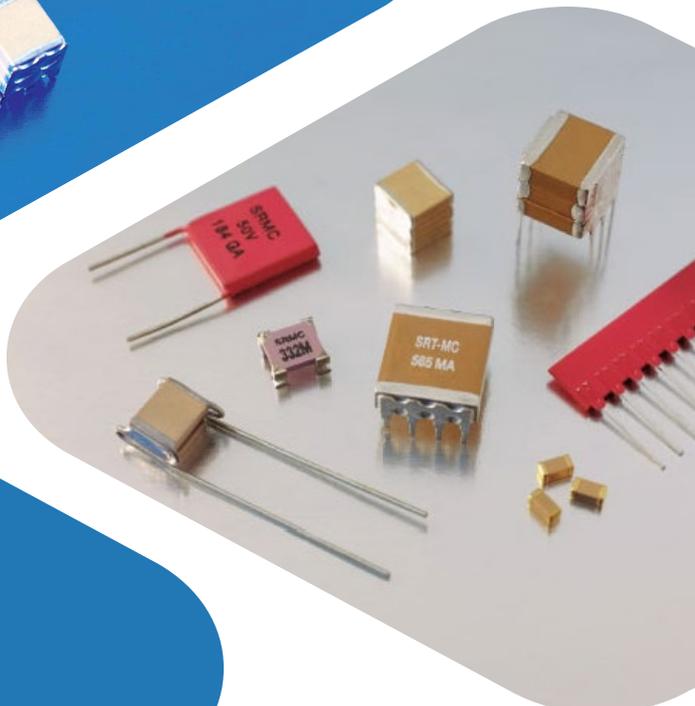




# SRT

## MICROCÉRAMIQUE

MLCC CAPACITORS



- › MLCC, FILTERS, STACK, RADIAL
- › STANDARD AND CUSTOM PRODUCTS
- › HIGH VOLTAGE, FREQUENCY, PRECISION
- › HIGH REACTIVITY, SHORT LEAD TIMES
- › SERVICE PROVIDER
- › COMPLETE PASSIVE & THERMAL SOLUTIONS
- › MANUFACTURED IN FRANCE

## SRT MICROCÉRAMIQUE

We manufacture MultiLayer Ceramic Capacitors and filters in France. Established in 1982 in Vendôme by former Vishay-Vitramon employees, SRT-Microcéramique is one of the only two companies still producing MLCCs in Europe. We are specialized in high value components, high voltage, high frequency, high precision, high reliability, low ESL, non-magnetic components and precision filters.

*Manufactured in Europe,  
short lead time guaranteed  
(4 to 8 weeks)  
No obsolescence*

Applications of our products include commercial aerospace, defense, medical applications (both implantable and imaging), space level, military aircraft and ground-based systems, high temperature (geophysical and geothermal), pulse discharge with high repetition rate, and a variety of commercial and industrial applications.



## OUR PRODUCTS

Range from Multi-layer Surface Mount Chip, to Stack, Radial leaded and vertical layers capacitors and filters in a variety of dielectrics and the full range of termination to suit your applications. We can produce large or small quantities.

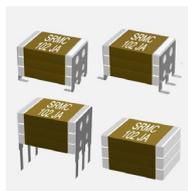
*Cross reference to most competitors designs :  
Exxelia, Syfer, Kemet, Presidio...*

Due to our very flexible production we can guarantee the absence of obsolescence. Our highly qualified engineer team works in close cooperation with our customers to develop custom designs and variations for their specific need.



### SMD

- 0201 -> 8060
- COG, X7R, High Q, HT
- Voltage : 16V -> 15KV
- Polymer option
- Sn, Au, AgPd term



### STACKS

- High power
- Low volume
- High reliability



### RADIALS

- Encapsulated
- Dipped
- Severe environment
- Historical design



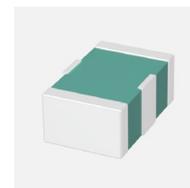
### NON MAGNETIC

- Cu-Sn termination
- All SMD available
- Medical application
- High Tesla



### MICROELECTRONIC

- Vertical layer 0303
- Au termination for bonding
- 0202 single layer (2024)



### FILTERS

- EMI M2F MCF MPF series
- High precision
- Large currents



### SPECIAL DESIGN

- Barcap capacitors
- Capacitors arrays
- Large cases



### CUSTOMS

- Very high tension 32K
- Any value
- Any size
- Any Voltage



### SnPb/SAC

- Dipped or electrolytic
- Medical application
- Space application

*This document is subject to change without notice.*

## SERVICES

Thanks to our cutting edge industrial equipment to produce MLCCs, we also offer a large range of services to our partners : full silver-nickel/tin termination process of various electronic components, termination change to lead/silver for medical and space applications, precision sorting and taping, testing and burn-in for high Reliability needs.

| TERMINATION  | PRECISION SORTING | BURN IN/TESTING               | TERMINATION CHANGE  | TAPING   | SOURCING   |
|--|-------------------|-------------------------------|---|--|--|
| Various SMD components<br>Medical, Space application | Up to 0,03%       | High Reliability test program | Ag/Pd Sn/Pb Cu/Sn<br>SAC, Au<br>Medical, Space applications | We can put on reel any kind and any volume of components | Passive and active components from multiple source at best price |

## THEY TRUST US

Over the years, we developed close relationships with large international groups and high technology companies, for which we provide unique services and custom products.

*Our relationship is based on a culture of trust, service and open communication.*

**MARKETS APPLICATIONS**

AEROSPACE    INDUSTRIAL    MEDICAL    ENERGY    RAIL    SPACE    TELECOM    MILITARY

## QUALITY AND CERTIFICATIONS

In order to ensure the highest reliability to our customers our quality process includes a full traceability, 100% visual and electrical test and burn-in. For special requirements we offer standard and specific qualification programs including, thermal cycling, humidity test, life test, thermal shock, vibration test, shear test, pull test...



We follow internally AECQ200 and MIL-STD-202 testing. SRT-Microcéramique is ISO-9001 since 2002. We are REACH and conflict of minerals compliant. Most of our products are ROHS certified.

## PASSIVE AND THERMAL SOLUTIONS

Our distribution branch Milton Ross Composants, in addition to our own ceramic production can offer the full range (except tantalum) of capacitors (film, electrolytic) and resistors (thick film, thin film, wirebound) through our partnership with specialized manufacturers (mainly European) offering the same high value product, high voltage, high precision, large values, custom products with always the shortest lead time.



## INNOVATION : HYDROGEN FUEL

In addition to our constant R&D to improve and innovate in our MLCC discipline we are leveraging our unique ceramic process knowledge to develop in collaboration with the CEA an innovative ceramic fuel cell production line offering the highest performance of the market.



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Different types of dielectrics display very different behaviours when it comes to withstanding power and heat, and don't demonstrate the same capacitance potential. SRT-Microcéramique proposes a wide range of ceramics. You'll find in the page below more information about what type of ceramic is better suited to your needs.

## Class I Dielectrics

Class I Dielectrics are the most stable type and are used when the application demands highly stable performance and cannot allow electrical noise or dielectric loss. Variations of voltage and temperature have minimum consequences on this class of dielectrics. Consequently, they are most used for DC blocking, decoupling applications as well as filtering with low capacitance.

### Q (Code Q)

- High Q (>2000)
- RF application up to 30 Ghz
- High Current

### NPO (Code A)

- Most stable type
- Lower capacitance
- Good for avoiding electrical noise

## Class I N2200 Dielectrics

Class I stability with close to Class II volumetric capacitance

### N2T (Code P)

- Ultra stable
- No piezo electric effect
- High current pulse discharge

## Class II Dielectrics

Class II Dielectrics display stable performance and possess a better volumetric efficiency than class I. Thus, they are used in bypassing, filtering, coupling and decoupling applications.

### X7R (Code Y)

- Good volumetric efficiency
- High capacitance
- Stable

### BX/BY (Code X/2C1)

- Improved ESR
- Better voltage coefficient
- MIL specifications

### X7S/X7T/X6S/X5R/Y5V (Code T/W/R/S/V)

- Highest capacitance per volume
- Less stable
- Low voltage

| Dielectric                      | Class I                               |            |                  | Class II         |               |          |                                    |                 |                 |                 |               |                |
|---------------------------------|---------------------------------------|------------|------------------|------------------|---------------|----------|------------------------------------|-----------------|-----------------|-----------------|---------------|----------------|
|                                 | High Q                                | NPO/COG    | N2T              | X7R              | BX            | 2C1      | X5R                                | X7S             | X6S             | X7T             | Z5U           | Y5V            |
| SRT Code                        | Q                                     | A          | P                | Y                | X             | BY       | R                                  | T               | S               | W               | U             | V              |
| Type                            | Ultra Stable                          |            |                  | Stable           |               |          |                                    |                 |                 |                 |               |                |
| Temperature Range               | -55°C<br>+125°C (250°C)               |            |                  | -55°C<br>+125°C  |               |          | -55°C +85°C                        | -55°C<br>+125°C | -55°C<br>+105°C | -55°C<br>+125°C | +10°C +85°C   | -30°C<br>+85°C |
| T° Coefficient no DC applied    | ± 30ppm                               |            | 2200ppm<br>± 350 | ± 15%            |               | ± 20%    | ± 15%                              | ± 22%           |                 | +22% -33%       | +22% -56%     | +22% -82%      |
| T° Coefficient rated DC applied | -                                     |            |                  | -                | +15 -25%      | +20 -30% | -                                  |                 |                 |                 |               |                |
| Dielectric constant             | 10-100                                |            | 450              | 2000-3000        |               |          | 3000-20000                         |                 |                 |                 |               |                |
| Dissipation Factor              | 0.01%                                 | 0.05% 0.1% |                  | 1% 3.5%          |               |          | 2.5% 15%                           |                 |                 | 5% 20%          |               |                |
| IR 25°C/Un                      | 100 GΩ or 1000 Ω-F whichever is less  |            |                  |                  |               |          | 10 GΩ or 100 Ω-F whichever is less |                 |                 |                 |               |                |
| Dielectric strenght ≤200V       | 2.5 Ur 5 seconds 50mA max             |            |                  |                  |               |          |                                    |                 |                 |                 |               |                |
| Dielectric strenght <500V       | Ur + 250V 5 seconds 50mA max          |            |                  |                  |               |          |                                    |                 |                 |                 |               |                |
| Dielectric strenght <1000V      | 1.5 Ur 5 seconds 50mA max             |            |                  |                  |               |          |                                    |                 |                 |                 |               |                |
| Dielectric strenght ≥1000V      | 1.2 Ur 5 seconds 50mA max             |            |                  |                  |               |          |                                    |                 |                 |                 |               |                |
| Piezo effect                    | No piezo                              |            |                  | piezo effect     |               |          |                                    |                 |                 |                 |               |                |
| Ageing                          | None                                  |            |                  | 2% per decade    | 1% per decade |          | 4% per decade                      | 5% per decade   |                 |                 | 7% per decade |                |
| Tolerance                       | ± 0.25pF ± 0.5pF ± 1% ± 2% ± 5% ± 10% |            |                  | ± 5% ± 10% ± 20% |               |          | ± 10% ± 20%                        |                 |                 | -20% +80%       |               |                |
| Termination                     | X,F,P,C,W,H,I                         |            |                  |                  |               |          | X,P,G,W,H,I                        |                 |                 |                 |               |                |

All our capacitors are available with a wide range of termination to fit your specific needs :

## Tin (Code X)

- Standard termination
- ROHS
- Dipped Silver, Nickel barrier, Sn plated
- Process qualified according to JDEC JESD201A regarding whisker mitigation

## Polymer (Code P)

- Flexible termination
- Improve bending tolerance
- ROHS
- Available on all components
- Designed for gluing

## Silver-Palladium (Code F)

- Excellent contact properties
- Resist to leaching during hand soldering
- Dipped Silver-Palladium
- ROHS

## Gold Flash (Code W)

- Glueing
- ROHS
- Max 0.2µm Gold Flash

## Gold Thick (Code G)

- Microelectronic applications
- Wire Bonding/glueing
- ROHS
- Min 2.5µm Gold

## Non Magnetic (Code C/CP)

- High Tesla Applications
- IRM, particule accelerators
- Dipped Silver, Copper barrier, Sn plated
- ROHS

## Solderable Silver (Code Q)

- Medical or space application
- Whiskers free
- High temperature
- ROHS

## Dipped SAC 305 (Code S/SP)

- Sn96.5 Ag3 Cu0.5
- Medical, space and oil application
- Whiskers free
- High reliability
- ROHS

## Dipped Tin-Lead (Code H/HP)

- Sn62 Pb36 Ag2
- Medical or Oil application
- Whiskers free
- High reliability

## Electrolytical Tin-Lead (Code I/IP)

- Minimum Pb 5%
- Medical or space application
- Whiskers free
- High reliability

| TERMINATION         | CODE | ROHS | NON MAGNETIC | IMPROVED BOARD FLEX | SOLDERING | GLUING | WIRE BONDING |
|---------------------|------|------|--------------|---------------------|-----------|--------|--------------|
| Sn                  | X    | 0    |              |                     | 0         |        |              |
| Polymer             | P    | 0    |              | 0                   | 0         |        |              |
| AgPd                | F    | 0    |              |                     | 0         | 0      |              |
| Gold Flash          | W    | 0    |              |                     | 0         | 0      |              |
| Gold Thick          | G    | 0    |              |                     | 0         | 0      | 0            |
| Non Magnetic        | C    | 0    | 0            |                     | 0         |        |              |
| Solderable Silver   | Q    | 0    |              |                     | 0         |        |              |
| Dipped SnPb         | H    |      |              |                     | 0         |        |              |
| Dipped SAC          | S    | 0    |              |                     | 0         |        |              |
| Electrolytical SnPb | I    |      |              |                     | 0         |        |              |
| Lead                | -    | 0    |              | 0                   | 0         |        |              |
| Non Magn Lead       | C    | 0    | 0            | 0                   | 0         |        |              |
| Lead Frame          | -    | 0    |              | 0                   | 0         |        |              |
| Non Magn Lead Frame | C    | 0    | 0            | 0                   | 0         |        |              |

0 = COMPLIANT

## STORAGE

To prevent the damage of solderability of terminations, the following storage conditions are recommended :

Indoors under 5 ~ 40°C and 20% ~ 70% RH.

No harmful gases containing sulfuric acid, ammonia, hydrogen sulfide or chlorine.

Packaging should not be opened until the capacitors are required for use. If opened, the pack should be re-sealed as soon as possible. Taped products should be stored out of direct sunlight, which might promote deterioration in tape or adhesion performance. The product is recommended to be used within 24 months after shipment. Extended shelf life over this period require a solderability check before use.

## HANDLING

Chip capacitors are dense, hard, brittle, and abrasive materials. They are liable to suffer mechanical damage, in the form of cracks or chips. Chip Capacitors should be handled with care to avoid contamination or damage. To use vacuum or plastic tweezers to pick up or plastic tweezers is recommended for manual placement. Tape and reeled packages are suitable for automatic pick and placement machine.

## PREHEAT

In order to minimize the risk of thermal shock during soldering, a carefully controlled preheat is required.

The rate of preheat should not exceed 3°C per second.

## SOLDERING FLUX

Use mildly activated rosin RA and RMA fluxes, but do not use activated flux. The amount of solder in each solder joint should be controlled to prevent the damage of chip capacitors caused by the stress between solder, chips, and substrate.

## SOLDERING TYPE

Lead containing solders, such as Sn60, Sn62 or Sn63 and lead free solders, such as SnAgCu, can all be used with our MLCCs.

In case of non-magnetic termination code C, use lead containing or lead (Pb)-free SAC305 solders.

## SOLDERING HEIGHT

The solder climbing minimum height is suggesting to 25% of chip thickness or 500um whichever is less.

(Reference from IPC-610E)

## COOLING

After soldering, cool the chips and the substrate gradually to room temperature. Natural cooling in air is recommended to minimize stress in the solder joint.

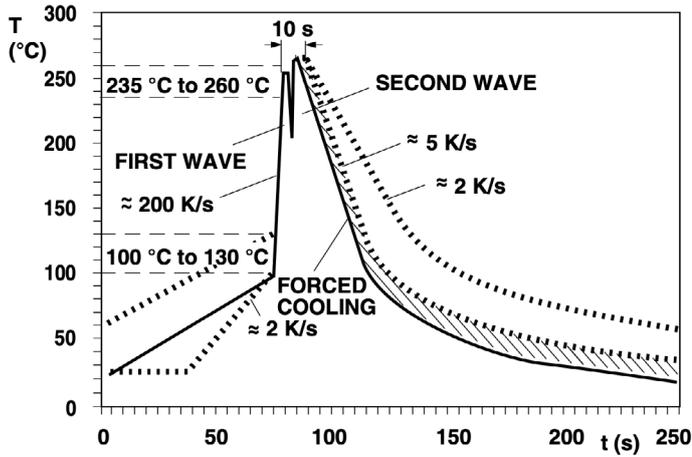
## CLEANING

All flux residues must be removed by using suitable electronic-grade vapor-cleaning solvents to eliminate contamination that could cause electrolytic surface corrosion. Good results can be obtained by using ultrasonic cleaning of the solvent. The choice of the proper system is depends upon many factors such as component mix, flux, and solder paste and assembly method. The ability of the cleaning system to remove flux residues and contamination from under the chips is very important.

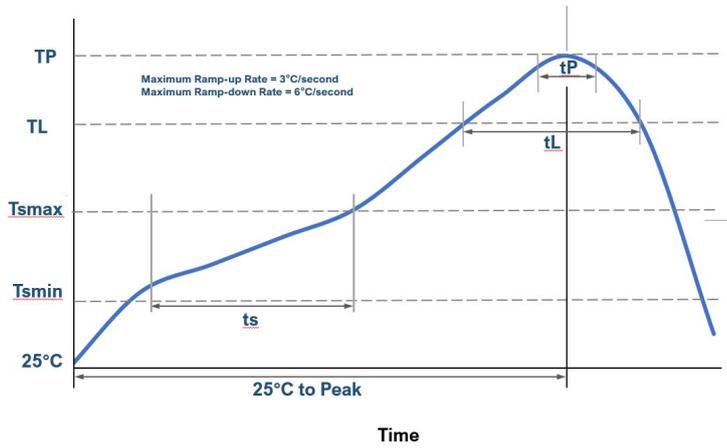
## SOLDERING CONDITIONS

| SIZE             | THICKNESS | WAVE | REFLOW |
|------------------|-----------|------|--------|
| 0201             | All       | 0    | 0      |
| 0402             | All       | 0    | 0      |
| 0505             | All       | 0    | 0      |
| 0603             | All       | 0    | 0      |
| 0805             | < 1.25mm  | 0    | 0      |
| 0805             | ≥ 1.25mm  |      | 0      |
| 1111             | < 1.25mm  | 0    | 0      |
| 1111             | ≥ 1.25mm  |      | 0      |
| 1206             | < 1.25mm  | 0    | 0      |
| 1206             | ≥ 1.25mm  |      | 0      |
| 1210             | < 1.25mm  | 0    | 0      |
| 1210             | ≥ 1.25mm  |      | 0      |
| larger than 1210 | All       |      | 0      |
| High compact     | All       |      | 0      |

## WAVE SOLDERING PROFILE

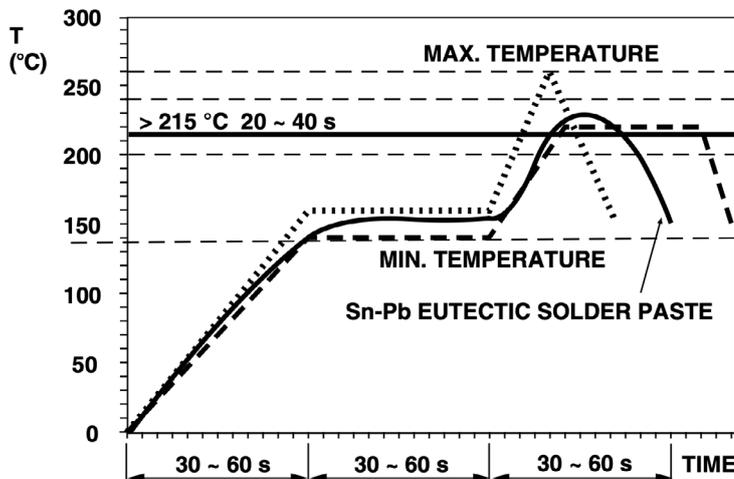


## LEADFREE REFLOW SOLDERING PROFILE

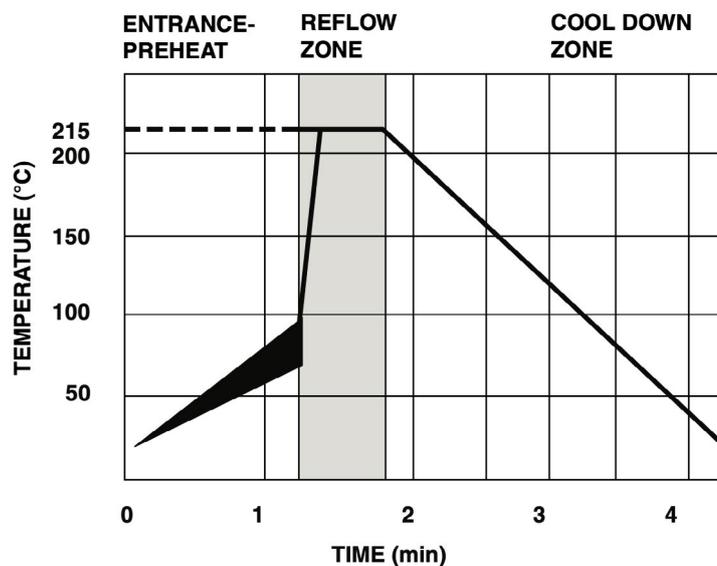


| PROFILE FEATURE            | LEAD FREE (SAC 305) |
|----------------------------|---------------------|
| Tsmin                      | 150°C               |
| Tsmax                      | 190°C               |
| Time from Tsmin to Tsmax   | 60 - 120 seconds    |
| Ramp-up Rate               | 3°C/second max      |
| Liquidous Temperature      | 217°C               |
| Time above Liquidous       | 60 - 120 seconds    |
| Peak Temperature           | 250°C               |
| Time within 5°C of maximum | 10 seconds max      |
| Peak Temperature           | 250°C               |
| Ramp-down Rate             | 6°C/second max      |
| Time 25°C to Peak          | 8min max            |

## SNPB REFLOW SOLDERING PROFILE



## VAPOUR PHASE REFLOW PROFILE



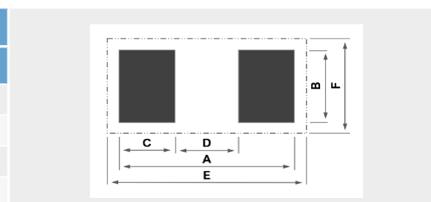
## HAND SOLDERING

Hand soldering is not recommended as the thermal shock may cause a crack, hot air pencil use is advised, however if used the following recommendations should be taken :

- Soldering iron tip diameter  $\leq 3.0$  mm and wattage max. 20W.
- The Capacitors shall be pre-heated to 150°C and that the temperature gradient between the devices and the tip of the soldering iron.
- Tip temperature  $\leq 280$ °C and should't be applied for more than 5 seconds.
- The required amount of solder shall be melted on the soldering tip.
- The tip of iron should not contact the ceramic body directly.
- The Capacitors shall be cooled gradually at room temperature after soldering.
- Forced air cooling is not allowed.

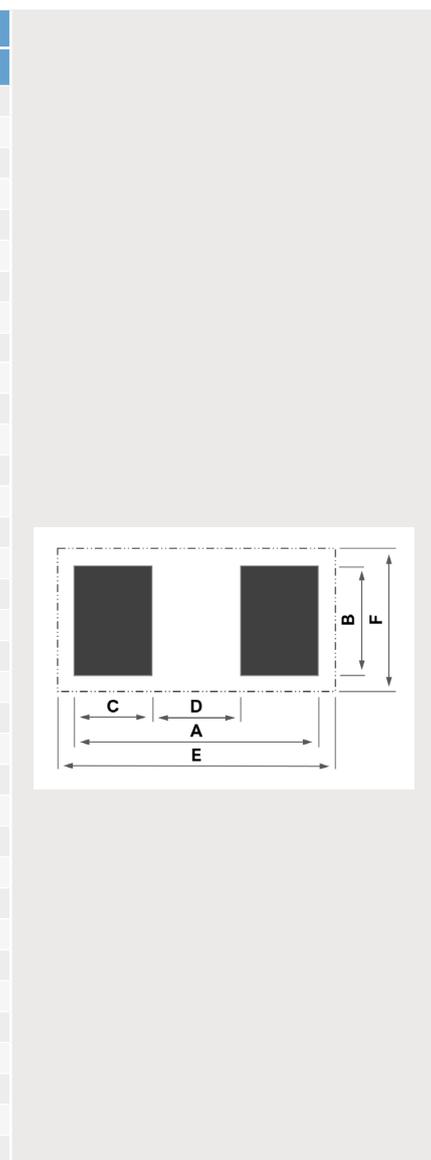
## TYPICAL SMD FOOTPRINT WAVE SOLDERING

| SIZE | FOOTPRINT DIMENSIONS IN MM |      |      |      |      |      |
|------|----------------------------|------|------|------|------|------|
|      | A                          | B    | C    | D    | E    | F    |
| 0603 | 2.40                       | 1.00 | 0.70 | 1.00 | 3.10 | 1.40 |
| 0805 | 3.20                       | 1.30 | 0.90 | 1.40 | 4.10 | 1.85 |
| 1206 | 4.80                       | 1.80 | 1.25 | 2.30 | 5.90 | 2.25 |
| 1210 | 4.80                       | 2.70 | 1.25 | 2.30 | 5.90 | 3.15 |



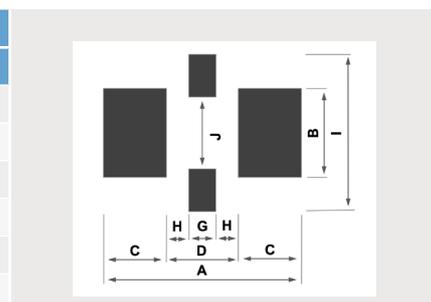
## TYPICAL SMD FOOTPRINT REFLOW SOLDERING

| SIZE              | FOOTPRINT DIMENSIONS IN mm |       |      |       |       |       |
|-------------------|----------------------------|-------|------|-------|-------|-------|
|                   | A                          | B     | C    | D     | E     | F     |
| 0201              | 1.00                       | 0.40  | 0.30 | 0.40  | 1.25  | 0.85  |
| 0204              | 1.00                       | 1.20  | 0.30 | 0.40  | 1.25  | 1.65  |
| 0402              | 1.50                       | 0.60  | 0.40 | 0.70  | 1.75  | 1.05  |
| 0306              | 1.30                       | 1.80  | 0.40 | 0.50  | 1.55  | 2.25  |
| 0404              | 1.50                       | 1.20  | 0.40 | 0.70  | 1.75  | 1.65  |
| 0504              | 1.90                       | 1.20  | 0.40 | 1.10  | 2.15  | 1.65  |
| 0505              | 1.90                       | 1.50  | 0.50 | 0.90  | 2.15  | 1.95  |
| 0508              | 1.90                       | 2.20  | 0.50 | 0.90  | 2.15  | 2.75  |
| 0603              | 2.30                       | 1.00  | 0.60 | 1.10  | 2.55  | 1.55  |
| 0612              | 2.30                       | 3.40  | 0.60 | 1.10  | 2.55  | 3.95  |
| 0805              | 2.90                       | 1.45  | 0.90 | 1.10  | 3.15  | 2.00  |
| 1206              | 4.10                       | 1.80  | 0.90 | 2.30  | 4.35  | 2.45  |
| 1210              | 4.10                       | 2.70  | 1.00 | 2.10  | 4.35  | 3.35  |
| 1808              | 5.50                       | 2.20  | 1.20 | 3.10  | 5.75  | 2.85  |
| 1812              | 5.50                       | 3.40  | 1.20 | 3.10  | 5.75  | 4.05  |
| 1825              | 5.50                       | 6.70  | 1.20 | 3.10  | 5.75  | 7.35  |
| 2211              | 6.80                       | 3.00  | 1.40 | 4.00  | 7.05  | 3.65  |
| 2220              | 6.80                       | 5.40  | 1.40 | 4.00  | 7.05  | 6.05  |
| 2225              | 6.80                       | 6.70  | 1.65 | 3.50  | 7.05  | 7.50  |
| 2525              | 7.70                       | 6.75  | 1.65 | 4.40  | 7.95  | 7.55  |
| 2825              | 8.40                       | 6.70  | 1.65 | 5.10  | 8.65  | 7.50  |
| 3033              | 9.00                       | 8.80  | 1.95 | 5.10  | 9.25  | 9.60  |
| 3640              | 11.60                      | 4.60  | 2.35 | 6.90  | 11.85 | 5.40  |
| 4017              | 11.60                      | 5.45  | 2.35 | 6.90  | 11.85 | 6.25  |
| 4020              | 11.60                      | 10.70 | 2.35 | 6.90  | 11.85 | 11.50 |
| 4040              | 11.60                      | 26.20 | 2.35 | 6.90  | 11.85 | 27.00 |
| 40100             | 15.50                      | 13.20 | 2.35 | 10.80 | 15.75 | 14.00 |
| 5550              | 16.70                      | 20.80 | 2.35 | 12.00 | 16.95 | 21.60 |
| 6080              | 18.30                      | 15.70 | 2.35 | 13.60 | 18.55 | 16.50 |
| 6660              | 21.90                      | 15.70 | 2.35 | 17.20 | 22.15 | 16.50 |
| 8060              | 21.90                      | 38.90 | 2.35 | 17.20 | 22.15 | 39.70 |
| 80150             | 4.15                       | 2.60  | 1.15 | 1.75  | 5.05  | 3.30  |
| HIGH COMPACT 1210 | 5.75                       | 3.40  | 1.35 | 2.70  | 6.70  | 4.20  |
| HIGH COMPACT 1812 | 6.80                       | 5.50  | 1.70 | 2.80  | 7.70  | 6.30  |
| HIGH COMPACT 2220 | 6.80                       | 5.50  | 1.70 | 2.80  | 7.70  | 6.30  |



## TYPICAL FILTER FOOTPRINT REFLOW SOLDERING

| SIZE | FOOTPRINT DIMENSIONS IN mm |      |      |      |      |      |      |      |
|------|----------------------------|------|------|------|------|------|------|------|
|      | A                          | B    | C    | D    | G    | H    | I    | J    |
| 0603 | 2.30                       | 1.00 | 0.55 | 1.20 | 0.60 | 0.30 | 1.40 | 0.60 |
| 0805 | 2.90                       | 1.45 | 0.70 | 1.50 | 0.80 | 0.35 | 1.85 | 1.05 |
| 1206 | 4.10                       | 1.80 | 0.95 | 2.20 | 1.00 | 0.60 | 2.20 | 1.40 |
| 1806 | 5.50                       | 1.80 | 1.15 | 3.20 | 1.50 | 0.85 | 2.20 | 1.40 |
| 1812 | 5.50                       | 3.40 | 1.15 | 3.20 | 1.50 | 0.85 | 3.90 | 3.00 |
| 2220 | 6.80                       | 5.40 | 1.25 | 4.30 | 2.00 | 1.15 | 7.20 | 5.00 |



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## ORDERING INFORMATION

| SRMC  | -             | 0603     | Y          | 102   | J                 | A           | -                                      | L       | 040    | -       | -                     | -        | B                | -                      |
|-------|---------------|----------|------------|---|-------------------|-------------|--|---------|--------|---------|-----------------------|----------|------------------|------------------------|
| SERIE | HT            | SIZE     | DIELECTRIC | CAPACITANCE                                       | TOLERANCE         | VOLTAGE     | TERMINAISON                            | FORM    | HEIGHT | LEADS   | COATING/MARKING       | CUR-RENT | PACKAGING        | SPECIAL                |
| -     | -             | 0201     | Q = High Q | Expressed in picofarads (pF)                      | A = ± 0.05pF/0.5% | V = 2.5V    | - = Sn lead/lead frame                 | -       | -      | -       | -                     | -        | B = Reel         | -                      |
| FK    | H = High Temp | 0204     | A = NP0    |   | B = ± 0.1pF       | Y = 4V      | X = Nickel Tin                         | J       | 020    | 2 to 10 | I = Conformal-Coating | 1        | V = Bulk         | BM = BME               |
| FH    |               | 0402     | P = N2T    | The first two digits are significant,             | C = ± 0.25pF      | R = 6.3V    | F = Palladium-Silver                   | L       | 030    | B       | H = Epoxy Coating     | 2        | T = Tray Package | Dxx = Reliability spec |
| SREV  |               | 0303     | X = BX     | the third digit gives the number of noughts       | D = ± 0.5pF       | Q = 10V     | P = Polymer Tin (Flex)                 | D       | 040    |         | M = Marked Resistor   |          | W = Waffle Pack  | Exx = Sorting spec     |
| MCF   |               | 0306     | Y=X7R      | Example : 102 = 1 000pF                           | E = ± 0.1%        | J = 16V     | C = Copper Tin (Non magnetic)          | M       | 050    |         |                       |          |                  |                        |
| M2F   |               | 0404     | BY=2C1     |   | F = ± 1%          | X = 25V     | CP = Copper Polymer Tin (Non magnetic) | T = 2   | 060    |         |                       |          |                  |                        |
| MPF   |               | 0504     | S = X5R    |   | G = ± 2%          | Z = 35V     | W = Nickel Gold Flash                  | leads   | 070    |         |                       |          |                  |                        |
| SRMC  |               | 0505     | T = X7S    |   | J = ± 5%          | A = 50V     | G = Nickel Gold Thick                  | leads   | 080    |         |                       |          |                  |                        |
| SRTV  |               | 0508     | R = X6S    | For special values R is used as decimal separator | K = ± 10%         | U = 63V     | HP = Dipped SnPb Polymer               | leads   | 090    |         |                       |          |                  |                        |
| SR    |               | 0603     | W = X7T    | Example 12R7 = 12.7pF                             | M = ± 20%         | B = 100V    | H = Dipped SnPb                        | plain J | 100    |         |                       |          |                  |                        |
| SA    |               | 0612     | U = Z5U    | Example 1340R0 = 1340pF                           | Z = -20% +80%     | N = 150V    | S = Dipped SAC                         | Lead    | 110    |         |                       |          |                  |                        |
| SF    |               | 0805     | V = Y5V    |   |                   | C = 200V    | IP = Polymer Electrolytical SnPb       |         | 120    |         |                       |          |                  |                        |
|       |               | 1206     |            |   |                   | P = 250V    |  |         | 130    |         |                       |          |                  |                        |
|       |               | 1210     |            |   |                   | D = 300V    | SP = Polymer Dipped SAC                |         | 140    |         |                       |          |                  |                        |
|       |               | 1808     |            |   |                   | E = 500V    | I = Electrolytic SnPb                  |         | 160    |         |                       |          |                  |                        |
|       |               | 1812     |            |   |                   | F = 630V    |  |         | 180    |         |                       |          |                  |                        |
|       |               | 1825     |            |   |                   | G = 1000V   | Q = Solderable Silver                  |         |        |         |                       |          |                  |                        |
|       |               | 2211     |            |   |                   | 1K2 = 1200V | M = Microstrip                         |         |        |         |                       |          |                  |                        |
|       |               | 2220     |            |   |                   | 1K4 = 1400V | A = Axial Ribbon                       |         |        |         |                       |          |                  |                        |
|       |               | 2225     |            |   |                   | O = 1500V   | R = Radial Ribbon                      |         |        |         |                       |          |                  |                        |
|       |               | 2325     |            |   |                   | 1K7 = 1700V | U = Axial Wire                         |         |        |         |                       |          |                  |                        |
|       |               | 2525     |            |   |                   | 1K8 = 1800V | V = Radial Wire                        |         |        |         |                       |          |                  |                        |
|       |               | 2825     |            |   |                   | H = 2000V   | CM = Microstrip (Non magnetic)         |         |        |         |                       |          |                  |                        |
|       |               | 3033     |            |   |                   | T = 2500V   | CA = Axial Ribbon (Non magnetic)       |         |        |         |                       |          |                  |                        |
|       |               | 3640     |            |   |                   | I = 3000V   | CR = Radia Ribbon (Non magnetic)       |         |        |         |                       |          |                  |                        |
|       |               | 4040     |            |   |                   | M = 3600V   | CU = Axial Wire (Non magnetic)         |         |        |         |                       |          |                  |                        |
|       |               | 40100    |            |   |                   | K = 4000V   | CV = Radial Wire (Non magnetic)        |         |        |         |                       |          |                  |                        |
|       |               | 5550     |            |   |                   | L = 5000V   |  |         |        |         |                       |          |                  |                        |
|       |               | 6080     |            |   |                   | 6 = 6000V   |  |         |        |         |                       |          |                  |                        |
|       |               | 6560     |            |   |                   | S = 7200V   |  |         |        |         |                       |          |                  |                        |
|       |               | 6660     |            |   |                   | 7K5 = 7500V |  |         |        |         |                       |          |                  |                        |
|       |               | 7274     |            |   |                   | 8 = 8000V   |  |         |        |         |                       |          |                  |                        |
|       |               | 7565     |            |   |                   | 10 = 10000V |  |         |        |         |                       |          |                  |                        |
|       |               | 8060     |            |   |                   | 12 = 12000V |  |         |        |         |                       |          |                  |                        |
|       |               | 80150    |            |   |                   | 15 = 15000V |  |         |        |         |                       |          |                  |                        |
|       |               | 15080    |            |   |                   |             |  |         |        |         |                       |          |                  |                        |
|       |               | 40 to 94 |            |   |                   |             |  |         |        |         |                       |          |                  |                        |

## RELIABILITY/SCREENING LEVEL

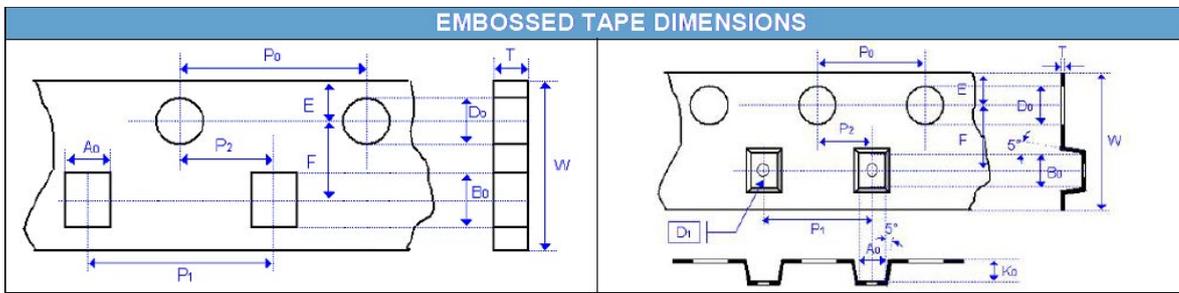
| OPTIONAL CODE | TESTING DETAIL   |
|---------------|--|
| D20           | Generic AECQ-200   |
| D55681        | DPA & 100% Burn-In Per Group A of MIL-PRF-55681  |
| D123          | Group A & B Per MIL-PRF-123  |
| D3009         | DPA & 100% Burn-In according to ECSS-3009 for space application  |
| COTS1         | Class 1 COTS+ according to ECSS-Q-ST-60-13C-Rev1   |
| COTS2         | Class 2 COTS+ according to ECSS-Q-ST-60-13C-Rev1   |
| COTS3         | Class 3 COTS+ according to ECSS-Q-ST-60-13C-Rev1   |
| D03           | High Temperature application<br>Burn-In 100% 125° 168H 2Un, 6.5% AQL   |
| D05           | Burn-In 100% 125° 168H 2Un, less than 5% default allowed<br>VRT CEI 68-2-14 10 cycles 0V -55°C/+125°C, less than 5% default allowed<br>20 pieces life test 125°C, 1.5Un, 1 default allowed |

## SORTING

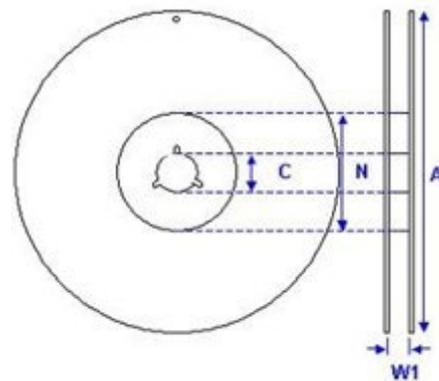
| OPTIONAL CODE | SORTING DETAIL   |
|---------------|--|
| E01           | 2 cells sorting 0 to +2,5 & +2,5 to +5 (% or pF accoding to value)                         |
| E02           | 4 cells sorting -5 to -2,5 ; -2,5 to 0 ; 0 to +2,5 & +2,5 to 5 (% or pF accoding to value) |
| E21           | 2% cells   |

## PACKAGE DIMENSION AND QUANTITY

| SIZE              | THICKNESS  | PAPER TAPE |         | PLASTIC TAPE |           |
|-------------------|------------|------------|---------|--------------|-----------|
|                   |            | 7 REEL     | 13 REEL | 7' REEL      | 13 REEL   |
| 0201              | 0.3 ± 0.05 | 10 K       | 50 K    |              |           |
| 0402              | 0.5 ± 0.05 | 10 K       | 50 K    |              |           |
| 0504              | 0.6 ± 0.05 |            |         | 4K           | 15K       |
|                   | 0.9 ± 0.05 |            |         | 4K           | 15K       |
| 0603              | 0.7 ± 0.07 | 4K         |         | 4K           | 15K       |
|                   | 0.9 ± 0.07 | 4K         | 15K     | 4K           | 15K       |
|                   | 0.9 ± 0.07 |            |         | 4K           | 15K       |
|                   | 1.1 ± 0.07 |            |         | 4K           | 15K       |
| 0805              | 0.8 ± 0.07 | 4K         | 15K     | 4K           | 15K       |
|                   | 0.9 ± 0.07 |            |         | 4K           | 10K       |
|                   | 1.1 ± 0.07 |            |         | 3K           | 10K       |
|                   | 1.3 ± 0.07 |            |         | 3K           | 10K       |
| 1206              | 1.1 ± 0.1  |            |         | 3K           | 10K       |
|                   | 1.4 ± 0.1  |            |         | 3K           | 8K        |
|                   | 1.8 ± 0.1  |            |         | 2K           | 8K        |
| 1210              | 1.4 ± 0.1  |            |         | 3K           | 8K        |
|                   | 1.8 ± 0.1  |            |         | 1K           | 6K        |
| 1808              | 1.4 ± 0.1  |            |         | 3K           | 8K        |
| 1812              | 1.6 ± 0.1  |            |         | 2K           | 8K        |
|                   | 2.1 ± 0.1  |            |         | 1K           | 6K        |
|                   | 2.8 ± 0.1  |            |         | 1K           | 6K        |
| 2220              | 1.8 ± 0.1  |            |         | 1K           | 6K        |
|                   | 3.0 ± 0.1  |            |         | 0.5K         | 2K        |
| 2225              | 3.0 ± 0.1  |            |         | 0.5K         | 2K        |
| 3033              | 3.0 ± 0.1  |            |         | 0.5K         | 2K        |
| 3640              | 3.0 ± 0.1  |            |         | 0.5K         | 2K        |
| 5440              | 3.9 ± 0.1  |            |         |              | 0.5K - 1K |
| HIGH COMPACT 1210 |            |            |         | 1K           | 6K        |
| HIGH COMPACT 1812 |            |            |         | 1K           | 6K        |
| HIGH COMPACT 2220 |            |            |         | 0.5K         | 2K        |



| REEL SIZE | 7                 | 7                 | 13                |
|-----------|-------------------|-------------------|-------------------|
| C         | 13.0<br>+0.5/-0.2 | 13.0<br>+0.5/-0.2 | 13.0<br>+0.7/-0.3 |
| W1        | 8.4<br>+1.5/-0    | 12.4<br>+2.0/-0   | 8.4<br>+2.0/-0    |
| A         | 178.0<br>±0.10    | 178.0<br>±0.10    | 330.0<br>±1.0     |
| N         | 60.0<br>±1.0      | 80.0<br>±1.0      | 100<br>±1.0       |



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## PRODUCTION CONTROL

Comparison of the Screening/Testing of the standard and High Reliability SRT-Microcéramique components

|                     | TEST/STRESS                 | STANDARD SMD                      | STACKS SRMC RADIALS                         | HIGH TEMPERATURE             | IAW ESA-ESCC3009   | COTS1   | COTS2   | COTS3   | IAW MIL-PRF-55681 GROUP A                 | IAW MIL-PRF-123 GROUP A                          |
|---------------------|-----------------------------|-----------------------------------|---|------------------------------|--|---|---|---|---|--|
|                     | CODE                        |                                   |   | D03                          | D3009  | COTS1   | COTS2   | COTS3   | D55681                                    | D123   |
|                     | SCOPE                       | PMEMLCC X7R, BX, NPO, N2T, High Q | Encapsulated, Dipped radial and Stacks SRMC | Type 1, Type 2 Chips         | SRT PME BME, Radials, Stacks, X7R, BX, N2T, NPO, High Q                    | Class 1 BME Chips   | Class 2 BME Chips   | Class 3 BME Chips   | SRT PME BME X7R, NPO, BX, N2T, High Q     | SRT PME BME X7R, BX, NPO, N2T, High Q            |
| PROCESS / SCREENING | Burn-In                     |                                   | 100% Chips 24H +Stack 48H Tmax 2Un PDA 6.5% | 100% 168H Tmax 2Un PDA 6.5%  | 100% 96H Tmax 2Un PDA 5%   | 100% 96H Tmax 2Un PDA 5%  | 100% 96H Tmax 2Un PDA 5% for non AEC-Q200                                   | 100% 96H Tmax 2Un PDA 5% for non AEC-Q200                                   | 100% 100H Min Tmax 2Un PDA 8%             | 100% 168H Min 0.1%/1pc last 48H 125°C 2Un PDA 5% |
|                     | Capa, DF, IR, VP (25°C)     | 100%                              | 100%  | 100%                         | 100%   | 100%  | 100%  | 100%  | 100%                                      | 100%   |
|                     | IR (125°C)                  |                                   |   |                              |  |   |   |   | Sample                                    | Sample   |
|                     | Voltage Breakdown           | 10 pcs/lot                        | 10 pcs/lot                                  | 10 pcs/lot                   | 10 pcs/lot   | 10 pcs/lot  | 10 pcs/lot  | 10 pcs/lot  | 10 pcs/lot                                | 10 pcs/lot                                       |
|                     | Dimension                   | 5 pcs/lot                         | 5 pcs/lot                                   | 5 pcs/lot                    | 5 pcs/lot  | 5 pcs/lot   | 5 pcs/lot   | 5 pcs/lot   | 5 pcs/lot                                 | 5 pcs/lot  |
|                     | DPA                         | per lot                           | per lot                                     | per lot                      | per lot  | per lot   | per lot   | per lot   | per lot                                   | per lot  |
|                     | Visual                      | 100%                              | 100%  | 100%                         | 100%   | 100%  | 100%  | 100%  | 100%                                      | 100%   |
|                     | Solderability               | 5 pcs/lot                         | 5 pcs/lot                                   | 5 pcs/lot                    | 5 pcs/lot  | 5 pcs/lot   | 5 pcs/lot   | 5 pcs/lot   | 5 pcs/lot                                 | 5 pcs/lot  |
|                     | Leaching                    | 5 pcs/lot                         | 5 pcs/lot                                   | 5 pcs/lot                    | 5 pcs/lot  | 6 pcs/lot   | 5 pcs/lot   | 5 pcs/lot   | 5 pcs/lot                                 | 5 pcs/lot  |
|                     | Termination thickness       | 5 pcs/lot                         | 5 pcs/lot                                   | 5 pcs/lot                    | 5 pcs/lot  | 5 pcs/lot   | 5 pcs/lot   | 5 pcs/lot   | 5 pcs/lot                                 | 5 pcs/lot  |
| TC                  | per ceramic lot             | per ceramic lot                   | per ceramic lot                             | per ceramic lot              | per ceramic lot and in LAT   | in LAT  | in LAT  | in LAT  | per ceramic lot                           | per ceramic lot                                  |
| LAT                 | On request                  | On request                        | On request                                  | On request                   | Flying Part  | Flying part   | Flying part   | Flying part   | On request                                | On request                                       |
| LAT SUBGROUP 1      | Mounting                    |                                   |   |                              | 20 serialized pcs on PCB   |   |   |   |   |  |
|                     | Thermal Shock               |                                   |   |                              | 10 Cycles 30mn/1mn   |   |   |   |   |  |
|                     | Humidity                    |                                   |   |                              | For Un<500V 1000h 85/85  |   |   |   |   |  |
| Criteria            |                             |                                   |   | No visual/electrical default |  |   |   |   |   |  |
| LAT SUBGROUP 2A     | Mounting                    |                                   |   |                              | 40 serialized pcs on PCB   | 20 serialized pcs on PCB  | 20 serialized pcs on PCB  | 20 serialized pcs on PCB  | 20 serialized pcs on PCB for non AEC-Q200 |  |
|                     | Operational Life            |                                   |   |                              | 1000h ±24 125°C 2Un Un=500V 1.5Un Un=500V 1.3Un 500V<Un≤1250V 1Un Un>1250V | 1000h ±24 max T° 2Un Un=500V 1.5Un Un=500V 1.3Un 500V<Un≤1250V 1Un Un>1250V | 1000h ±24 max T° 2Un Un=500V 1.5Un Un=500V 1.3Un 500V<Un≤1250V 1Un Un>1250V | 1000h ±24 Max T° 2Un Un=500V 1.5Un Un=500V 1.3Un 500V<Un≤1250V 1Un Un>1250V |   |  |
|                     | Criteria                    |                                   |   |                              | No visual/electrical default   | No visual/electrical default  | No visual/electrical default  | No visual/electrical default  |   |  |
| LAT SUBGROUP 2B     | Mounting                    |                                   |   |                              | 6 serialized pcs on PCB  | 6 serialized pcs on PCB non AEC-Q200  |   |   |   |  |
|                     | TC                          |                                   |   |                              | IR at 125°C Cp at -55°C/20°C+125°C   | IR at 125°C Cp at -55°C/20°C+125°C  |   |   |   |  |
|                     | Shear Test                  |                                   |   |                              | 5N 10s   | 5N 10s  |   |   |   |  |
|                     | Criteria                    |                                   |   |                              | No visual/electrical default   | No visual/electrical default  |   |   |   |  |
| LAT SUBGROUP 3      | Mounting                    |                                   |   |                              | 6 pcs serialized   | 6 pcs serialized  |   |   |   |  |
|                     | Solderability               |                                   |   |                              | Solder bath 235°C 5s included in screening                                 | Solder bath 235°C 5s included in screening                                  |   |   |   |  |
|                     | Permanence of Marking       |                                   |   |                              | ESCC24800 when applicable  | ESCC24800 when applicable   |   |   |   |  |
|                     | Criteria                    |                                   |   |                              | No visual/electrical default   | No visual/electrical default  |   |   |   |  |
|                     | Thermal Cycle (optional)    |                                   |   |                              |  |   |   |   |   |  |
|                     | Ultrasonic, Xray (optional) |                                   |   |                              |  |   |   |   |   |  |

- All components can be proposed with SbPb termination (electrolytical I or Dipped H) with 5% min Pb for whisker mitigation
- Standard NiSn Termination is qualified according to JDEC JESD201A regarding whisker mitigation
- Other termination available Silver Palladium F, Solderable Silver Q, Thick Gold G, Flash Gold W, Non Magnetic Copper C, Polymer option P
- ECSS COTS framework is used to propose space ready components Class 1 to 3 based on SRT or customer chosen BME chips either AEC-Q200 (preferred) or non AEC-Q200. Size can start from 0201 and resistors can also be proposed and termination be changed.
- Specific High Reliability programs can be established to fit customer requirement for medical, defense, space, high stress applications.

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## RELIABILITY PRINCIPLES OVERVIEW GENERAL PRODUCTION

In order to guarantee highly reliable products to their customers, SRT-Microcéramique follows a strict quality policy which is explained below :

- According to AECQ philosophy, each component belongs to a family, which most restrictive members (four corners) have been fully qualified.
- PME components are produced in our Vendôme facility, with very stable process and equipments, in order to ensure Reliability and reproductibility.
- Reliability is based on batch tests, new product or equipment-specific qualifications and periodic requalifications.
- In addition to those regular tests, our quality departement launches regular accelerated tests to further deepens our reliability datas.
- Tests and qualifications of our standard products are based on AECQ methodology and are qualified according to the following limits.
- In accordance to AECQ methodology, specifics tests and limits can be adapted to fit our clients' needs.
- A whole range of stricter reliability tests can be offered for high Reliability products (burn-in, shocks, pulses...) for medical, space and defense applications.
- Based on our reliability database, FIT datas can be provided if necessary.

## PRODUCTION CONTROL

Test conducted on each lot according to AECQ-200 framework

| FREQUENCY     | TEST/STRESS             | REFERENCE          | AEC-Q       | DETAIL                       |
|---------------|-------------------------|--------------------|-------------|------------------------------|
| 100%          | Capa, DF, IR            | CECC-32100-4.6     |             | according to datasheet       |
| 100%          | Visual                  | CECC-32100-4.5     | AEC-Q200-9  | no visual defects            |
| 50/lot        | DPA                     | SRT QC1302         | AEC-Q200-5  | internal component integrity |
| 5/lot         | Dimension               | CECC-32100-4.5     | AEC-Q200-5  | according to datasheet       |
| 5/lot         | Solderability           | CECC-32100-4.11    | AEC-Q200-18 | 0 fail                       |
| 5/lot         | Leaching                | SRT QC1105         |             | 0 fail                       |
| 5/lot         | Termination Thickness   | SRT QC1108         |             | 0 fail                       |
| 10/lot        | Voltage Breakdown       | CECC-32100-4.6.4   |             | 0 fail                       |
| 1/ceramic lot | Temperature coefficient | CECC 32100-Prgh4,7 |             | according to datasheet       |

## QUALIFICATIONS

Each component family has been qualified according to CECC and AECQ tests methodology, which are renewed on a periodic basis.

| FREQUENCY | TEST/STRESS                 | REFERENCE                          | AEC-Q       | DETAIL   |
|-----------|-----------------------------|------------------------------------|-------------|--|
| Qualif    | Electrical Characterization | CECC-32100-4.6 4.7                 | AEC-Q200-19 | measure before test according to datasheet and after test according to post environmental limits |
| Qualif    | Temperature Cycling         | JESD22 Method-JA method 104        | AEC-Q200-4  | 1,000 cycles -55°C to +125°C Measurement at 24 ± 2 hours after test conclusion                   |
| Qualif    | Biased Humidity             | MIL-STD-202 Method 103             | AEC-Q200-7  | 1,000 hours 85°C/85%RH. Rated voltage. Measurement at 24 ± 2 hours after test conclusion         |
| Qualif    | Operational Life            | MIL-STD-202 Method 108 condition D | AEC-Q200-8  | 1,000 hours at 125°C with applied Voltage : 2xRV RV≤500V, 1.2xRV 500V<RV≤1250V, RV RV>1250V      |
| Qualif    | Terminal Strength           | CECC-32100-4.8                     | AEC-Q200-6  | 1.8kg 60 seconds   |
| Qualif    | Vibration                   | MIL-STD-202 Method 204             | AEC-Q200-14 | 5g 20min 12cycles 3 orientations 10-2000Hz   |
| Qualif    | Board Flex                  | CEC 32100-4.9                      | AEC-Q200-21 | 3mm Type 1, 2mm Type 2, Measurement at 24 ± 2 hours after test conclusion                        |

## POST ENVIRONMENTAL STRESS LIMIT

| DIELECTRIC | DISSIPATION FACTOR (MAXIMUM) | CAPACITANCE SHIFT | INSULATION RESISTANCE |
|------------|------------------------------|-------------------|-----------------------|
| NPO        | ≤ 4 10 <sup>-3</sup>         | ±2%               | 10% initial limit     |
| N2T        | ≤ 6 10 <sup>-3</sup>         | ±4%               | 10% initial limit     |
| X7R        | ≤ 0.035                      | ±15%              | 10% initial limit     |

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## SPACE LEVEL COMPONENT SCREENED AND QUALIFIED ACCORDING TO ESCC-3009

SRT-Microcéramique can propose a wide range of BME and PME component from its catalog qualified and tested according to ESCC-3009 Revision 5 specifications for space applications. Both for development en evaluation and flight ready with full lot validation and ESCC standard documentation. Specific qualification programmes can be included to meet final customer requirement.

SRT manufactured PME with standard production control or requalified source BME components directly or after termination change or mounting enter the following screening process :

### SCREENING D3009

| FREQUENCY | TEST/STRESS                        | REFERENCE                                     | DETAIL  |
|-----------|------------------------------------|---|---|
| 100%      | Voltage conditioning               | IEC Publication No. 60384-1 clause 4.23       | 100% 96H Tmax 2Un PDA 5%  |
| 100%      | Capa, DF, IR, VP (25°C)            | ESCC3009 Chart F3                             | According to datasheet  |
| 5/Lot     | High and Low Temperatures Electri- | ESCC3009 Chart F3                             | According to datasheet, 0 fail or 100%                                  |
| 5/lot     | Dimension                          | ESCC Basic Specification No. 20500            | According to datasheet (done in manufacturing, requalification process) |
| 5/lot     | DPA                                | ESCC Basic Specification No. 23400            | Internal component integrity  |
| 100%      | Visual                             | ESCC Basic Specification Nos. 20400 and 20500 | No defect   |
| 5/lot     | Solderability                      | IEC Publication No. 60068-2-58                | 0 fail  |

### LOT VALIDATION D3009

| GROUP       | NB PCS | TEST/STRESS           | REFERENCE                                       | DETAIL  |
|-------------|--------|-----------------------|---|---|
| SUBGROUP 1  | 20     | Mounting              | ESCC3009 8.6                                    | 20 serialized pcs on PCB  |
|             |        | Thermal Shock         | ESCC3009 8.7, IEC No. 60068-2-14                | 10 Cycles 30mn/1mn  |
|             |        | Humidity              | ESCC3009 8.2                                    | For Un<500V 1000h 85/85 Un≥500V not applicable  |
|             |        | Criteria              | ESCC3009  | No visual/electrical default  |
| SUBGROUP 2A | 40     | Mounting              | ESCC3009 8.6                                    | 40 serialized pcs on PCB  |
|             |        | Operational Life      | ESCC3009 Chart F4, IEC No. 60384-1 clause 4.23. | 1000h ±24 125°C (optional 2000h) 2U U<500V \| 1.5U 500≤U<1000 \| 1.2U 1000≤U≤2000 \| 1U U>2000 |
|             |        | Criteria              | ESCC3009  | No visual/electrical default  |
| SUBGROUP 2B | 6      | Mounting              | ESCC3009 8.6                                    | 6 serialized pcs on PCB   |
|             |        | TC                    | ESCC3009 8.10                                   | IR at 125°C, CP at -55°C/25°C/125°C   |
|             |        | Shear Test            | ESCC3009 8.7, IEC No. 60384-1                   | 5N 10s  |
|             |        | Criteria              | ESCC3009  | No visual/electrical default  |
| SUBGROUP 3  | 6      | Solderability         | ESCC3009 8.11, IEC No. 60068-2-58               | Solder bath 235°C 5s included in screening  |
|             |        | Permanence of Marking | ESCC3009 8.12                                   | ESCC24800 when applicable   |
|             |        | Criteria              | ESCC3009  | No visual/electrical default  |

LAT3=LVT3 = Subgroup 3/LAT2=LVT2 = Subgroup 2A + Subgroup 2B + Subgroup 3/LAT1=LVT1 = Subgroup 1 + Subgroup 2A + Subgroup 2B + Subgroup 3

## SPACE LEVEL COMPONENT SCREENED ACCORDING TO COTS+ ECSS-Q-ST-60-13C-REV1

SRT-Microcéramique can apply the COTS+ qualification framework to any suitable component AEQ-200 or not, with or without termination change, to make them fly ready, offering a wide range of possibilities at competitive cost, either in Class 1 (COTS1), Class 2 (COTS2) or Class 3 (COTS3).

### EVALUATION/SCREENING/LAT COTS1/COTS2/COTS3

Class 1 (COTS1), Class 2 (COTS2), Class 3 (COTS3)

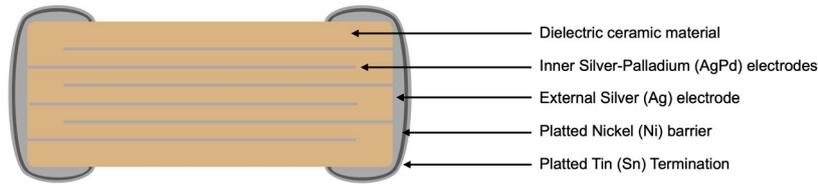
| AECQ-200 | CLASS 1 | CLASS 2 | CLASS 3 | CATEGORY   | TEST TYPE                    | SAMPLE | PROCEDURE          |
|----------|---------|---------|---------|------------|------------------------------|--------|--------------------|
| Yes      | X       | X       | X       | Evaluation | Construction Analysis        | 5      | ESCC21001          |
| Yes      | X       | X       | X       | Evaluation | Temperature characterization | 5      | ESCC3009 8.10      |
| Yes      | X       |         |         | Evaluation | Life Test 2000h              | 40     | ESCC3009 8.6 + 8.9 |
| Yes      | X       |         |         | Screening  | Complete screening           | 100%   | ESCC3009 chart F3  |
| Yes      | X       | X       | X       | LAT        | DPA                          | 3      | ESCC21001          |
| Yes      | X       | X       |         | LAT        | Life Test 1000h              | 20     | ESCC3009 8.6 + 8.9 |
| No       | X       | X       | X       | Evaluation | Construction Analysis        | 5      | ESCC21001          |
| No       | X       | X       | X       | Evaluation | Temperature characterization | 5      | ESCC 3009 8.10     |
| No       | X       | X       |         | Evaluation | Complete evaluation          | 72     | ESCC 3009 chart F4 |
| No       |         |         | X       | Evaluation | Life Test 1000h              | 40     | ESCC3009 8.6 + 8.9 |
| No       | X       | X       | X       | Screening  | Complete screening           | 100%   | ESCC3009 chart F3  |
| No       | X       | X       | X       | LAT        | DPA                          | 3      | ESCC21001          |
| No       | X       |         |         | LAT        | Complete LAT                 | 52     | ESCC 3009 chart F4 |
| No       |         | X       | X       | LAT        | Life Test 1000h              | 20     | ESCC3009 8.6 + 8.9 |

### TINNING

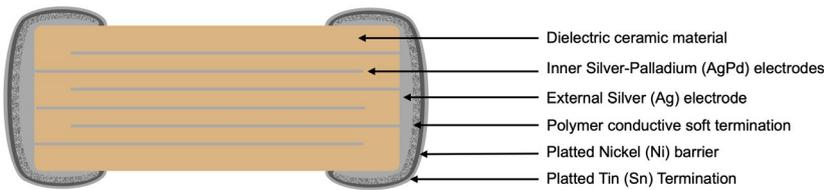
All component for space application can be proposed with dipped SnPb termination (Sn62 Pb36 Ag2) or SAC 305 (Sn96.5 Ag3 Cu0.5) for maximum reliability and whiskers avoidance.

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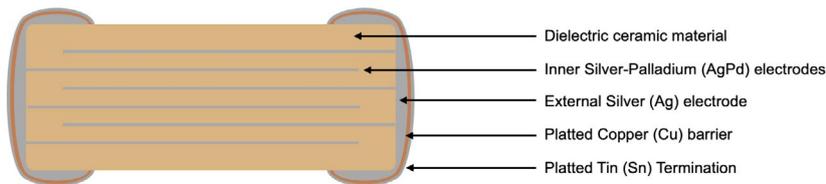
**PME (Precious Metal Electrodes)**



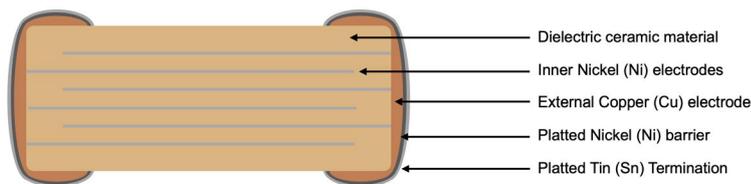
**PME (Precious Metal Electrodes) Polymer Soft Termination**



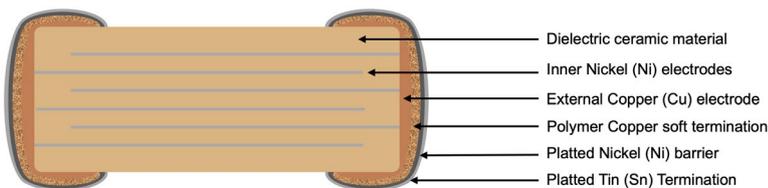
**PME (Precious Metal Electrodes) Non Magnetic**



**BME (Basis Metal Electrodes) code BM**



**BME (Basis Metal Electrodes) code BM Polymer Soft Termination**



## REACH Compliance

- SRT-Microcéramique delivers non-chemical articles only.
- These contain no substances which are intended to be released under normal or reasonably foreseeable conditions of use according to Reach article 7(1).

SRT-Microcéramique confirms hereby that our products contain none of the substances which are listed in the present candidate list of the European Chemicals Agency (ECHA), above a concentration of 0.1% by weight of the whole component.

Candidate list of substances (European Chemicals Agency ECHA) :  
<http://echa.europa.eu/fr/candidate-list-table>

## ROHS COMPLIANCE

SRT-Microcéramique herewith confirms that RoHS-compliant SRT-microcéramique products are conforming to the following EU directives:  
**EU directive 2015/863/EU EU directive 2011/65/EU EU directive 2003/11/EC**

Following restricted materials are not used and do not exceed the legal limits: Lead (Pb, see exemptions),

- Mercury (Hg)
- Cadmium (Cd)
- Chromium (Cr VI)
- Polybrominated biphenyls (PBB) Polybrominated diphenyl ethers (PBDE) Bis(2-Ethylhexyl) phthalate (DEHP) Benzyl butyl phthalate (BBP)
- Dibutyl phthalate (DBP) Diisobutyl phthalate (DIBP)

Exemptions: The following exemptions according to the RoHS annexe are applicable:

Identity 7(a) :

- Lead in high melting temperature type solders (i.e lead-based alloys containing 85% by weight or more lead).

Identity 7(c)-I :

- Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound.

The components are suitable for a lead-free process according to EN 60068-2-58 and in accordance with the IPC/JEDEC standard J-Std-020D. The lead free process has been tested using solder alloy Sn96.5Ag3Cu0.5

## Export controls and dual-use regulations

Some SRT-Microcéramique components fall under 'dual-use' items under international export controls definition - those that can be used for civil or military purposes which meet certain specified technical standards.

The defining criteria for a dual use component is one with a voltage rating of >750Vdc and a capacitance value of >250nF when measured at 750Vdc and a series inductance <10nH. Components defined as dual-use under the above criteria may require a licence for export across international borders. Please contact us for further information on specific part numbers.

## ISO9001:2015

In their design, research and development as well as the manufacturing of MLCC capacitors, customer service and distribution SRT-Microcéramique uses and maintains a Management System audited and certified in accordance to : **ISO9001:2015**

You may contact us for any inquiry regarding the regulations and compliance listed above.



# SMD Low Voltage Class I

10V - 1000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Typical uses : timing, precision circuitry, filtering



RoHS compliant

## FEATURES

- Ultra stable temperature compensating classe I ceramic
- Custom voltage, package size, capacitance value on request
- Tested in accordance to CECC 32100 and AEC-Q200
- CECC 30600 et NFC 83-131 compliant
- Available in stack or radial
- Wide range of termination
- All PME SMD available in non magnetic

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
± 30ppm with 0Vdc applied

**DISSIPATION FACTOR :**  
≤ 1.10-3 at 1Vrms and 1MHz for values ≤ 1000pF  
≤ 1.10-3 at 1Vrms and 1KHz for values > 1000pF

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5Un U≤200V | U+250V 200<U≤500 | 1.5U 500<U<1000 | 1.2U U≥1000  
for 5s with 50mA max charging current

## QUICK REFERENCE DATA

|       | 0201   | 0402   | 0504   | 0603   | 0805   | 1206   | 1210   | 1808   | 1812   | 1825   | 2220   | 2225   | 2825   | 3033   | 3640   | 4040   | 5440   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Min   | 0.1 pF | 0.4 pF | 0.4 pF | 1.0 pF | 4.7 pF | 10 pF  | 10 pF  | 10 pF  | 10 pF  |
| 10V   | 1.0 nF | 10 nF  | 1.5 nF | 15 nF  | 47 nF  | 470 nF | 470 nF | 22 nF  | 220 nF | 100 nF | 470 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF |
| 25V   | 1.0 nF | 8.2 nF | 1.5 nF | 15 nF  | 47 nF  | 470 nF | 220 nF | 22 nF  | 220 nF | 100 nF | 470 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF |
| 50V   | 1.0 nF | 8.2 nF | 1.5 nF | 10 nF  | 47 nF  | 220 nF | 100 nF | 22 nF  | 220 nF | 100 nF | 470 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF |
| 63V   | 100 pF | 1.0 nF | 1.5 nF | 10 nF  | 39 nF  | 100 nF | 100 nF | 22 nF  | 150 nF | 100 nF | 330 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF |
| 100V  | 100 pF | 1.0 nF | 1.5 nF | 10 nF  | 39 nF  | 100 nF | 100 nF | 22 nF  | 150 nF | 100 nF | 330 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF |
| 200V  |        | 330 pF | 1.2 nF | 2.2 nF | 10 nF  | 22 nF  | 47 nF  | 22 nF  | 100 nF | 100 nF | 150 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF |
| 250V  |        | 330 pF | 1.2 nF | 2.2 nF | 10 nF  | 22 nF  | 47 nF  | 22 nF  | 100 nF | 100 nF | 150 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF |
| 500V  |        | 180 pF | 1.0 nF | 1.0 nF | 3.3 nF | 8.2 nF | 15 nF  | 18 nF  | 47 nF  | 100 nF | 100 nF | 82 nF  | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF |
| 630V  |        |        |        |        | 560 pF | 2.2 nF | 6.8 nF | 12 nF  | 15 nF  | 47 nF  | 56 nF  | 68 nF  | 82 nF  | 120 nF | 180 nF | 220 nF | 270 nF |
| 1000V |        |        |        |        | 220 pF | 820 pF | 2.7 nF | 6.8 nF | 6.8 nF | 15 nF  | 33 nF  | 100 nF | 47 nF  | 56 nF  | 82 nF  | 120 nF | 180 nF |

Max values italic obtained with BME parts

## ORDERING INFORMATION

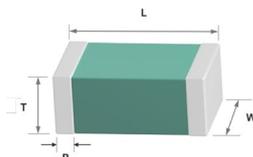
| 0603   | A          | 101  | J   | B  | X   | B                    | -   |
|--|------------|--|---|--|---|----------------------|---|
| SIZE   | DIELECTRIC | CAPACITANCE  | TOLERANCE   | VOLTAGE  | TERMINATION   | PACKAGING            | SPECIAL PARAMETERS  |
| 0201<br>0402<br>0504<br>0603<br>0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225<br>2825<br>3033<br>3640<br>4040<br>5440 | A = NPO    | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0,5% if > 10pF and<br>±0,05pF if < 10pF<br>B = ± 0.1pF<br>C = ± 0,25pF<br>D = ± 0,5pF<br>E = 0.1%<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10% | Q = 10V<br>J = 16V<br>X = 25V<br>A = 50V<br>U = 63V<br>B = 100V<br>C = 200V<br>P = 250V<br>E = 500V<br>F = 630V<br>G = 1000V | X = Nickel Tin<br>F = Palladium-Silver<br>P = Polymer Tin (Flex)<br>C = Copper Tin (Non magnetic)<br>W = Nickel Gold<br>H = Dipped SnPb<br>I = Electrolytic SnPb<br>Q = Solderable Silver | B = Reel<br>V = Bulk | -<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec<br>D20 = AECQ-200 |

For other sizes, voltage, tolerance contact us.

## DIMENSIONS IN MILLIMETERS

|                  | 0201        | 0402       | 0504       | 0603       | 0805       | 1206       | 1210       | 1808       | 1812       | 1825       | 2220       | 2225       | 2825       | 3033       | 3640        | 4040        | 5440        |
|------------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|
| Length (L)       | 0.60 ± 0.03 | 1.00 ± 0.1 | 1.25 ± 0.1 | 1.60 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 3.20 ± 0.2 | 4.60 ± 0.3 | 4.60 ± 0.3 | 4.60 ± 0.4 | 5.60 ± 0.4 | 5.60 ± 0.4 | 7.10 ± 0.4 | 7.60 ± 0.4 | 9.15 ± 0.8  | 10.20 ± 0.8 | 13.70 ± 1.0 |
| Width (W)        | 0.30 ± 0.03 | 0.50 ± 0.1 | 1.00 ± 0.1 | 0.80 ± 0.2 | 1.25 ± 0.2 | 1.60 ± 0.2 | 2.50 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 6.35 ± 0.3 | 5.10 ± 0.4 | 6.35 ± 0.4 | 6.35 ± 0.4 | 8.40 ± 0.4 | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 1.0 |
| Thickness max(T) | 0.35        | 0.60       | 1.00       | 0.92       | 1.40       | 1.70       | 2.50       | 2.20       | 3.30       | 3.60       | 4.00       | 4.00       | 4.00       | 4.00       | 4.00        | 4.00        | 4.00        |
| Termination (P)  | Min         | 0.10       | 0.10       | 0.10       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.50        | 0.80        | 0.80        |
|                  | Max         | 0.20       | 0.40       | 0.40       | 0.70       | 0.70       | 0.80       | 0.80       | 0.80       | 0.80       | 0.80       | 1.00       | 1.00       | 1.20       | 1.50        | 1.50        | 1.50        |

For P termination (Polymer type) add 0.10mm to Length (L) and 0.05 to Width (W)



This document is subject to change without notice.

# SMD Low Voltage Class I

10V - 1000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## STANDARD SIZE : 0201 to 1808

| SIZE | 0201   |     |   | 0402 |     |     |      | 0504 |     |      |      | 0603 |     |     |      | 0805 |      |       |     | 1206 |      |      |      | 1210  |     |     |      | 1808 |      |       |  |  |
|------|--------|-----|---|------|-----|-----|------|------|-----|------|------|------|-----|-----|------|------|------|-------|-----|------|------|------|------|-------|-----|-----|------|------|------|-------|--|--|
|      | CODE   | CAP | V | 10V  | 25V | 50V | 100V | 25V  | 50V | 100V | 250V | 500V | 25V | 50V | 100V | 250V | 500V | 1000V | 25V | 50V  | 100V | 250V | 500V | 1000V | 25V | 50V | 100V | 250V | 500V | 1000V |  |  |
| 0R1  | 0.1 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 0R3  | 0.3 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 0R5  | 0.5 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 0R8  | 0.8 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 1R0  | 1.0 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 1R2  | 1.2 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 1R5  | 1.5 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 1R8  | 1.8 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 2R2  | 2.2 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 2R7  | 2.7 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 3R3  | 3.3 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 3R9  | 3.9 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 4R7  | 4.7 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 5R6  | 5.6 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 6R8  | 6.8 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 8R2  | 8.2 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 100  | 10 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 120  | 12 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 150  | 15 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 180  | 18 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 220  | 22 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 270  | 27 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 330  | 33 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 390  | 39 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 470  | 47 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 560  | 56 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 680  | 68 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 820  | 82 pF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 101  | 100 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 121  | 120 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 151  | 150 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 181  | 180 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 221  | 220 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 271  | 270 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 331  | 330 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 391  | 390 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 471  | 470 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 561  | 560 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 681  | 680 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 821  | 820 pF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 102  | 1.0 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 122  | 1.2 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 152  | 1.5 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 182  | 1.8 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 222  | 2.2 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 272  | 2.7 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 332  | 3.3 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 392  | 3.9 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 472  | 4.7 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 562  | 5.6 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 682  | 6.8 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 822  | 8.2 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 103  | 10 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 123  | 12 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 153  | 15 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 183  | 18 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 223  | 22 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 273  | 27 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 333  | 33 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 393  | 39 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 473  | 47 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 563  | 56 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 683  | 68 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 823  | 82 nF  |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 104  | 100 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 124  | 120 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 154  | 150 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 184  | 180 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 224  | 220 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 274  | 270 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 334  | 330 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 394  | 390 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 474  | 470 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 564  | 560 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 684  | 680 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |
| 824  | 820 nF |     |   |      |     |     |      |      |     |      |      |      |     |     |      |      |      |       |     |      |      |      |      |       |     |     |      |      |      |       |  |  |

● BME parts (AEC-Q200) ● BME parts (Industrial)

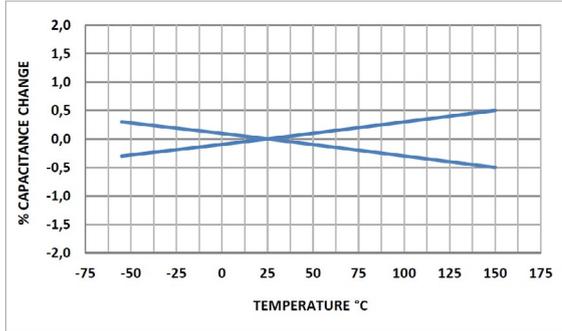
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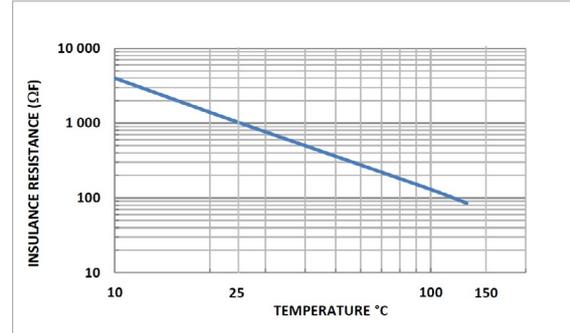


## TYPICAL CHARACTERISTICS

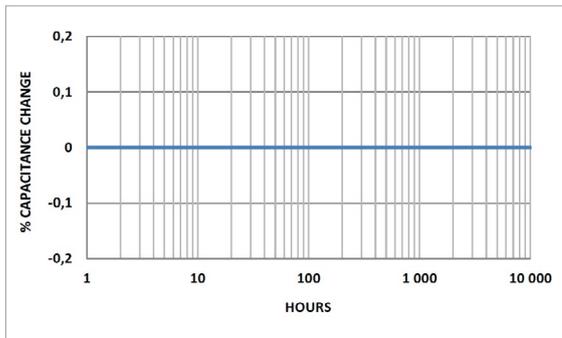
NPO Temperature coefficient of capacitance



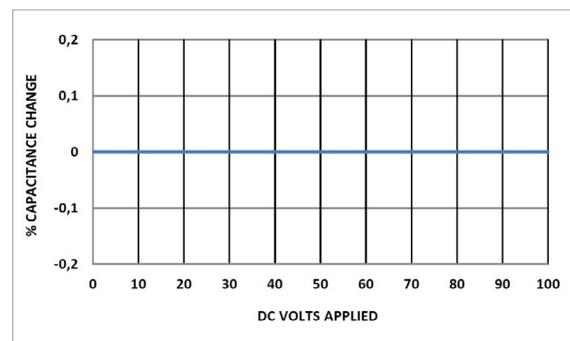
NPO Insulation resistance vs. temperature



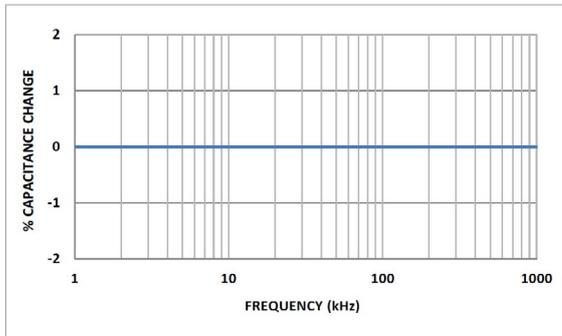
NPO Aging rate



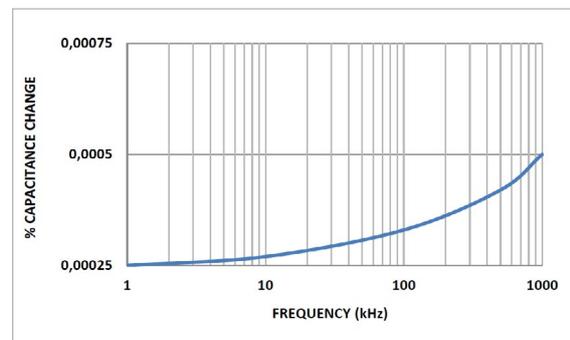
NPO Voltage coefficient of capacitance



NPO Change of Capacitance with Frequency



NPO Dissipation factor vs. frequency



# SMD Low Voltage N2T

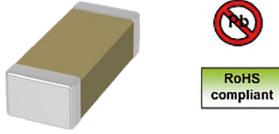
10V - 1000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Typical uses : timing, filtering, pulse discharge



## FEATURES

- Class 1
- Close to Class 2 volumetric capacitance, high power
- No piezo electric effect, high current pulse discharge
- Custom voltage, package size, capacitance value on request
- Available in stack or radial
- Wide range of termination
- All PME SMD available in non magnetic termination

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
-2200 ± 350 ppm/C° with 0Vdc applied

**DISSIPATION FACTOR :**  
≤ 1.10-3 at 1Vrms and 1MHz for values ≤ 100pF  
≤ 1.10-3 at 1Vrms and 1KHz for values > 100pF

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5Un U≤200V | U+250V 200<U≤500 | 1.5U 500<U<1000 | 1.2U U≥1000  
for 5s with 50mA max charging current

## QUICK REFERENCE DATA

|       | 0402   | 0504   | 0603   | 0805   | 1206   | 1210   | 1808   | 1812   | 1825  | 2220   | 2225   | 2825   | 3033   | 3640   | 4040   | 5440   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|
| Min   | 0.3 pF | 0.3 pF | 0.3 pF | 1.0 pF | 4.7 pF | 4.7 pF | 4.7 pF | 4.7 pF | 10 pF | 10 pF  | 10 pF  | 10 pF  | 47 pF  | 47 pF  | 47 pF  | 47 pF  |
| 10V   | 1.2 nF | 39 nF  | 1.5 nF | 15 nF  | 220 nF | 15 nF  | 82 nF  | 820 nF | 82 nF | 330 nF | 2.2 μF | 120 nF | 680 nF | 820 nF | 5.6 μF | 330 nF |
| 25V   | 1.2 nF | 39 nF  | 1.5 nF | 15 nF  | 220 nF | 15 nF  | 82 nF  | 820 nF | 82 nF | 330 nF | 2.2 μF | 120 nF | 680 nF | 820 nF | 5.6 μF | 330 nF |
| 50V   | 1.2 nF | 39 nF  | 1.2 nF | 15 nF  | 220 nF | 15 nF  | 82 nF  | 820 nF | 82 nF | 330 nF | 2.2 μF | 120 nF | 680 nF | 820 nF | 5.6 μF | 330 nF |
| 63V   | 1.2 nF | 39 nF  | 1.2 nF | 15 nF  | 220 nF | 15 nF  | 82 nF  | 820 nF | 82 nF | 330 nF | 2.2 μF | 120 nF | 680 nF | 820 nF | 5.6 μF | 330 nF |
| 100V  | 1.2 nF | 39 nF  | 1.2 nF | 15 nF  | 220 nF | 15 nF  | 82 nF  | 820 nF | 82 nF | 330 nF | 2.2 μF | 120 nF | 680 nF | 820 nF | 5.6 μF | 330 nF |
| 200V  | 1.0 nF | 39 nF  | 1.2 nF | 15 nF  | 220 nF | 15 nF  | 82 nF  | 820 nF | 82 nF | 330 nF | 2.2 μF | 120 nF | 680 nF | 820 nF | 5.6 μF | 330 nF |
| 250V  | 1.0 nF | 33 nF  | 1.2 nF | 15 nF  | 220 nF | 15 nF  | 82 nF  | 820 nF | 82 nF | 330 nF | 2.2 μF | 120 nF | 680 nF | 820 nF | 5.6 μF | 330 nF |
| 500V  | 330 pF | 6.8 nF | 1.0 nF | 6.8 nF | 82 nF  | 15 nF  | 47 nF  | 330 nF | 68 nF | 180 nF | 1.0 μF | 120 nF | 390 nF | 560 nF | 2.7 μF | 330 nF |
| 630V  |        |        | 560 pF | 4.7 nF | 47 nF  | 12 nF  | 39 nF  | 270 nF | 56 nF | 150 nF | 820 nF | 82 nF  | 330 nF | 470 nF | 2.2 μF | 270 nF |
| 1000V |        |        | 220 pF | 1.8 nF | 15 nF  | 6.8 nF | 15 nF  | 120 nF | 33 nF | 100 nF | 470 nF | 56 nF  | 220 nF | 330 nF | 1.2 μF | 180 nF |

## ORDERING INFORMATION

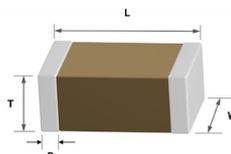
| 0805   | P          | 101   | J   | A   | X   | B                    | -   |
|--|------------|---|---|---|---|----------------------|---|
| SIZE   | DIELECTRIC | CAPACITANCE   | TOLERANCE   | VOLTAGE   | TERMINATION   | PACKAGING            | SPECIAL PARAMETERS                                    |
| 0402<br>0504<br>0603<br>0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225<br>2825<br>3033<br>3640<br>4040<br>5440 | P = N2T    | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if < 10pF and<br>0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0,25pF<br>D = ± 0,5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10% | Q = 10V<br>X = 25V<br>A = 50V<br>U = 63V<br>B = 100V<br>C = 200V<br>P = 250V<br>E = 500V<br>F = 630V<br>G = 1000V | X = Nickel Tin<br>F = Palladium-Silver<br>P = Polymer Tin (Flex)<br>C = Copper Tin (Non magnetic)<br>W = Nickel Gold<br>H = Dipped SnPb<br>I = Electrolytic SnPb<br>Q = Solderable Silver | B = Reel<br>V = Bulk | -<br><br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us.

## DIMENSIONS IN MILLIMETERS

|                  | 0402       | 0504       | 0603       | 0805       | 1206       | 1210       | 1808       | 1812       | 1825       | 2220       | 2225       | 2825       | 3033       | 3640        | 4040        | 5440        |
|------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|
| Length (L)       | 1.00 ± 0.1 | 1.25 ± 0.1 | 1.60 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 3.20 ± 0.2 | 4.60 ± 0.3 | 4.60 ± 0.3 | 4.60 ± 0.4 | 5.60 ± 0.4 | 5.60 ± 0.4 | 7.10 ± 0.4 | 7.60 ± 0.4 | 9.15 ± 0.8  | 10.20 ± 0.8 | 13.70 ± 1.0 |
| Width (W)        | 0.50 ± 0.1 | 1.00 ± 0.1 | 0.80 ± 0.2 | 1.25 ± 0.2 | 1.60 ± 0.2 | 2.50 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 6.35 ± 0.3 | 5.10 ± 0.4 | 6.35 ± 0.4 | 6.35 ± 0.4 | 8.40 ± 0.4 | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 1.0 |
| Thickness max(T) | 0.60       | 1.00       | 0.92       | 1.40       | 1.70       | 2.50       | 2.20       | 3.30       | 3.60       | 4.00       | 4.00       | 4.00       | 4.00       | 4.00        | 4.00        | 4.00        |
| Termination (P)  | Min        | 0.10       | 0.10       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.50       | 0.80        | 0.80        | 0.80        |
|                  | Max        | 0.40       | 0.40       | 0.40       | 0.70       | 0.70       | 0.80       | 0.80       | 0.80       | 0.80       | 1.00       | 1.00       | 1.20       | 1.50        | 1.50        | 1.50        |

For P termination (Polymer type) add 0.10mm to Length (L) and 0.05 to Width (W)



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# SMD Low Voltage N2T

10V - 1000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## STANDARD SIZE : 0402 to 1812

| SIZE | 0402   |     |     |     |      | 0504 |      |      | 0603 |     |     |      | 0805 |      |      |       | 1206 |     |     |      | 1210 |      |      |       | 1808 |     |     |      | 1812 |      |      |       |  |  |
|------|--------|-----|-----|-----|------|------|------|------|------|-----|-----|------|------|------|------|-------|------|-----|-----|------|------|------|------|-------|------|-----|-----|------|------|------|------|-------|--|--|
|      | CODE   | CAP | 25V | 50V | 100V | 200V | 250V | 500V | 25V  | 50V | 63V | 100V | 250V | 500V | 630V | 1000V | 25V  | 50V | 63V | 100V | 250V | 500V | 630V | 1000V | 25V  | 50V | 63V | 100V | 250V | 500V | 630V | 1000V |  |  |
| 0R3  | 0.3 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 0R5  | 0.5 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 0R8  | 0.8 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 1R0  | 1.0 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 1R2  | 1.2 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 1R5  | 1.5 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 1R8  | 1.8 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 2R2  | 2.2 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 2R7  | 2.7 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 3R3  | 3.3 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 3R9  | 3.9 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 4R7  | 4.7 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 5R6  | 5.6 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 6R8  | 6.8 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 8R2  | 8.2 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 100  | 10 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 120  | 12 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 150  | 15 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 180  | 18 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 220  | 22 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 270  | 27 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 330  | 33 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 390  | 39 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 470  | 47 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 560  | 56 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 680  | 68 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 820  | 82 pF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 101  | 100 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 121  | 120 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 151  | 150 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 181  | 180 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 221  | 220 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 271  | 270 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 331  | 330 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 391  | 390 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 471  | 470 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 561  | 560 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 681  | 680 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 821  | 820 pF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 102  | 1.0 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 122  | 1.2 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 152  | 1.5 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 182  | 1.8 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 222  | 2.2 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 272  | 2.7 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 332  | 3.3 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 392  | 3.9 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 472  | 4.7 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 562  | 5.6 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 682  | 6.8 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 822  | 8.2 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 103  | 10 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 123  | 12 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 153  | 15 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 183  | 18 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 223  | 22 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 273  | 27 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 333  | 33 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 393  | 39 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 473  | 47 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 563  | 56 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 683  | 68 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 823  | 82 nF  |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 104  | 100 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 124  | 120 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 154  | 150 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 184  | 180 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 224  | 220 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 274  | 270 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 334  | 330 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 394  | 390 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 474  | 470 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 564  | 560 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 684  | 680 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |
| 824  | 820 nF |     |     |     |      |      |      |      |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |      |     |     |      |      |      |      |       |  |  |

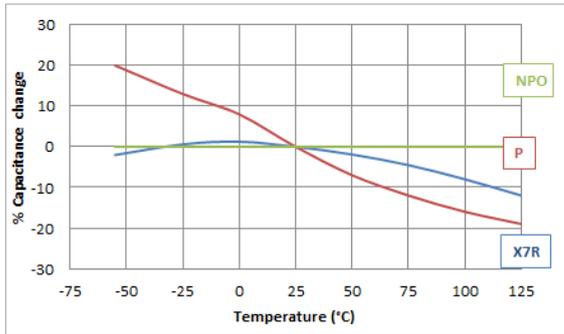
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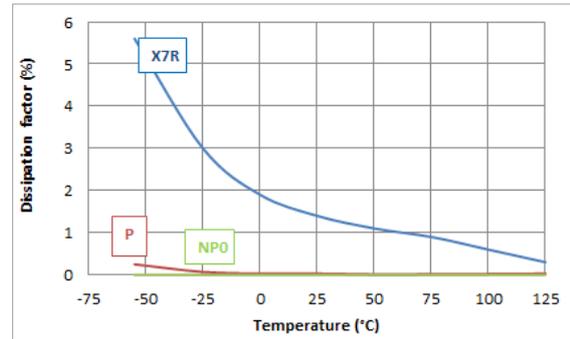


## TYPICAL CHARACTERISTICS

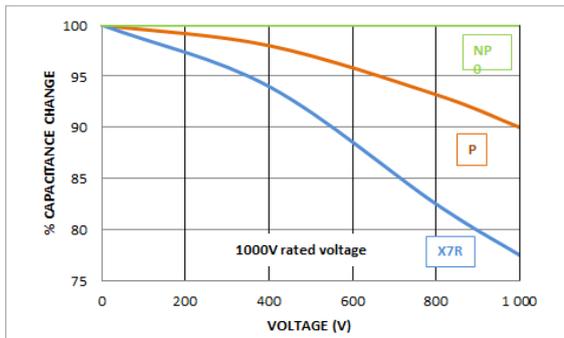
N2T Capacitance vs. temperature



N2T Dissipation factor vs. temperature



N2T Capacitance vs. voltage



# SMD Low Voltage Class II

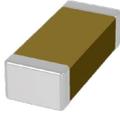
10V - 1000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Typical uses : passing, coupling, filtering, blocking



## FEATURES

- Temperature stable classe II ceramic
- Custom voltage, package size, capacitance value on request
- Tested in accordance to CECC 32100 and AEC-Q200
- CECC 30700 et NFC 83-132 compliant
- Available in stack or radial
- Wide range of termination
- All PME values available in non magnetic termination
- BX range with improved ESR and voltage coef, MIL specifications

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
X7R : ± 15% with 0Vdc applied  
BX : +15% -25% at rated voltage

**DISSIPATION FACTOR :**  
≤ 2.5% at 1kHz for C ≥ 100pF

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5Un U ≤ 200V | U + 250V 200 < U ≤ 500 | 1.5U 500 < U < 1000 | 1.2U U ≥ 1000  
for 5s with 50mA max charging current

## QUICK REFERENCE DATA

|       | 0201   | 0402   | 0504   | 0603   | 0805   | 1206   | 1210   | 1808   | 1812   | 1825   | 2220   | 2225   | 2825   | 3033   | 3640   | 4040   | 5440   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Min   | 100 pF | 2.2 pF | 2.2 pF | 2.2 pF | 6.8 pF | 10 pF  | 10 pF  | 10 pF  | 10 pF  | 33 pF  | 33 pF  | 33 pF  | 33 pF  | 100 pF | 100 pF | 100 pF | 100 pF |
| 10V   | 100 nF | 2.2 μF | 39 nF  | 4.7 μF | 22 μF  | 22 μF  | 47 μF  | 470 nF | 33 μF  | 10 μF  | 47 μF  | 15 μF  | 2.7 μF | 3.9 μF | 5.6 μF | 6.8 μF | 8.2 μF |
| 25V   | 10 nF  | 220 nF | 39 nF  | 2.2 μF | 10 μF  | 10 μF  | 22 μF  | 470 nF | 22 μF  | 10 μF  | 47 μF  | 15 μF  | 2.7 μF | 3.9 μF | 5.6 μF | 6.8 μF | 8.2 μF |
| 50V   | 1.5 nF | 100 nF | 39 nF  | 1.0 μF | 4.7 μF | 10 μF  | 10 μF  | 470 nF | 6.8 μF | 10 μF  | 22 μF  | 2.7 μF | 3.9 μF | 5.6 μF | 6.8 μF | 8.2 μF | 8.2 μF |
| 63V   |        | 10 nF  | 39 nF  | 100 nF | 1.0 μF | 4.7 μF | 10 μF  | 470 nF | 4.7 μF | 10 μF  | 22 μF  | 10 μF  | 2.7 μF | 3.9 μF | 5.6 μF | 6.8 μF | 8.2 μF |
| 100V  |        | 10 nF  | 39 nF  | 100 nF | 1.0 μF | 4.7 μF | 10 μF  | 470 nF | 4.7 μF | 10 μF  | 22 μF  | 10 μF  | 2.7 μF | 3.9 μF | 5.6 μF | 6.8 μF | 8.2 μF |
| 200V  |        | 6.8 nF | 39 nF  | 39 nF  | 100 nF | 220 nF | 390 nF | 470 nF | 820 nF | 1.8 μF | 1.8 μF | 2.2 μF | 2.7 μF | 3.9 μF | 5.6 μF | 6.8 μF | 8.2 μF |
| 250V  |        | 5.6 nF | 33 nF  | 27 nF  | 82 nF  | 220 nF | 330 nF | 470 nF | 820 nF | 1.8 μF | 1.8 μF | 2.2 μF | 2.7 μF | 3.9 μF | 5.6 μF | 6.8 μF | 8.2 μF |
| 500V  |        | 1.2 nF | 6.8 nF | 6.8 nF | 27 nF  | 82 nF  | 180 nF | 220 nF | 330 nF | 8.2 μF | 8.2 μF | 1.0 μF | 1.2 μF | 1.8 μF | 2.7 μF | 2.7 μF | 3.9 μF |
| 630V  |        |        |        | 3.9 nF | 15 nF  | 47 nF  | 120 nF | 120 nF | 270 nF | 560 nF | 560 nF | 820 nF | 1.0 μF | 1.2 μF | 1.8 μF | 2.2 μF | 2.7 μF |
| 1000V |        |        |        | 1.2 nF | 5.6 nF | 15 nF  | 47 nF  | 39 nF  | 120 nF | 330 nF | 330 nF | 470 nF | 560 nF | 820 nF | 1.2 μF | 1.2 μF | 1.8 μF |

Max values italic obtained with BME parts

## ORDERING INFORMATION

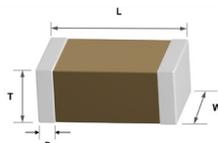
| 0805   | Y                             | 103   | K                                  | C   | X   | B                    | -   |
|--|-------------------------------|---|------------------------------------|---|---|----------------------|---|
| SIZE   | DIELECTRIC                    | CAPACITANCE   | TOLERANCE                          | VOLTAGE   | TERMINATION   | PACKAGING            | SPECIAL PARAMETERS  |
| 0201<br>0402<br>0504<br>0603<br>0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225<br>2825<br>3033<br>3640<br>4040<br>5440 | Y = X7R<br>X = BX<br>BY = 2C1 | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | J = ± 5%<br>K = ± 10%<br>M = ± 20% | Q = 10V<br>X = 25V<br>A = 50V<br>U = 63V<br>B = 100V<br>C = 200V<br>P = 250V<br>E = 500V<br>F = 630V<br>G = 1000V | X = Nickel Tin<br>F = Palladium-Silver<br>P = Polymer Tin (Flex)<br>C = Copper Tin (Non magnetic)<br>CP = Copper Polymer Tin (Non magnetic)<br>W = Nickel Gold Flash<br>G = Nickel Gold Thick<br>H = Dipped SnPb<br>S = Dipped SAC<br>SP = Polymer Dipped SAC<br>HP = Polymer Dipped SnPb<br>I = Electrolytic SnPb<br>IP = Polymer Electrolytic SnPb<br>Q = Solderable Silver | B = Reel<br>V = Bulk | -<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us.

## DIMENSIONS IN MILLIMETERS

|                  | 0201        | 0402         | 0504         | 0603         | 0805         | 1206         | 1210         | 1808         | 1812         | 1825         | 2220         | 2225         | 2825         | 3033         | 3640         | 4040         | 5440         |
|------------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Length (L)       | 0.60 ± 0.03 | 1.00 ± 0.1   | 1.25 ± 0.1   | 1.60 ± 0.2   | 2.00 ± 0.2   | 3.20 ± 0.2   | 3.20 ± 0.2   | 4.60 ± 0.3   | 4.60 ± 0.3   | 4.60 ± 0.4   | 5.60 ± 0.4   | 5.60 ± 0.4   | 7.10 ± 0.4   | 7.60 ± 0.4   | 9.15 ± 0.8   | 10.20 ± 0.8  | 13.70 ± 1.0  |
| Width (W)        | 0.30 ± 0.03 | 0.50 ± 0.1   | 1.00 ± 0.1   | 0.80 ± 0.2   | 1.25 ± 0.2   | 1.60 ± 0.2   | 2.50 ± 0.2   | 2.00 ± 0.2   | 3.20 ± 0.2   | 6.35 ± 0.3   | 5.10 ± 0.4   | 6.35 ± 0.4   | 6.35 ± 0.4   | 8.40 ± 0.4   | 10.20 ± 0.8  | 10.20 ± 0.8  | 10.20 ± 1.0  |
| Thickness max(T) | 0.35        | 0.60         | 1.00         | 0.92         | 1.40         | 1.70         | 2.50         | 2.20         | 3.30         | 3.60         | 4.00         | 4.00         | 4.00         | 4.00         | 4.00         | 4.00         | 4.00         |
| Termination (P)  | Min<br>Max  | 0.10<br>0.20 | 0.10<br>0.40 | 0.10<br>0.40 | 0.25<br>0.70 | 0.25<br>0.70 | 0.25<br>0.80 | 0.25<br>0.80 | 0.25<br>0.80 | 0.25<br>0.80 | 0.25<br>0.80 | 0.25<br>1.00 | 0.25<br>1.00 | 0.50<br>1.20 | 0.80<br>1.50 | 0.80<br>1.50 | 0.80<br>1.50 |

For P termination (Polymer type) add 0.10mm to Length (L) and 0.05 to Width (W)



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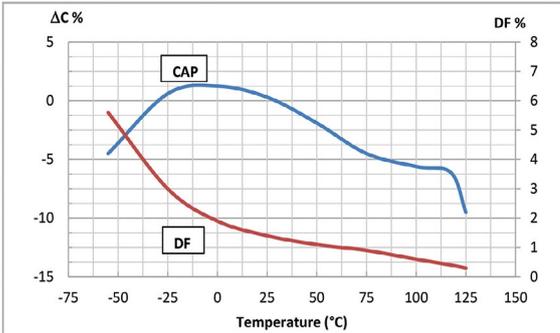




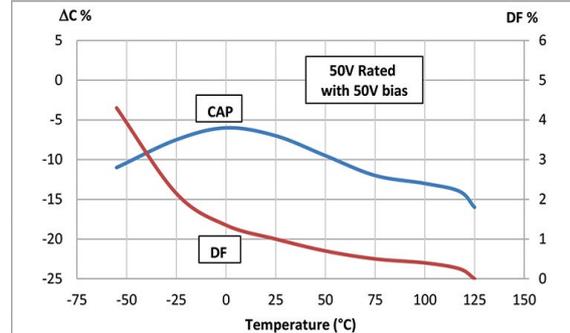


## TYPICAL CHARACTERISTICS

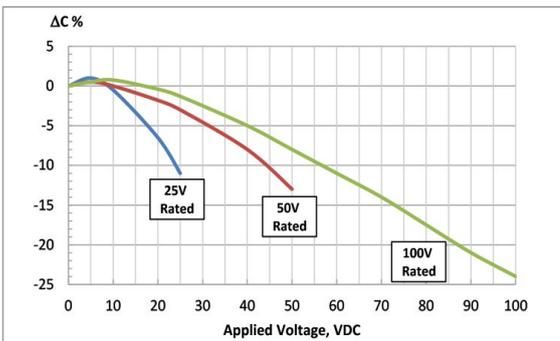
X7R Capacitance and dissipation factor vs temperature



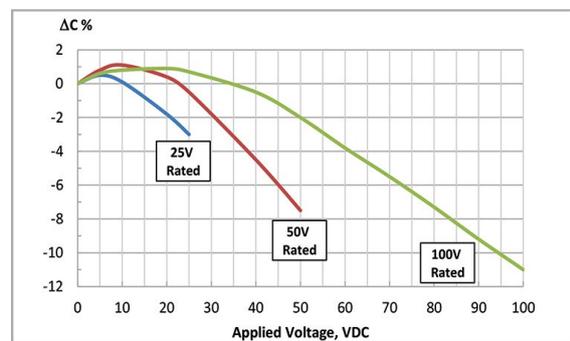
BX Capacitance and dissipation factor vs temperature



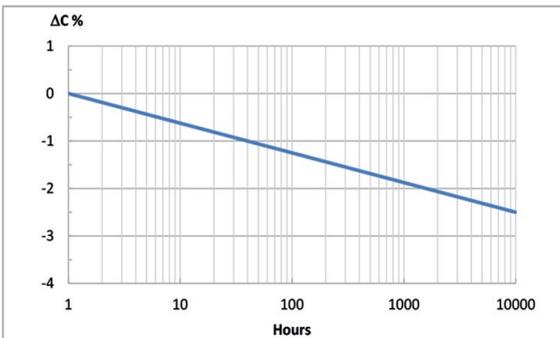
X7R Voltage coefficient of capacitance



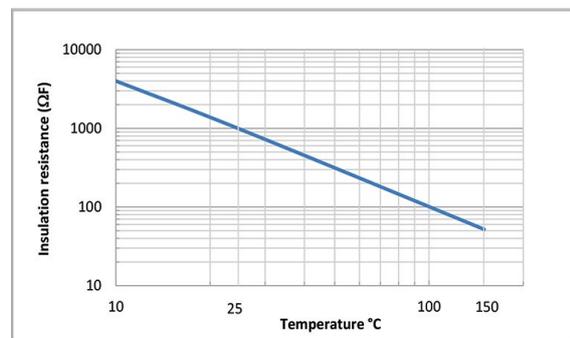
BX Voltage coefficient of capacitance



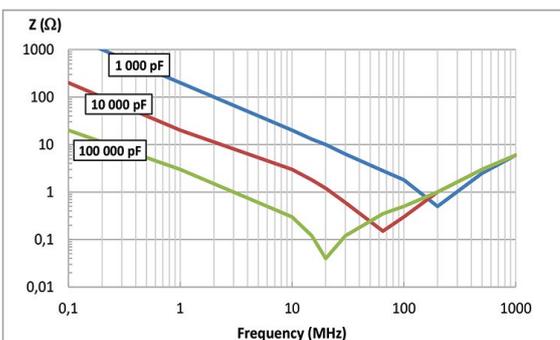
X7R and BX Aging



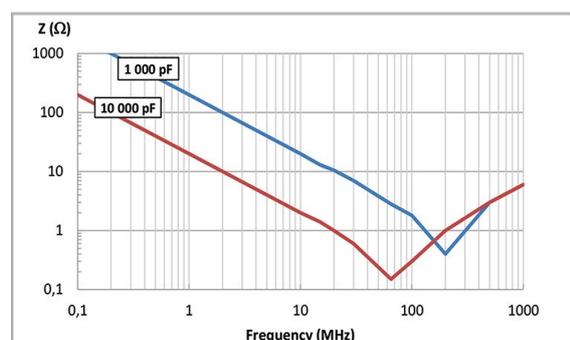
X7R and BX Insulation resistance vs temperature



X7R Impedance vs frequency



BX Impedance vs frequency



# High Capacitance capacitors

X7R X7S X6S X5R X7T Series



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Digital circuit coupling/decoupling
- High frequency & high-density type power suppliers
- For bypassing
- Ideal for smoothing circuits
- Suitable for DC-DC converter, personal computer and peripherals, telecommunication and general electronic equipment



RoHS compliant



## FEATURES

- Realize high capacitance in small sizes
- Basis Metal Electrode
- RoHS and HALOGEN compliant
- Surface mount suited for wave and reflow soldering
- High reliability and no polarity
- Excellent in high frequency characteristics
- Various termination available
- AEC-Q200 range can be proposed in High Reliability

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**

X7R, X7S, X7T : - 55°C, + 125°C  
X6S : - 55°C, + 105°C  
X5R : - 55°C, + 85°C

**TEMPERATURE COEFFICIENT :**

X7R : ±15% with 0Vdc applied  
X7S : ±22% with 0Vdc applied  
X7T : +22% -33% with 0Vdc applied  
X6S : ±22% with 0Vdc applied  
X5R : ±15% with 0Vdc applied

**DISSIPATION FACTOR :**

cf Table

**INSULATION RESISTANCE (IR) :**

25°C/Un 10<sup>4</sup> MOhm or 500 Ohm-Farad whichever is less  
Except ° table 25°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less  
Except ° table 50 Ohm-Farad

**DIELECTRIC STRENGTH TEST :**

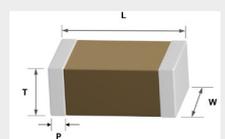
2.5Un for 5s with 50mA max charging current

## QUICK REFERENCE DATA (MAX)

|      | 0201  |       |       | 0402  |       |       | 0603  |       |       | 0805  |       |       | 1206  |       |       |       | 1210  |       |      |      |       |       |      |       |       |       |       |       |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|------|-------|-------|-------|-------|-------|
|      | X7S   | X6S   | X5R   | X7R   | X7S   | X7T   | X6S   | X5R   | X7R   | X7S   | X7T   | X6S   | X5R   | X7R   | X7S   | X7T   | X6S   | X5R   | X7R  | X7S  | X6S   | X5R   | X7R  | X7S   | X7T   | X6S   | X5R   |       |
| 2.5V |       |       |       |       |       |       |       |       |       |       | 22µF  |       |       |       |       | 47µF  |       |       |      |      |       |       |      |       |       |       |       | 330µF |
| 4V   | 1.0µF | 2.2µF |       | 2.2µF |       | 10µF  | 22µF  | 22µF  | 10µF  |       |       | 47µF  |       | 22µF  |       |       | 100µF | 100µF | 22µF |      | 220µF | 220µF | 47µF |       |       |       | 220µF | 330µF |
| 6.3V | 1.0µF |       | 4.7µF | 2.2µF |       | 4.7µF | 10µF  | 22µF  | 10µF  |       | 10µF  | 22µF  | 47µF  | 22µF  |       |       | 47µF  | 100µF | 22µF | 47µF | 47µF  | 220µF | 47µF | 100µF | 100µF | 100µF | 220µF |       |
| 10V  |       | 1.0µF |       | 2.2µF | 2.2µF | 4.7µF | 4.7µF | 10µF  | 10µF  |       | 10µF  | 10µF  | 22µF  | 10µF  | 22µF  | 22µF  | 22µF  | 47µF  | 22µF |      | 47µF  | 100µF | 47µF | 47µF  |       |       | 47µF  | 100µF |
| 16V  |       |       | 2.2µF |       |       | 2.2µF | 2.2µF | 4.7µF | 2.2µF | 4.7µF |       | 10µF  | 22µF  | 10µF  |       |       | 22µF  | 22µF  | 22µF | 22µF | 22µF  | 47µF  | 22µF |       |       |       | 47µF  | 100µF |
| 25V  |       |       |       |       |       | 1.0µF | 2.2µF | 2.2µF | 2.2µF |       |       | 10µF  | 10µF  | 4.7µF | 10µF  |       | 10µF  | 22µF  | 10µF |      | 22µF  | 22µF  | 22µF |       |       |       |       | 47µF  |
| 35V  |       |       |       |       |       |       | 2.2µF | 1.0µF |       |       |       | 2.2µF | 10µF  | 4.7µF |       |       | 10µF  | 22µF  | 10µF |      | 10µF  | 10µF  | 10µF |       |       |       |       |       |
| 50V  |       |       |       |       |       |       |       | 1.0µF | 1.0µF |       |       |       | 2.2µF | 4.7µF |       |       | 4.7µF | 10µF  |      |      | 4.7µF | 10µF  | 10µF |       |       |       |       |       |
| 100V |       |       |       |       |       |       |       |       |       |       | 1.0µF |       |       | 1.0µF | 1.0µF | 2.2µF |       |       |      |      | 4.7µF |       |      |       |       |       |       |       |

## DIMENSIONS IN MILLIMETERS

|                   | 0201                       | 0402        | 0603        | 0805        | 1206        | 1210        |
|-------------------|----------------------------|-------------|-------------|-------------|-------------|-------------|
| Length (L)        | 0.60 ± 0.05 (0.09 C>1.0µF) | 1.00 ± 0.10 | 1.60 ± 0.20 | 2.00 ± 0.20 | 3.20 ± 0.20 | 3.20 ± 0.30 |
| Width (W)         | 0.30 ± 0.05 (0.09 C>1.0µF) | 0.5 ± 0.10  | 0.80 ± 0.20 | 1.25 ± 0.20 | 1.60 ± 0.20 | 2.50 ± 0.30 |
| Thickness max (T) | 0.33                       | 0.70        | 0.95        | 1.45        | 1.90        | 2.80        |
| Termination (P)   | Min                        | 0.10        | 0.15        | 0.30        | 0.40        | 0.40        |
|                   | Max                        | 0.20        | 0.30        | 0.55        | 0.70        | 1.10        |



## ORDERING INFORMATION

| 0805   | T   | 475   | M                      | X   | X  | B                           | BM       |   |
|--|---|---|------------------------|---|--|-----------------------------|----------|---|
| SIZE   | DIELECTRIC  | CAPACITANCE   | TOLERANCE              | VOLTAGE   | TERMINATION  | PACKAGING                   | BME      | SPECIAL PARAMETERS                            |
| 0201<br>0402<br>0603<br>0805<br>1206<br>1210 | Y = X7R<br>T = X7S<br>W = X7T<br>R = X6S<br>S = X5R | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF | K = ±10 %<br>M = ±20 % | V = 2.5V<br>Y = 4V<br>R = 6.3V<br>Q = 10V<br>J = 16V<br>X = 25V<br>Z = 35V<br>A = 50V<br>B = 100V | X = Nickel Tin<br>P = Polymer<br>W = Nickel Gold Flash<br>G = Nickel Gold Thick<br>H = Dipped SnPb<br>S = Dipped SAC<br>I = Electrolytic SnPb<br>Q = Solderable Silver | B = Taping Reel<br>V = Bulk | BM = BME | -<br>Dxx = Reliability spec<br>D20 = AEC-Q200 |

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# High Capacitance capacitors

X7R X7S X6S X5R X7T Series



## DF TABLE : X7R/X7S/X7T/X6S/X5R

| Rated | D.F.≤ | Exception of D.F.≤ |   |
|-------|-------|--------------------|---|
| 100V  | ≤2.5% |                    |   |
| 50V   | ≤2.5% | ≤3.5%              | 1206<2.2μF, 1210≥2.2μF, 1812≥4.7μF                              |
|       |       | ≤5%                | 0201, 1210≥4.7μF  |
|       |       | ≤10%               | 0402, 0603, 0805, 1206≥2.2μF, 1210≥10μF                         |
| 35V   | ≤10%  |                    |   |
| 25V   | ≤3.5% | ≤5%                | 0805, 1210≥10μF   |
|       |       | ≤10%               | 0201, 0603, 0805≥2.2μF, 1206≥2.2μF, 1210≥22μF                   |
|       |       | ≤12.5%             | 0402  |
| 16V   | ≤3.5% | ≤5%                | 0805<2.2μF, 1206≥2.2μF, 1210≥4.7μF                              |
|       |       | ≤10%               | 0201, 0402, 0603, 0805≥2.2μF, 1206≥4.7μF, 1210≥22μF             |
|       |       | ≤15%               | 0603<10μF, 0805≥2.2μF, 1206≥2.2μF, 1210≥22μF                    |
| 10V   | ≤5%   | ≤10%               | 0201, 0402, 0603≥10μF   |
|       |       | ≤15%               |   |
|       |       | ≤20%               | 0201, 0402<2.2μF, 0603≥10μF, 0805≥4.7μF, 1206≥4.7μF, 1210≥100μF |
| 6.3V  | ≤10%  |                    |   |
| 4V    | ≤15%  |                    | 0402≥2.2μF  |

## THICKNESS CODE :

| Code | Thickness (mm) |
|------|----------------|
| C    | 0.30±0.04      |
| E    | 0.50±0.05      |
| G    | 0.50±0.20      |
| J    | 0.80±0.07      |
| K    | 0.80±0.10      |
| M    | 0.95±0.10      |
| O    | 1.15±0.15      |
| P    | 1.25±0.10      |
| Q    | 1.25±0.20      |
| T    | 1.60±0.20      |
| U    | 1.70±0.20      |
| W    | 2.00±0.20      |
| X    | 2.25±0.25      |
| Y    | 2.50±0.30      |

## X7R

| CODE | SIZE   | CAP | 0402 |     | 0603 |     |     |     |     | 0805 |      |     |     |     | 1206 |      |      |     |     | 1210 |     |     |      |      |     |     |     |     |     |      |
|------|--------|-----|------|-----|------|-----|-----|-----|-----|------|------|-----|-----|-----|------|------|------|-----|-----|------|-----|-----|------|------|-----|-----|-----|-----|-----|------|
|      |        |     | 4V   | 10V | 6.3V | 10V | 16V | 25V | 35V | 50V  | 6.3V | 10V | 16V | 25V | 50V  | 100V | 6.3V | 10V | 16V | 25V  | 35V | 50V | 100V | 6.3V | 10V | 16V | 25V | 50V | 63V | 100V |
| 105  | 1.0 μF | J   | J    | J   | J    | J   | J   | J   | J   | J    | P    | P   | P   | P   | O    | O    | O    | O   | T   | T    | T   | T   | P    | P    | P   | Y   | W   | Y   | Y   |      |
| 155  | 1.5 μF |     |      |     |      |     |     |     |     |      | O    | O   | O   | O   | O    | O    | O    | O   | T   | T    | T   | T   | T    | T    | T   | T   | Y   | Y   | Y   |      |
| 225  | 2.2 μF | J   | J    | J   | J    | J   | J   |     |     |      | O    | O   | O   | O   | O    | O    | O    | O   | T   | T    | T   | T   | T    | T    | T   | Y   | Y   | Y   | Y   |      |
| 335  | 3.3 μF |     |      |     |      |     |     |     |     |      | O    | O   | O   | O   | O    | O    | O    | O   | T   | T    | T   | T   | T    | T    | T   | Y   | Y   | Y   | Y   |      |
| 475  | 4.7 μF |     |      | J   | J    |     |     |     |     |      | O    | O   | O   | O   | O    | O    | O    | O   | T   | T    | T   | T   | T    | T    | W   | W   | W   | Y   | Y   | Y    |
| 685  | 6.8 μF |     |      | J   | J    |     |     |     |     |      | O    | O   | O   | O   | O    | O    | O    | O   | T   | T    | T   | T   | T    | T    | W   | W   | W   | Y   | Y   | Y    |
| 106  | 10 μF  |     |      | J   | J    |     |     |     |     |      | O    | O   | O   |     |      |      |      |     | T   | T    | T   | T   | T    |      | W   | W   | W   | Y   | Y   | Y    |
| 226  | 22 μF  |     |      |     |      |     |     |     |     |      | O    |     |     |     |      |      |      |     | T   | T    | T   |     |      |      | Y   | Y   | Y   | Y   | Y   |      |
| 476  | 47 μF  |     |      |     |      |     |     |     |     |      |      |     |     |     |      |      |      |     |     |      |     |     |      | Y    | Y   |     |     |     |     |      |
| 107  | 100 μF |     |      |     |      |     |     |     |     |      |      |     |     |     |      |      |      |     |     |      |     |     |      |      |     |     |     |     |     |      |

Yellow : AECQ-200, White : Industrial

# High Capacitance capacitors

X7R X7S X6S X5R X7T Series



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## X7S

| SIZE | 0201   |                  | 0402             |                | 0603           |     | 0805 |     | 1206 |                 | 1210             |                  |
|------|--------|------------------|------------------|----------------|----------------|-----|------|-----|------|-----------------|------------------|------------------|
|      | CODE   | CAP              | 4V               | 6.3V           | 10V            | 16V | 25V  | 10V | 25V  | 100V            | 6.3V             | 16V              |
| 105  | 1.0 μF | C <sup>***</sup> | C <sup>***</sup> |                |                |     |      |     |      | G <sup>**</sup> |                  |                  |
| 155  | 1.5 μF |                  |                  |                |                |     |      |     |      |                 |                  |                  |
| 225  | 2.2 μF |                  |                  | G <sup>°</sup> | G <sup>°</sup> |     |      |     |      | K <sup>°</sup>  | K <sup>°</sup>   |                  |
| 335  | 3.3 μF |                  |                  |                |                |     |      |     |      |                 |                  |                  |
| 475  | 4.7 μF |                  |                  |                |                |     |      |     |      | K <sup>°</sup>  | K <sup>°</sup>   |                  |
| 685  | 6.8 μF |                  |                  |                |                |     |      |     |      |                 |                  |                  |
| 106  | 10 μF  |                  |                  |                |                |     |      |     |      | G <sup>**</sup> |                  |                  |
| 226  | 22 μF  |                  |                  |                |                |     |      |     |      | O <sup>°</sup>  |                  | U <sup>***</sup> |
| 476  | 47 μF  |                  |                  |                |                |     |      |     |      |                 | U <sup>***</sup> | Y <sup>***</sup> |
| 107  | 100 μF |                  |                  |                |                |     |      |     |      |                 |                  | Y <sup>***</sup> |
| 227  | 220 μF |                  |                  |                |                |     |      |     |      |                 |                  |                  |

Yellow : AECQ-200, White : Industrial

\* : tolerance M only, ° : RC≥10<sup>4</sup> MOhm or 100 Ω/F whichever is less, °° : RC≥50 Ω/F

## X7T

| SIZE | 0402   |     | 0603 |      | 0805 |     | 1210 |                 |
|------|--------|-----|------|------|------|-----|------|-----------------|
|      | CODE   | CAP | 4V   | 6.3V | 10V  | 16V | 2.5V | 6.3V            |
| 105  | 1.0 μF |     |      |      |      |     |      |                 |
| 155  | 1.5 μF |     |      |      |      |     |      |                 |
| 225  | 2.2 μF |     |      |      |      |     |      | G <sup>**</sup> |
| 335  | 3.3 μF |     |      |      |      |     |      |                 |
| 475  | 4.7 μF |     |      |      |      |     |      |                 |
| 685  | 6.8 μF |     |      |      |      |     |      |                 |
| 106  | 10 μF  |     |      |      |      |     |      |                 |
| 226  | 22 μF  |     |      |      |      |     |      |                 |
| 476  | 47 μF  |     |      |      |      |     |      |                 |
| 107  | 100 μF |     |      |      |      |     |      |                 |
| 227  | 220 μF |     |      |      |      |     |      |                 |

## X6S

| SIZE | 0201   |                  | 0402 |     | 0603 |      | 0805 |     | 1206 |     | 1210 |      |
|------|--------|------------------|------|-----|------|------|------|-----|------|-----|------|------|
|      | CODE   | CAP              | 4V   | 10V | 4V   | 6.3V | 10V  | 16V | 25V  | 35V | 50V  | 2.5V |
| 105  | 1.0 μF | C <sup>***</sup> |      |     |      |      |      |     |      |     |      |      |
| 155  | 1.5 μF |                  |      |     |      |      |      |     |      |     |      |      |
| 225  | 2.2 μF | C <sup>°</sup>   |      |     |      |      |      |     |      |     |      |      |
| 335  | 3.3 μF |                  |      |     |      |      |      |     |      |     |      |      |
| 475  | 4.7 μF |                  |      |     |      |      |      |     |      |     |      |      |
| 685  | 6.8 μF |                  |      |     |      |      |      |     |      |     |      |      |
| 106  | 10 μF  |                  |      |     |      |      |      |     |      |     |      |      |
| 226  | 22 μF  |                  |      |     |      |      |      |     |      |     |      |      |
| 476  | 47 μF  |                  |      |     |      |      |      |     |      |     |      |      |
| 107  | 100 μF |                  |      |     |      |      |      |     |      |     |      |      |
| 227  | 220 μF |                  |      |     |      |      |      |     |      |     |      |      |
| 330  | 330 μF |                  |      |     |      |      |      |     |      |     |      |      |

Yellow : AECQ-200, White : Industrial

\* : tolerance M only, ° : RC≥10<sup>4</sup> MOhm or 100 Ω/F whichever is less, °° : RC≥50 Ω/F

## X5R

| SIZE | 0201   |                  | 0402             |                  | 0603           |                | 0805           |                | 1206           |                | 1210           |                |
|------|--------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|      | CODE   | CAP              | 6.3V             | 10V              | 4V             | 6.3V           | 10V            | 16V            | 25V            | 35V            | 50V            | 4V             |
| 105  | 1.0 μF | C <sup>***</sup> | C <sup>***</sup> | C <sup>***</sup> | G <sup>°</sup> | G <sup>°</sup> | G <sup>°</sup> | E <sup>°</sup> | E <sup>°</sup> | F <sup>°</sup> | F <sup>°</sup> | G <sup>°</sup> |
| 155  | 1.5 μF |                  |                  |                  |                |                |                |                |                |                |                |                |
| 225  | 2.2 μF |                  |                  |                  |                |                |                |                |                |                |                |                |
| 335  | 3.3 μF |                  |                  |                  |                |                |                |                |                |                |                |                |
| 475  | 4.7 μF |                  |                  |                  |                |                |                |                |                |                |                |                |
| 685  | 6.8 μF |                  |                  |                  |                |                |                |                |                |                |                |                |
| 106  | 10 μF  |                  |                  |                  |                |                |                |                |                |                |                |                |
| 226  | 22 μF  |                  |                  |                  |                |                |                |                |                |                |                |                |
| 476  | 47 μF  |                  |                  |                  |                |                |                |                |                |                |                |                |
| 107  | 100 μF |                  |                  |                  |                |                |                |                |                |                |                |                |
| 227  | 220 μF |                  |                  |                  |                |                |                |                |                |                |                |                |
| 330  | 330 μF |                  |                  |                  |                |                |                |                |                |                |                |                |

Yellow : AECQ-200, White : Industrial

\* : tolerance M only, ° : RC≥10<sup>4</sup> MOhm or 100 Ω/F whichever is less, °° : RC≥50 Ω/F

# Low Inductance Capacitors Class II

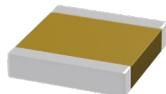
6.3V -50V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

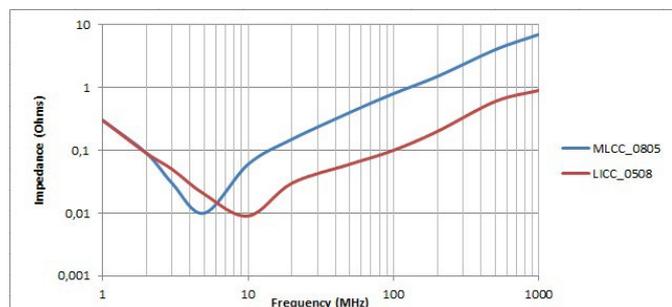
- Typical uses : high speed energy transfer on semiconductor applications



RoHS  
compliant

## FEATURES

- Inverted geometry reduces the ESL up to 60% to standard MLCC
- Custom voltage, package size, capacitance value on request
- Tested in accordance to CECC 32100 and AEC-Q200
- CECC 30700 et NFC 83-132 compliant



## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

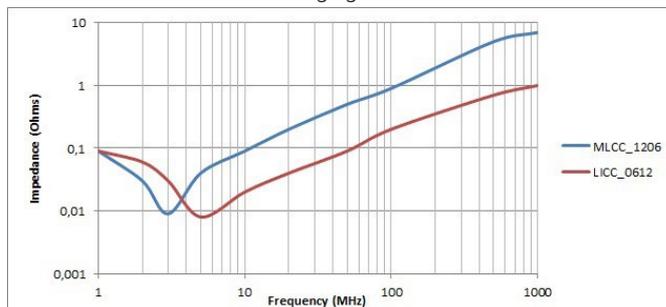
**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
X7R : ± 15% with 0Vdc applied  
BX : +15% -25% at rated voltage

**DISSIPATION FACTOR :**  
≤ 2.5% at 1kHz for C ≥ 100pF

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
Performed per method 103 of EIA 198-2-E  
1.2Un for 5s with 50mA max charging current



## QUICK REFERENCE DATA

|      | 0204   | 0306   | 0505  | 0508   | 0612   | 1111   |
|------|--------|--------|-------|--------|--------|--------|
| Min  | 1.0 nF | 1.0 nF | 1 nF  | 1.0 nF | 1.0 nF | 1.0 nF |
| 6.3V | 22 nF  | 220 nF | 56 nF | 1.0 µF | 1.5 µF | 270 nF |
| 10V  |        | 150 nF | 56 nF | 1.0 µF | 1.5 µF | 270 nF |
| 16V  |        | 68 nF  | 56 nF | 220 nF | 330 nF | 270 nF |
| 25V  |        | 22 nF  | 56 nF | 100 nF | 220 nF | 270 nF |
| 50V  |        |        | 56 nF | 100 nF | 150 nF | 270 nF |

Max values italic obtained with BME parts

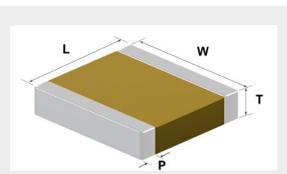
## ORDERING INFORMATION

| 0805                         | Y                 | 103   | K                                  | C  | X   | B                    | XX  |
|------------------------------|-------------------|---|------------------------------------|--|---|----------------------|---|
| SIZE                         | DIELECTRIC        | CAPACITANCE   | TOLERANCE                          | VOLTAGE  | TERMINATION   | PACKAGING            | SPECIAL PARAMETERS  |
| 0204<br>0306<br>0508<br>0612 | Y = X7R<br>X = BX | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | J = ± 5%<br>K = ± 10%<br>M = ± 20% | R = 6.3V<br>Q = 10V<br>J = 16V<br>X = 25V<br>A = 50V | X = Nickel Tin<br>F = Palladium-Silver<br>P = Polymer Tin (Flex)<br>C = Copper Tin (Non magnetic)<br>W = Nickel Gold<br>H = Dipped SnPb<br>I = Electrolytic SnPb<br>Q = Solderable Silver | B = Reel<br>V = Bulk | -<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, ceramic tolerance contact us

## DIMENSIONS IN MILLIMETERS

|                   | 0204       | 0306       | 0505       | 0508       | 0612       | 1111       |
|-------------------|------------|------------|------------|------------|------------|------------|
| Length (L)        | 0.50 ± 0.1 | 0.80 ± 0.1 | 1.40 ± 0.1 | 1.30 ± 0.2 | 1.60 ± 0.2 | 2.80 ± 0.2 |
| Width (W)         | 1.00 ± 0.1 | 1.60 ± 0.1 | 1.40 ± 0.1 | 2.00 ± 0.2 | 3.20 ± 0.2 | 2.80 ± 0.2 |
| Thickness max (T) | 0.60       | 0.92       | 1.45       | 2.00       | 3.00       | 2.60       |
| Termination (P)   | Min        | 0.10       | 0.10       | 0.25       | 0.25       | 0.25       |
|                   | Max        | 0.40       | 0.40       | 0.40       | 0.70       | 0.70       |



For P termination (Polymer type) add 0.10mm to Length (L) and 0.05 to Width (W)

This document is subject to change without notice.

# Low Inductance Capacitors Class II

6.3V -50V



## STANDARD SIZE : 0204 to 0612

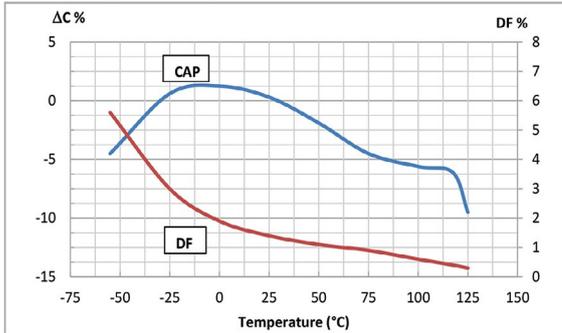
| SIZE | CAP    | 0204 |      |     |     | 0306 |     |     |     | 0505 |      |     |     | 0508 |     |      |     | 0612 |     |     |     | 1111 |     |     |  |
|------|--------|------|------|-----|-----|------|-----|-----|-----|------|------|-----|-----|------|-----|------|-----|------|-----|-----|-----|------|-----|-----|--|
|      |        | 6.3V | 6.3V | 10V | 16V | 25V  | 10V | 16V | 25V | 50V  | 6.3V | 10V | 16V | 25V  | 50V | 6.3V | 10V | 16V  | 25V | 50V | 10V | 16V  | 25V | 50V |  |
| 102  | 1.0 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 122  | 1.2 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 152  | 1.5 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 182  | 1.8 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 222  | 2.2 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 272  | 2.7 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 332  | 3.3 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 392  | 3.9 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 472  | 4.7 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 562  | 5.6 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 682  | 6.8 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 822  | 8.2 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 103  | 10 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 123  | 12 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 153  | 15 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 183  | 18 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 223  | 22 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 273  | 27 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 333  | 33 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 393  | 39 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 473  | 47 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 563  | 56 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 683  | 68 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 823  | 82 nF  | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 104  | 100 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 124  | 120 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 154  | 150 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 184  | 180 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 224  | 220 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 274  | 270 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 334  | 330 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 394  | 390 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 474  | 470 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 564  | 560 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 684  | 680 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 824  | 820 nF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 105  | 1.0 µF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 125  | 1.2 µF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 155  | 1.5 µF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 185  | 1.8 µF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 225  | 2.2 µF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |
| 275  | 2.7 µF | ●    | ●    | ●   | ●   | ●    | ●   | ●   | ●   | ●    | ●    | ●   | ●   | ●    | ●   | ●    | ●   | ●    | ●   | ●   | ●   | ●    | ●   | ●   |  |

● BME parts ● BX range

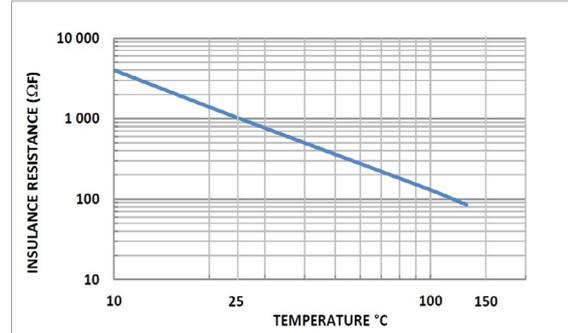


### TYPICAL CHARACTERISTICS

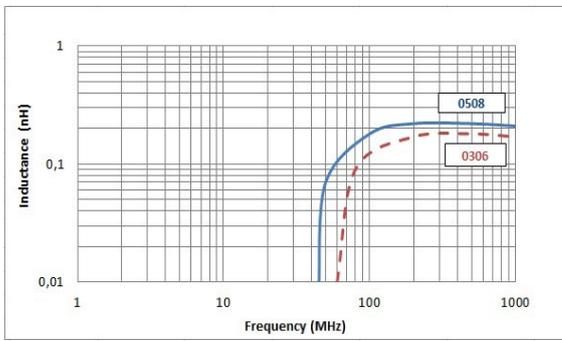
Capacitance and dissipation factor vs temperature



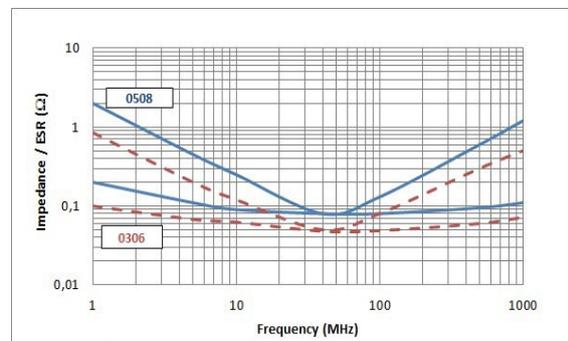
Insulation resistance vs temperature



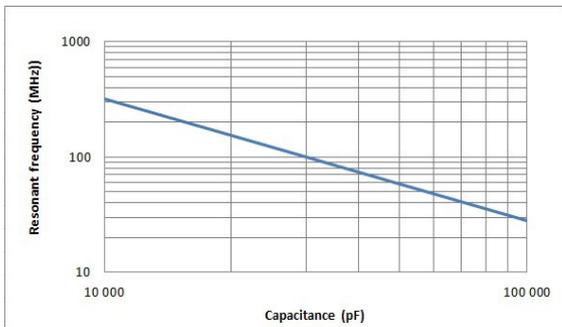
Inductance vs. frequency  
0508Y104KXX & 0306Y104KXX



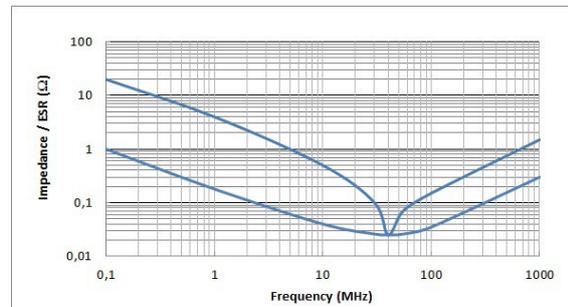
Impedance & ESR vs. frequency  
0508Y104KXX & 0306Y104KXX



Series resonant frequency 0612



Impedance & ESR vs. frequency 0612Y823KXA



# SMD High Voltage Class I

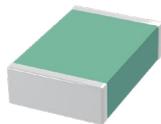
1KV - 15KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Typical uses : timing, precision circuitry, filtering



RoHS  
compliant

## FEATURES

- Ultra stable temperature compensating class I ceramic
- Custom voltage, package size, capacitance value on request
- Tested in accordance to CECC 32100 and AEC-Q200
- CECC 30600 et NFC 83-131 compliant
- Available in stack or radial
- Surface coating can be necessary to prevent surface arcing

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
± 30ppm with 0Vdc applied

**DISSIPATION FACTOR :**  
≤ 1.10-3 at 1Vrms and 1MHz for values ≤ 1000pF  
≤ 1.10-3 at 1Vrms and 1KHz for values > 1000pF

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
1.2Un for 5s with 50mA max charging current

## QUICK REFERENCE DATA

|       | 0805   | 1206   | 1210   | 1808   | 1812   | 1825   | 2220   | 2225   | 2825   | 3640   | 4040   | 5440   | 5550   | 6660   | 8060   | 80150  | 15080  |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Min   | 0.1 pF | 0.4 pF | 0.4 pF | 1.0 pF | 1.0 pF | 1.0 pF | 1.0 pF | 1.0 pF | 4.7 pF | 10 pF  | 10 pF  | 10 pF  | 10 pF  | 10 pF  | 10 pF  | 22 pF  | 22 pF  |
| 1KV   | 820 pF | 2.7 nF | 6.8 nF | 6.8 nF | 15 nF  | 33 nF  | 39 nF  | 47 nF  | 56 nF  | 120 nF | 120 nF | 180 nF | 220 nF | 330 nF | 390 nF | 1.0 µF | 1.0 µF |
| 1.5KV | 330 pF | 1.0 nF | 2.7 nF | 2.7 nF | 8.2 nF | 18 nF  | 18 nF  | 27 nF  | 33 nF  | 68 nF  | 68 nF  | 100 nF | 120 nF | 180 nF | 220 nF | 560 nF | 560 nF |
| 2KV   | 150 pF | 560 pF | 1.5 nF | 1.2 nF | 3.9 nF | 10 nF  | 12 nF  | 15 nF  | 18 nF  | 39 nF  | 47 nF  | 56 nF  | 82 nF  | 120 nF | 120 nF | 330 nF | 330 nF |
| 3KV   |        | 180 pF | 470 pF | 470 pF | 1.2 nF | 2.7 nF | 2.7 nF | 3.9 nF | 4.7 nF | 10 nF  | 12 nF  | 15 nF  | 18 nF  | 27 nF  | 33 nF  | 82 nF  | 82 nF  |
| 4KV   |        | 82 pF  | 220 pF | 220 pF | 680 pF | 1.8 nF | 1.8 nF | 2.2 nF | 3.3 nF | 6.8 nF | 8.2 nF | 10 nF  | 12 nF  | 18 nF  | 22 nF  | 56 nF  | 56 nF  |
| 5KV   |        |        |        | 150 pF | 390 pF | 1.0 nF | 1.2 nF | 1.8 nF | 2.2 nF | 4.7 nF | 5.6 nF | 6.8 nF | 8.2 nF | 12 nF  | 15 nF  | 39 nF  | 39 nF  |
| 8KV   |        |        |        | 47 pF  | 120 pF | 330 pF | 330 pF | 390 pF | 470 pF | 1.0 nF | 1.2 nF | 1.8 nF | 2.2 nF | 3.3 nF | 3.9 nF | 10 nF  | 10 nF  |
| 10KV  |        |        |        | 22 pF  | 82 pF  | 180 pF | 220 pF | 270 pF | 330 pF | 680 pF | 820 pF | 1.2 nF | 1.5 nF | 2.2 nF | 2.7 nF | 6.8 nF | 6.8 nF |
| 12KV  |        |        |        |        |        |        |        |        |        | 470 pF | 560 pF | 820 pF | 1.0 nF | 1.5 nF | 1.8 nF | 4.7 nF | 4.7 nF |
| 15KV  |        |        |        |        |        |        |        |        |        | 270 pF | 330 pF | 470 pF | 680 pF | 820 pF | 1.0 nF | 2.7 nF | 2.7 nF |

## ORDERING INFORMATION

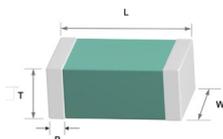
| 5440   | A          | 101  | K   | H  | X   | B                    | -   |
|--|------------|--|---|--|---|----------------------|---|
| SIZE   | DIELECTRIC | CAPACITANCE  | TOLERANCE   | VOLTAGE  | TERMINATION   | PACKAGING            | SPECIAL PARAMETERS  |
| 0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225<br>2825<br>3033<br>3640<br>4040<br>4055<br>5440<br>5550<br>6660<br>8060<br>80150<br>15080 | A = NPO    | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0,5% if > 10pF and<br>±0,05pF si < 10pF<br>B = ± 0,1pF<br>C = ± 0,25pF<br>D = ± 0,5pF<br>E = 0.1%<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10% | G = 1KV<br>O = 1.5KV<br>H = 2KV<br>T = 2.5KV<br>I = 3KV<br>K = 4KV<br>L = 5KV<br>6 = 6KV<br>8 = 8KV<br>10 = 10KV<br>12 = 12KV<br>15 = 15KV | X = Nickel Tin<br>F = Palladium-Silver<br>P = Polymer Tin<br>C = Copper Tin<br>W = Nickel Gold<br>Q = Solderable Silver | B = Reel<br>V = Bulk | -<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us

## DIMENSIONS IN MILLIMETERS

|                  | 0805       | 1206       | 1210       | 1808       | 1812       | 1825       | 2220       | 2225       | 2825       | 3640        | 4040        | 5440        | 5550        | 6660        | 8060        | 80150       | 15080       |
|------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Length (L)       | 2.00 ± 0.2 | 3.20 ± 0.2 | 3.20 ± 0.2 | 4.60 ± 0.3 | 4.60 ± 0.3 | 4.60 ± 0.4 | 5.60 ± 0.4 | 5.60 ± 0.4 | 7.10 ± 0.4 | 9.15 ± 0.8  | 10.20 ± 0.8 | 13.70 ± 1.0 | 14.00 ± 1.0 | 16.80 ± 1.0 | 20.30 ± 1.0 | 20.30 ± 1.0 | 20.30 ± 1.0 |
| Width (W)        | 1.25 ± 0.2 | 1.60 ± 0.2 | 2.50 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 6.35 ± 0.3 | 5.10 ± 0.4 | 6.35 ± 0.4 | 6.35 ± 0.4 | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 1.0 | 12.70 ± 1.0 | 15.20 ± 1.0 | 15.20 ± 1.0 | 38.10 ± 1.0 | 38.10 ± 1.0 |
| Thickness max(T) | 1.40       | 1.70       | 2.50       | 2.20       | 3.30       | 3.60       | 4.30       | 4.30       | 4.30       | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        |
| Termination (P)  |            |            |            |            |            |            |            |            |            |             |             |             |             |             |             |             |             |
| Min              | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        |
| Max              | 0.70       | 0.70       | 0.80       | 0.80       | 0.80       | 0.80       | 0.80       | 1.00       | 1.00       | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        |

For P termination (Polymer type) add 0.10mm to Length (L) and 0.05 to Width (W)



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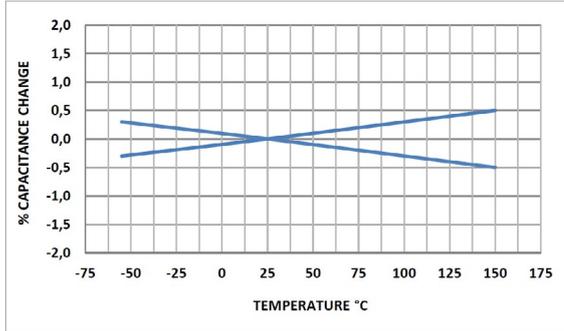




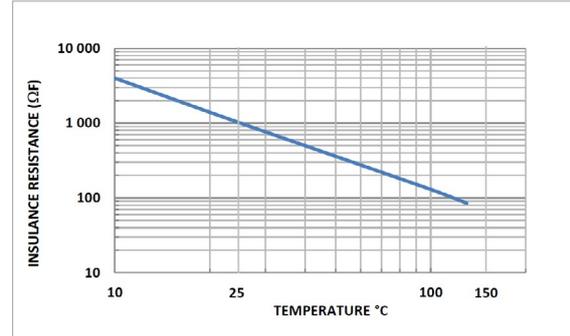


## TYPICAL CHARACTERISTICS

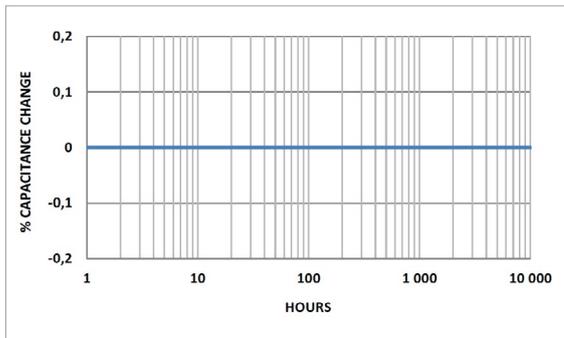
NPO Temperature coefficient of capacitance



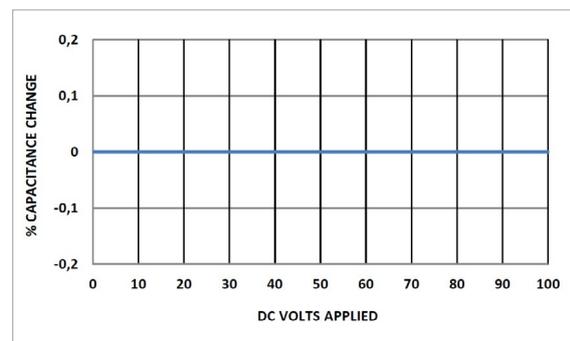
NPO Insulation resistance vs. temperature



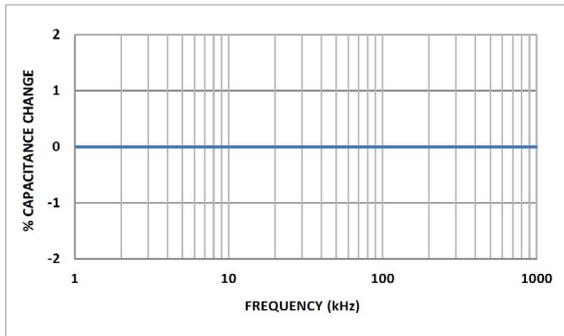
NPO Aging rate



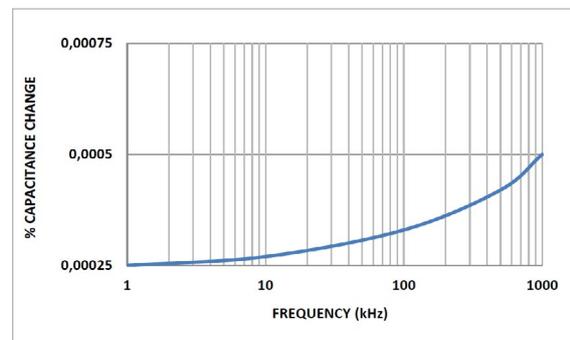
NPO Voltage coefficient of capacitance



NPO Change of Capacitance with Frequency



NPO Dissipation factor vs. frequency



# SMD High Voltage N2T

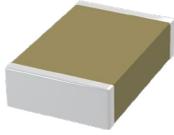
1KV - 15KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Typical uses : timing, filtering, pulse discharge



RoHS  
compliant

## FEATURES

- Class 1
- Close to Class 2 volumetric capacitance, high power
- No piezoelectric effect, high current pulse discharge
- Custom voltage, package size, capacitance value on request
- Available in stack or radial
- Surface coating can be necessary to prevent surface arcing

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
-2200 ± 350 ppm/°C° with 0Vdc applied

**DISSIPATION FACTOR :**  
≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 100pF  
≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 100pF

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
1.2Un for 5s with 50mA max charging current

## QUICK REFERENCE DATA

|       | 0805   | 1206   | 1210   | 1808   | 1812   | 1825   | 2220   | 2225   | 2825   | 3640   | 4040   | 5440   | 5550   | 6660   | 8060   | 80150  | 15080  |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Min   | 1.0 pF | 4.7 pF | 4.7 pF | 4.7 pF | 4.7 pF | 10 pF  | 10 pF  | 10 pF  | 10 pF  | 47 pF  | 68 pF  | 68 pF  |
| 1KV   | 2.2 nF | 8.2 nF | 22 nF  | 18 nF  | 47 nF  | 100 nF | 120 nF | 150 nF | 180 nF | 390 nF | 390 nF | 560 nF | 680 nF | 1.0 µF | 1.2 µF | 3.3 µF | 3.3 µF |
| 1.5KV | 820 pF | 2.7 nF | 6.8 nF | 6.8 nF | 22 nF  | 56 nF  | 56 nF  | 82 nF  | 100 nF | 180 nF | 220 nF | 270 nF | 390 nF | 560 nF | 680 nF | 1.8 µF | 1.8 µF |
| 2KV   | 390 pF | 1.2 nF | 3.3 nF | 3.3 nF | 8.2 nF | 18 nF  | 22 nF  | 33 nF  | 39 nF  | 82 nF  | 82 nF  | 120 nF | 150 nF | 220 nF | 270 nF | 680 nF | 680 nF |
| 3KV   |        | 470 pF | 1.2 nF | 1.2 nF | 3.3 nF | 10 nF  | 10 nF  | 12 nF  | 18 nF  | 39 nF  | 39 nF  | 56 nF  | 68 nF  | 100 nF | 120 nF | 330 nF | 330 nF |
| 4KV   |        | 220 pF | 680 pF | 680 pF | 1.8 nF | 4.7 nF | 4.7 nF | 6.8 nF | 8.2 nF | 18 nF  | 18 nF  | 27 nF  | 33 nF  | 47 nF  | 56 nF  | 150 nF | 150 nF |
| 5KV   |        |        |        | 390 pF | 1.2 nF | 2.7 nF | 3.3 nF | 4.7 nF | 5.6 nF | 12 nF  | 12 nF  | 18 nF  | 22 nF  | 33 nF  | 39 nF  | 100 nF | 100 nF |
| 8KV   |        |        |        | 120 pF | 390 pF | 1.0 nF | 1.2 nF | 1.2 nF | 1.5 nF | 3.9 nF | 4.7 nF | 6.8 nF | 8.2 nF | 10 nF  | 12 nF  | 33 nF  | 33 nF  |
| 10KV  |        |        |        |        |        |        |        |        | 1.0 nF | 2.2 nF | 2.7 nF | 3.9 nF | 4.7 nF | 6.8 nF | 8.2 nF | 18 nF  | 18 nF  |
| 12KV  |        |        |        |        |        |        |        |        |        | 1.5 nF | 1.8 nF | 2.2 nF | 3.3 nF | 4.7 nF | 5.6 nF | 12 nF  | 12 nF  |
| 15KV  |        |        |        |        |        |        |        |        |        | 820 pF | 820 pF | 1.5 nF | 1.8 nF | 2.7 nF | 3.3 nF | 8.2 nF | 8.2 nF |

## ORDERING INFORMATION

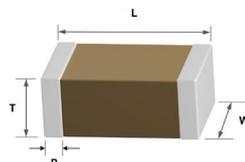
| 5440   | P          | 101   | J  | T  | X   | B                    | -   |
|--|------------|---|--|--|---|----------------------|---|
| SIZE   | DIELECTRIC | CAPACITANCE   | TOLERANCE  | VOLTAGE  | TERMINATION   | PACKAGING            | SPECIAL PARAMETERS                                |
| 0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225<br>2825<br>3640<br>4040<br>4055<br>5440<br>5550<br>6660<br>8060<br>80150<br>15080 | P = N2T    | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if < 10pF and<br>0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0.25pF<br>D = ± 0.5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5% | G = 1KV<br>O = 1.5KV<br>H = 2KV<br>I = 3KV<br>T = 2.5KV<br>K = 4KV<br>L = 5KV<br>6 = 6KV<br>8 = 8KV<br>10 = 10KV<br>12 = 12KV<br>15 = 15KV | X = Nickel Tin<br>F = Palladium-Silver<br>P = Polymer Tin<br>C = Copper Tin<br>W = Nickel Gold<br>Q = Solderable Silver | B = Reel<br>V = Bulk | -<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us

## DIMENSIONS IN MILLIMETERS

|                  | 0805       | 1206       | 1210       | 1808       | 1812       | 1825       | 2220       | 2225       | 2825       | 3640        | 4040        | 5440        | 5550        | 6660        | 8060        | 80150       | 15080       |
|------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Length (L)       | 2.00 ± 0.2 | 3.20 ± 0.2 | 3.20 ± 0.2 | 4.60 ± 0.3 | 4.60 ± 0.3 | 4.60 ± 0.4 | 5.60 ± 0.4 | 5.60 ± 0.4 | 7.10 ± 0.4 | 9.15 ± 0.8  | 10.20 ± 0.8 | 13.70 ± 1.0 | 14.00 ± 1.0 | 16.80 ± 1.0 | 20.30 ± 1.0 | 20.30 ± 1.0 | 38.10 ± 1.0 |
| Width (W)        | 1.25 ± 0.2 | 1.60 ± 0.2 | 2.50 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 6.35 ± 0.3 | 5.10 ± 0.4 | 6.35 ± 0.4 | 6.35 ± 0.4 | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 1.0 | 12.70 ± 1.0 | 15.20 ± 1.0 | 15.20 ± 1.0 | 38.10 ± 1.0 | 20.30 ± 1.0 |
| Thickness max(T) | 1.40       | 1.70       | 2.50       | 2.20       | 3.30       | 3.60       | 4.30       | 4.30       | 4.30       | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        |
| Termination (P)  | Min        | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        |
|                  | Max        | 0.70       | 0.70       | 0.80       | 0.80       | 0.80       | 0.80       | 1.00       | 1.00       | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        |

For P termination (Polymer type) add 0.10mm to Length (L) and 0.05 to Width (W)



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# SMD High Voltage N2T

1KV - 15KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## STANDARD SIZE : 0805 to 3640

| SIZE | 0805   |     | 1206 |     | 1210 |     | 1808 |     | 1812 |     | 1825 |     | 2220 |     | 2225 |     | 3640 |     |     |     | SIZE |     |        |      |
|------|--------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|-----|-----|------|-----|--------|------|
|      | CODE   | CAP | 1KV  | 2KV | 1KV | 2KV | 1KV | 2KV | 1KV | 2KV | 1KV | 2KV | 1KV | 2KV | 1KV | 2KV | 1KV | 2KV | 3KV | 4KV | 5KV  | 8KV | CAP    | CODE |
| 1R0  | 1.0 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 1.0 pF | 1R0  |
| 1R2  | 1.2 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 1.2 pF | 1R2  |
| 1R5  | 1.5 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 1.5 pF | 1R5  |
| 1R8  | 1.8 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 1.8 pF | 1R8  |
| 2R2  | 2.2 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 2.2 pF | 2R2  |
| 2R7  | 2.7 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 2.7 pF | 2R7  |
| 3R3  | 3.3 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 3.3 pF | 3R3  |
| 3R9  | 3.9 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 3.9 pF | 3R9  |
| 4R7  | 4.7 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 4.7 pF | 4R7  |
| 5R6  | 5.6 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 5.6 pF | 5R6  |
| 6R8  | 6.8 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 6.8 pF | 6R8  |
| 8R2  | 8.2 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 8.2 pF | 8R2  |
| 100  | 10 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 10 pF  | 100  |
| 120  | 12 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 12 pF  | 120  |
| 150  | 15 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 15 pF  | 150  |
| 180  | 18 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 18 pF  | 180  |
| 220  | 22 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 22 pF  | 220  |
| 270  | 27 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 27 pF  | 270  |
| 330  | 33 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 33 pF  | 330  |
| 390  | 39 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 39 pF  | 390  |
| 470  | 47 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 47 pF  | 470  |
| 560  | 56 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 56 pF  | 560  |
| 680  | 68 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 68 pF  | 680  |
| 820  | 82 pF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 82 pF  | 820  |
| 101  | 100 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 100 pF | 101  |
| 121  | 120 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 120 pF | 121  |
| 151  | 150 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 150 pF | 151  |
| 181  | 180 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 180 pF | 181  |
| 221  | 220 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 220 pF | 221  |
| 271  | 270 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 270 pF | 271  |
| 331  | 330 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 330 pF | 331  |
| 391  | 390 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 390 pF | 391  |
| 471  | 470 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 470 pF | 471  |
| 561  | 560 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 560 pF | 561  |
| 681  | 680 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 680 pF | 681  |
| 821  | 820 pF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 820 pF | 821  |
| 102  | 1.0 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 1.0 nF | 102  |
| 122  | 1.2 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 1.2 nF | 122  |
| 152  | 1.5 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 1.5 nF | 152  |
| 182  | 1.8 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 1.8 nF | 182  |
| 222  | 2.2 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 2.2 nF | 222  |
| 272  | 2.7 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 2.7 nF | 272  |
| 332  | 3.3 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 3.3 nF | 332  |
| 392  | 3.9 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 3.9 nF | 392  |
| 472  | 4.7 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 4.7 nF | 472  |
| 562  | 5.6 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 5.6 nF | 562  |
| 682  | 6.8 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 6.8 nF | 682  |
| 822  | 8.2 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 8.2 nF | 822  |
| 103  | 10 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 10 nF  | 103  |
| 123  | 12 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 12 nF  | 123  |
| 153  | 15 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 15 nF  | 153  |
| 183  | 18 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 18 nF  | 183  |
| 223  | 22 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 22 nF  | 223  |
| 273  | 27 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 27 nF  | 273  |
| 333  | 33 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 33 nF  | 333  |
| 393  | 39 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 39 nF  | 393  |
| 473  | 47 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 47 nF  | 473  |
| 563  | 56 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 56 nF  | 563  |
| 683  | 68 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 68 nF  | 683  |
| 823  | 82 nF  |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 82 nF  | 823  |
| 104  | 100 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 100 nF | 104  |
| 124  | 120 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 120 nF | 124  |
| 154  | 150 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 150 nF | 154  |
| 184  | 180 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 180 nF | 184  |
| 224  | 220 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 220 nF | 224  |
| 274  | 270 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 270 nF | 274  |
| 334  | 330 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 330 nF | 334  |
| 394  | 390 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 390 nF | 394  |
| 474  | 470 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 470 nF | 474  |
| 564  | 560 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 560 nF | 564  |
| 684  | 680 nF |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |      |     |     |     |      |     | 680 nF | 684  |

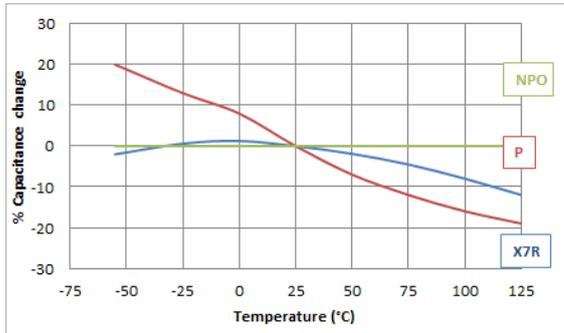
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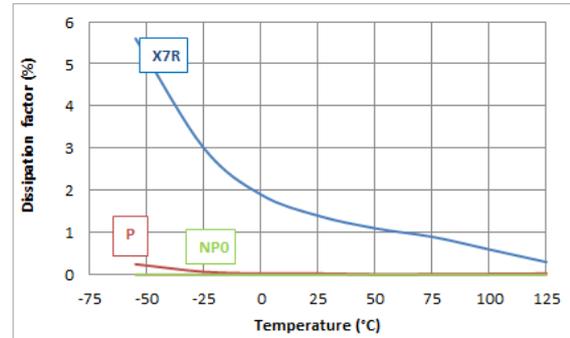


## TYPICAL CHARACTERISTICS

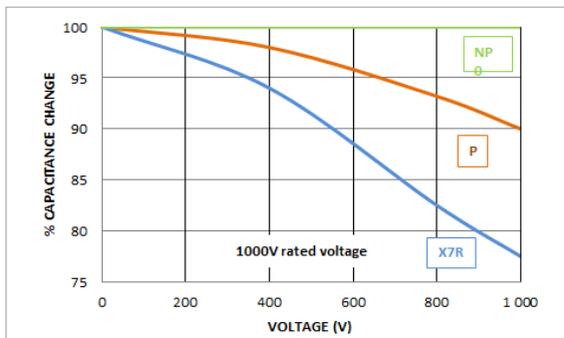
N2T Capacitance vs. temperature



N2T Dissipation factor vs. temperature



N2T Capacitance vs. voltage



# SMD High Voltage Class II

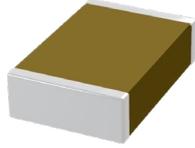
1KV - 15KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Typical uses : passing, coupling, filtering, blocking



RoHS  
compliant

## FEATURES

- Temperature stable class II ceramic
- Custom voltage, package size, capacitance value on request
- Tested in accordance to CECC 32100 and AEC-Q200
- CECC 30700 et NFC 83-132 compliant
- Available in stack or radial
- Surface coating can be necessary to prevent surface arcing

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
± 15% with 0Vdc applied

**DISSIPATION FACTOR :**  
≤ 2.5% at 1kHz for C ≥ 100pF

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
1.2Un for 5s with 50mA max charging current

## QUICK REFERENCE DATA

|       | 0805   | 1206   | 1210   | 1808   | 1812   | 1825   | 2220   | 2225   | 2825   | 3640   | 4040   | 5440   | 5550   | 6660   | 8060   | 80150  | 15080  |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Min   | 6.8 pF | 10 pF  | 10 pF  | 10 pF  | 10 pF  | 33 pF  | 33 pF  | 33 pF  | 33 pF  | 100 pF | 100 pF | 100 pF | 100 pF | 100 pF | 100 pF | 180 pF | 180 pF |
| 1KV   | 5.6 nF | 15 nF  | 47 nF  | 39 nF  | 120 nF | 330 nF | 330 nF | 470 nF | 560 nF | 1.2 µF | 1.2 µF | 1.8 µF | 2.2 µF | 3.3 µF | 3.9 µF | 10 µF  | 10 µF  |
| 1.5KV | 1.8 nF | 5.6 nF | 18 nF  | 15 nF  | 56 nF  | 120 nF | 150 nF | 180 nF | 220 nF | 470 nF | 560 nF | 680 nF | 1.0 µF | 1.2 µF | 1.5 µF | 3.9 µF | 3.9 µF |
| 2KV   | 820 pF | 2.7 nF | 8.2 nF | 8.2 nF | 22 nF  | 56 nF  | 68 nF  | 82 nF  | 120 nF | 270 nF | 270 nF | 390 nF | 470 nF | 680 nF | 820 nF | 2.2 µF | 2.2 µF |
| 3KV   |        | 1.0 nF | 2.7 nF | 3.3 nF | 8.2 nF | 22 nF  | 27 nF  | 39 nF  | 47 nF  | 100 nF | 120 nF | 150 nF | 180 nF | 270 nF | 330 nF | 820 nF | 820 nF |
| 4KV   |        | 470 pF | 1.5 nF | 1.5 nF | 4.7 nF | 12 nF  | 15 nF  | 18 nF  | 27 nF  | 56 nF  | 56 nF  | 82 nF  | 100 nF | 150 nF | 180 nF | 470 nF | 470 nF |
| 5KV   |        |        |        | 820 pF | 2.7 nF | 6.8 nF | 8.2 nF | 12 nF  | 15 nF  | 33 nF  | 33 nF  | 47 nF  | 56 nF  | 82 nF  | 100 nF | 270 nF | 270 nF |
| 8KV   |        |        |        | 270 pF | 1.0 nF | 2.7 nF | 2.7 nF | 3.3 nF | 3.9 nF | 8.2 nF | 10 nF  | 15 nF  | 18 nF  | 27 nF  | 33 nF  | 82 nF  | 82 nF  |
| 10KV  |        |        |        |        |        |        | 1.5 nF | 1.8 nF | 2.2 nF | 4.7 nF | 5.6 nF | 8.2 nF | 10 nF  | 15 nF  | 18 nF  | 47 nF  | 47 nF  |
| 12KV  |        |        |        |        |        |        |        |        |        | 3.3 nF | 3.9 nF | 5.6 nF | 6.8 nF | 10 nF  | 12 nF  | 27 nF  | 27 nF  |
| 15KV  |        |        |        |        |        |        |        |        |        | 1.8 nF | 2.2 nF | 3.3 nF | 3.9 nF | 5.6 nF | 6.8 nF | 18 nF  | 18 nF  |

## ORDERING INFORMATION

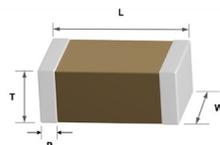
| 5440   | Y          | 103   | K                                  | H  | X  | B                    | -   |
|--|------------|---|------------------------------------|--|--|----------------------|---|
| SIZE   | DIELECTRIC | CAPACITANCE   | TOLERANCE                          | VOLTAGE  | TERMINATION  | PACKAGING            | SPECIAL PARAMETERS  |
| 0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225<br>2825<br>3033<br>3640<br>4040<br>4055<br>40100<br>5550<br>6660<br>8060<br>80150 | Y = X7R    | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | J = ± 5%<br>K = ± 10%<br>M = ± 20% | G = 1KV<br>O = 1.5KV<br>H = 2KV<br>T = 2.5KV<br>I = 3KV<br>K = 4KV<br>L = 5KV<br>6 = 6KV<br>8 = 8KV<br>10 = 10KV<br>12 = 12KV<br>15 = 15KV | X = Nickel Tin<br>F = Palladium-Silver<br>P = Polymer Tin<br>C = Copper Tin<br>W = Nickel Gold | B = Reel<br>V = Bulk | -<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us.

## DIMENSIONS IN MILLIMETERS

|                  | 0805       | 1206         | 1210         | 1808         | 1812         | 1825         | 2220         | 2225         | 2825         | 3640         | 4040         | 5440         | 5550         | 6660         | 8060         | 80150        | 15080        |
|------------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Length (L)       | 2.00 ± 0.2 | 3.20 ± 0.2   | 3.20 ± 0.2   | 4.60 ± 0.3   | 4.60 ± 0.3   | 4.60 ± 0.4   | 5.60 ± 0.4   | 5.60 ± 0.4   | 7.10 ± 0.4   | 9.15 ± 0.8   | 10.20 ± 0.8  | 13.70 ± 1.0  | 14.00 ± 1.0  | 16.80 ± 1.0  | 20.30 ± 1.0  | 20.30 ± 1.0  | 38.10 ± 1.0  |
| Width (W)        | 1.25 ± 0.2 | 1.60 ± 0.2   | 2.50 ± 0.2   | 2.00 ± 0.2   | 3.20 ± 0.2   | 6.35 ± 0.3   | 5.10 ± 0.4   | 6.35 ± 0.4   | 6.35 ± 0.4   | 10.20 ± 0.8  | 10.20 ± 0.8  | 10.20 ± 1.0  | 12.70 ± 1.0  | 15.20 ± 1.0  | 15.20 ± 1.0  | 38.10 ± 1.0  | 20.30 ± 1.0  |
| Thickness max(T) | 1.40       | 1.70         | 2.50         | 2.20         | 3.30         | 3.60         | 4.30         | 4.30         | 4.30         | 4.30         | 4.30         | 4.30         | 4.30         | 4.30         | 4.30         | 4.30         | 4.30         |
| Termination (P)  | Min<br>Max | 0.25<br>0.70 | 0.25<br>0.70 | 0.25<br>0.80 | 0.25<br>0.80 | 0.25<br>0.80 | 0.25<br>0.80 | 0.25<br>1.00 | 0.25<br>1.00 | 0.25<br>1.50 | 0.80<br>1.50 |

For P termination (Polymer type) add 0.10mm to Length (L) and 0.05 to Width (W)



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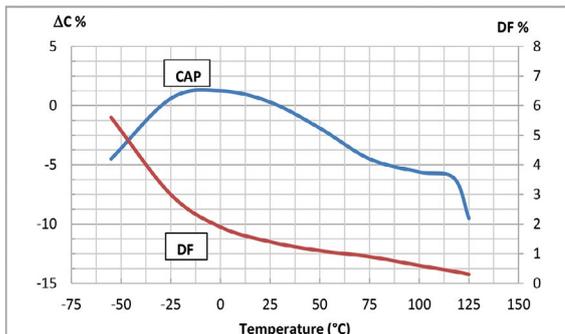




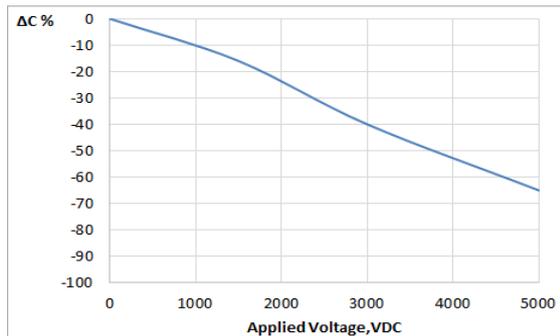


## TYPICAL CHARACTERISTICS

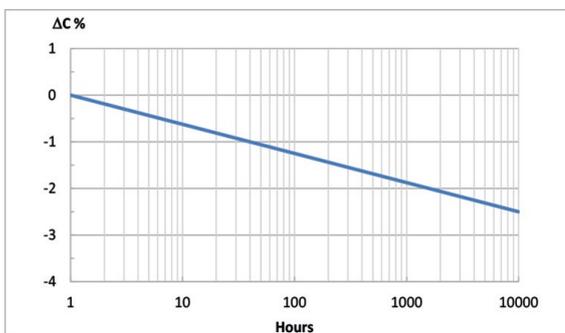
X7R Capacitance and factor vs temperature



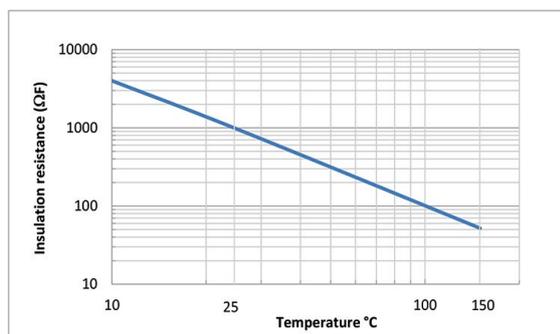
X7R Voltage coefficient of capacitance



X7R Aging



X7R Insulation resistance vs temperature



# SMD Pulse Energy Capacitor

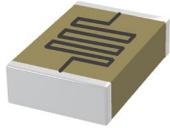
1000V-3000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Typical uses : detonators and ignition system, downhole, plasma generation



## FEATURES

- Non piezo pulse ceramic, stable, high constant
- Temperature up to 200°C
- Available in stack with J L M Leads
- SRMC 1 or 2 chips : add 1.8mm to chips height
- SRHS 1 chip, SRHD 2 chips : add 1.3mm to chips height
- Thick film bleed resistor with glass cover in option
- High current short duration pulse
- Tested to 1 million pulses without degradation

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 200°C

**TEMPERATURE COEFFICIENT :**  
-2200 ± 350 ppm/°C° with 0Vdc applied

**DISSIPATION FACTOR :**  
≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz f

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
1.2Un for 5s with 50mA max charging current

## QUICK REFERENCE DATA (MAX)

|       | 2225   | 3040   | 3640   | 4040   | 4055   | 5550   | 6660   | 7565   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000V | 120 nF | 270 nF | 330 nF | 330 nF | 470 nF | 680 nF | 1.0 µF | 1.2 µF |
| 1200V | 100 nF | 180 nF | 220 nF | 270 nF | 390 nF | 560 nF | 820 nF | 1.0 µF |
| 1400V | 82 nF  | 150 nF | 180 nF | 220 nF | 300 nF | 390 nF | 560 nF | 820 nF |
| 1500V | 82 nF  | 150 nF | 180 nF | 200 nF | 270nF  | 390 nF | 560 nF | 680 nF |
| 1700V | 56 nF  | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 430 nF | 560 nF |
| 2000V | 33 nF  | 68 nF  | 90 nF  | 110 nF | 150nF  | 200 nF | 330 nF | 390 nF |
| 2500V | 18 nF  | 39 nF  | 47 nF  | 56 nF  | 82 nF  | 100 nF | 150 nF | 180 nF |
| 3000V | 12 nF  | 27 nF  | 33 nF  | 39 nF  | 56 nF  | 68 nF  | 90 nF  | 120 nF |

Max value for 1 Chip, Double the value for 2 Chips SRMC or SRHD

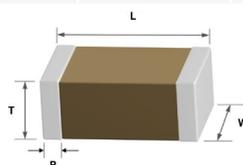
## ORDERING INFORMATION

| -                         | 4040   | P          | 803  | K                                  | H  | X   | -                | -        | R                 | B         | -   |
|---------------------------|--|------------|--|------------------------------------|--|---|------------------|----------|-------------------|-----------|---|
| STACK                     | SIZE   | DIELECTRIC | CAPACITANCE  | TOLERANCE                          | VOLTAGE  | TERMINATION   | FORM             | HEIGHT   | RESISTOR          | PACKAGING | SPECIAL PARAMETERS                                |
| -<br>SRMC<br>SRHS<br>SRHD | 2225<br>3040<br>3640<br>4040<br>4055<br>5550<br>6660<br>7565 | P = N2T    | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | J = ± 5%<br>K = ± 10%<br>M = ± 20% | G = 1000V<br>1K2 = 1200V<br>1K4 = 1400V<br>O = 1500V<br>1K7 = 1700V<br>H = 2000V<br>T = 2500V<br>I = 3000V | X = Nickel Tin (up to 200°C)<br>H = Dipped SnPb (up to 200°C)<br>S = Dipped SAC (up to 200°C)<br>I = Electrolytic SnPb (up to 200°C)<br>F = Palladium-Silver (up to 250°C)<br>Q = Solderable Silver (up to 250°C) | -<br>J<br>L<br>M | -<br>XXX | -<br>R = Resistor | B = Reel  | -<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us.

## DIMENSIONS IN MILLIMETERS (WITHOUT LEADS)

|                  | 2225       | 3040        | 3640        | 4040        | 4055        | 5550        | 6660        | 7565        |
|------------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Length (L)       | 5.60 ± 0.4 | 7.60 ± 0.8  | 9.15 ± 0.8  | 10.20 ± 0.8 | 10.20 ± 1.0 | 14.00 ± 1.0 | 16.80 ± 1.0 | 19.10 ± 1.0 |
| Width (W)        | 6.35 ± 0.4 | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 0.8 | 14.00 ± 1.0 | 12.70 ± 1.0 | 15.20 ± 1.0 | 16.50 ± 1.0 |
| Thickness max(T) | 4.30       | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        |
| Termination (P)  | Min        | 0.25        | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        |
|                  | Max        | 1.00        | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        |

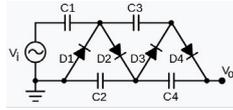
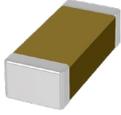


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## APPLICATIONS

- Voltage multipliers for X-Ray, Plasma, Electropray...



## FEATURES

- Alternative to disc capacitor
- Compact SMD design
- Custom voltage, package size, capacitance value on request
- Polymer and non magnetic termination available
- NPO best electrical performance
- N2T best volumetric capacitance under voltage
- X7R best volumetric capacitance with no DC Bias

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
N2T : 2200 ± 350 ppm/°C  
X7R : ± 15% with 0Vdc applied

**AGING RATE :**  
X7R : 2% per decade

**Dissipation Factor :**  
NPO, N2T : ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
: ≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 0.025 at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
1.2Un for 5s with 50mA max charging current

## QUICK REFERENCE DATA (MAX)

|      | 4010   |        |        | 4012   |        |        | 4015   |        |        | 4017   |        |        | 4020   |        |        | 4030   |        |        | 4040   |        |        | 5550   |        |        |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|      | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| 8KV  | 180 pF | 560 pF | 1.3 nF | 270 pF | 1.0 nF | 2.2 nF | 430 pF | 1.3 nF | 3.6 nF | 510 pF | 1.8 nF | 3.9 nF | 510 pF | 2.0 nF | 5.1 nF | 910 pF | 3.3 nF | 7.5 nF | 1.3 nF | 4.7 nF | 11 nF  | 2.4 nF | 8.2 nF | 20 nF  |
| 9KV  | 150 pF | 390 pF | 910 pF | 220 pF | 680 pF | 1.6 nF | 390 pF | 1.1 nF | 2.7 nF | 430 pF | 1.3 nF | 3.3 nF | 430 pF | 1.6 nF | 3.9 nF | 820 pF | 2.4 nF | 6.2 nF | 1.1 nF | 3.3 nF | 8.2 nF | 2.0 nF | 6.2 nF | 16 nF  |
| 10KV | 120 pF | 300 pF | 750 pF | 160 pF | 510 pF | 1.3 nF | 300 pF | 820 pF | 2.2 nF | 360 pF | 1.0 nF | 2.4 nF | 390 pF | 1.2 nF | 3.0 nF | 680 pF | 1.8 nF | 4.3 nF | 910 pF | 2.7 nF | 6.2 nF | 1.6 nF | 4.7 nF | 11 nF  |
| 11KV | 91 pF  | 240 pF | 510 pF | 130 pF | 390 pF | 910 pF | 220 pF | 680 pF | 1.3 nF | 270 pF | 820 pF | 1.6 nF | 270 pF | 1.0 nF | 2.0 nF | 470 pF | 1.5 nF | 3.0 nF | 620 pF | 2.0 nF | 4.3 nF | 1.2 nF | 3.9 nF | 8.2 nF |
| 12KV | 68 pF  | 180 pF | 430 pF | 120 pF | 300 pF | 750 pF | 200 pF | 560 pF | 1.3 nF | 240 pF | 750 pF | 1.5 nF | 240 pF | 910 pF | 1.8 nF | 430 pF | 1.3 nF | 2.7 nF | 560 pF | 1.8 nF | 3.9 nF | 1.1 nF | 3.3 nF | 7.5 nF |
| 13KV | 56 pF  | 130 pF | 360 pF | 100 pF | 240 pF | 620 pF | 130 pF | 430 pF | 1.0 nF | 160 pF | 560 pF | 1.2 nF | 200 pF | 750 pF | 1.3 nF | 330 pF | 1.0 nF | 2.2 nF | 430 pF | 1.3 nF | 3.0 nF | 820 pF | 2.7 nF | 6.2 nF |
| 14KV | 47 pF  | 110 pF | 270 pF | 82 pF  | 200 pF | 510 pF | 130 pF | 360 pF | 820 pF | 150 pF | 470 pF | 1.0 nF | 180 pF | 560 pF | 1.0 nF | 300 pF | 820 pF | 1.8 nF | 390 pF | 1.2 nF | 2.4 nF | 750 pF | 2.2 nF | 4.3 nF |
| 15KV | 39 pF  | 91 pF  | 240 pF | 75 pF  | 160 pF | 430 pF | 110 pF | 300 pF | 750 pF | 130 pF | 390 pF | 910 pF | 160 pF | 470 pF | 910 pF | 270 pF | 680 pF | 1.6 nF | 360 pF | 910 pF | 2.2 nF | 680 pF | 1.8 nF | 3.9 nF |

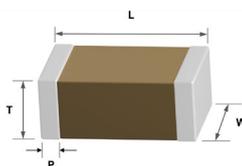
## ORDERING INFORMATION

| 4040   | P                             | 803   | K                                  | 15   | X  | B         | -   |
|--|-------------------------------|---|------------------------------------|--|--|-----------|---|
| SIZE   | DIELECTRIC                    | CAPACITANCE   | TOLERANCE                          | VOLTAGE  | TERMINATION  | PACKAGING | SPECIAL PARAMETERS                                    |
| 4010<br>4012<br>4015<br>4017<br>4020<br>4030<br>4040<br>5550 | A = NPO<br>P = N2T<br>Y = X7R | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | J = ± 5%<br>K = ± 10%<br>M = ± 20% | 8 = 8KV<br>9 = 9KV<br>10 = 10KV<br>11 = 11KV<br>12 = 12KV<br>13 = 13KV<br>14 = 14KV<br>15 = 15KV | X = Nickel Tin<br>P = Polymer Tin<br>C = Copper Tin<br>CP = Polymer Copper Tin | B = Reel  | -<br><br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us.

## DIMENSIONS IN MILLIMETERS

|                  | 4010        | 4012        | 4015        | 4017        | 4020        | 4030        | 4040        | 5550        |
|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Length (L)       | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 0.8 | 14.00 ± 1.0 |
| Width (W)        | 2.50 ± 0.8  | 3.00 ± 0.8  | 3.80 ± 0.8  | 4.30 ± 0.8  | 5.10 ± 0.8  | 7.60 ± 1.0  | 10.20 ± 0.8 | 12.70 ± 1.0 |
| Thickness max(T) | 2.40        | 3.00        | 3.80        | 4.30        | 4.30        | 4.30        | 4.30        | 4.30        |
| Termination (P)  | Min         | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        | 0.80        |
|                  | Max         | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        | 1.50        |



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### APPLICATIONS

- Magnetic resonance imaging
- Medical test equipment
- Laboratory analyze system
- Audio amplifier
- Particle accelerator



### FEATURES

- Non magnetic material : precious metal inner electrode, copper barrier
- All size/voltage available in non magnetic form
- Custom voltage, package size, capacitance value on request
- Tested in accordance to AEC-Q200 methodology
- Magnetic properties tested
- Polymer termination available

### ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
N2T : 2200 ± 350 ppm/°C  
X7R : ± 15% with 0Vdc applied

**AGING RATE :**  
X7R : 2% per decade

**Dissipation Factor :**  
NPO, N2T : ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
: ≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 0.025 at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5Un U ≤ 200V | U + 250V 200 < U ≤ 500 | 1.5U 500 < U < 1000 | 1.2U U ≥ 1000  
for 5s with 50mA max charging current

### QUICK REFERENCE DATA

|              | 0402   |        |        | 0504   |        |        | 0603   |        |        | 0805   |        |        | 1206   |        |        | 1210   |        |        | 1808   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|              | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| <b>Min</b>   | 0.1 pF | 0.3 pF | 2.2 pF | 0.1 pF | 0.3 pF | 2.2 pF | 0.1 pF | 0.3 pF | 2.2 pF | 0.1 pF | 1.0 pF | 6.8 pF | 0.4 pF | 4.7 pF | 10 pF  | 0.4 pF | 4.7 pF | 10 pF  | 1.0 pF | 4.7 pF | 10 pF  |
| <b>25V</b>   | 270 pF | 1.2 nF | 8.2 nF | 1.5 nF | 5.6 nF | 39 nF  | 1.5 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 100 nF | 10 nF  | 39 nF  | 220 nF | 15 nF  | 68 nF  | 390 nF | 22 nF  | 82 nF  | 470 nF |
| <b>50V</b>   | 270 pF | 1.2 nF | 8.2 nF | 1.5 nF | 5.6 nF | 39 nF  | 1.2 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 100 nF | 10 nF  | 39 nF  | 220 nF | 15 nF  | 68 nF  | 390 nF | 22 nF  | 82 nF  | 470 nF |
| <b>100V</b>  | 270 pF | 1.2 nF | 8.2 nF | 1.5 nF | 5.6 nF | 39 nF  | 1.2 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 100 nF | 10 nF  | 39 nF  | 220 nF | 15 nF  | 68 nF  | 390 nF | 22 nF  | 82 nF  | 470 nF |
| <b>200V</b>  | 270 pF | 1.0 nF | 6.8 nF | 1.2 nF | 5.6 nF | 39 nF  | 1.2 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 100 nF | 10 nF  | 39 nF  | 220 nF | 15 nF  | 68 nF  | 390 nF | 22 nF  | 82 nF  | 470 nF |
| <b>500V</b>  | 180 pF | 330 pF | 1.2 nF | 1.0 nF | 1.8 nF | 6.8 nF | 1.0 nF | 1.8 nF | 6.8 nF | 3.3 nF | 6.8 nF | 27 nF  | 8.2 nF | 22 nF  | 82 nF  | 15 nF  | 39 nF  | 180 nF | 18 nF  | 47 nF  | 220 nF |
| <b>1000V</b> |        |        |        |        |        |        | 220 pF | 390 pF | 1.2 nF | 820 pF | 1.8 nF | 5.6 nF | 2.7 nF | 5.6 nF | 15 nF  | 6.8 nF | 15 nF  | 47 nF  | 6.8 nF | 15 nF  | 39 nF  |
| <b>2000V</b> |        |        |        |        |        |        |        |        |        | 150 pF | 270 pF | 820 pF | 560 pF | 820 pF | 2.7 nF | 1.5 nF | 2.7 nF | 8.2 nF | 1.2 nF | 2.2 nF | 8.2 nF |
| <b>3000V</b> |        |        |        |        |        |        |        |        |        |        |        |        | 180 pF | 330 pF | 1.0 nF | 470 pF | 1.0 nF | 2.7 nF | 470 pF | 1.0 nF | 3.3 nF |

|              | 1825   |        |        | 2220   |        |        | 2225   |        |        | 3033   |        |        | 3640   |        |        | 4040   |        |        | 5440   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|              | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| <b>Min</b>   | 1.0 pF | 10 pF  | 33 pF  | 1.0 pF | 10 pF  | 33 pF  | 1.0 pF | 10 pF  | 33 pF  | 10 pF  | 47 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF |
| <b>50V</b>   | 82 nF  | 270 nF | 1.8 μF | 82 nF  | 330 nF | 1.8 μF | 100 nF | 390 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF | 220 nF | 820 nF | 5.6 μF | 270 nF | 1.0 μF | 5.6 μF | 330 nF | 1.2 μF | 8.2 μF |
| <b>100V</b>  | 82 nF  | 270 nF | 1.8 μF | 82 nF  | 330 nF | 1.8 μF | 100 nF | 390 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF | 220 nF | 820 nF | 5.6 μF | 270 nF | 1.0 μF | 5.6 μF | 330 nF | 1.2 μF | 8.2 μF |
| <b>200V</b>  | 82 nF  | 270 nF | 1.8 μF | 82 nF  | 330 nF | 1.8 μF | 100 nF | 390 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF | 220 nF | 820 nF | 5.6 μF | 270 nF | 1.0 μF | 5.6 μF | 330 nF | 1.2 μF | 8.2 μF |
| <b>500V</b>  | 68 nF  | 180 nF | 820 nF | 68 nF  | 180 nF | 820 nF | 82 nF  | 220 nF | 1.0 μF | 150 nF | 390 nF | 1.8 μF | 220 nF | 560 nF | 2.7 μF | 270 nF | 680 nF | 2.7 μF | 330 nF | 1.0 μF | 3.9 μF |
| <b>630V</b>  | 56 nF  | 150 nF | 560 nF | 56 nF  | 150 nF | 560 nF | 68 nF  | 180 nF | 820 nF | 120 nF | 330 nF | 1.2 μF | 180 nF | 470 nF | 1.8 μF | 220 nF | 560 nF | 2.2 μF | 270 nF | 680 nF | 2.7 μF |
| <b>1000V</b> | 33 nF  | 82 nF  | 330 nF | 39 nF  | 100 nF | 330 nF | 47 nF  | 120 nF | 470 nF | 82 nF  | 220 nF | 820 nF | 120 nF | 330 nF | 1.2 μF | 120 nF | 330 nF | 1.2 μF | 180 nF | 470 nF | 1.8 μF |
| <b>2000V</b> | 10 nF  | 15 nF  | 56 nF  | 12 nF  | 15 nF  | 68 nF  | 15 nF  | 18 nF  | 82 nF  | 27 nF  | 39 nF  | 180 nF | 39 nF  | 56 nF  | 270 nF | 47 nF  | 56 nF  | 270 nF | 56 nF  | 82 nF  | 390 nF |
| <b>3000V</b> | 2.7 nF | 5.6 nF | 22 nF  | 2.7 nF | 6.8 nF | 27 nF  | 3.9 nF | 8.2 nF | 33 nF  | 6.8 nF | 15 nF  | 56 nF  | 10 nF  | 22 nF  | 82 nF  | 12 nF  | 27 nF  | 100 nF | 15 nF  | 33 nF  | 120 nF |
| <b>10KV</b>  | 220 pF | 270 pF |        | 270 pF | 470 pF | 1.2 nF | 330 pF | 680 pF | 1.8 nF | 680 pF | 1.2 nF | 3.3 nF | 1.0 nF | 1.8 nF | 4.7 nF | 1.0 nF | 1.8 nF | 5.6 nF | 1.5 nF | 2.7 nF | 6.8 nF |

### ORDERING INFORMATION

| 0603   | A                             | 103   | J  | B   | C   | B                    | -   |
|--|-------------------------------|---|--|---|---|----------------------|---|
| SIZE   | DIELECTRIC                    | CAPACITANCE   | TOLERANCE  | VOLTAGE   | TERMINATION   | PACKAGING            | SPECIAL PARAMETERS                                    |
| 0402<br>0504<br>0603<br>0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225<br>2825<br>3033<br>3640<br>4040<br>5440 | A = NPO<br>P = N2T<br>Y = X7R | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if < 10pF and<br>0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0.25pF<br>D = ± 0.5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | X = 25V<br>A = 50V<br>U = 63V<br>B = 100V<br>C = 200V<br>P = 250V<br>E = 500V<br>F = 630V<br>G = 1000V<br>H = 2000V<br>I = 3000V<br>10 = 10000V | C = Copper Tin (Non magnetic)<br>CP = Copper Polymer Tin (Non magnetic) | B = Reel<br>V = Bulk | -<br><br>Dxx = Reliability spec<br>Exx = Sorting spec |



### APPLICATIONS

- Improved reliability termination
- Whisker free
- Space and medical and oil application
- PME manufactured or AEC-Q200 BME sourced components
- High Reliability testing, burn-in, screening available according to MIL-PRF-55681, ESCC3009 or specific reliability program



### FEATURES

- Choice between :
- Electrolytical SnPb (10% min Pb)
- Dipped SnPb (Sn62 Pb36 Ag2)
- Dipped SAC (Sn96.5 Ag3 Cu0.5) ROHS
- Other size/voltage available on demand
- Other passive/active component dipping on demand

### ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
N2T : 2200 ± 350 ppm/C°  
X7R : ± 15% with 0Vdc applied

**AGING RATE :**  
X7R : 2% per decade

**Dissipation Factor :**  
NPO, N2T : ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
                  : ≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 0.025 at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5Un U ≤ 200V | U + 250V 200 < U ≤ 500 | 1.5U 500 < U < 1000  
for 5s with 50mA max charging current

### QUICK REFERENCE DATA

|              | 0201          |               | 0402          |        |               | 0603          |        |               | 0805         |        |               | 1206          |        |               | 1210          |        |               | 1812          |        |               | 2220          |        |               |
|--------------|---------------|---------------|---------------|--------|---------------|---------------|--------|---------------|--------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|
|              | NPO           | X7R           | NPO           | N2T    | X7R           | NPO           | N2T    | X7R           | NPO          | N2T    | X7R           | NPO           | N2T    | X7R           | NPO           | N2T    | X7R           | NPO           | N2T    | X7R           | NPO           | N2T    | X7R           |
| <b>Min</b>   |               |               | 0.1 pF        | 0.3 pF | 2.2 pF        | 0.1 pF        | 0.3 pF | 2.2 pF        | 0.1 pF       | 1.0 pF | 6.8 pF        | 0.4 pF        | 4.7 pF | 10 pF         | 0.4 pF        | 4.7 pF | 10 pF         | 1.0 pF        | 4.7 pF | 10 pF         | 1.0 pF        | 10 pF  | 33 pF         |
| <b>6.3V</b>  |               | <i>100 nF</i> | <i>2.2 nF</i> | 1.2 nF | 1 μF          | 10 nF         | 5.6 nF | <i>4.7 μF</i> | <i>33 nF</i> | 15 nF  | 10 μF         | <i>220 nF</i> | 39 nF  | <i>22 μF</i>  | <i>100 nF</i> | 68 nF  | <i>47 μF</i>  | <i>220 nF</i> | 120 nF | <i>33 μF</i>  | <i>470 nF</i> | 330 nF | <i>47 μF</i>  |
| <b>10V</b>   |               |               | <i>2.2 nF</i> | 1.2 nF | 1 μF          | 10 nF         | 5.6 nF | <i>2.2 μF</i> | <i>33 nF</i> | 15 nF  | 10 μF         | <i>220 nF</i> | 39 nF  | <i>22 μF</i>  | <i>100 nF</i> | 68 nF  | <i>22 μF</i>  | <i>220 nF</i> | 120 nF | <i>33 μF</i>  | <i>470 nF</i> | 330 nF | <i>47 μF</i>  |
| <b>16V</b>   |               | <i>10 nF</i>  | <i>2.2 nF</i> | 1.2 nF | <i>470 nF</i> | 10 nF         | 5.6 nF | 1.0 μF        | <i>33 nF</i> | 15 nF  | 10 μF         | <i>220 nF</i> | 39 nF  | 10 μF         | <i>100 nF</i> | 68 nF  | <i>22 μF</i>  | <i>220 nF</i> | 120 nF | <i>33 μF</i>  | <i>470 nF</i> | 330 nF | <i>47 μF</i>  |
| <b>25V</b>   | <i>1.0 nF</i> | <i>6.8 nF</i> | <i>2.2 nF</i> | 1.2 nF | <i>220 nF</i> | 10 nF         | 5.6 nF | 1.0 μF        | <i>33 nF</i> | 15 nF  | <i>4.7 μF</i> | <i>220 nF</i> | 39 nF  | 10 μF         | <i>120 nF</i> | 68 nF  | <i>22 μF</i>  | <i>220 nF</i> | 120 nF | <i>22 μF</i>  | <i>470 nF</i> | 330 nF | <i>47 μF</i>  |
| <b>50V</b>   | <i>220 pF</i> | <i>1.0 nF</i> | <i>1.5 nF</i> | 1.2 nF | <i>100 nF</i> | 10 nF         | 5.6 nF | 1.0 μF        | <i>33 nF</i> | 15 nF  | <i>4.7 μF</i> | <i>220 nF</i> | 39 nF  | 10 μF         | <i>100 nF</i> | 68 nF  | 10 μF         | <i>220 nF</i> | 120 nF | <i>6.8 μF</i> | <i>470 nF</i> | 330 nF | <i>22 μF</i>  |
| <b>63V</b>   |               |               | <i>1.0 nF</i> | 1.2 nF | 10 nF         | 10 nF         | 5.6 nF | <i>100 nF</i> | <i>33 nF</i> | 15 nF  | <i>2.2 μF</i> | <i>100 nF</i> | 39 nF  | <i>2.2 μF</i> | <i>100 nF</i> | 68 nF  | 10 μF         | <i>100 nF</i> | 120 nF | <i>2.2 μF</i> | <i>330 nF</i> | 330 nF | 10 μF         |
| <b>100V</b>  |               |               | <i>1.0 nF</i> | 1.2 nF | 10 nF         | 10 nF         | 5.6 nF | <i>100 nF</i> | <i>33 nF</i> | 15 nF  | <i>2.2 μF</i> | <i>100 nF</i> | 39 nF  | <i>2.2 μF</i> | <i>100 nF</i> | 68 nF  | <i>4.7 μF</i> | <i>100 nF</i> | 120 nF | <i>2.2 μF</i> | <i>330 nF</i> | 330 nF | 10 μF         |
| <b>200V</b>  |               |               | <i>330 pF</i> | 1.0 nF | 6.8 nF        | <i>2.2 nF</i> | 5.6 nF | 39 nF         | 10 nF        | 15 nF  | 470 nF        | <i>22 nF</i>  | 39 nF  | <i>220 nF</i> | <i>47 nF</i>  | 68 nF  | 1.0 μF        | <i>100 nF</i> | 120 nF | 1.0 μF        | <i>150 nF</i> | 330 nF | <i>2.2 μF</i> |
| <b>250V</b>  |               |               | <i>330 pF</i> | 1.0 nF | 5.6 nF        | <i>2.2 nF</i> | 5.6 nF | 27 nF         | 10 nF        | 15 nF  | 82 nF         | <i>22 nF</i>  | 39 nF  | <i>220 nF</i> | <i>47 nF</i>  | 68 nF  | 680 nF        | 100 nF        | 120 nF | 1.0 μF        | 150 nF        | 330 nF | <i>2.2 μF</i> |
| <b>500V</b>  |               |               | <i>180 pF</i> | 330 pF | 1.2 nF        | 1.0 nF        | 1.8 nF | 6.8 nF        | 3.3 nF       | 6.8 nF | 33 nF         | 8.2 nF        | 22 nF  | 82 nF         | 15 nF         | 39 nF  | 180 nF        | 33 nF         | 82 nF  | 470 nF        | 68 nF         | 180 nF | 1.0 μF        |
| <b>630V</b>  |               |               |               |        |               | 560 pF        | 1.2 nF | 3.9 nF        | 2.2 nF       | 4.7 nF | 33 nF         | 6.8 nF        | 15 nF  | 56 nF         | 12 nF         | 33 nF  | 120 nF        | 27 nF         | 68 nF  | 270 nF        | 56 nF         | 150 nF | 1.0 μF        |
| <b>1000V</b> |               |               |               |        |               | 220 pF        | 390 pF | 1.2 nF        | 820 pF       | 1.8 nF | 5.6 nF        | 2.7 nF        | 5.6 nF | 27 nF         | 6.8 nF        | 15 nF  | 68 nF         | 15 nF         | 39 nF  | 150 nF        | 39 nF         | 100 nF | 470 nF        |

Max values italic obtained with BME parts

### ORDERING INFORMATION

| 0603   | A                             | 103  | J   | B   | I  | B                    | -                   | -  |
|--|-------------------------------|--|---|---|--|----------------------|---------------------|--|
| SIZE   | DIELECTRIC                    | CAPACITANCE  | TOLERANCE   | VOLTAGE   | TERMINATION  | PACKAGING            | PACKAGING           | SPECIAL PARAMETERS   |
| 0201<br>0402<br>0603<br>0805<br>1206<br>1210<br>1812<br>2220 | A = NPO<br>P = N2T<br>Y = X7R | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if < 10pF and 0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0,25pF<br>D = ± 0,5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | R = 6.3V<br>Q = 10V<br>J = 16V<br>X = 25V<br>Z = 35V<br>A = 50V<br>U = 63V<br>B = 100V<br>C = 200V<br>P = 250V<br>E = 500V<br>F = 630V<br>G = 1000V | H = Dipped SnPb<br>S = Dipped SAC<br>I = Electrolytic SnPb | B = Reel<br>V = Bulk | - = PME<br>BM = BME | -<br>D55681 = iec MIL-PRF55681<br>D3009 = iec ESCC3009<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, ceramic tolerance contact us

# SMD High Temperature Class I

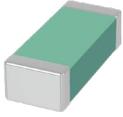
10V-2000V 200°C-250°C



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Typical uses : timing, precision circuitry, filtering for High Temperature environnement



## FEATURES

- Ultra stable temperature compensating classe I ceramic up to 250°C
- Robust design for High Temperature durability
- ROHS Tin Termination or Non ROHS SnPb for use up to 200°C (use HMP soldering)
- Gold/Silver-Palladium/Solderable Silver for use up to 250°C (use High-Temperature Epoxy)
- Custom voltage, package size, capacitance value on request
- 168H/125°C Burn-In option for maximum reliability

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 250°C

**TEMPERATURE COEFFICIENT :**  
± 30ppm with 0Vdc applied

**DISSIPATION FACTOR :**  
≤ 1.10-3 at 1Vrms and 1MHz for values ≤ 1000pF  
≤ 1.10-3 at 1Vrms and 1KHz for values > 1000pF

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
200°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less  
250°C/Un 5x10<sup>3</sup> MOhm or 50 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5Un U≤200V | U+250V 200<U≤500 | 1.5U 500<U<1000 | 1.2U U≥1000  
for 5s with 50mA max charging current

## QUICK REFERENCE DATA

|       | 0402   | 0603   | 0805   | 1206   | 1210   | 1808   | 1812   | 1825   | 2220   | 2225   | 2525   | 2825   | 3033   | 3640   | 4040   | 5440   | 6660   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Min   | 0.1 pF | 0.1 pF | 0.1 pF | 0.4 pF | 0.4 pF | 1.0 pF | 1.0 pF | 1.0 pF | 1.0 pF | 1.0 pF | 1.0 pF | 4.7 pF | 10 pF  | 10 pF  | 10 pF  | 10 pF  | 10 pF  |
| 10V   | 2.2 nF | 27 nF  | 47 nF  | 220 nF | 220 nF | 22 nF  | 220 nF | 100 nF | 470 nF | 100 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF | 560 nF |
| 25V   | 1.5 nF | 10 nF  | 47 nF  | 220 nF | 150 nF | 22 nF  | 220 nF | 100 nF | 470 nF | 100 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF | 560 nF |
| 50V   | 330 pF | 2.2 nF | 10 nF  | 22 nF  | 47 nF  | 22 nF  | 100 nF | 82 nF  | 150 nF | 100 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF | 560 nF |
| 63V   | 330 pF | 2.2 nF | 10 nF  | 22 nF  | 47 nF  | 22 nF  | 100 nF | 82 nF  | 150 nF | 100 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF | 560 nF |
| 100V  | 220 pF | 1.2 nF | 3.9 nF | 10 nF  | 15 nF  | 22 nF  | 33 nF  | 82 nF  | 82 nF  | 100 nF | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF | 560 nF |
| 200V  | 180 pF | 1.0 nF | 3.3 nF | 8.2 nF | 15 nF  | 18 nF  | 33 nF  | 68 nF  | 68 nF  | 82 nF  | 100 nF | 120 nF | 150 nF | 220 nF | 270 nF | 330 nF | 560 nF |
| 250V  |        | 560 pF | 2.2 nF | 6.8 nF | 12 nF  | 15 nF  | 27 nF  | 56 nF  | 56 nF  | 68 nF  | 82 nF  | 82 nF  | 120 nF | 180 nF | 220 nF | 270 nF | 470 nF |
| 500V  |        | 150 pF | 560 pF | 1.8 nF | 4.7 nF | 4.7 nF | 12 nF  | 27 nF  | 27 nF  | 33 nF  | 39 nF  | 47 nF  | 68 nF  | 82 nF  | 100 nF | 120 nF | 270 nF |
| 630V  |        | 68 pF  | 330 pF | 1.0 nF | 2.7 nF | 2.7 nF | 8.2 nF | 18 nF  | 18 nF  | 27 nF  | 27 nF  | 33 nF  | 47 nF  | 68 nF  | 68 nF  | 100 nF | 180 nF |
| 1000V |        |        | 150 pF | 560 pF | 1.5 nF | 1.2 nF | 3.9 nF | 10 nF  | 12 nF  | 15 nF  | 18 nF  | 18 nF  | 27 nF  | 39 nF  | 47 nF  | 56 nF  | 120 nF |
| 1500V |        |        |        | 180 pF | 470 pF | 470 pF | 1.2 nF | 2.7 nF | 2.7 nF | 3.9 nF | 4.7 nF | 4.7 nF | 6.8 nF | 10 nF  | 12 nF  | 15 nF  | 27 nF  |
| 2000V |        |        |        | 82 pF  | 220 pF | 220 pF | 680 pF | 1.8 nF | 1.8 nF | 2.2 nF | 2.7 nF | 3.3 nF | 4.7 nF | 6.8 nF | 8.2 nF | 10 nF  | 18 nF  |
| 3000V |        |        |        |        |        |        |        |        |        |        |        | 1.2 nF | 1.8 nF | 2.7 nF | 2.7 nF | 3.9 nF | 6.8 nF |

Max values italic obtained with BME parts

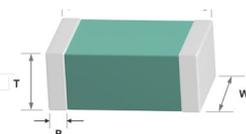
## ORDERING INFORMATION

| H                | 0603   | A          | 101   | J   | B   | F  | B                    | D03   |
|------------------|--|------------|---|---|---|--|----------------------|---|
| SERIE            | SIZE   | DIELECTRIC | CAPACITANCE   | TOLERANCE   | VOLTAGE   | TERMINATION  | PACKAGING            | SPECIAL PARAMETERS  |
| High-Temperature | 0402<br>0603<br>0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225<br>2525<br>2825<br>3033<br>3640<br>4040<br>5440<br>6660 | A = NPO    | Expressed in picrofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0,5% if > 10pF and<br>±0,05pF if < 10pF<br>B = ± 0.1pF<br>C = ± 0,25pF<br>D = ± 0,5pF<br>E = 0.1%<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10% | Q = 10V<br>J = 16V<br>X = 25V<br>A = 50V<br>U = 63V<br>B = 100V<br>C = 200V<br>P = 250V<br>E = 500V<br>F = 630V<br>G = 1000V<br>O = 1500V<br>H = 2000V<br>I = 2000V | X = Nickel Tin (up to 200°C)<br>H = Dipped SnPb (up to 200°C)<br>S = Dipped SAC (up to 200°C)<br>I = Electrolytic SnPb (up to 200°C)<br>F = Palladium-Silver (up to 250°C)<br>W = Nickel Gold (up to 250°C)<br>Q = Solderable Silver (up to 250°C) | B = Reel<br>V = Bulk | -<br>D03 = Burn-In 168H/125°C<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us.

## DIMENSIONS IN MILLIMETERS

|                  | 0402       | 0603       | 0805       | 1111       | 1206       | 1210       | 1808       | 1812       | 1825       | 2220       | 2225       | 2525       | 2825       | 3033       | 3640        | 4040        | 5440        |
|------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|
| Length (L)       | 1.00 ± 0.1 | 1.60 ± 0.2 | 2.00 ± 0.2 | 2.80 ± 0.2 | 3.20 ± 0.2 | 3.20 ± 0.2 | 4.60 ± 0.3 | 4.60 ± 0.3 | 4.60 ± 0.4 | 5.60 ± 0.4 | 5.60 ± 0.4 | 6.35 ± 0.4 | 7.10 ± 0.4 | 7.60 ± 0.4 | 9.15 ± 0.8  | 10.20 ± 0.8 | 13.70 ± 1.0 |
| Width (W)        | 0.50 ± 0.1 | 0.80 ± 0.2 | 1.25 ± 0.2 | 2.80 ± 0.2 | 1.60 ± 0.2 | 2.50 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 6.35 ± 0.3 | 5.10 ± 0.4 | 6.35 ± 0.4 | 6.35 ± 0.4 | 6.35 ± 0.4 | 8.40 ± 0.4 | 10.20 ± 0.8 | 10.20 ± 0.8 | 10.20 ± 1.0 |
| Thickness max(T) | 0.60       | 0.92       | 1.40       | 2.60       | 1.70       | 2.50       | 2.20       | 3.30       | 3.60       | 4.00       | 4.00       | 4.00       | 4.00       | 4.00       | 4.00        | 4.00        | 4.00        |
| Termination (P)  |            |            |            |            |            |            |            |            |            |            |            |            |            |            |             |             |             |
| Min              | 0.10       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.50       | 0.80        | 0.80        | 0.80        |
| Max              | 0.40       | 0.40       | 0.70       | 0.70       | 0.70       | 0.80       | 0.80       | 0.80       | 0.80       | 0.80       | 1.00       | 1.00       | 1.00       | 1.20       | 1.50        | 1.50        | 1.50        |

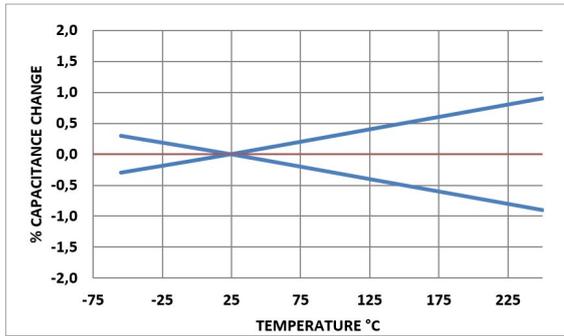


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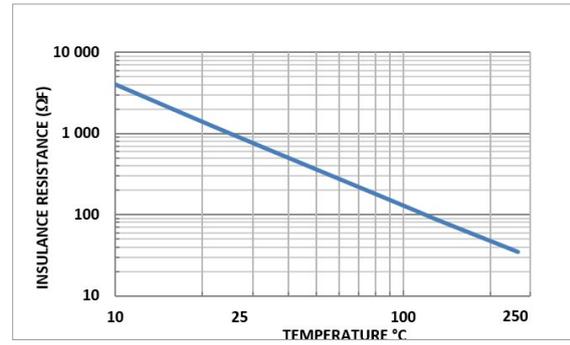


## TYPICAL CHARACTERISTICS

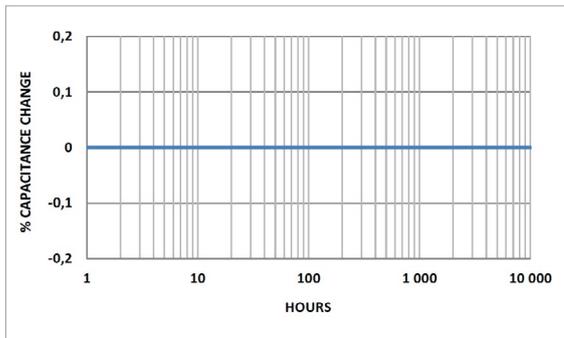
NPO Temperature coefficient of capacitance



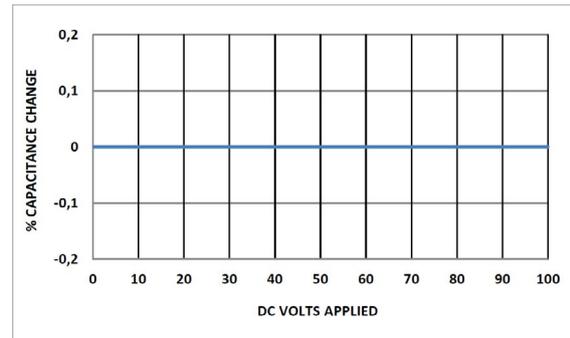
NPO Insulation resistance vs. temperature



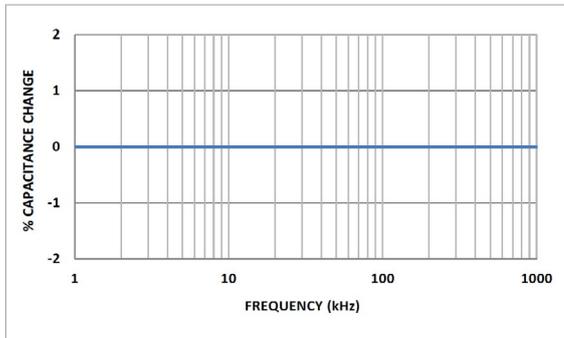
NPO Aging rate



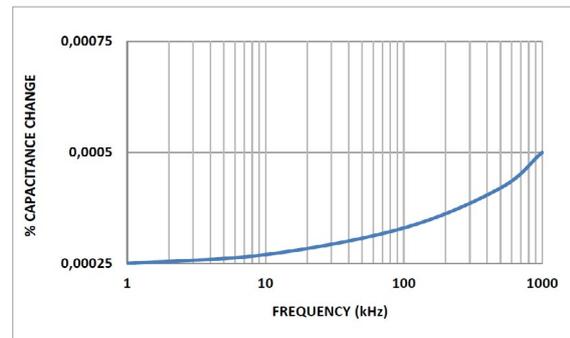
NPO Voltage coefficient of capacitance



NPO Change of Capacitance with Frequency



NPO Dissipation factor vs. frequency



# SMD High Temperature Class II

10V-2000V 150°C-250°C



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Typical uses : timing, precision circuitry, filtering for High Temperature environment



## FEATURES

- Robust design for High Temperature durability
- ROHS Tin Termination or Non ROHS SnPb for use up to 200°C
- Gold/Silver-Palladium/Solderable Silver for use up to 250°C
- Custom voltage, package size, capacitance value on request
- 168H/125°C Burn-In option for maximum reliability
- Extended range for low time usage with reasonable reliability

## QUICK REFERENCE DATA

|  | 0603   | 0805   | 1206   | 1210   | 1812   | 2220   | 0603   | 0805   | 1206   | 1210   | 1812   | 2220   | 0603   | 0805   | 1206   | 1210   | 1812   | 2220   |        |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|  | 200°C  | 250°C  | 250°C  | 250°C  | 250°C  | 250°C  | 250°C  |        |
|  | Min    | 10V    | 25V    | 50V    | 63V    | 100V   | 200V   | 250V   | 500V   | 630V   | 1000V  | 1500V  | 2000V  |        |        |        |        |        |        |
|  | 2.2 pF | 6.8 pF | 10 pF  | 10 pF  | 10 pF  | 33 pF  | 2.2 pF | 6.8 pF | 10 pF  | 10 pF  | 10 pF  | 33 pF  | 2.2 pF | 6.8 pF | 10 pF  | 10 pF  | 10 pF  | 10 pF  | 33 pF  |
|  | 100 nF | 1.0 μF | 2.2 μF | 10 μF  | 4.7 μF | 22 μF  | 1.0 μF | 4.7 μF | 10 μF  | 22 μF  | 6.8 μF | 47 μF  | 39 nF  | 100 nF | 220 nF | 390 nF | 820 nF | 1.8 μF | 1.8 μF |
|  | 39 nF  | 100 nF | 220 nF | 390 nF | 820 nF | 1.8 μF | 100 nF | 1.0 μF | 2.2 μF | 10 μF  | 4.7 μF | 22 μF  | 18 nF  | 68 nF  | 150 nF | 270 nF | 560 nF | 1.2 μF | 1.2 μF |
|  | 27 nF  | 82 nF  | 220 nF | 330 nF | 820 nF | 1.8 μF | 39 nF  | 100 nF | 220 nF | 390 nF | 820 nF | 1.8 μF | 3.9 nF | 15 nF  | 47 nF  | 120 nF | 270 nF | 560 nF | 1.2 μF |
|  | 18 nF  | 68 nF  | 180 nF | 270 nF | 560 nF | 1.2 μF | 39 nF  | 100 nF | 220 nF | 390 nF | 820 nF | 1.8 μF | 1.8 nF | 8.2 nF | 27 nF  | 68 nF  | 180 nF | 470 nF | 470 nF |
|  | 6.8 nF | 27 nF  | 82 nF  | 180 nF | 330 nF | 820 nF | 22 nF  | 82 nF  | 180 nF | 330 nF | 680 nF | 1.5 μF | 1.2 nF | 5.6 nF | 15 nF  | 47 nF  | 120 nF | 330 nF | 330 nF |
|  | 1.2 nF | 5.6 nF | 15 nF  | 47 nF  | 120 nF | 330 nF | 5.6 nF | 22 nF  | 68 nF  | 150 nF | 330 nF | 680 nF |        | 1.5 nF | 4.7 nF | 12 nF  | 33 nF  | 82 nF  | 82 nF  |
|  | 680 pF | 2.7 nF | 10 nF  | 27 nF  | 82 nF  | 220 nF | 2.7 nF | 12 nF  | 39 nF  | 100 nF | 220 nF | 560 nF |        | 820 pF | 2.7 nF | 8.2 nF | 22 nF  | 68 nF  | 68 nF  |
|  |        |        | 1.5 nF | 4.7 nF | 12 nF  | 39 nF  | 470 pF | 2.2 nF | 6.8 nF | 18 nF  | 39 nF  | 100 nF |        |        | 470 pF | 1.5 nF | 4.7 nF | 15 nF  | 15 nF  |
|  |        |        |        | 820 pF | 2.7 nF | 8.2 nF | 22 nF  |        | 1.2 nF | 3.9 nF | 10 nF  | 27 nF  |        |        |        |        | 2.7 nF | 8.2 nF | 8.2 nF |
|  |        |        |        |        | 2.7 nF | 8.2 nF |        |        | 1.2 nF | 3.3 nF | 10 nF  | 27 nF  |        |        |        |        | 1.0 nF | 2.7 nF | 2.7 nF |
|  |        |        |        |        | 1.0 nF | 3.3 nF |        |        |        |        | 3.9 nF | 12 nF  |        |        |        |        |        |        |        |
|  |        |        |        |        |        | 1.2 nF |        |        |        |        | 2.2 nF | 5.6 nF |        |        |        |        |        |        |        |

Max values italic obtained with BME parts

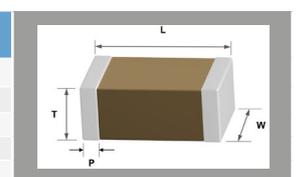
## ORDERING INFORMATION

| H                | 0603   | Y          | 101   | J                                  | B   | W  | B                    | D03   |
|------------------|--|------------|---|------------------------------------|---|--|----------------------|---|
| SERIE            | SIZE   | DIELECTRIC | CAPACITANCE   | TOLERANCE                          | VOLTAGE   | TERMINATION  | PACKAGING            | SPECIAL PARAMETERS  |
| High-Température | 0603<br>0805<br>1206<br>1210<br>1812<br>2220 | Y= X7R     | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | J = ± 5%<br>K = ± 10%<br>M = ± 20% | Q = 10V<br>J = 16V<br>X = 25V<br>Z = 35V<br>A = 50V<br>U = 63V<br>B = 100V<br>C = 200V<br>P = 250V<br>E = 500V<br>F = 630V<br>G = 1000V<br>O = 1500V<br>H = 2000V | X = Nickel Tin (up to 200°C)<br>H = Dipped SnPb (up to 200°C)<br>S = Dipped SAC (up to 200°C)<br>I = Electrolytic SnPb (up to 200°C)<br>F = Palladium-Silver (up to 250°C)<br>W = Nickel Gold (up to 250°C)<br>Q = Solderable Silver (up to 250°C) | B = Reel<br>V = Bulk | -<br>D03 = Burn-In 168H/125°C<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us.

## DIMENSIONS IN MILLIMETERS

|                  | 0603       | 0805         | 1206         | 1210         | 1812         | 2220         |
|------------------|------------|--------------|--------------|--------------|--------------|--------------|
| Length (L)       | 1.60 ± 0.2 | 2.00 ± 0.2   | 3.20 ± 0.2   | 3.20 ± 0.2   | 4.60 ± 0.3   | 5.60 ± 0.4   |
| Width (W)        | 0.80 ± 0.2 | 1.25 ± 0.2   | 1.60 ± 0.2   | 2.50 ± 0.2   | 3.20 ± 0.2   | 5.10 ± 0.4   |
| Thickness max(T) | 0.92       | 1.40         | 1.70         | 2.50         | 3.30         | 4.00         |
| Termination (P)  | Min<br>Max | 0.25<br>0.40 | 0.25<br>0.70 | 0.25<br>0.70 | 0.25<br>0.80 | 0.25<br>0.80 |

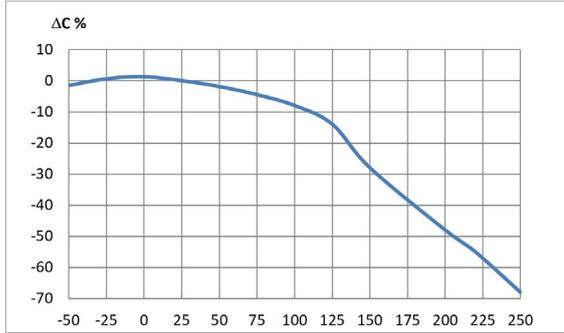


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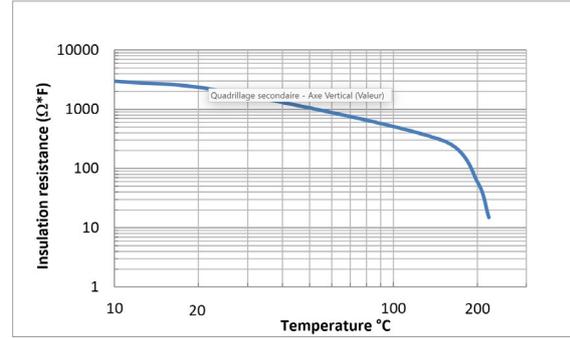


## TYPICAL CHARACTERISTICS

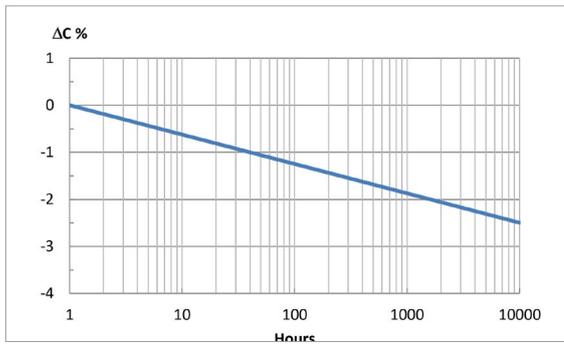
HT Classe II Temperature coefficient of capacitance



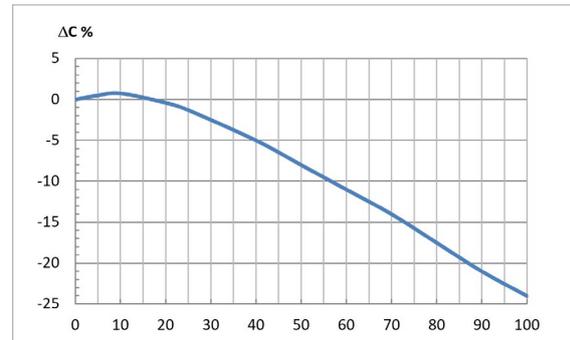
HT Classe II Insulation resistance vs. temperature



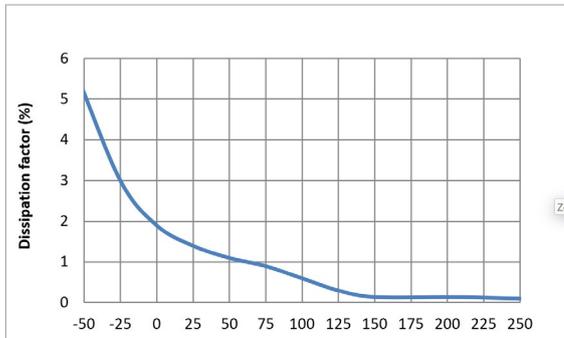
HT Classe II Aging rate



HT Classe II Voltage coefficient of capacitance



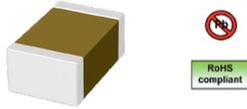
HT Classe II DF vs. temperature





### DESCRIPTION

Safety certified capacitors are designed for surge or lightning immunity in modern facsimile and other equipments. The capacitors of FK series are class X1/Y2 compliant, and the capacitors of FH series are class X2 compliant respectively. The green type capacitors in FK/FH series are manufactured by using environmentally friendly materials without lead or cadmium. The terminations are composed of plated nickel and pure tin to feature the superiority of leaching resistance during soldering.



### APPLICATIONS

- Modem
- Facsimile
- Telephone
- Other electronic equipment for lighting or surge protection and isolation

### FEATURES

- High reliability and stability.
- Small size and high capacitance
- Safety standard approval by :
  - EN 60384-14 : 2013/A1 : 2016
  - IEC60384-14:2013/AMD1:2016
  - UL 60384-14(Ed 2.0)UL 62368-1 (2nd Edition)
- Certificate number :
  - R 50041666 & R 50359148 by TUV.
  - E346791(FOWX2/8) by UL, E231248 by UL
  - CQC20001247849 by CQC (FK series)
  - CQC20001247848 by CQC (FH series)
- Licenses :
  - ENEC-03020 (FK series)
  - ENEC-03021 (FH series)
- RoHS and HALOGEN compliant
- Manufactured by PDC

### ELECTRICAL PARAMETERS

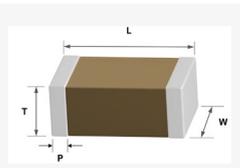
| DIELECTRIC                       | COG   | X7R  |
|----------------------------------|---|--|
| Size                             | 1808, 1812 2211   | 1808, 1812, 2211, 2220   |
| Rated Voltage                    | 250 Vac   |  |
| Capacitance Range                | X1/Y2 Class (Impulse 6KV) : 4pF - 100pF<br>X1/Y2 Class (Impulse 5KV) : 3pF - 720pF<br>X2 Class : 3pF - 1000pF | X1/Y2 Class : 100pF-4700pF<br>X2 Class : 56000pF   |
| Capacitance Tolerance            | Cap.<10pF : D (±0.5pF)<br>10pF≤ Cap : F (±1%), G (±2%), J (±5%),K (±10%), M (±20%)                            | J (±5%)<br>K (±10%)<br>M (±20%)  |
| DF                               | Cap.<30pF : Q≥400+20C<br>Cap.≥30pF : Q≥1000   | ≤2.5%  |
| Capacitance & DF- Test Condition | Measured at the condition of 30-70% related humidity.   |  |
|                                  | For 25°C at ambient temperature   | Preconditioning for Class II MLCC :<br>Perform a heat treatment at 150 ±10°C for 1 hour, then leave in ambient condition for 24±2 hours before measurement |
| Insulation Resistance            | ≥100GΩ or RxC≥1000Ω-F, whichever is smaller   | ≥10GΩ or RxC≥5000Ω-F, whichever is smaller   |
| Operating Temperature            | -55°C to +125°C   |  |
| Temperature coefficient          | ±30ppm/°C   | ±15%   |
| Termination                      | Cu or Ag/Ni/Sn (lead-free termination)  |  |

### ORDERING INFORMATION

| FK  | 0805                                 | Y                  | 103   | K  | L                               | B                    | G   |
|---|--------------------------------------|--------------------|---|--|---------------------------------|----------------------|---|
| SERIES  | SIZE                                 | DIELECTRIC         | CAPACITANCE   | TOLERANCE  | VOLTAGE                         | PACKAGING            | SPECIAL   |
| FK = Safety X1 & Y2 Series<br>FH = Safety X2 Series | 1206<br>1808<br>1812<br>2211<br>2220 | A = COG<br>Y = X7R | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1 000pF | D = ± 0.50pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | T = 2.5KV<br>L = 5KV<br>6 = 6KV | B = Reel<br>V = Bulk | G = RoHS Compliant<br>H = High Reliability<br>Q = Anti-Arcing<br>E = Anti Bending<br>Z = Anti-Arcing + Anti-Bending<br>Dxx = Reliability spec<br>Exx = Sorting spec |

### DIMENSIONS IN MILLIMETERS

|                   |     | 1206       | 1808           | 1812           | 2211       | 2220       |
|-------------------|-----|------------|----------------|----------------|------------|------------|
| Length (L)        |     | 3.30 ±0.40 | 4.50 +0.6/-0.3 | 4.50 +0.6/-0.3 | 5.70 ±0.50 | 5.70 ±0.50 |
| Width (W)         |     | 1.60 ±0.20 | 2.00 ±0.30     | 3.20 ±0.40     | 2.80 ±0.40 | 5.00 ±0.50 |
| Thickness max (T) |     | 1.35       | 2.20           | 2.80           | 3.10       | 3.10       |
| Termination (P)   | Min | 0.25       | 0.25           | 0.25           | 0.30       | 0.30       |
|                   | Max | 0.75       | 0.75           | 0.75           | 0.90       | 0.90       |





### CAPACITANCE RANGE

| Class         |        | X1/Y2 (FK series)             |      |      |      |      |      |      |      | X2 (FH series) |      |      |      |      |       |
|---------------|--------|-------------------------------|------|------|------|------|------|------|------|----------------|------|------|------|------|-------|
| Rated Voltage |        | 250Vac                        |      |      |      |      |      |      |      |                |      |      |      |      |       |
| Certificated  |        | TUV / UL / CQC (IEC 60384-14) |      |      |      |      |      |      |      |                |      |      |      |      |       |
| Dielectric    |        | COG                           |      |      |      | X7R  |      |      |      | COG            |      | X7R  |      |      | X7R   |
| Size          |        | 1808                          | 1812 | 2211 | 2211 | 1808 | 1812 | 2211 | 2220 | 1808           | 1812 | 1808 | 1812 | 2220 | 1206  |
| Impulse       |        | 5KV                           |      |      | 6KV  | 5KV  |      |      |      | 2.5KV          |      |      |      |      | 2.5KV |
| Code          | Cap    |                               |      |      |      |      |      |      |      |                |      |      |      |      |       |
| 3R0           | 3.0 pF | R                             |      |      |      |      |      |      |      | R              |      |      |      |      |       |
| 3R3           | 3.3 pF | R                             |      |      |      |      |      |      |      |                |      |      |      |      |       |
| 4R0           | 4.0 pF | R                             |      | W    | W    |      |      |      |      | R              |      |      |      |      |       |
| 4R7           | 4.7 pF | R                             |      | W    | W    |      |      |      |      |                |      |      |      |      |       |
| 5R0           | 5.0 pF | R                             |      | W    | W    |      |      |      |      | R              |      |      |      |      |       |
| 5R6           | 5.6 pF | R                             |      | W    | W    |      |      |      |      |                |      |      |      |      |       |
| 6R0           | 6.0 pF | R                             |      | W    | W    |      |      |      |      | R              |      |      |      |      |       |
| 6R8           | 6.8 pF | R                             |      | W    | W    |      |      |      |      |                |      |      |      |      |       |
| 7R0           | 7.0 pF | R                             |      | W    | W    |      |      |      |      | R              |      |      |      |      |       |
| 8R0           | 8.0 pF | R                             |      | W    | W    |      |      |      |      | R              |      |      |      |      |       |
| 8R2           | 8.2 pF | R                             |      | W    | W    |      |      |      |      |                |      |      |      |      |       |
| 9R0           | 9.0 pF | R                             |      |      |      |      |      |      |      | R              |      |      |      |      |       |
| 100           | 10 pF  | R                             | P    | W    | W    |      |      |      |      | R              | P    |      |      |      |       |
| 120           | 12 pF  | R                             | P    | W    | W    |      |      |      |      | R              | P    |      |      |      |       |
| 150           | 15 pF  | R                             | P    | W    | W    |      |      |      |      | R              | P    |      |      |      |       |
| 180           | 18 pF  | R                             | P    | W    | W    |      |      |      |      | R              |      |      |      |      |       |
| 220           | 22 pF  | R                             | P    | W    | W    |      |      |      |      | R              | P    |      |      |      |       |
| 270           | 27 pF  | R                             | P    | W    | W    |      |      |      |      | R              | P    |      |      |      |       |
| 330           | 33 pF  | R                             | P    | W    | W    |      |      |      |      | R              | P    |      |      |      |       |
| 390           | 39 pF  | T                             | P    | W    | W    |      |      |      |      | T              | P    |      |      |      |       |
| 470           | 47 pF  | T                             | P    | W    | W    |      |      |      |      | T              | P    |      |      |      |       |
| 560           | 56 pF  | T                             | P    | W    | W    |      |      |      |      | T              | P    |      |      |      |       |
| 680           | 68 pF  | T                             | P    | W    | Y    |      |      |      |      | T              | P    |      |      |      |       |
| 820           | 82 pF  | T                             | P    | W    | Y    |      |      |      |      | T              | P    |      |      |      |       |
| 101           | 100 pF | W                             | P    | W    | Z    | T*   |      | T*   |      | W              | P    |      |      |      | P     |
| 121           | 120 pF | W                             | P    | Y    |      | T*   |      | T*   |      | W              | P    |      |      |      | P     |
| 131           | 130 pF | W                             | P    |      |      |      |      | T*   |      |                |      |      |      |      | P     |
| 151           | 150 pF | W                             | P    | Y    |      | T*   | T*   | T*   |      | W              | P    | T    |      |      | P     |
| 161           | 160 pF | W                             | P    | Y    |      | T*   |      |      | W*   |                |      | T    |      |      | P     |
| 181           | 180 pF | W                             | P    | Y    |      | T*   | T*   | T*   | W*   | W              | P    | T    |      |      | P     |
| 221           | 220 pF | W                             | W    | Y    |      | T*   | T*   | T*   | W*   | W              | P    | T    |      |      | P     |
| 271           | 270 pF | W                             | W    | Y    |      | W*   | T*   |      | W*   | W              | R    | T    | T    |      | P     |
| 301           | 300 pF |                               | W    |      |      |      |      |      |      |                |      | T    | T    |      | P     |
| 331           | 330 pF |                               | W    | Y    |      | W*   | T*   | T*   | W*   | W              | R    | T    | T    |      | P     |
| 391           | 390 pF |                               | W    | Y    |      | W*   | T*   | T*   | W*   | W              | R    | T    | T    |      | P     |
| 471           | 470 pF |                               | W    | Y    |      | W*   | T*   | W*   | W*   | W              | T    | T    | T    |      | P     |
| 561           | 560 pF |                               |      | Y    |      | W*   | T*   | W*   | W*   | W              | W    | T    | T    |      | P     |
| 681           | 680 pF |                               |      | Y    |      | W*   | W*   | W*   | W*   | W              | W    | T    | T    |      | P     |
| 721           | 720 pF |                               |      |      |      |      |      |      | W*   | W              |      |      | T    |      | P     |
| 821           | 820 pF |                               |      |      |      | W*   | W*   | W*   | W*   | W              | Y    | T    | T    |      | P     |
| 102           | 1.0 nF |                               |      |      |      | W*   | Y*   | Y*   | W*   | W              | Y    | W    | T    |      | P     |
| 122           | 1.2 nF |                               |      |      |      |      |      | Y*   | Y*   |                |      | W    | T    |      |       |
| 152           | 1.5 nF |                               |      |      |      |      |      | Y*   | Y*   |                |      | W    | W    |      |       |
| 182           | 1.8 nF |                               |      |      |      |      |      | Y*   | Y*   |                |      | W    | W    |      |       |
| 222           | 2.2 nF |                               |      |      |      |      |      | Y*   | Y*   |                |      | W    | Y    |      |       |
| 272           | 2.7 nF |                               |      |      |      |      |      | Z*   | Y*   |                |      |      | Y    |      |       |
| 332           | 3.3 nF |                               |      |      |      |      |      |      | Y*   |                |      |      | Y    |      |       |
| 392           | 3.9 nF |                               |      |      |      |      |      |      | Y*   |                |      |      | Y    |      |       |
| 472           | 4.7 nF |                               |      |      |      |      |      |      | Y*   |                |      |      | Y    |      |       |
| 562           | 5.6 nF |                               |      |      |      |      |      |      |      |                |      |      | Y    |      |       |
| 682           | 6.8 nF |                               |      |      |      |      |      |      |      |                |      |      |      |      |       |
| 822           | 8.2 nF |                               |      |      |      |      |      |      |      |                |      |      |      |      |       |
| 103           | 10 nF  |                               |      |      |      |      |      |      |      |                |      |      |      | Y    |       |
| 123           | 12 nF  |                               |      |      |      |      |      |      |      |                |      |      |      | Y    |       |
| 153           | 15 nF  |                               |      |      |      |      |      |      |      |                |      |      |      | Y    |       |
| 183           | 18 nF  |                               |      |      |      |      |      |      |      |                |      |      |      | Y    |       |
| 223           | 22 nF  |                               |      |      |      |      |      |      |      |                |      |      |      | Z    |       |
| 273           | 27 nF  |                               |      |      |      |      |      |      |      |                |      |      |      | Z*   |       |
| 333           | 33 nF  |                               |      |      |      |      |      |      |      |                |      |      |      | Z*   |       |
| 393           | 39 nF  |                               |      |      |      |      |      |      |      |                |      |      |      | Z*   |       |
| 473           | 47 nF  |                               |      |      |      |      |      |      |      |                |      |      |      | Z*   |       |
| 563           | 56 nF  |                               |      |      |      |      |      |      |      |                |      |      |      | Z*   |       |

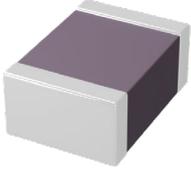
| Code | Thickness (mm) |
|------|----------------|
| P    | 1.25±0.10      |
| R    | 1.40±0.15      |
| T    | 1.60±0.20      |
| W    | 2.00±0.20      |
| Y    | 2.50±0.30      |
| Z    | 2.80±0.30      |

\* : Surface coating only



## APPLICATIONS

- RF and microwave communication (30MHz - 30GHz) for satellite communication, base station, wireless devices, radar



RoHS  
compliant

## FEATURES

- Ultra stable dielectric material  $Q > 2000$
- Best in class ESR
- High conductivity precious metal electrodes
- Marking option
- Standard and custom kits
- High rel version according to ESCC3009
- High temperature version up to 200°C (H prefix)

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS:**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE:**  
- 55°C. + 125°C

**TEMPERATURE COEFFICIENT:**  
± 30ppm

**DISSIPATION FACTOR :**  
≤ 5.10<sup>-4</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
≤ 5.10<sup>-4</sup> at 1Vrms and 1KHz for values > 1000pF

**INSULATION RESISTANCE (IR):**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST:**  
2.5Un U ≤ 200V | U + 250V 200 < U ≤ 500 | 1.5U 500 < U < 1000 | 1.2U U ≥ 1000  
for 5s with 50mA max charging current

## QUICK REFERENCE DATA

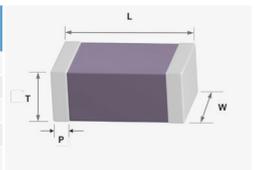
|       | 0402  | 0504  | 0505  | 0603  | 0709  | 0805  | 1206  | 1210  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| MIN   | 0.1pF | 0.1pF | 0.1pF | 0.1pF | 0.1pF | 0.1pF | 0.5pF | 0.5pF |
| 25V   | 82pF  | 820pF | 1.0nF | 560pF | 1.5nF | 1.5nF | 4.7nF | 5.6nF |
| 50V   | 56pF  | 820pF | 1.0nF | 560pF | 1.5nF | 1.5nF | 4.7nF | 5.6nF |
| 100V  | 33pF  | 820pF | 1.0nF | 560pF | 1.5nF | 1.5nF | 4.7nF | 5.6nF |
| 150V  | 33pF  | 820pF | 1.0nF | 150pF | 1.5nF | 1.5nF | 4.7nF | 5.6nF |
| 200V  | 33pF  | 220pF | 270pF | 150pF | 1.5nF | 1.5nF | 4.7nF | 5.6nF |
| 250V  | 33pF  | 220pF | 270pF | 150pF | 1.5nF | 1.5nF | 4.7nF | 5.6nF |
| 500V  |       |       |       | 68pF  | 470pF | 470pF | 680pF | 1.2nF |
| 1000V |       |       |       |       |       |       | 150pF | 270pF |

## ORDERING INFORMATION

| 1206   | Q          | 560  | F  | E   | X  | -                          | B                    | -   |
|--|------------|--|--|---|--|----------------------------|----------------------|---|
| SIZE   | DIELECTRIC | CAPACITANCE  | TOLERANCE  | VOLTAGE   | TERMINATION  | MARKING                    | PACKAGING            | SPECIAL   |
| 0402<br>0504<br>0505<br>0603<br>0709<br>0805<br>1206<br>1210 | Q = High Q | Expressed in picofarads (pF).<br>The first two digits are significant,<br>the third digit gives the number of<br>noughts.<br>Example : 102 = 1 000pF<br><br>For special values R is used<br>as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if < 10pF<br>and<br>0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0.25pF<br>D = ± 0.5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10% | X = 25V<br>A = 50V<br>B = 100V<br>N = 150V<br>C = 200V<br>P = 250V<br>E = 500V<br>G = 1000V | X = Nickel Tin<br>C = Copper Tin (Non<br>magnetic)<br>F = Silver Palladium (Non<br>magnetic)<br>W = Nickel Gold Flash<br>G = Nickel Gold Thick<br>H = Dipped SnPb<br>I = Electrolytic SnPb | - = Unmarked<br>M = Marked | B = Reel<br>V = Bulk | -<br>Dxx = Reliability spec<br>Exx = Sorting spec |

## DIMENSIONS IN MILLIMETERS

|                   | 0402       | 0505       | 0603       | 0709       | 0805       | 1206       | 1210       |
|-------------------|------------|------------|------------|------------|------------|------------|------------|
| LENGTH (L)        | 1.00 ± 0.1 | 1.40 ± 0.1 | 1.60 ± 0.1 | 1.80 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 3.20 ± 0.2 |
| WIDTH (W)         | 0.50 ± 0.1 | 1.40 ± 0.1 | 0.80 ± 0.1 | 2.30 ± 0.2 | 1.25 ± 0.2 | 1.60 ± 0.2 | 2.50 ± 0.2 |
| THICKNESS MAX (T) | 0.60       | 1.45       | 0.90       | 2.90       | 1.40       | 1.70       | 1.70       |
| TERMINATION (P)   | MIN        | 0.10       | 0.10       | 0.25       | 0.25       | 0.25       | 0.25       |
|                   | MAX        | 0.40       | 0.40       | 0.40       | 0.50       | 0.70       | 0.80       |

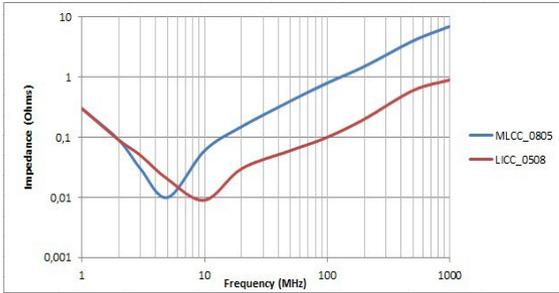


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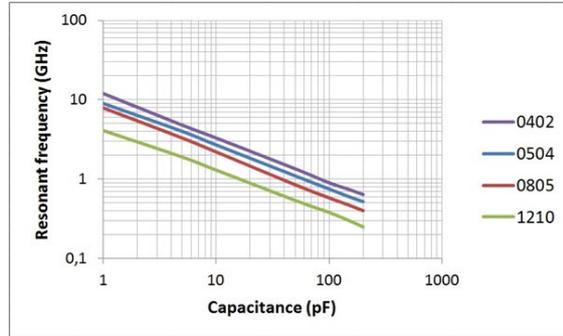


**TYPICAL CHARACTERISTICS**

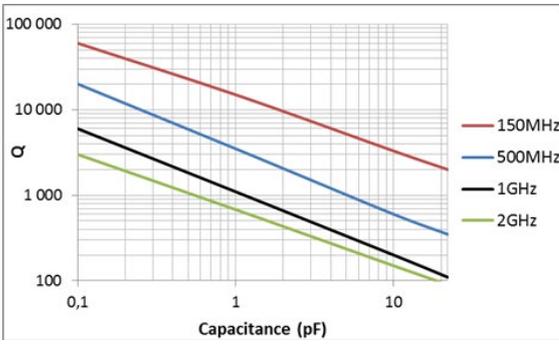
Temperature coefficient of capacitance



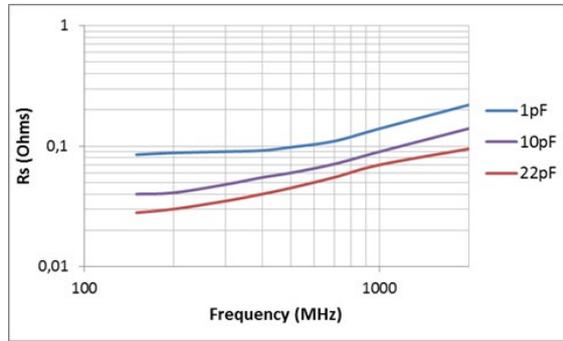
Series resonant frequency



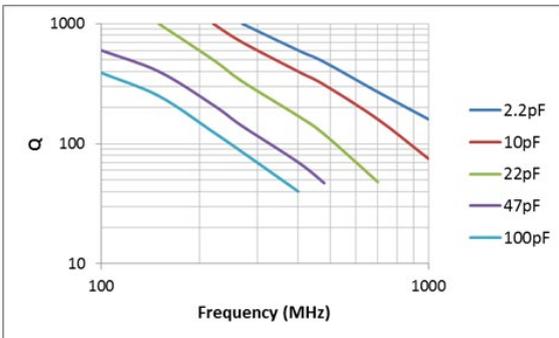
Q / Frequency - 0402, 200V



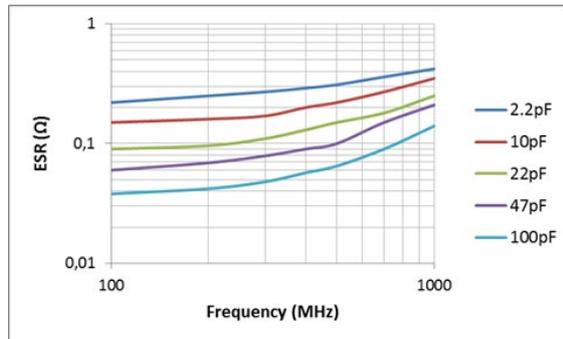
ESR / Frequency - 0402, 200V



Q / Frequency - 0805, 1206, 200V



ESR / Frequency - 0805, 1206, 200V



## APPLICATIONS

- Lasers, CATV, RF Power Amplifiers
- Mixers, RF Instruments



## FEATURE

- Wide range of termination magnetic and non magnetic
- Microstrips and wires, axial, radial
- Equivalent to concurrent design
- Very low ESL/ESR. High current
- Optional marking
- High temperature version up to 200°C (H prefix)
- High rel version according to ESCC3009

## QUICK REFERENCE DATA

|        | 1111  | 2225  | 2525  | 4040  | 7274  |
|--------|-------|-------|-------|-------|-------|
| MIN    | 0.1pF | 0.5pF | 0.5pF | 0.5pF | 1pF   |
| 50V    | 10nF  | 12nF  | 18nF  | 20nF  | 20nF  |
| 150V   | 10nF  | 12nF  | 18nF  | 20nF  | 20nF  |
| 200V   | 10nF  | 12nF  | 18nF  | 20nF  | 20nF  |
| 250V   | 1.5nF | 12nF  | 18nF  | 20nF  | 20nF  |
| 300V   | 1.5nF | 12nF  | 18nF  | 20nF  | 20nF  |
| 500V   | 1.2nF | 12nF  | 18nF  | 20nF  | 20nF  |
| 630V   | 68pF  | 3.0nF | 4.7nF | 18nF  | 20nF  |
| 1000V  | 33pF  | 2.4nF | 3.3nF | 18nF  | 20nF  |
| 1500V  | 15pF  | 1.5nF | 1.8nF | 5.1nF | 20nF  |
| 2000V  |       | 220pF | 820pF | 5.1nF | 20nF  |
| 2500V  |       | 330pF | 820pF | 2.2nF | 12nF  |
| 3600V  |       | 150pF | 360pF | 680pF | 10nF  |
| 5000V  |       |       |       | 390pF | 1nF   |
| 7200V  |       |       |       | 220pF | 430pF |
| 8000V  |       |       |       | 180pF | 360pF |
| 10000V |       |       |       |       | 200pF |

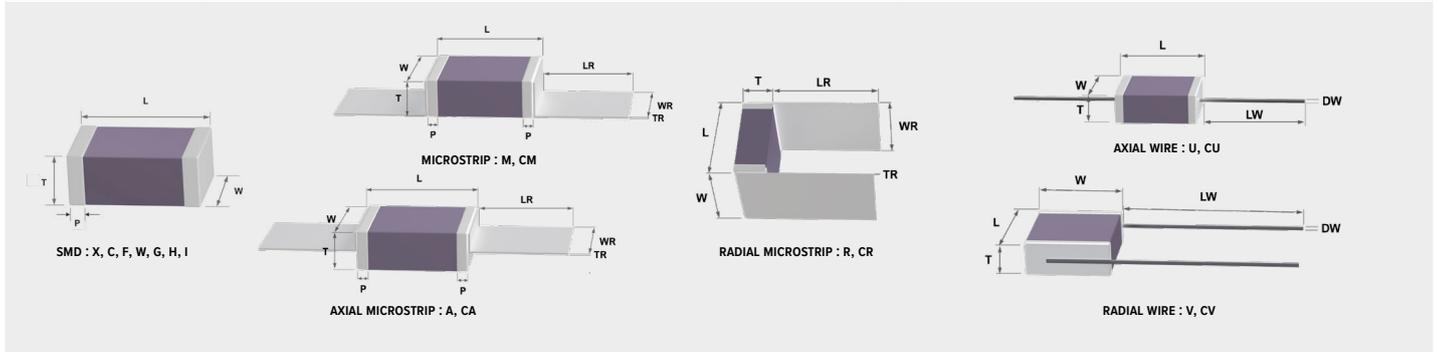
## ORDERING INFORMATION

| 2325                                 | Q          | 560  | F  | E   | X   | -                           | B                    | -   |
|--------------------------------------|------------|--|--|---|---|-----------------------------|----------------------|---|
| SIZE                                 | DIELECTRIC | CAPACITANCE  | TOLERANCE  | VOLTAGE   | TERMINATION   | MARKING                     | PACKAGING            | SPECIAL   |
| 1111<br>2225<br>2525<br>4040<br>7274 | Q = High Q | Expressed in picofarads (pF). The first two digits are significant, the third digit gives the number of noughts.<br>Example :<br>102 = 1000pF<br><br>For special values R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if < 10pF and<br>0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0,25pF<br>D = ± 0,5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5% | A = 50V<br>B = 100V<br>C = 200V<br>P = 250V<br>D = 300V<br>E = 500V<br>F = 630V<br>G = 1000V<br>O = 1500V<br>H = 2000V<br>T = 2500V<br>M = 3600V<br>K = 4000V<br>L = 5000V<br>S = 7200V<br>8 = 8000V<br>10 = 10000V | X = Nickel Tin<br>C = Copper Tin (Non magnetic)<br>F = Silver Palladium (Non magnetic)<br>W = Nickel Gold Flash<br>G = Nickel Gold Thick<br>H = Dipped SnPb<br>I = Electrolytic SnPb<br>M = Microstrip<br>A = Axial Ribbon<br>R = Radial Ribbon<br>U = Axial Wire<br>V = Radial Wire<br><br>CM = Microstrip (Non magnetic)<br>CA = Axial Ribbon (Non magnetic)<br>CR = Axial Ribbon (Non magnetic)<br>CU = Axial Wire (Non magnetic)<br>CV = Radial Wire (Non magnetic) | - = Un-marked<br>M = Marked | B = Reel<br>V = Bulk | -<br>Dxx = Reliability spec<br>Exx = Sorting spec |

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**DIMENSIONS IN MILLIMETERS**

| DESIGNATION            | TERMINATION         | 1111       | 2225       | 2525       | 4040       | 7274       |
|------------------------|---------------------|------------|------------|------------|------------|------------|
| LENGTH (L)             | X, C, F, W, G, H, I | 2.80 ± 0.2 | 5.85 ± 0.4 | 6.35 ± 0.4 | 9.7 ± 0.6  | 18.9 ± 0.8 |
| LENGTH (L)             | M, CM, A, AR, R, CR | 3.20 ± 0.5 | 6.30 ± 0.6 | 6.80 ± 0.6 | 10.1 ± 0.8 | 18.9 ± 1.0 |
| LENGTH (L)             | U, UC, CU, CV       | 3.20 ± 0.5 | 6.30 ± 0.6 | 6.80 ± 0.6 | 10.1 ± 0.8 |            |
| WIDTH (W)              | ALL                 | 2.80 ± 0.4 | 6.35 ± 0.5 | 6.35 ± 0.5 | 9.7 ± 0.8  | 19.1 ± 1.0 |
| THICKNESS MAX (T)      | ALL - M, CM         | 2.60       | 4.30       | 4.30       | 4.30       | 4.30       |
| THICKNESS MAX (T)      | M, CM               | 3.10       | 4.30       | 4.30       | 4.30       |            |
| TERMINATION (P)        | MIN                 | ALL        | 0.20       | 0.25       | 0.80       | 0.80       |
|                        | MAX                 | ALL        | 0.50       | 0.80       | 1.50       | 1.50       |
| LENGTH RIBBON MIN (LR) | M, CM, A, AR, R, CR | 7.00       | 13.00      | 13.00      | 20.00      | 20.00      |
| WIDTH RIBBON (WR)      | M, CM, A, AR, R, CR | 2.40 ± 0.2 | 6.10 ± 0.2 | 6.10 ± 0.2 | 8.90 ± 0.2 | 16.7 ± 0.4 |
| THICKNESS RIBBON (TR)  | M, CM, A, AR, R, CR | 0.10       | 0.10       | 0.10       | 0.25       | 0.25       |
| LENGTH WIRE MIN (LW)   | U, UC, CU, CV       | 13.00      | 13.00      | 13.00      | 25.00      |            |
| DIAMETER WIRE (DW)     | U, UC, CU, CV       | 0.41       | 0.81       | 0.81       | 0.81       |            |

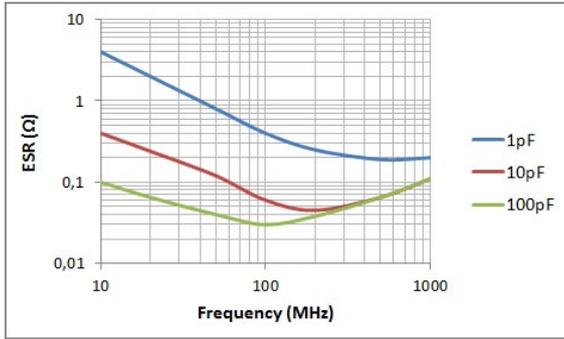




**TYPICAL CHARACTERISTICS : 0505 TO 1111**

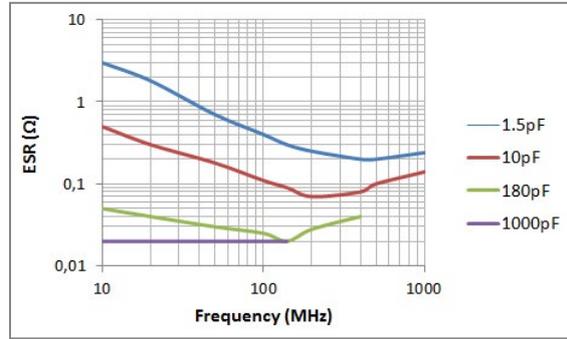
**0505**

$ESR = f(F_{MHz})$

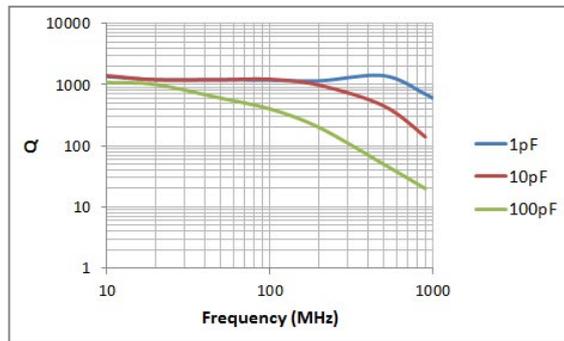


**1111**

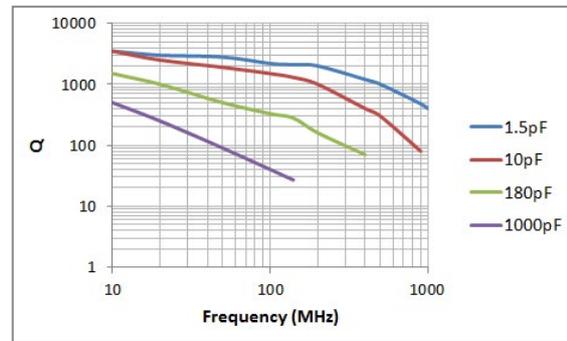
$ESR = f(F_{MHz})$



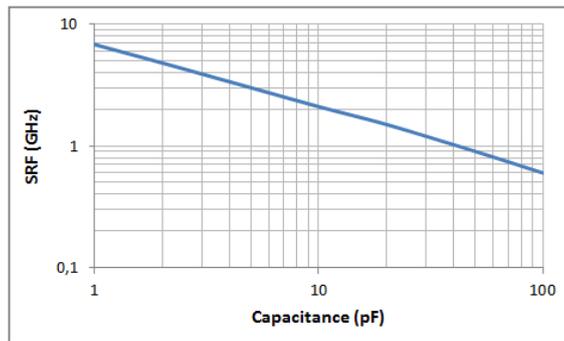
$Q \text{ Value} = f(F_{MHz})$



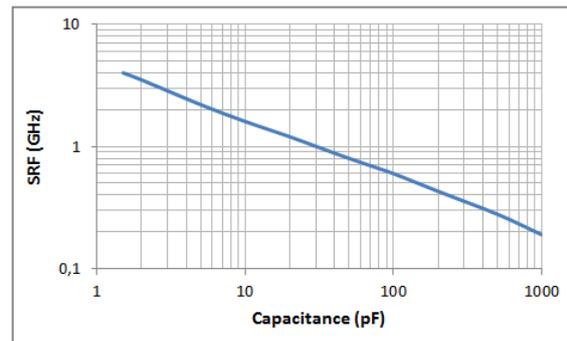
$Q \text{ Value} = f(F_{MHz})$



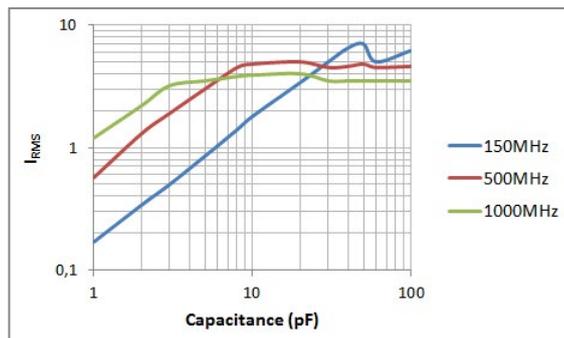
$\text{Resonant Frequency} = f(\text{CAP}_{pF})$



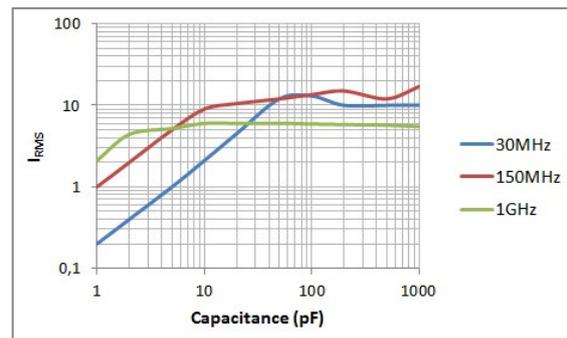
$\text{Resonant Frequency} = f(\text{CAP}_{pF})$



$I_{RMS} = f(\text{CAP}_{pF})$



$I_{RMS} = f(\text{CAP}_{pF})$



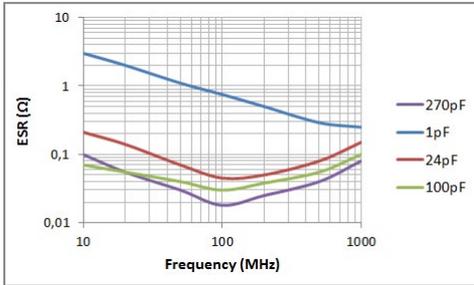
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**TYPICAL CHARACTERISTICS : 2325 TO 4040**

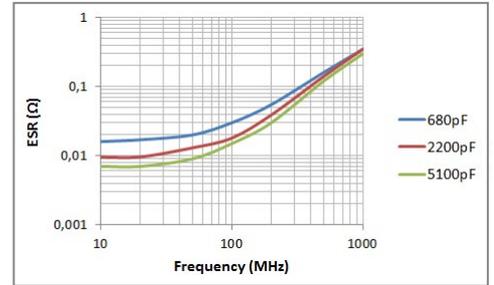
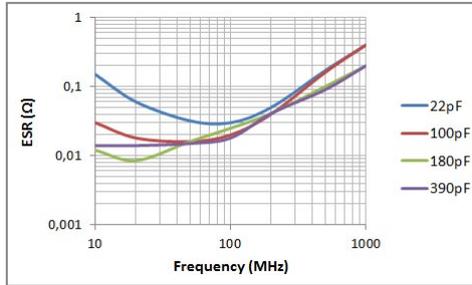
2325

4040

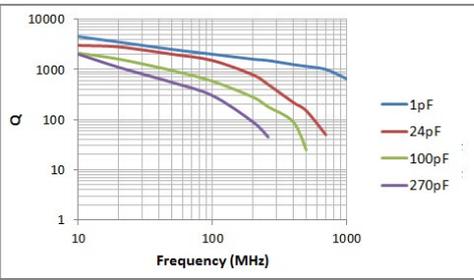
ESR = f(F<sub>MHz</sub>)



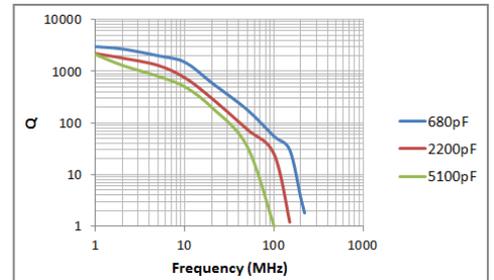
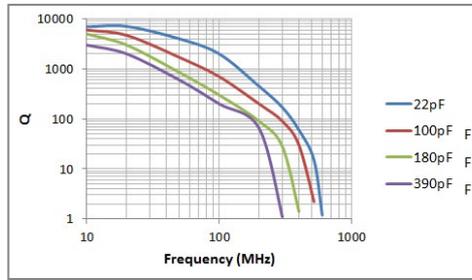
ESR = f(F<sub>MHz</sub>)



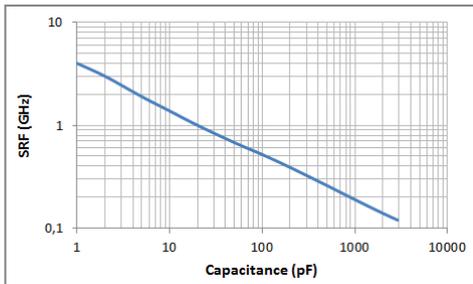
Q Value = f(F<sub>MHz</sub>)



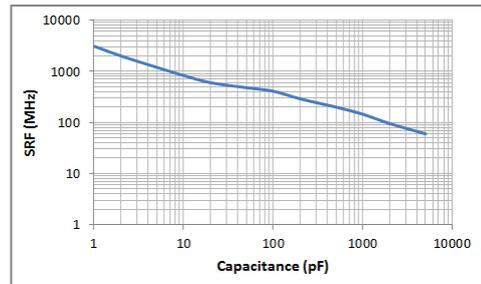
Q Value = f(F<sub>MHz</sub>)



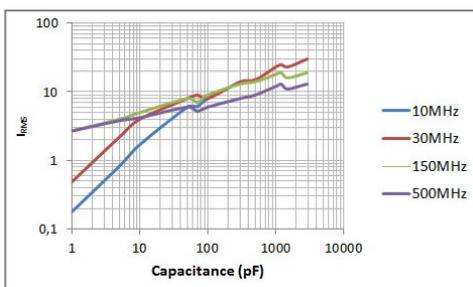
Resonant Frequency = f(CAP<sub>pF</sub>)



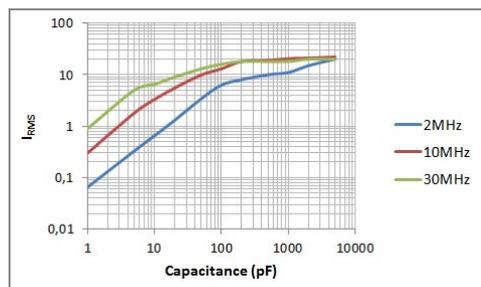
Resonant Frequency = f(CAP<sub>pF</sub>)



I<sub>RMS</sub> = f(CAP<sub>pF</sub>)



I<sub>RMS</sub> = f(CAP<sub>pF</sub>)



## DESIGN KITS

SRT-Microc ermique is widening its High Q offer and propose design Kits with

## KITS

| P/N             | DES  | RANGE          | VALUES   | TOL                                   |
|-----------------|--|----------------|--|---------------------------------------|
| 0603QXK-0R1-020 | 0603 HIGH Q 250V NISN TERMINATION<br>(15PCS PER VALUE) | 1.0pF -> 2.0pF | 0.1pF 0.2pF 0.3pF 0.4pF 0.5pF 0.6pF 0.7pF 0.8pF 0.9pF 1.0pF 1.1pF 1.2pF 1.5pF<br>1.6pF, 1.8pF, 2.0pF | ±0.1pF (B)<br>±0.25pF (C)             |
| 0603QXK-010-100 |  | 1.0pF -> 10pF  | 1.0pF 1.2pF 1.5pF 1.8pF 2.0pF 2.2pF 2.4pF 2.7pF 3.0pF 3.3pF<br>3.9pF 4.7pF 5.6pF 6.8pF 8.2pF<br>10pF | ±0.25pF (C)<br>±0.50pF (D)<br>±5% (K) |
| 0603QXK-100-101 |  | 10pF -> 100pF  | 10pF 12pF 15pF 18pF 20pF 22pF 24pF 27pF 30pF 33pF 39pF 47pF 56pF 68pF 82pF 100pF                     | ±5% (K)                               |
| 0709QXK-010-100 | 0709 HIGH Q 500V NISN TERMINATION<br>(15PCS PER VALUE) | 1.0pF -> 10pF  | 1.0pF 1.2pF 1.5pF 1.8pF 2.0pF 2.2pF 2.4pF 2.7pF 3.0pF 3.3pF<br>3.9pF 4.7pF 5.6pF 6.8pF 8.2pF<br>10pF | ±0.25pF (C)<br>±0.50pF (D)<br>±5% (K) |
| 0703QXK-100-101 |  | 10pF -> 100pF  | 10pF 12pF 15pF 18pF 20pF 22pF 24pF 27pF 30pF 33pF 39pF 47pF 56pF 68pF 82pF 100pF                     | ±5% (K)                               |

# RF DECOUPLING X7R Vertical Electrodes Capacitor

16V-100V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Filtering, decoupling in Microelectronic applications



## FEATURES

- Low Inductance Chip for Decoupling Integrated
- Circuit Able to work until 3GHz
- Wire Bondable Capacitor with Gold Termination
- Attachment Conductive Adhesive or AuSn Solder

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS:**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE:**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT:**  
± 15% with 0Vdc applied

**DISSIPATION FACTOR:**  
≤ 2.5%

**INSULATION RESISTANCE (IR):**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST:**  
Performed per method 301 MIL STD 202  
Applied test voltages  
≤ 100Vdc-rated : 250% of rated voltage

## QUICK REFERENCE DATA

|      | 0204  | 0303  | 0306  | 0404  | 0508  |
|------|-------|-------|-------|-------|-------|
| Min  | 10pF  | 10pF  | 10pF  | 10pF  | 100pF |
| 16V  | 10nF  | 15nF  | 33nF  | 22nF  | 47nF  |
| 25V  | 5.6nF | 15nF  | 33nF  | 22nF  | 47nF  |
| 50V  | 2.2nF | 10nF  | 22nF  | 15nF  | 22nF  |
| 100V | 1nF   | 6.8nF | 8.2nF | 8.2nF | 22nF  |

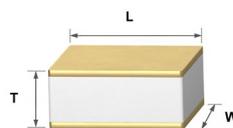
## ORDERING INFORMATION

| SREV  | 0303                                 | Y          | 103  | K                      | X   | W           | W               | -   |
|-------|--------------------------------------|------------|--|------------------------|---|-------------|-----------------|---|
| STYLE | SIZE                                 | DIELECTRIC | CAPACITANCE  | TOLERANCE              | VOLTAGE                                   | TERMINATION | PACKAGING       | SPECIAL   |
| SREV  | 0204<br>0303<br>0306<br>0404<br>0508 | Y = X7R    | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit gives the number of noughts.<br>Example : 102 = 1000pF<br><br>For special values R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | K = ± 10%<br>M = ± 20% | J = 16V<br>X = 25V<br>A = 50V<br>B = 100V | W = Gold    | W = Waffle Pack | -<br>Dxx = Reliability spec<br>Exx = Sorting spec |

## DIMENSIONS IN MILLIMETERS

| DESIGNATION   | 0204        | 0303       | 0306       | 0404       | 0508       |
|---------------|-------------|------------|------------|------------|------------|
| Length (L)    | 0.51 ± 0.05 | 0.8 ± 0.05 | 0.8 ± 0.05 | 1.02 ± 0.1 | 1.25 ± 0.1 |
| Width (W)     | 1.02 ± 0.1  | 0.8 ± 0.05 | 1.50 ± 0.1 | 1.02 ± 0.1 | 2.1 ± 0.1  |
| THICKNESS (T) | Min         | 0.45       | 0.60       | 0.65       | 0.65       |
|               | Max         | 0.15       | 0.15       | 0.15       | 0.15       |

Gold Termination > 2.5µm.

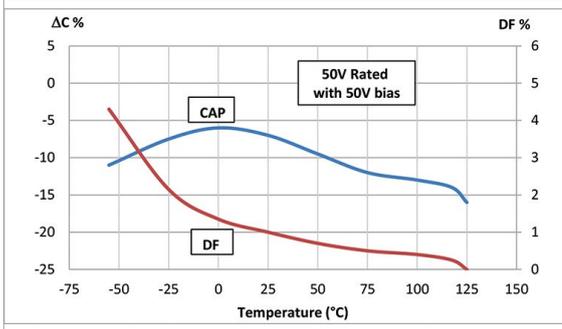


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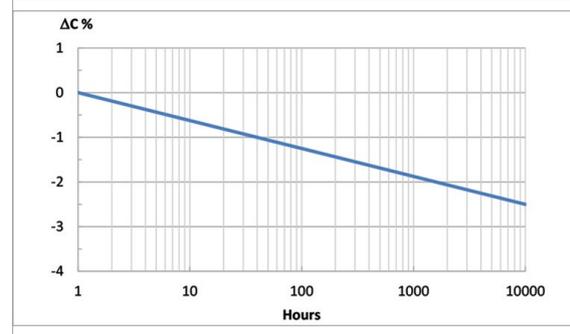


## TYPICAL CHARACTERISTICS

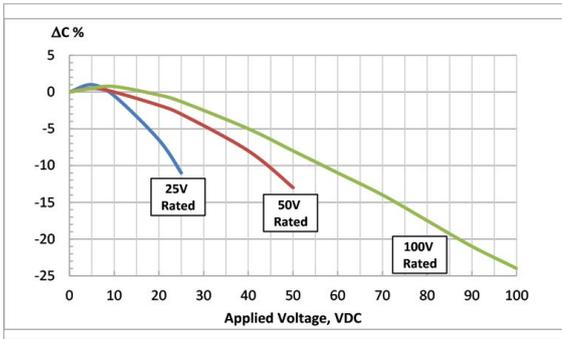
X7R Capacitance and dissipation factor vs temperature



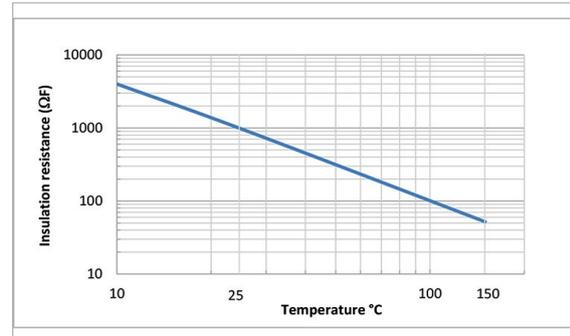
X7R Aging



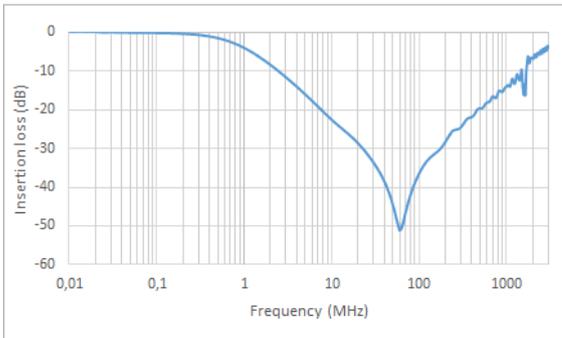
X7R Voltage coefficient of capacitance



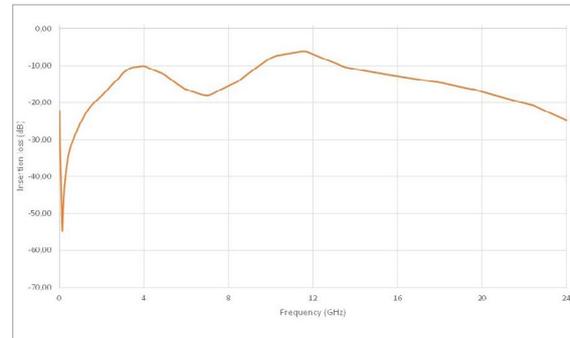
X7R Insulation resistance vs temperature



Impedance vs frequency



Impedance vs high frequency





## APPLICATIONS

- Microelectronic applications
- Wirebonding/glueing



## FEATURES

- Max 0.2µm Flash Au for Glueing (W termination)
- Min 2.5µm Thick Au for Wire Bonding/Glueing (G termination)

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
N2T : 2200 ± 350 ppm/°C  
X7R : ± 15% with 0Vdc applied

**AGING RATE :**  
X7R : 2% per decade

**Dissipation Factor :**  
NPO/N2T : ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
                  ≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 0.025 at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5Un U ≤ 200V | U + 250V 200 < U ≤ 500 | 1.5U 500 < U < 1000 | 1.2U U ≥ 1000  
for 5s with 50mA max charging current

## ORDERING INFORMATION

| 0603   | A                             | 103  | G  | B   | G                                | B                    | -   |
|--|-------------------------------|--|--|---|----------------------------------|----------------------|---|
| SIZE   | DIELECTRIC                    | CAPACITANCE  | TOLERANCE  | VOLTAGE   | TERMINATION                      | PACKAGING            | SPECIAL PARAMETERS                                |
| 0201<br>0306<br>0402<br>0504<br>0508<br>0603<br>0612<br>0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225 | A = NPO<br>P = N2T<br>Y = X7R | Expressed in picofarads (pF).<br>The first two digits are significant,<br>the third digit gives the<br>number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if < 10pF and<br>0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0.25pF<br>D = ± 0,5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | R = 6.3V<br>Q = 10V<br>J = 16V<br>X = 25V<br>A = 50V<br>U = 63V<br>B = 100V<br>C = 200V<br>P = 250V<br>E = 500V | W = Gold Flash<br>G = Gold Thick | B = Reel<br>V = Bulk | -<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us.

## QUICK REFERENCE DATA

|             | 0201   |        | 0306   |        |        | 0402   |        |        | 0504   |        |        | 0508   |        |        | 0603   |        |        | 0612   |        |        | 0805   |        |        |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|             | NPO    | X7R    | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| <b>Min</b>  | 0.1 pF | 100 pF | 0.1 pF | 0.3 pF | 2.2 pF | 0.1 pF | 0.3 pF | 2.2 pF | 0.1 pF | 0.3 pF | 2.2 pF | 0.1 pF | 0.3 pF | 2.2 pF | 0.1 pF | 0.3 pF | 2.2 pF | 0.1 pF | 1.0 pF | 6.8 pF | 0.1 pF | 1.0 pF | 6.8 pF |
| <b>6.3V</b> | 1.0 nF | 33 nF  | 1.2 nF | 5.6 nF | 470 nF | 2.2 nF | 1.2 nF | 1.0 µF | 1.5 nF | 6.8 nF | 39 nF  | 3.9 nF | 15 nF  | 2.2 µF | 27 nF  | 5.6 nF | 4.7 µF | 8.2 nF | 33 nF  | 4.7 µF | 47 nF  | 15 nF  | 10 µF  |
| <b>10V</b>  | 1.0 nF | 33 nF  | 1.2 nF | 5.6 nF | 470 nF | 2.2 nF | 1.2 nF | 470 nF | 1.5 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 2.2 µF | 27 nF  | 5.6 nF | 4.7 µF | 8.2 nF | 33 nF  | 2.2 µF | 47 nF  | 15 nF  | 10 µF  |
| <b>16V</b>  | 1.0 nF | 33 nF  | 1.2 nF | 5.6 nF | 470 nF | 2.2 nF | 1.2 nF | 220 nF | 1.5 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 2.2 µF | 27 nF  | 5.6 nF | 2.2 µF | 8.2 nF | 33 nF  | 1.0 µF | 47 nF  | 15 nF  | 10 µF  |
| <b>25V</b>  | 1.0 nF | 10 nF  | 1.2 nF | 5.6 nF | 33 nF  | 2.2 nF | 1.2 nF | 220 nF | 1.5 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 2.2 µF | 27 nF  | 5.6 nF | 1.0 µF | 8.2 nF | 33 nF  | 470 nF | 47 nF  | 15 nF  | 4.7 µF |
| <b>50V</b>  | 220 pF | 1.5 nF | 1.2 nF | 4.7 nF | 33 nF  | 1.5 nF | 1.2 nF | 100 nF | 1.5 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 100 nF | 10 nF  | 5.6 nF | 1.0 µF | 8.2 nF | 33 nF  | 220 nF | 47 nF  | 15 nF  | 4.7 µF |
| <b>63V</b>  | 100 pF |        | 1.2 nF | 4.7 nF | 33 nF  | 1.0 nF | 1.2 nF | 12 nF  | 1.5 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 100 nF | 10 nF  | 5.6 nF | 100 nF | 8.2 nF | 33 nF  | 220 nF | 33 nF  | 15 nF  | 1.0 µF |
| <b>100V</b> | 100 pF |        | 1.2 nF | 4.7 nF | 33 nF  | 1.0 nF | 1.2 nF | 10 nF  | 1.5 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 100 nF | 10 nF  | 5.6 nF | 100 nF | 8.2 nF | 33 nF  | 220 nF | 33 nF  | 15 nF  | 1.0 µF |
| <b>200V</b> |        |        | 1.2 nF | 4.7 nF | 33 nF  | 330 pF | 1.0 nF | 6.8 nF | 1.2 nF | 5.6 nF | 39 nF  | 3.9 nF | 15 nF  | 100 nF | 2.2 nF | 5.6 nF | 39 nF  | 8.2 nF | 33 nF  | 220 nF | 10 nF  | 15 nF  | 470 nF |
| <b>250V</b> |        |        | 1.2 nF | 4.7 nF | 27 nF  | 330 pF | 1.0 nF | 5.6 nF | 1.2 nF | 5.6 nF | 33 nF  | 3.9 nF | 15 nF  | 82 nF  | 2.2 nF | 5.6 nF | 27 nF  | 8.2 nF | 33 nF  | 180 nF | 10 nF  | 15 nF  | 82 nF  |
| <b>500V</b> |        |        | 820 pF | 2.2 nF | 5.6 nF | 180 pF | 470 pF | 1.2 nF | 1.0 nF | 2.7 nF | 6.8 nF | 3.3 nF | 10 nF  | 39 nF  | 1.0 nF | 2.7 nF | 6.8 nF | 8.2 nF | 22 nF  | 82 nF  | 3.3 nF | 10 nF  | 33 nF  |

Max values italic obtained with BME parts



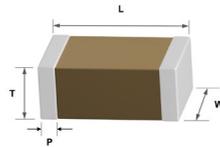
## QUICK REFERENCE DATA

|             | 1206          |        |               | 1210          |        |               | 1808   |        |        | 1812   |        |               | 1825          |        |               | 2220   |        |               | 2225   |        |               |
|-------------|---------------|--------|---------------|---------------|--------|---------------|--------|--------|--------|--------|--------|---------------|---------------|--------|---------------|--------|--------|---------------|--------|--------|---------------|
|             | NPO           | N2T    | X7R           | NPO           | N2T    | X7R           | NPO    | N2T    | X7R    | NPO    | N2T    | X7R           | NPO           | N2T    | X7R           | NPO    | N2T    | X7R           | NPO    | N2T    | X7R           |
| <b>Min</b>  | 0.4 pF        | 4.7 pF | 10 pF         | 0.4 pF        | 4.7 pF | 10 pF         | 1.0 pF | 4.7 pF | 10 pF  | 1.0 pF | 4.7 pF | 10 pF         | 1.0 pF        | 10 pF  | 33 pF         | 1.0 pF | 10 pF  | 33 pF         | 1.0 pF | 10 pF  | 33 pF         |
| <b>6.3V</b> | <i>220 nF</i> | 39 nF  | <i>22 μF</i>  | <i>220 nF</i> | 68 nF  | <i>47 μF</i>  | 22 nF  | 82 nF  | 470 nF | 220 nF | 120 nF | <i>22 μF</i>  | <i>100 nF</i> | 270 nF | <i>10 μF</i>  | 470 nF | 330 nF | <i>47 μF</i>  | 100 nF | 390 nF | <i>10 μF</i>  |
| <b>10V</b>  | <i>220 nF</i> | 39 nF  | <i>22 μF</i>  | <i>220 nF</i> | 68 nF  | <i>47 μF</i>  | 22 nF  | 82 nF  | 470 nF | 220 nF | 120 nF | <i>22 μF</i>  | <i>100 nF</i> | 270 nF | <i>10 μF</i>  | 470 nF | 330 nF | <i>47 μF</i>  | 100 nF | 390 nF | <i>10 μF</i>  |
| <b>16V</b>  | <i>220 nF</i> | 39 nF  | <i>22 μF</i>  | <i>220 nF</i> | 68 nF  | <i>22 μF</i>  | 22 nF  | 82 nF  | 470 nF | 220 nF | 120 nF | <i>22 μF</i>  | <i>100 nF</i> | 270 nF | <i>10 μF</i>  | 470 nF | 330 nF | <i>47 μF</i>  | 100 nF | 390 nF | <i>10 μF</i>  |
| <b>25V</b>  | <i>220 nF</i> | 39 nF  | <i>10 μF</i>  | <i>220 nF</i> | 68 nF  | <i>22 μF</i>  | 22 nF  | 82 nF  | 470 nF | 220 nF | 120 nF | <i>22 μF</i>  | <i>100 nF</i> | 270 nF | <i>10 μF</i>  | 470 nF | 330 nF | <i>47 μF</i>  | 100 nF | 390 nF | <i>10 μF</i>  |
| <b>50V</b>  | <i>220 nF</i> | 39 nF  | <i>10 μF</i>  | <i>150 nF</i> | 68 nF  | <i>22 μF</i>  | 22 nF  | 82 nF  | 470 nF | 220 nF | 120 nF | <i>6.8 μF</i> | <i>100 nF</i> | 270 nF | <i>10 μF</i>  | 470 nF | 330 nF | <i>47 μF</i>  | 100 nF | 390 nF | <i>10 μF</i>  |
| <b>63V</b>  | <i>100 nF</i> | 39 nF  | <i>2.2 μF</i> | <i>100 nF</i> | 68 nF  | <i>10 μF</i>  | 22 nF  | 82 nF  | 470 nF | 150 nF | 120 nF | <i>4.7 μF</i> | <i>100 nF</i> | 270 nF | <i>10 μF</i>  | 330 nF | 330 nF | <i>22 μF</i>  | 100 nF | 390 nF | <i>10 μF</i>  |
| <b>100V</b> | <i>100 nF</i> | 39 nF  | <i>2.2 μF</i> | <i>100 nF</i> | 68 nF  | <i>10 μF</i>  | 22 nF  | 82 nF  | 470 nF | 150 nF | 120 nF | <i>4.7 μF</i> | <i>100 nF</i> | 270 nF | <i>10 μF</i>  | 330 nF | 330 nF | <i>22 μF</i>  | 100 nF | 390 nF | <i>10 μF</i>  |
| <b>200V</b> | <i>22 nF</i>  | 39 nF  | <i>220 nF</i> | <i>47 nF</i>  | 68 nF  | <i>1.0 μF</i> | 22 nF  | 82 nF  | 470 nF | 100 nF | 120 nF | <i>1.0 μF</i> | 82 nF         | 270 nF | <i>2.2 μF</i> | 150 nF | 330 nF | <i>2.2 μF</i> | 100 nF | 390 nF | <i>2.7 μF</i> |
| <b>250V</b> | <i>22 nF</i>  | 39 nF  | <i>220 nF</i> | <i>47 nF</i>  | 68 nF  | <i>680 nF</i> | 22 nF  | 82 nF  | 470 nF | 100 nF | 120 nF | <i>1.0 μF</i> | 82 nF         | 270 nF | 1.8 μF        | 150 nF | 330 nF | <i>2.2 μF</i> | 100 nF | 390 nF | <i>2.7 μF</i> |
| <b>500V</b> | 8.2 nF        | 27 nF  | 82 nF         | 15 nF         | 47 nF  | 180 nF        | 18 nF  | 56 nF  | 220 nF | 33 nF  | 100 nF | <i>470 nF</i> | 68 nF         | 220 nF | 820 nF        | 68 nF  | 220 nF | <i>1.0 μF</i> | 82 nF  | 270 nF | 1.0 μF        |

Max values italic obtained with BME parts

## DIMENSIONS IN MILLIMETERS

|                  | 0201        | 0306       | 0402       | 0504       | 0508       | 0603       | 0612       | 0805       | 1206       | 1210       | 1808       | 1812       | 1825       | 2220       | 2225       |
|------------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Length (L)       | 0.60 ± 0.03 | 0.80 ± 0.1 | 1.00 ± 0.1 | 1.25 ± 0.1 | 1.30 ± 0.2 | 1.60 ± 0.2 | 1.60 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 3.20 ± 0.2 | 4.50 ± 0.2 | 4.50 ± 0.2 | 4.50 ± 0.3 | 5.60 ± 0.4 | 5.60 ± 0.4 |
| Width (W)        | 0.30 ± 0.03 | 1.60 ± 0.1 | 0.50 ± 0.1 | 1.00 ± 0.1 | 2.00 ± 0.2 | 0.80 ± 0.2 | 3.20 ± 0.2 | 1.25 ± 0.2 | 1.60 ± 0.2 | 2.50 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 6.35 ± 0.3 | 5.10 ± 0.4 | 6.35 ± 0.4 |
| Thickness max(T) | 0.35        | 0.92       | 0.60       | 1.00       | 2.00       | 0.92       | 3.00       | 1.40       | 1.70       | 2.50       | 2.10       | 3.30       | 3.60       | 4.10       | 4.10       |
| Termination (P)  | Min         | 0.10       | 0.10       | 0.10       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       | 0.25       |
|                  | Max         | 0.20       | 0.30       | 0.30       | 0.30       | 0.40       | 0.40       | 0.70       | 0.70       | 0.80       | 0.80       | 0.80       | 0.80       | 0.80       | 1.00       |





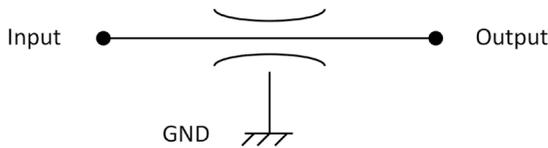
## APPLICATIONS

Our FeedThru Capacitors provide better EMI performance than SMD components due to lower inductance, which results in broader frequency response for :

- Low speed signal lines
- Medium current power lines
- RF Immunity filter and amplifier gain filter



## EQUIVALENT CIRCUIT



## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
X7R : ± 15% with 0Vdc applied

**AGING RATE :**  
X7R : 2% per decade

**Dissipation Factor :**  
NPO :  $\leq 1.10^{-3}$  at 1Vrms and 1MHz for values  $\leq 1000\text{pF}$   
 $\leq 1.10^{-3}$  at 1Vrms and 1KHz for values  $> 1000\text{pF}$   
X7R :  $\leq 0.025$  at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un  $10^5$  MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un  $10^4$  MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5Un  $U \leq 200\text{V}$  |  $U + 250\text{V}$   $200 < U \leq 500$  | 1.5U  $500 < U < 1000$  | 1.2U  $U \geq 1000$   
for 5s with 50mA max charging current

## QUICK REFERENCE DATA

|       | 0603  |       | 0805  |       | 1206  |       | 1806  |       | 1812  |       | 2220  |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       | NPO | X7R | NPO | X7R | NPO | X7R | NPO | X7R | NPO | X7R | NPO | X7R   |
| MIN   | 1pF   | 47pF  | 10pF  | 100pF | 22pF  | 220pF | 22pF  | 220pF | 100pF | 1nF   | 100pF | 1nF   |
| 50V   | 270pF | 6.8nF | 1.5nF | 47nF  | 3.3nF | 150nF | 5.6nF | 220nF | 18nF  | 680nF | 33nF  | 1.5µF |
| 100V  | 270pF | 5.6nF | 1.5nF | 47nF  | 3.3nF | 100nF | 4.7nF | 150nF | 15nF  | 470nF | 33nF  | 1µF   |
| 200V  | 220pF | 2.7nF | 1nF   | 22nF  | 2.7nF | 56nF  | 3.9nF | 68nF  | 12nF  | 270nF | 27nF  | 620nF |
| 500V  | 47pF  | 750pF | 390pF | 3.9nF | 1nF   | 10nF  | 1.5nF | 18nF  | 6.8nF | 100nF | 15nF  | 270nF |
| 1000V |       |       | 120pF | 1.8nF | 390pF | 5.6nF | 560pF | 6.8nF | 3.3nF | 47nF  | 10nF  | 150nF |

|         |     | ORDERING | 0603  | 0805  | 1206  | 1806  | 1812 | 2220 |
|---------|-----|----------|-------|-------|-------|-------|------|------|
| CURRENT | NPO | -        | 1A    | 2A    | 2A    | 2A    | 3A   | 6A   |
|         | X7R | 1        | 500mA | 500mA | 500mA | 500mA | 3A   | 6A   |
|         |     | 2        | 1A    | 2A    | 2A    | 2A    | /    | /    |

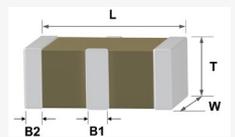
## ORDERING INFORMATION

| SERIES | SIZE   | DIELECTRIC         | CAPACITANCE  | TOLERANCE                          | VOLTAGE  | TERMINATION  | CURRENT     | PACKAGING            | SPECIAL PARAMETERS   |
|--------|--|--------------------|--|------------------------------------|--|--|-------------|----------------------|--|
| MCF    | 0603<br>0805<br>1206<br>1806<br>1812<br>2220 | A = NPO<br>Y = X7R | Expressed in picofarads (pF).<br>The first two digits are significant,<br>the third digit give the number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | J = ± 5%<br>K = ± 10%<br>M = ± 20% | A = 50V<br>B = 100V<br>C = 200V<br>E = 500V<br>G = 1000V | X = Nickel Tin<br>F = Palladium-Silver<br>P = Polymer Tin (Flex)<br>C = Copper Tin (Non magnetic)<br>W = Nickel Gold | -<br>1<br>2 | B = Reel<br>V = Bulk | -<br>Dxx = Reliability spec<br>Exx = Sorting spec<br>T21 = Special B1 parameters |

For other sizes contact us

## DIMENSIONS (In millimeters)

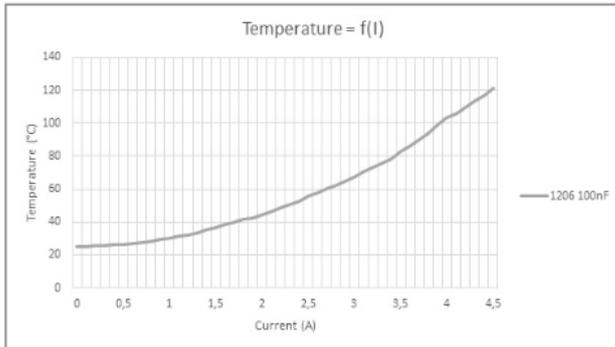
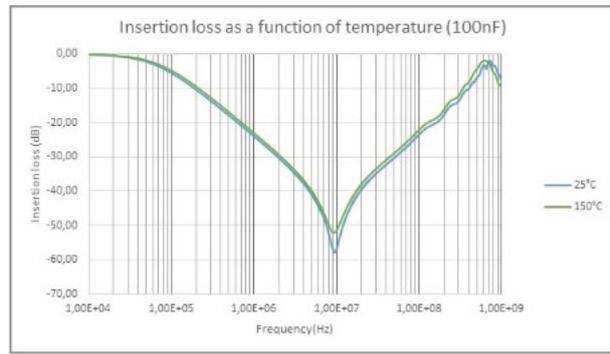
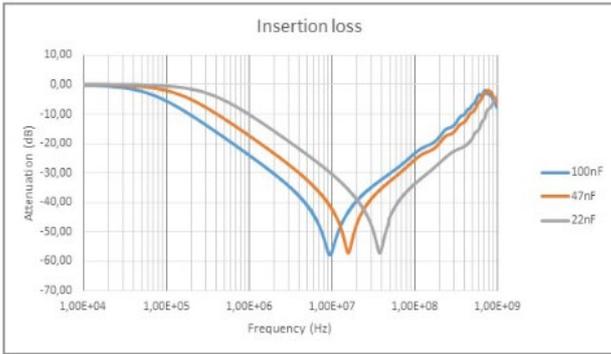
|               |        | 0603       | 0805       | 1206       | 1806       | 1812       | 2220       |
|---------------|--------|------------|------------|------------|------------|------------|------------|
| Length (L)    |        | 1.60 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 4.50 ± 0.3 | 4.50 ± 0.3 | 5.70 ± 0.4 |
| Width (W)     |        | 0.80 ± 0.1 | 1.25 ± 0.2 | 1.60 ± 0.2 | 1.60 ± 0.3 | 3.20 ± 0.2 | 5.00 ± 0.4 |
| Thickness (T) | Max    | 0.9        | 1.25       | 1.60       | 1.60       | 3.20       | 4.00       |
|               | B1 Min | 0.30       | 0.50       | 0.40       | 0.70       | 1.10       | 1.10       |
| Termination   | B1 Max | 0.60       | 0.80       | 0.8        | 1.10       | 1.50       | 1.50       |
|               | B2 Min | 0.15       | 0.15       | 0.15       | 0.15       | 0.15       | 0.15       |
|               | B2 Max | 0.30       | 0.60       | 0.60       | 0.70       | 0.70       | 0.70       |
|               |        |            |            |            |            |            |            |



For P termination (Polymer type) add 0.10mm to Length (L) and 0.05 to Width (W) of the chip.

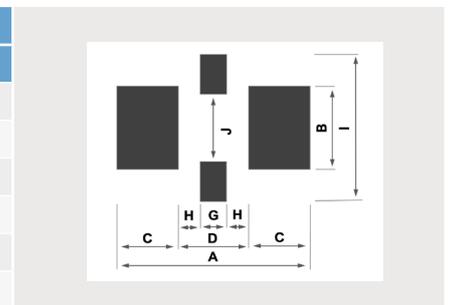
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## TYPICAL CHARACTERISTICS



## TYPICAL FILTER FOOTPRINT REFLOW SOLDERING

| SIZE | FOOTPRINT DIMENSIONS IN mm |      |      |      |      |      |      |      |
|------|----------------------------|------|------|------|------|------|------|------|
|      | A                          | B    | C    | D    | G    | H    | I    | J    |
| 0603 | 2.30                       | 1.00 | 0.55 | 1.20 | 0.60 | 0.30 | 1.40 | 0.60 |
| 0805 | 2.90                       | 1.45 | 0.70 | 1.50 | 0.80 | 0.35 | 1.85 | 1.05 |
| 1206 | 4.10                       | 1.80 | 0.95 | 2.20 | 1.00 | 0.60 | 2.20 | 1.40 |
| 1806 | 5.50                       | 1.80 | 1.15 | 3.20 | 1.50 | 0.85 | 2.20 | 1.40 |
| 1812 | 5.50                       | 3.40 | 1.15 | 3.20 | 1.50 | 0.85 | 3.90 | 3.00 |
| 2220 | 6.80                       | 5.40 | 1.25 | 4.30 | 2.00 | 1.15 | 7.20 | 5.00 |



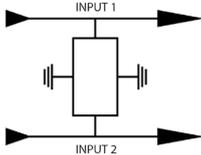
## APPLICATIONS

- Flexible Quadripole Capacitor for filtering and decoupling

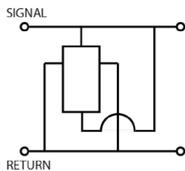


## EQUIVALENT CIRCUIT

- Filtering



- Decoupling



## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
X7R : ± 15% with 0Vdc applied

**AGING RATE :**  
X7R : 2% per decade

**Dissipation Factor :**  
NPO :  $\leq 1.10^{-3}$  at 1Vrms and 1MHz for values  $\leq 1000\text{pF}$   
 $\leq 1.10^{-3}$  at 1Vrms and 1KHz for values  $> 1000\text{pF}$   
X7R :  $\leq 0.025$  at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un  $10^5$  MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un  $10^4$  MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
 $2.5U_n U \leq 200V \mid U + 250V \ 200 < U \leq 500$  for 5s with 50mA max charging current

## QUICK REFERENCE DATA

|      | 0603  |       | 0805  |       | 1206  |       | 1812  |       | 2220  |       |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      | NPO | X7R | NPO | X7R | NPO | X7R | NPO | X7R | NPO | X7R   |
| MIN  | 1pF   | 47pF  | 1pF   | 100pF | 10pF  | 220pF | 100pF | 470pF | 100pF | 470pF |
| 50V  | 120pF | 8.2nF | 1.2nF | 47nF  | 2.2nF | 220nF | 10nF  | 470nF | 22nF  | 1µF   |
| 100V | 120pF | 6.2nF | 1nF   | 39nF  | 1.8nF | 100nF | 6.8nF | 330nF | 18nF  | 750nF |
| 200V | 100pF | 3.3nF | 1nF   | 27nF  | 1.5nF | 47nF  | 6.8nF | 220nF | 18nF  | 560nF |
| 500V | 27pF  | 680pF | 220pF | 7.5nF | 470pF | 12nF  | 3.3nF | 100nF | 10nF  | 270nF |

## ORDERING INFORMATION

| M2F    | 0805   | Y                  | 103   | K                                  | A   | X  | B                    |   |
|--------|--|--------------------|---|------------------------------------|---|--|----------------------|---|
| SERIES | SIZE   | DIELECTRIC         | CAPACITANCE   | TOLERANCE                          | VOLTAGE                                     | TERMINATION  | PACKAGING            | SPECIAL PARAMETERS                                |
| M2F    | 0603<br>0805<br>1206<br>1806<br>1812<br>2220 | A = NPO<br>Y = X7R | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit give the number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | J = ± 5%<br>K = ± 10%<br>M = ± 20% | A = 50V<br>B = 100V<br>C = 200V<br>E = 500V | X = Nickel Tin<br>F = Palladium-Silver<br>P = Polymer Tin (Flex)<br>C = Copper Tin (Non magnetic)<br>W = Nickel Gold | B = Reel<br>V = Bulk | -<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes contact us

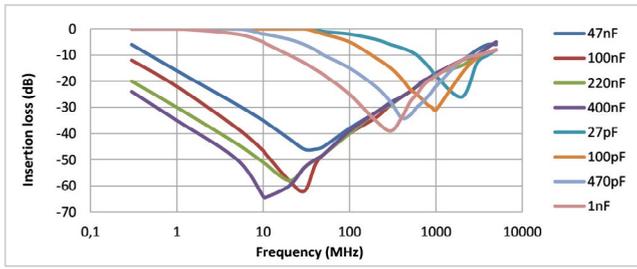
## DIMENSIONS (In millimeters)

|               |        | 0603       | 0805       | 1206       | 1812       | 2220       |  |
|---------------|--------|------------|------------|------------|------------|------------|--|
| Length (L)    |        | 1.60 ± 0.2 | 2.00 ± 0.2 | 3.20 ± 0.2 | 4.50 ± 0.3 | 5.70 ± 0.4 |  |
| Width (W)     |        | 0.80 ± 0.1 | 1.25 ± 0.2 | 1.60 ± 0.2 | 3.20 ± 0.2 | 5.00 ± 0.4 |  |
| Thickness (T) | Max    | 0.9        | 1.25       | 1.60       | 3.20       | 4.00       |  |
| Termination   | B1 Min | 0.30       | 0.50       | 0.70       | 1.10       | 1.10       |  |
|               | B1 Max | 0.60       | 0.80       | 1.10       | 1.50       | 1.50       |  |
|               | B2 Min | 0.15       | 0.15       | 0.15       | 0.15       | 0.15       |  |
|               | B2 Max | 0.30       | 0.60       | 0.60       | 0.70       | 0.70       |  |

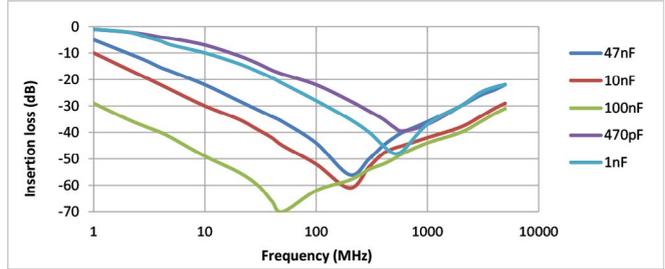
For P termination (Polymer type) add 0.10mm to Length (L) and 0.05 to Width (W) of the chip.

## TYPICAL CHARACTERISTICS

Filtering

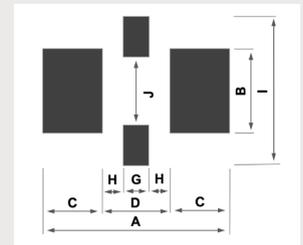


Decoupling



## TYPICAL FILTER FOOTPRINT REFLOW SOLDERING

| SIZE | FOOTPRINT DIMENSIONS IN mm |      |      |      |      |      |      |      |
|------|----------------------------|------|------|------|------|------|------|------|
|      | A                          | B    | C    | D    | G    | H    | I    | J    |
| 0603 | 2.30                       | 1.00 | 0.55 | 1.20 | 0.60 | 0.30 | 1.40 | 0.60 |
| 0805 | 2.90                       | 1.45 | 0.70 | 1.50 | 0.80 | 0.35 | 1.85 | 1.05 |
| 1206 | 4.10                       | 1.80 | 0.95 | 2.20 | 1.00 | 0.60 | 2.20 | 1.40 |
| 1806 | 5.50                       | 1.80 | 1.15 | 3.20 | 1.50 | 0.85 | 2.20 | 1.40 |
| 1812 | 5.50                       | 3.40 | 1.15 | 3.20 | 1.50 | 0.85 | 3.90 | 3.00 |
| 2220 | 6.80                       | 5.40 | 1.25 | 4.30 | 2.00 | 1.15 | 7.20 | 5.00 |



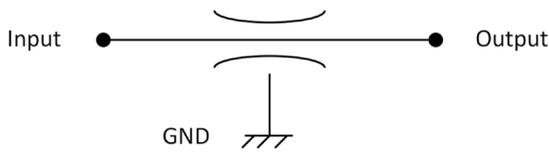


### APPLICATIONS

Noise suppression in power lines for High Current Applications



### EQUIVALENT CIRCUIT



### ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
X7R : ± 15% with 0Vdc applied

**AGING RATE :**  
X7R : 2% per decade

**Dissipation Factor :**  
NPO :  $\leq 1.10^{-3}$  at 1Vrms and 1MHz for values  $\leq 1000\text{pF}$   
 $\leq 1.10^{-3}$  at 1Vrms and 1KHz for values  $> 1000\text{pF}$   
X7R :  $\leq 0.025$  at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un  $10^5$  MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un  $10^4$  MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
 $2.5U_n U \leq 200V \mid U + 250V \ 200 < U \leq 500$  for 5s with 50mA max charging current

### QUICK REFERENCE DATA (Max capacitance)

|                    | 1812  |        | 2220  |         |
|--------------------|-------|--------|-------|---------|
|                    | NPO   | X7R    | NPO   | X7R     |
| <b>MAX CURRENT</b> | 10A   | 2A-10A | 20A   | 10A-20A |
| <b>MIN</b>         | 100pF | 1nF    | 100pF | 1nF     |
| <b>50V</b>         | 10nF  | 220nF  | 22nF  | 470nF   |
| <b>100V</b>        | 10nF  | 150nF  | 22nF  | 330 nF  |
| <b>200V</b>        | 10nF  | 68nF   | 22nF  | 150nF   |
| <b>500V</b>        | 5.6nF | 47nF   | 10nF  | 68nF    |

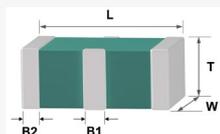
### ORDERING INFORMATION

| MPF    | 0805         | Y                  | 103   | K                      | A   | X  | B                    | SPECIAL PARAMETERS                                |
|--------|--------------|--------------------|---|------------------------|---|--|----------------------|---|
| SERIES | SIZE         | DIELECTRIC         | CAPACITANCE   | TOLERANCE              | VOLTAGE                                     | TERMINATION  | PACKAGING            |   |
| MPF    | 1812<br>2220 | A = NPO<br>Y = X7R | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit give the number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | K = ± 10%<br>M = ± 20% | A = 50V<br>B = 100V<br>C = 200V<br>E = 500V | X = Nickel Tin<br>F = Palladium-Silver<br>P = Polymer Tin (Flex)<br>C = Copper Tin (Non magnetic)<br>W = Nickel Gold | B = Reel<br>V = Bulk | -<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes contact us

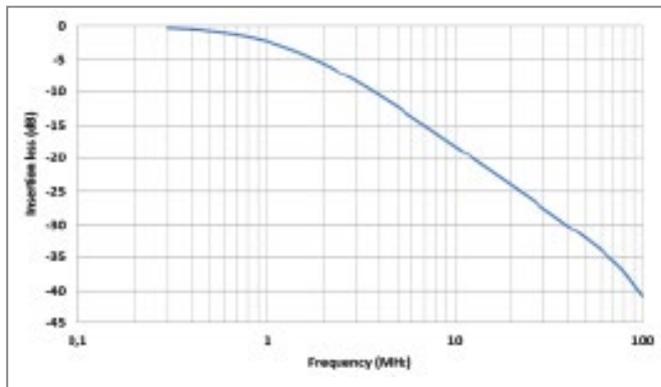
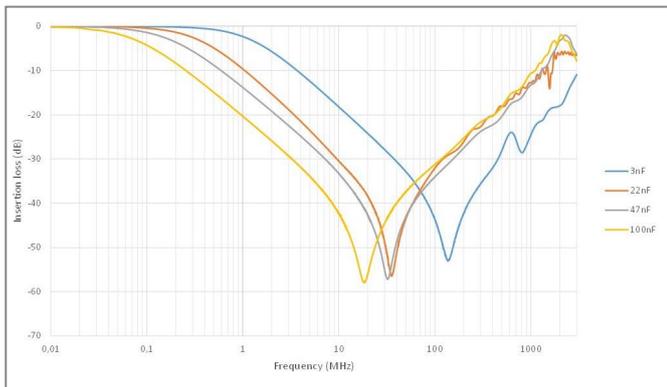
### DIMENSIONS (In millimeters)

|               |        | 1812       | 2220       |
|---------------|--------|------------|------------|
| Length (L)    |        | 4.50 ± 0.3 | 5.70 ± 0.4 |
| Width (W)     |        | 3.20 ± 0.2 | 5.00 ± 0.4 |
| Thickness (T) | MAX    | 3.20       | 4.00       |
| Termination   | B1 Min | 1.10       | 1.10       |
|               | B1 Max | 1.50       | 1.50       |
|               | B2 Min | 0.15       | 0.15       |
|               | B2 Max | 0.70       | 0.70       |



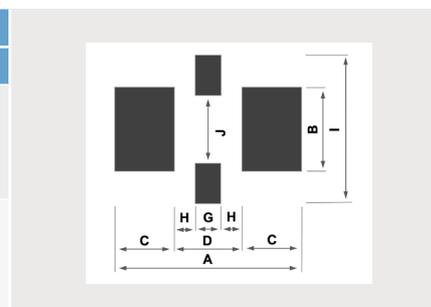
For P termination (Polymer type) add 0.10mm to Length (L) and 0.05 to Width (W) of the chip.

## TYPICAL CHARACTERISTICS



## TYPICAL FILTER FOOTPRINT REFLOW SOLDERING

| SIZE | FOOTPRINT DIMENSIONS IN mm |      |      |      |      |      |      |      |
|------|----------------------------|------|------|------|------|------|------|------|
|      | A                          | B    | C    | D    | G    | H    | I    | J    |
| 1812 | 5.50                       | 3.40 | 1.15 | 3.20 | 1.50 | 0.85 | 3.90 | 3.00 |
| 2220 | 6.80                       | 5.40 | 1.25 | 4.30 | 2.00 | 1.15 | 7.20 | 5.00 |



# STACKED CAPACITOR High Power

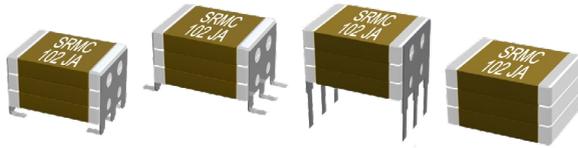
NPO N2T X7R 16-1000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Switch Mode Power Capacitor
- for Input / Output Filtering



RoHS compliant

## FEATURES

- High reliability, 100% 48 hours burn-in
- Low ESR and ESL design
- High frequency switch
- Custom designs with any size, voltage, capacity, leads...
- Marking

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
N2T : 2200 ± 350 ppm/C°  
X7R : ± 15% with 0Vdc applied

**DISSIPATION FACTOR:**  
NPO/N2T : ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
                  ≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 0.025 at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5U U≤200V | U+250V 200<U≤500 | 1.5U 500<U<1000 | 1.2U U≥1000  
for 5s with 50mA max charging current

**BURN IN :**  
Chips 24H+Stack 48H 125°C 2U U<500V | 1.5U 500≤U<1000 | 1.2U U=1000

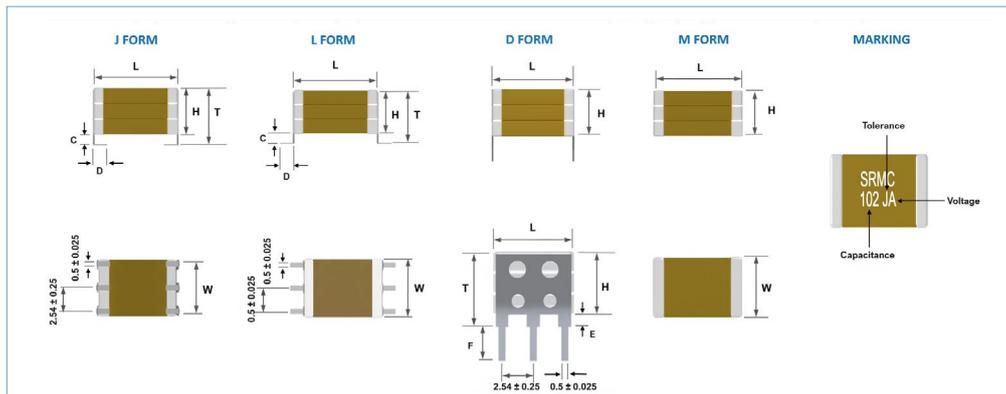
## ORDERING INFORMATION

| SRMC  | 2225   | Y   | 102  | J  | A  | -                | L                               | 100   | -   | B                    | -   |
|-------|--|---|--|--|--|------------------|---------------------------------|---|---|----------------------|---|
| SERIE | SIZE   | DIELECTRIC                                      | CAPACITANCE  | TOLERANCE  | VOLTAGE  | TERMINAISON      | FORM                            | HEIGHT (H)  | COATING   | PACKAGING            | SPECIAL   |
| SRMC  | 1210<br>1812<br>1825<br>2220<br>2225<br>2825<br>3033<br>3640<br>4040<br>40100<br>5550<br>6080<br>6560<br>6660<br>8060<br>80150 | A = NPO<br>P = N2T<br>X = BX<br>Y=X7R<br>BY=2C1 | Expressed in picofarads (pF)<br>The first two digits are significant, the third digit gives the number of noughts<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if < 10pF and<br>0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0.25pF<br>D = ± 0.5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | J = 16 V<br>X = 25 V<br>A = 50 V<br>U = 63 V<br>B = 100 V<br>C = 200 V<br>P = 250 V<br>E = 500 V<br>F = 630 V<br>G = 1KV | -<br>P : Polymer | J<br>L<br>D<br>M<br>U = 4 leads | 020<br>030<br>040<br>050<br>060<br>070<br>080<br>090<br>100<br>110<br>120<br>130<br>140<br>160<br>180 | -<br>I = Conformal Coating<br>H = Epoxy Coating | B = Reel<br>V = Bulk | -<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For J, L, M form, total height (T) is obtained by adding lead height (C/E) to specified chip height (H) in 1/10mm  
For other sizes, voltage, tolerance contact us

## DIMENSIONS J/L/D/M (In millimeters)

|                 | 1210       | 1812       | 1825       | 2220       | 2225       | 2825       | 3033       | 3640        | 4040        | 40100       | 5550        | 6080        | 6560<br>6660 | 8060        | 80150       |
|-----------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|
| Lenght (L)      | 3.80 ± 0.3 | 5.10 ± 0.4 | 5.10 ± 0.4 | 6.20 ± 0.4 | 6.20 ± 0.4 | 7.70 ± 0.4 | 8.20 ± 0.4 | 9.75 ± 0.5  | 10.80 ± 0.8 | 10.80 ± 1.0 | 14.60 ± 1.0 | 15.80 ± 1.0 | 17.40 ± 1.0  | 20.90 ± 1.0 | 20.90 ± 1.0 |
| Width (W)       | 2.50 ± 0.3 | 3.20 ± 0.4 | 6.35 ± 0.4 | 5.10 ± 0.4 | 6.35 ± 0.4 | 6.35 ± 0.4 | 8.40 ± 0.4 | 10.20 ± 0.5 | 10.20 ± 0.8 | 25.40 ± 1.0 | 12.70 ± 1.0 | 20.30 ± 1.0 | 15.20 ± 1.0  | 15.20 ± 1.0 | 38.10 ± 1.0 |
| Nb of Leads     | 2          | 2          | 3          | 3          | 3          | 3          | 3          | 4           | 4           | 10          | 5           | 8           | 6            | 6           | 15          |
| Min Height (T)  | 2.8        | 2.8        | 3.0        | 3.0        | 3.1        | 3.4        | 3.5        | 3.6         | 4.0         | 4.0         | 4.3         | 4.4         | 4.5          | 4.5         | 4.5         |
| Max Height (T)  | 7.2        | 9.6        | 16.2       | 16.2       | 16.2       | 16.9       | 20.1       | 20.1        | 20.1        | 20.1        | 20.1        | 20.1        | 20.1         | 20.1        | 20.1        |
| Lead Height (C) | 1.3 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3    | 1.8 ± 0.3   | 1.8 ± 0.3   |
| lead Lenght (D) | 1.3 ± 0.3  | 1.4 ± 0.3  | 1.6 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3    | 1.8 ± 0.3   | 1.8 ± 0.3   |
| Lead Height (E) | 1.0 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3   | 1.3 ± 0.3   | 1.3 ± 0.3   | 1.3 ± 0.3   | 1.3 ± 0.3   | 1.3 ± 0.3    | 1.3 ± 0.3   | 1.3 ± 0.3   |
| Lead Lenght (F) | 4.0 ± 1.0  | 4.0 ± 1.0  | 4.5 ± 1.0  | 5.0 ± 1.0  | 5.0 ± 1.0  | 6.0 ± 1.0  | 6.0 ± 1.0  | 6.0 ± 1.0   | 6.0 ± 1.0   | 6.0 ± 1.0   | 6.0 ± 1.0   | 6.0 ± 1.0   | 6.0 ± 1.0    | 6.0 ± 1.0   | 6.0 ± 1.0   |



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# STACKED CAPACITOR High Power

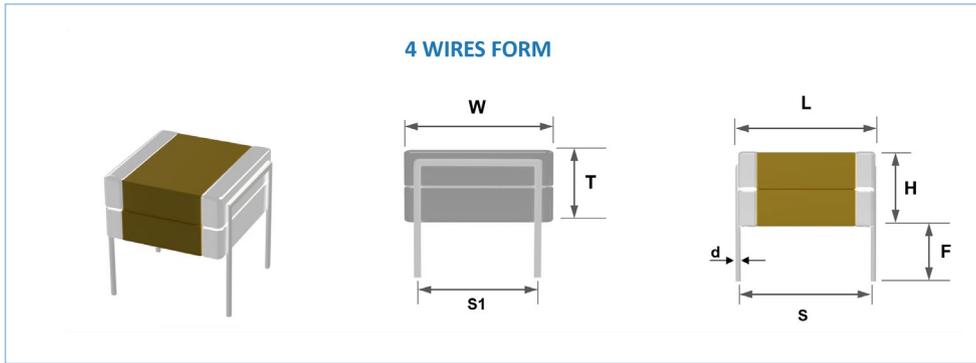
NPO N2T X7R 16-1000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## DIMENSIONS 4 WIRES (In millimeters)

|                 | 3033       | 3640        | 5550        | 5550        | 5550        | 6080        | 6080        | 6660        | 8060        | 40100       | 80150       |
|-----------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Lenght (L)      | 9.20 ± 0.5 | 11.15 ± 0.5 | 16.00 ± 0.5 | 16.00 ± 0.5 | 16.00 ± 0.5 | 17.20 ± 0.5 | 17.20 ± 0.5 | 18.80 ± 0.5 | 22.30 ± 0.5 | 12.20 ± 0.5 | 22.70 ± 0.5 |
| Width (W)       | 8.40 ± 0.5 | 10.20 ± 0.5 | 12.70 ± 0.5 | 12.70 ± 0.5 | 12.70 ± 0.5 | 20.30 ± 0.5 | 20.30 ± 0.5 | 15.20 ± 0.5 | 15.20 ± 0.5 | 25.40 ± 0.5 | 38.10 ± 0.5 |
| Lead Space (S)  | 8.40       | 10.15       | 15.00       | 15.00       | 15.00       | 16.20       | 16.20       | 17.80       | 21.30       | 11.20       | 21.50       |
| Lead Width (S1) | 5.08       | 7.62        | 7.62        | 10.16       | 15.24       | 10.16       | 15.24       | 10.16       | 10.16       | 27.94       | 30.48       |
| Nb 2.54 sp (x)  | 2          | 3           | 3           | 4           | 6           | 4           | 6           | 4           | 4           | 11          | 12          |
| Lead diam (d)   | 0.8        | 1.0         | 1.0         | 1.0         | 1.0         | 1.0         | 1.0         | 1.0         | 1.0         | 1.0         | 1.2         |
| Min Height (H)  | 6          | 6           | 6           | 6           | 6           | 6           | 6           | 6           | 6           | 4           | 6           |
| Max Height (H)  | 18         | 18          | 18          | 18          | 18          | 18          | 18          | 18          | 18          | 20.1        | 18          |
| Lead Lenght (F) | 25 ± 1.0   | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    |



## QUICK REFERENCE DATA (Max capacitance)

|             | 1210   |        |        | 1812   |        |        | 1825   |        |        | 2220   |        |        | 2225   |        |        | 2825   |        |        | Height H (1/10 mm) |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------------|
|             | NPO    | N2T    | X7R    |                    |
| <b>min</b>  | 12 nF  | 39 nF  | 150 nF | 27 nF  | 82 nF  | 330 nF | 56 nF  | 180 nF | 820 nF | 56 nF  | 180 nF | 820 nF | 68 nF  | 220 nF | 1.0 µF | 100 nF | 330 nF | 1.2 µF |                    |
| <b>16V</b>  | 220 nF | 68 nF  | 22 µF  | 220 nF | 150 nF | 15 µF  | 82 nF  | 330 nF | 2.2 µF | 470 nF | 330 nF | 10 µF  | 100 nF | 390 nF | 3.3 µF | 120 nF | 470 nF | 3.3 µF | 020                |
|             | 220 nF | 220 nF | 22 µF  | 470 nF | 470 nF | 33 µF  | 150 nF | 1.0 µF | 10 µF  | 1.0 µF | 22 µF  | 180 nF | 820 nF | 10 µF  | 270 nF | 1.0 µF | 5.6 µF | 040    |                    |
|             | 470 nF | 270 nF | 47 µF  | 680 nF | 560 nF | 68 µF  | 330 nF | 1.2 µF | 18 µF  | 1.5 µF | 47 µF  | 390 nF | 1.5 µF | 18 µF  | 390 nF | 1.5 µF | 10 µF  | 060    |                    |
|             |        |        |        |        |        |        | 390 nF | 1.8 µF | 27 µF  | 1.8 µF | 1.8 µF | 68 µF  | 470 nF | 1.8 µF | 27 µF  | 470 nF | 1.8 µF | 12 µF  | 080                |
| <b>25V</b>  | 220 nF | 68 nF  | 22 µF  | 220 nF | 150 nF | 10 µF  | 82 nF  | 330 nF | 2.2 µF | 470 nF | 330 nF | 10 µF  | 100 nF | 390 nF | 3.3 µF | 120 nF | 470 nF | 3.3 µF | 020                |
|             | 470 nF | 220 nF | 2.7 µF | 68 nF  | 470 nF | 2.7 µF | 150 nF | 1.0 µF | 5.6 µF | 180 nF | 1.0 µF | 6.8 µF | 180 nF | 820 nF | 4.7 µF | 270 nF | 1.0 µF | 5.6 µF | 040                |
|             |        | 270 nF | 2.2 µF | 150 nF | 560 nF | 3.9 µF | 330 nF | 1.2 µF | 8.2 µF | 330 nF | 1.2 µF | 8.2 µF | 390 nF | 1.5 µF | 10 µF  | 390 nF | 1.5 µF | 10 µF  | 060                |
|             |        |        |        |        |        |        | 390 nF | 1.8 µF | 12 µF  | 390 nF | 1.8 µF | 12 µF  | 470 nF | 1.8 µF | 12 µF  | 470 nF | 1.8 µF | 12 µF  | 080                |
| <b>50V</b>  | 150 nF | 68 nF  | 10 µF  | 220 nF | 150 nF | 2.2 µF | 82 nF  | 330 nF | 2.2 µF | 470 nF | 330 nF | 4.7 µF | 100 nF | 390 nF | 3.3 µF | 120 nF | 470 nF | 3.3 µF | 020                |
|             | 56 nF  | 220 nF | 1.2 µF | 68 nF  | 470 nF | 2.7 µF | 150 nF | 1.0 µF | 5.6 µF | 180 nF | 1.0 µF | 6.8 µF | 180 nF | 820 nF | 4.7 µF | 270 nF | 1.0 µF | 5.6 µF | 040                |
|             | 68 nF  | 270 nF | 2.2 µF | 150 nF | 560 nF | 3.9 µF | 330 nF | 1.2 µF | 8.2 µF | 330 nF | 1.2 µF | 8.2 µF | 390 nF | 1.5 µF | 10 µF  | 390 nF | 1.5 µF | 10 µF  | 060                |
|             |        |        |        |        |        |        | 390 nF | 1.8 µF | 12 µF  | 390 nF | 1.8 µF | 12 µF  | 470 nF | 1.8 µF | 12 µF  | 470 nF | 1.8 µF | 12 µF  | 080                |
| <b>100V</b> | 100 nF | 68 nF  | 4.7 µF | 150 nF | 150 nF | 1.0 µF | 82 nF  | 330 nF | 2.2 µF | 330 nF | 330 nF | 3.3 µF | 100 nF | 390 nF | 3.3 µF | 120 nF | 470 nF | 3.3 µF | 020                |
|             | 56 nF  | 220 nF | 1.2 µF | 68 nF  | 470 nF | 2.7 µF | 150 nF | 1.0 µF | 5.6 µF | 180 nF | 1.0 µF | 6.8 µF | 180 nF | 820 nF | 4.7 µF | 270 nF | 1.0 µF | 5.6 µF | 040                |
|             | 68 nF  | 270 nF | 2.2 µF | 150 nF | 560 nF | 3.9 µF | 330 nF | 1.2 µF | 8.2 µF | 330 nF | 1.2 µF | 8.2 µF | 390 nF | 1.5 µF | 10 µF  | 390 nF | 1.5 µF | 10 µF  | 060                |
|             |        |        |        |        |        |        | 390 nF | 1.8 µF | 12 µF  | 390 nF | 1.8 µF | 12 µF  | 470 nF | 1.8 µF | 12 µF  | 470 nF | 1.8 µF | 12 µF  | 080                |
| <b>250V</b> | 18 nF  | 68 nF  | 390 nF | 39 nF  | 150 nF | 820 nF | 82 nF  | 330 nF | 1.8 µF | 82 nF  | 330 nF | 1.8 µF | 100 nF | 390 nF | 2.2 µF | 120 nF | 470 nF | 2.7 µF | 020                |
|             | 33 nF  | 220 nF | 1.2 µF | 68 nF  | 270 nF | 1.5 µF | 150 nF | 680 nF | 3.3 µF | 180 nF | 680 nF | 3.9 µF | 180 nF | 820 nF | 4.7 µF | 270 nF | 1.0 µF | 5.6 µF | 040                |
|             | 68 nF  | 270 nF | 1.5 µF | 150 nF | 560 nF | 3.3 µF | 330 nF | 1.2 µF | 6.8 µF | 330 nF | 1.2 µF | 6.8 µF | 390 nF | 1.5 µF | 10 µF  | 390 nF | 1.5 µF | 10 µF  | 060                |
|             |        |        |        |        |        |        | 390 nF | 1.5 µF | 8.2 µF | 390 nF | 1.8 µF | 10 µF  | 470 nF | 1.8 µF | 12 µF  | 470 nF | 1.8 µF | 12 µF  | 080                |
| <b>500V</b> | 15 nF  | 39 nF  | 180 nF | 33 nF  | 82 nF  | 390 nF | 68 nF  | 180 nF | 820 nF | 82 nF  | 220 nF | 820 nF | 100 nF | 270 nF | 1.0 µF | 120 nF | 330 nF | 1.2 µF | 020                |
|             | 33 nF  | 82 nF  | 390 nF | 68 nF  | 180 nF | 390 nF | 150 nF | 390 nF | 820 nF | 150 nF | 390 nF | 820 nF | 180 nF | 470 nF | 1.0 µF | 220 nF | 680 nF | 1.2 µF | 040                |
|             | 68 nF  | 120 nF | 560 nF | 100 nF | 270 nF | 820 nF | 220 nF | 560 nF | 1.8 µF | 220 nF | 560 nF | 1.8 µF | 270 nF | 820 nF | 2.2 µF | 390 nF | 1.0 µF | 2.7 µF | 060                |
|             |        |        |        |        |        |        | 390 nF | 820 nF | 2.7 µF | 390 nF | 820 nF | 2.7 µF | 470 nF | 1.0 µF | 3.3 µF | 470 nF | 1.2 µF | 3.9 µF | 080                |
|             |        |        |        |        |        | 470 nF | 1.0 µF | 4.7 µF | 470 nF | 1.0 µF | 3.3 µF | 560 nF | 1.2 µF | 6.8 µF | 560 nF | 1.5 µF | 5.6 µF | 100    |                    |
|             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 8.2 µF | 140                |

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# STACKED CAPACITOR High Power

NPO N2T X7R 16-1000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## QUICK REFERENCE DATA (Max capacitance)

|              | 3033   |        |        | 3640          |        |        | 4040   |        |        | 40100  |        |        | 5550   |        |        | 6080   |        |        | Height H<br>(1/10 mm) |
|--------------|--------|--------|--------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------------|
|              | NPO    | N2T    | X7R    | NPO           | N2T    | X7R    | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    |                       |
| <b>min</b>   | 39 nF  | 120 nF | 270 nF | 56 nF         | 150 nF | 390 nF | 56 nF  | 180 nF | 470 nF | 150 nF | 470 nF | 1.2 µF | 100 nF | 330 nF | 820 nF | 180 nF | 560 nF | 1.5 µF |                       |
| <b>100V</b>  | 180 nF | 680 nF | 3.9 µF | <i>330 nF</i> | 1.0 µF | 5.6 µF | 270 nF | 1.0 µF | 6.8 µF | 820 nF | 2.7 µF | 18 µF  | 390 nF | 1.5 µF | 10 µF  | 680 nF | 2.7 µF | 15 µF  | 020                   |
|              | 330 nF | 1.2 µF | 8.2 µF | <i>470 nF</i> | 1.8 µF | 12 µF  | 270 nF | 1.0 µF | 6.8 µF | 820 nF | 2.7 µF | 18 µF  | 390 nF | 1.5 µF | 10 µF  | 680 nF | 2.7 µF | 15 µF  | 040                   |
|              | 560 nF | 1.8 µF | 12 µF  | <i>680 nF</i> | 2.7 µF | 18 µF  | 560 nF | 2.2 µF | 12 µF  | 1.5 µF | 5.6 µF | 39 µF  | 820 nF | 3.3 µF | 22 µF  | 1.2 µF | 5.6 µF | 33 µF  | 060                   |
|              | 820 nF | 3.3 µF | 22 µF  | <i>1.2 µF</i> | 4.7 µF | 27 µF  | 1.0 µF | 3.9 µF | 27 µF  | 3.3 µF | 12 µF  | 82 µF  | 1.2 µF | 4.7 µF | 33 µF  | 1.8 µF | 8.2 µF | 47 µF  | 100                   |
|              |        |        |        |               |        |        | 1.5 µF | 5.6 µF | 39 µF  | 4.7 µF | 18 µF  | 120 µF | 2.2 µF | 8.2 µF | 47 µF  | 3.3 µF | 12 µF  | 82 µF  | 140                   |
|              |        |        |        |               |        |        |        |        |        |        |        |        | 2.7 µF | 10 µF  | 56 µF  | 3.9 µF | 15 µF  | 100 µF | 180                   |
| <b>200V</b>  | 180 nF | 680 nF | 3.9 µF | <i>330 nF</i> | 1.0 µF | 5.6 µF | 270 nF | 1.0 µF | 6.8 µF | 820 nF | 2.7 µF | 18 µF  | 390 nF | 1.5 µF | 10 µF  | 680 nF | 2.7 µF | 15 µF  | 020                   |
|              | 330 nF | 1.2 µF | 8.2 µF | <i>470 nF</i> | 1.8 µF | 12 µF  | 270 nF | 1.0 µF | 6.8 µF | 820 nF | 2.7 µF | 18 µF  | 390 nF | 1.5 µF | 10 µF  | 680 nF | 2.7 µF | 15 µF  | 040                   |
|              | 560 nF | 1.8 µF | 12 µF  | <i>680 nF</i> | 2.7 µF | 18 µF  | 560 nF | 2.2 µF | 12 µF  | 1.5 µF | 5.6 µF | 39 µF  | 820 nF | 3.3 µF | 22 µF  | 1.2 µF | 5.6 µF | 33 µF  | 060                   |
|              | 820 nF | 3.3 µF | 22 µF  | <i>1.2 µF</i> | 4.7 µF | 27 µF  | 1.0 µF | 3.9 µF | 27 µF  | 3.3 µF | 12 µF  | 82 µF  | 1.2 µF | 4.7 µF | 33 µF  | 1.8 µF | 8.2 µF | 47 µF  | 100                   |
|              |        |        |        |               |        |        | 1.5 µF | 5.6 µF | 39 µF  | 4.7 µF | 18 µF  | 120 µF | 2.2 µF | 8.2 µF | 47 µF  | 3.3 µF | 12 µF  | 82 µF  | 140                   |
|              |        |        |        |               |        |        |        |        |        |        |        |        | 2.7 µF | 10 µF  | 56 µF  | 3.9 µF | 15 µF  | 100 µF | 180                   |
| <b>250V</b>  | 180 nF | 680 nF | 3.9 µF | 220 nF        | 1.0 µF | 5.6 µF | 270 nF | 1.0 µF | 6.8 µF | 820 nF | 2.7 µF | 18 µF  | 390 nF | 1.5 µF | 10 µF  | 680 nF | 2.7 µF | 15 µF  | 020                   |
|              | 330 nF | 1.2 µF | 8.2 µF | 470 nF        | 1.8 µF | 12 µF  | 270 nF | 1.0 µF | 6.8 µF | 820 nF | 2.7 µF | 18 µF  | 390 nF | 1.5 µF | 10 µF  | 680 nF | 2.7 µF | 15 µF  | 040                   |
|              | 560 nF | 1.8 µF | 12 µF  | 680 nF        | 2.7 µF | 18 µF  | 560 nF | 2.2 µF | 12 µF  | 1.5 µF | 5.6 µF | 39 µF  | 820 nF | 3.3 µF | 22 µF  | 1.2 µF | 5.6 µF | 33 µF  | 060                   |
|              | 820 nF | 3.3 µF | 22 µF  | 1.2 µF        | 4.7 µF | 27 µF  | 1.0 µF | 3.9 µF | 27 µF  | 3.3 µF | 12 µF  | 82 µF  | 1.2 µF | 4.7 µF | 33 µF  | 1.8 µF | 8.2 µF | 47 µF  | 100                   |
|              |        |        |        |               |        |        | 1.5 µF | 5.6 µF | 39 µF  | 4.7 µF | 18 µF  | 120 µF | 2.2 µF | 8.2 µF | 47 µF  | 3.3 µF | 12 µF  | 82 µF  | 140                   |
|              |        |        |        |               |        |        |        |        |        |        |        |        | 2.7 µF | 10 µF  | 56 µF  | 3.9 µF | 15 µF  | 100 µF | 180                   |
| <b>500V</b>  | 180 nF | 470 nF | 1.8 µF | 220 nF        | 680 nF | 2.7 µF | 270 nF | 680 nF | 3.3 µF | 820 nF | 2.7 µF | 12 µF  | 390 nF | 1.2 µF | 5.6 µF | 680 nF | 2.2 µF | 8.2 µF | 020                   |
|              | 330 nF | 820 nF | 1.8 µF | 470 nF        | 1.2 µF | 2.7 µF | 270 nF | 680 nF | 3.3 µF | 820 nF | 2.7 µF | 12 µF  | 390 nF | 1.2 µF | 5.6 µF | 680 nF | 2.2 µF | 8.2 µF | 040                   |
|              | 560 nF | 1.2 µF | 3.9 µF | 680 nF        | 1.8 µF | 5.6 µF | 560 nF | 1.5 µF | 6.8 µF | 1.5 µF | 5.6 µF | 22 µF  | 820 nF | 2.7 µF | 10 µF  | 1.2 µF | 4.7 µF | 060    |                       |
|              | 820 nF | 2.2 µF | 8.2 µF | 1.2 µF        | 3.3 µF | 12 µF  | 1.0 µF | 2.7 µF | 12 µF  | 3.3 µF | 12 µF  | 47 µF  | 1.2 µF | 3.9 µF | 15 µF  | 1.8 µF | 6.8 µF | 27 µF  | 100                   |
|              |        |        |        |               |        |        | 1.5 µF | 4.7 µF | 18 µF  | 4.7 µF | 18 µF  | 68 µF  | 2.2 µF | 6.8 µF | 27 µF  | 3.3 µF | 10 µF  | 47 µF  | 140                   |
|              |        |        |        |               |        |        |        |        |        |        |        |        | 2.7 µF | 8.2 µF | 3.9 µF | 12 µF  | 56 µF  | 180    |                       |
| <b>630V</b>  | 120 nF | 330 nF | 1.0 µF | 180 nF        | 470 nF | 1.5 µF | 220 nF | 470 nF | 1.8 µF | 820 nF | 1.8 µF | 6.8 µF | 390 nF | 820 nF | 2.7 µF | 680 nF | 1.5 µF | 4.7 µF | 020                   |
|              | 270 nF | 390 nF | 1.5 µF | 390 nF        | 560 nF | 2.2 µF | 220 nF | 560 nF | 2.2 µF | 820 nF | 2.2 µF | 8.2 µF | 390 nF | 1.0 µF | 3.9 µF | 680 nF | 1.8 µF | 6.8 µF | 040                   |
|              | 390 nF | 680 nF | 2.7 µF | 560 nF        | 1.0 µF | 3.9 µF | 470 nF | 1.2 µF | 4.7 µF | 1.5 µF | 4.7 µF | 18 µF  | 820 nF | 1.8 µF | 8.2 µF | 1.2 µF | 3.3 µF | 060    |                       |
|              | 680 nF | 1.5 µF | 4.7 µF | 1.0 µF        | 2.2 µF | 6.8 µF | 820 nF | 2.2 µF | 6.8 µF | 3.3 µF | 8.2 µF | 27 µF  | 1.2 µF | 1.8 µF | 1.2 µF | 1.8 µF | 5.6 µF | 22 µF  | 100                   |
|              |        |        |        |               |        |        | 1.2 µF | 1.2 µF | 12 µF  | 15 µF  | 4.7 µF | 47 µF  | 1.8 µF | 4.7 µF | 22 µF  | 3.3 µF | 8.2 µF | 33 µF  | 140                   |
|              |        |        |        |               |        |        |        |        |        |        |        |        | 5.6 µF | 2.2 µF | 3.9 µF | 10 µF  | 39 µF  | 180    |                       |
| <b>1000V</b> | 56 nF  | 120 nF | 390 nF | 82 nF         | 180 nF | 560 nF | 100 nF | 180 nF | 680 nF | 390 nF | 680 nF | 2.2 µF | 180 nF | 330 nF | 1.0 µF | 270 nF | 560 nF | 1.8 µF | 020                   |
|              | 82 nF  | 220 nF | 820 nF | 120 nF        | 330 nF | 1.2 µF | 150 nF | 390 nF | 1.5 µF | 560 nF | 1.5 µF | 5.6 µF | 220 nF | 680 nF | 2.2 µF | 390 nF | 1.0 µF | 3.9 µF | 040                   |
|              | 180 nF | 220 nF | 820 nF | 270 nF        | 330 nF | 1.2 µF | 270 nF | 390 nF | 1.5 µF | 1.0 µF | 1.5 µF | 5.6 µF | 470 nF | 680 nF | 2.2 µF | 820 nF | 1.0 µF | 3.9 µF | 060                   |
|              | 270 nF | 680 nF | 1.8 µF | 390 nF        | 1.0 µF | 2.7 µF | 390 nF | 1.2 µF | 2.7 µF | 1.5 µF | 3.9 µF | 10 µF  | 680 nF | 1.8 µF | 4.7 µF | 1.2 µF | 3.3 µF | 8.2 µF | 100                   |
|              | 390 nF | 820 nF | 2.7 µF | 680 nF        | 1.2 µF | 3.9 µF | 680 nF | 1.5 µF | 3.9 µF | 2.7 µF | 5.6 µF | 15 µF  | 1.2 µF | 2.7 µF | 6.8 µF | 2.2 µF | 4.7 µF | 12 µF  | 140                   |
|              |        |        |        |               |        | 820 nF | 1.8 µF | 5.6 µF | 3.3 µF | 6.8 µF | 22 µF  | 1.5 µF | 3.3 µF | 10 µF  | 2.7 µF | 5.6 µF | 15 µF  | 180    |                       |

1) Max Values in italic obtained with BME parts

## QUICK REFERENCE DATA (Max capacitance)

|              | 6660   |        |         | 8060   |        |        | 80150  |        |        | Height H<br>(1/10 mm) |
|--------------|--------|--------|---------|--------|--------|--------|--------|--------|--------|-----------------------|
|              | NPO    | N2T    | X7R     | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    |                       |
| <b>min</b>   | 150 nF | 470 nF | 1.2 µF  | 180 nF | 560 nF | 1.5 µF | 470 nF | 1.2 µF | 3.3 µF |                       |
| <b>100V</b>  | 560 nF | 2.2 µF | 15 µF   | 680 nF | 2.7 µF | 15 µF  | 1.2 µF | 5.6 µF | 33 µF  | 020                   |
|              | 560 nF | 2.2 µF | 15 µF   | 680 nF | 2.7 µF | 15 µF  | 1.2 µF | 5.6 µF | 33 µF  | 040                   |
|              | 1.2 µF | 4.7 µF | 27 µF   | 1.2 µF | 5.6 µF | 33 µF  | 2.7 µF | 10 µF  | 68 µF  | 060                   |
|              | 1.8 µF | 6.8 µF | 39 µF   | 1.8 µF | 8.2 µF | 47 µF  | 3.9 µF | 15 µF  | 100 µF | 100                   |
|              | 2.7 µF | 12 µF  | 68 µF   | 3.3 µF | 12 µF  | 82 µF  | 6.8 µF | 27 µF  | 150 µF | 140                   |
|              | 3.3 µF | 12 µF  | 82 µF   | 3.9 µF | 15 µF  | 100 µF | 8.2 µF | 33 µF  | 180 µF | 180                   |
| <b>200V</b>  | 560 nF | 2.2 µF | 15 µF   | 680 nF | 2.7 µF | 15 µF  | 1.2 µF | 5.6 µF | 33 µF  | 020                   |
|              | 560 nF | 2.2 µF | 15 µF   | 680 nF | 2.7 µF | 15 µF  | 1.2 µF | 5.6 µF | 33 µF  | 040                   |
|              | 1.2 µF | 4.7 µF | 27 µF   | 1.2 µF | 5.6 µF | 33 µF  | 2.7 µF | 10 µF  | 68 µF  | 060                   |
|              | 1.8 µF | 6.8 µF | 39 µF   | 1.8 µF | 8.2 µF | 47 µF  | 3.9 µF | 15 µF  | 100 µF | 100                   |
|              | 2.7 µF | 12 µF  | 68 µF   | 3.3 µF | 12 µF  | 82 µF  | 6.8 µF | 27 µF  | 150 µF | 140                   |
|              | 3.3 µF | 12 µF  | 82 µF   | 3.9 µF | 15 µF  | 100 µF | 8.2 µF | 33 µF  | 180 µF | 180                   |
| <b>250V</b>  | 560 nF | 2.2 µF | 15 µF   | 680 nF | 2.7 µF | 15 µF  | 1.2 µF | 5.6 µF | 33 µF  | 020                   |
|              | 560 nF | 2.2 µF | 15 µF   | 680 nF | 2.7 µF | 15 µF  | 1.2 µF | 5.6 µF | 33 µF  | 040                   |
|              | 1.2 µF | 4.7 µF | 27 µF   | 1.2 µF | 5.6 µF | 33 µF  | 2.7 µF | 10 µF  | 68 µF  | 060                   |
|              | 1.8 µF | 6.8 µF | 39 µF   | 1.8 µF | 8.2 µF | 47 µF  | 3.9 µF | 15 µF  | 100 µF | 100                   |
|              | 2.7 µF | 12 µF  | 68 µF   | 3.3 µF | 12 µF  | 82 µF  | 6.8 µF | 27 µF  | 150 µF | 140                   |
|              | 3.3 µF | 12 µF  | 82 µF   | 3.9 µF | 15 µF  | 100 µF | 8.2 µF | 33 µF  | 180 µF | 180                   |
| <b>500V</b>  | 560 nF | 1.8 µF | 6.8 µF  | 680 nF | 2.2 µF | 8.2 µF | 1.2 µF | 5.6 µF | 22 µF  | 020                   |
|              | 560 nF | 1.8 µF | 8.2 µF  | 680 nF | 2.2 µF | 10 µF  | 1.2 µF | 5.6 µF | 22 µF  | 040                   |
|              | 1.2 µF | 3.9 µF | 15 µF   | 1.2 µF | 4.7 µF | 18 µF  | 2.7 µF | 10 µF  | 47 µF  | 060                   |
|              | 1.8 µF | 5.6 µF | 22 µF   | 1.8 µF | 6.8 µF | 27 µF  | 3.9 µF | 15 µF  | 68 µF  | 100                   |
|              | 2.7 µF | 8.2 µF | 39 µF   | 3.3 µF | 10 µF  | 47 µF  | 6.8 µF | 27 µF  | 120 µF | 140                   |
|              | 3.3 µF | 10 µF  | 47 µF   | 3.9 µF | 12 µF  | 56 µF  | 8.2 µF | 33 µF  | 150 µF | 180                   |
| <b>630V</b>  | 560 nF | 1.2 µF | 3.9 µF  | 680 nF | 1.5 µF | 4.7 µF | 1.2 µF | 3.9 µF | 12 µF  | 020                   |
|              | 560 nF | 1.5 µF | 5.6 µF  | 680 nF | 1.8 µF | 6.8 µF | 1.2 µF | 4.7 µF | 18 µF  | 040                   |
|              | 1.0 µF | 2.7 µF | 12 µF   | 1.2 µF | 3.3 µF | 15 µF  | 2.7 µF | 8.2 µF | 33 µF  | 060                   |
|              | 1.5 µF | 3.9 µF | 18 µF   | 1.8 µF | 5.6 µF | 22 µF  | 3.9 µF | 12 µF  | 56 µF  | 100                   |
|              | 2.7 µF | 6.8 µF | 27 µF   | 3.3 µF | 8.2 µF | 33 µF  | 6.8 µF | 22 µF  | 82 µF  | 140                   |
|              | 3.3 µF | 8.2 µF | 33 µF   | 3.9 µF | 10 µF  | 39 µF  | 8.2 µF | 27 µF  | 100 µF | 180                   |
| <b>1000V</b> | 220 nF | 470 nF | 1.5 µF  | 270 nF | 560 nF | 1.8 µF | 680 nF | 1.5 µF | 4.7 µF | 020                   |
|              | 330 nF | 820 nF | 3.3 µF  | 390 nF | 1.0 µF | 3.9 µF | 1.0 µF | 2.7 µF | 10 µF  | 040                   |
|              | 680 nF | 820 nF | 3.3 µF  | 820 nF | 1.0 µF | 3.9 µF | 2.2 µF | 2.7 µF | 10 µF  | 060                   |
|              | 1.0 µF | 2.7 µF | 6.8 µF  | 1.2 µF | 3.3 µF | 8.2 µF | 3.3 µF | 8.2 µF | 22 µF  | 100                   |
|              | 1.8 µF | 3.9 µF | 10 µF   | 2.2 µF | 4.7 µF | 12 µF  | 5.6 µF | 10 µF  | 33 µF  | 140                   |
|              | 2.2 µF | 4.7 µF | 12 µF</ |        |        |        |        |        |        |                       |

# STACKED CAPACITOR High Voltage

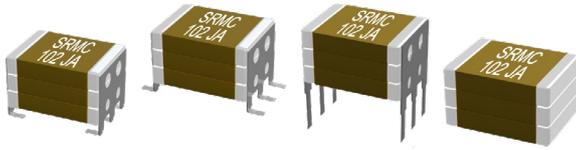
NPO N2T X7R 1KV-10KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Switch Mode Power Capacitor
- for Input / Output Filtering



RoHS  
compliant

## FEATURES

- High reliability, 100% burn-in
- Low ESR and ESL design
- High frequency switch
- Custom designs with any size, voltage, capacity, leads...
- Marking

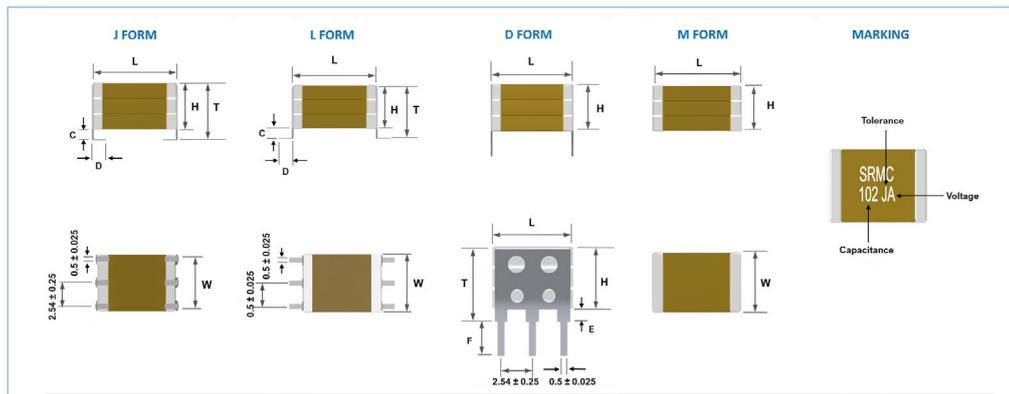
## ORDERING INFORMATION

| SRMC   | 2225   | Y   | 102   | J  | G  |                  | L                               | 100   | -   | B                    | -   |
|--------|--|---|---|--|--|------------------|---------------------------------|---|---|----------------------|---|
| SERIES | SIZE   | DIELECTRIC  | CAPACITANCE   | TOLERANCE  | VOLTAGE  | TERMINATION      | FORM                            | HEIGHT (H)  | COATING   | PACKAGING            | SPECIAL   |
| SRMC   | 1812<br>1825<br>2220<br>2225<br>3033<br>3640<br>4040<br>40100<br>5550<br>6560<br>6660<br>8060<br>80150 | A = NPO<br>P = N2T<br>Y = X7R<br>X = BX<br>BY = 2C1 | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit give the number of noughts.<br>Example : 102 = 1000pF<br><br>For special values R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if < 10pF and 0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0,25pF<br>D = ± 1%<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | G = 1KV<br>H = 2KV<br>I = 3KV<br>L = 5KV<br>8 = 8KV<br>10 = 10KV | -<br>P = Polymer | L<br>J<br>D<br>M<br>U = 4 leads | 020<br>030<br>040<br>050<br>060<br>070<br>080<br>090<br>100<br>110<br>120<br>130<br>140<br>160<br>180 | -<br>I = Conformal Coating<br>H = Epoxy-Coating | B = Reel<br>V = Bulk | -<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For J, L, M form, total height (T) is obtained by adding lead height (C/E) to specified chip height (H) in 1/10mm  
For other sizes, voltage, tolerance contact us

## DIMENSIONS (IN MILLIMETERS)

|                 | 1812       | 1825       | 2220       | 2225       | 2825       | 3033       | 3640        | 4040        | 40100       | 5550        | 6080        | 6560 /6660  | 8060        | 80150       |
|-----------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Lenght (L)      | 5.10 ± 0.4 | 5.10 ± 0.4 | 6.20 ± 0.4 | 6.20 ± 0.4 | 7.70 ± 0.4 | 8.20 ± 0.4 | 9.75 ± 0.5  | 10.80 ± 0.8 | 10.80 ± 1.0 | 14.60 ± 1.0 | 15.80 ± 1.0 | 17.40 ± 1.0 | 20.90 ± 1.0 | 20.90 ± 1.0 |
| Width (W)       | 3.20 ± 0.4 | 6.35 ± 0.4 | 5.10 ± 0.4 | 6.35 ± 0.4 | 6.35 ± 0.4 | 8.40 ± 0.4 | 10.20 ± 0.5 | 10.20 ± 0.8 | 25.40 ± 1.0 | 12.70 ± 1.0 | 20.30 ± 1.0 | 15.20 ± 1.0 | 15.20 ± 1.0 | 38.10 ± 1.0 |
| Nb of Leads     | 2          | 3          | 3          | 3          | 3          | 3          | 4           | 4           | 10          | 5           | 8           | 6           | 6           | 15          |
| Min Height (T)  | 2.8        | 3.0        | 3.0        | 3.1        | 3.4        | 3.5        | 3.6         | 4.0         | 4.0         | 4.3         | 4.4         | 4.5         | 4.5         | 4.5         |
| Max Height (T)  | 9.6        | 16.2       | 16.2       | 16.2       | 16.9       | 20.1       | 20.1        | 20.1        | 20.1        | 20.1        | 20.1        | 20.1        | 20.1        | 20.1        |
| Lead Height (C) | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   |
| lead Lenght (D) | 1.4 ± 0.3  | 1.6 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3  | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   | 1.8 ± 0.3   |
| Lead Height (E) | 1.3 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3  | 1.3 ± 0.3   | 1.3 ± 0.3   | 1.3 ± 0.3   | 1.3 ± 0.3   | 1.3 ± 0.3   | 1.3 ± 0.3   | 1.3 ± 0.3   | 1.3 ± 0.3   |
| Lead Lenght (F) | 4.0 ± 1.0  | 4.5 ± 1.0  | 5.0 ± 1.0  | 5.0 ± 1.0  | 6.0 ± 1.0  | 6.0 ± 1.0  | 6.0 ± 1.0   | 6.0 ± 1.0   | 6.0 ± 1.0   | 6.0 ± 1.0   | 6.0 ± 1.0   | 6.0 ± 1.0   | 6.0 ± 1.0   | 6.0 ± 1.0   |



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# STACKED CAPACITOR High Voltage

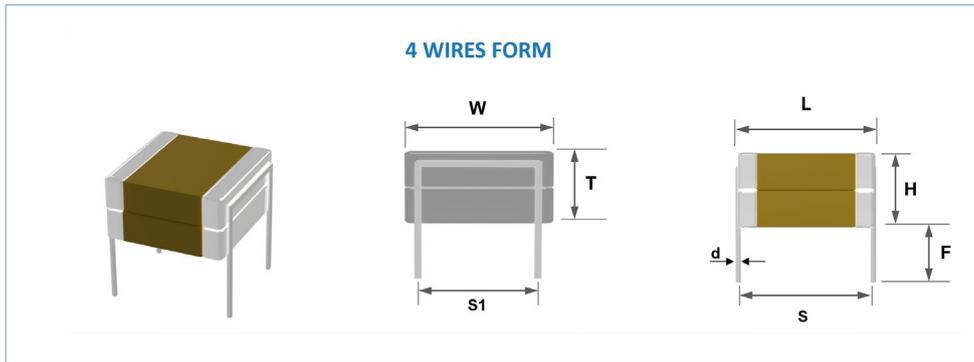
NPO N2T X7R 1KV-10KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## DIMENSIONS 4 WIRES (In millimeters)

|                 | 3033       | 3640        | 5550        | 5550        | 5550        | 6080        | 6080        | 6660        | 8060        | 40100       | 80150       |
|-----------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Lenght (L)      | 9.20 ± 0.5 | 11.15 ± 0.5 | 16.00 ± 0.5 | 16.00 ± 0.5 | 16.00 ± 0.5 | 17.20 ± 0.5 | 17.20 ± 0.5 | 18.80 ± 0.5 | 22.30 ± 0.5 | 12.20 ± 0.5 | 22.70 ± 0.5 |
| Width (W)       | 8.40 ± 0.5 | 10.20 ± 0.5 | 12.70 ± 0.5 | 12.70 ± 0.5 | 12.70 ± 0.5 | 20.30 ± 0.5 | 20.30 ± 0.5 | 15.20 ± 0.5 | 15.20 ± 0.5 | 25.40 ± 0.5 | 38.10 ± 0.5 |
| Lead Space (S)  | 8.40       | 10.15       | 15.00       | 15.00       | 15.00       | 16.20       | 16.20       | 17.80       | 21.30       | 11.20       | 21.50       |
| Lead Width (S1) | 5.08       | 7.62        | 7.62        | 10.16       | 15.24       | 10.16       | 15.24       | 10.16       | 10.16       | 27.94       | 30.48       |
| Nb 2.54 sp (x)  | 2          | 3           | 3           | 4           | 6           | 4           | 6           | 4           | 4           | 11          | 12          |
| Lead diam (d)   | 0.8        | 1.0         | 1.0         | 1.0         | 1.0         | 1.0         | 1.0         | 1.0         | 1.0         | 1.0         | 1.2         |
| Min Height (H)  | 3.5        | 3.6         | 4.3         | 4.3         | 4.3         | 4.4         | 4.4         | 4.5         | 4.5         | 4           | 4.5         |
| Max Height (H)  | 20,1       | 20,1        | 20,1        | 20,1        | 20,1        | 20,1        | 20,1        | 20,1        | 20,1        | 20,1        | 20,1        |
| Lead Lenght (F) | 25 ± 1.0   | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    | 25 ± 1.0    |



## QUICK REFERENCE DATA (Max capacitance)

|             | 1812   |        |        | 1825   |        |        | 2220   |        |        | 2225   |        |        | 3033   |        |        | 3640   |        |        | Height H (1/10 mm) |        |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------------|--------|
|             | NPO    | N2T    | X7R    |                    |        |
| <b>min</b>  | 12 pF  | 39 pF  | 1.0 nF | 33 pF  | 100 pF | 2.2 nF | 82 pF  | 220 pF | 470 pF | 100 pF | 220 pF | 560 pF | 180 pF | 560 pF | 1.2 nF | 270 pF | 820 pF | 1.8 nF |                    |        |
| <b>1KV</b>  | 12 nF  | 22 nF  | 68 nF  | 27 nF  | 56 nF  | 150 nF | 27 nF  | 56 nF  | 150 nF | 33 nF  | 68 nF  | 220 nF | 56 nF  | 120 nF | 390 nF | 82 nF  | 180 nF | 180 nF | 560 nF             | 020    |
|             | 18 nF  | 47 nF  | 120 nF | 39 nF  | 100 nF | 330 nF | 39 nF  | 100 nF | 390 nF | 47 nF  | 120 nF | 470 nF | 82 nF  | 220 nF | 820 nF | 120 nF | 330 nF | 330 nF | 1.2 μF             | 040    |
|             | 33 nF  | 47 nF  | 120 nF | 68 nF  | 100 nF | 330 nF | 82 nF  | 100 nF | 390 nF | 100 nF | 120 nF | 470 nF | 180 nF | 220 nF | 820 nF | 270 nF | 330 nF | 330 nF | 1.2 μF             | 060    |
|             |        |        |        | 120 nF | 270 nF | 680 nF | 120 nF | 330 nF | 820 nF | 150 nF | 390 nF | 1.0 μF | 270 nF | 680 nF | 1.8 μF | 390 nF | 1.0 μF | 1.0 μF | 1.0 μF             | 2.7 μF | 100 |
| <b>2KV</b>  | 2.2 nF | 3.9 nF | 12 nF  | 4.7 nF | 10 nF  | 33 nF  | 5.6 nF | 10 nF  | 33 nF  | 6.8 nF | 12 nF  | 39 nF  | 12 nF  | 22 nF  | 82 nF  | 18 nF  | 33 nF  | 120 nF | 47 nF              | 020    |
|             | 4.7 nF | 6.8 nF | 22 nF  | 12 nF  | 15 nF  | 56 nF  | 12 nF  | 15 nF  | 68 nF  | 18 nF  | 22 nF  | 100 nF | 27 nF  | 39 nF  | 180 nF | 47 nF  | 56 nF  | 270 nF | 270 nF             | 040    |
|             | 4.7 nF | 12 nF  | 22 nF  | 12 nF  | 33 nF  | 56 nF  | 12 nF  | 33 nF  | 68 nF  | 18 nF  | 39 nF  | 100 nF | 27 nF  | 82 nF  | 180 nF | 47 nF  | 120 nF | 270 nF | 270 nF             | 060    |
|             |        |        |        | 22 nF  | 47 nF  | 120 nF | 27 nF  | 47 nF  | 150 nF | 33 nF  | 56 nF  | 180 nF | 100 nF | 56 nF  | 120 nF | 390 nF | 180 nF | 180 nF | 560 nF             | 560 nF | 100 |
| <b>3KV</b>  | 820 pF | 1.5 nF | 5.6 nF | 1.8 nF | 3.3 nF | 12 nF  | 1.8 nF | 3.9 nF | 12 nF  | 2.7 nF | 4.7 nF | 18 nF  | 4.7 nF | 8.2 nF | 33 nF  | 6.8 nF | 12 nF  | 47 nF  | 47 nF              | 020    |
|             | 1.2 nF | 2.7 nF | 10 nF  | 2.7 nF | 5.6 nF | 27 nF  | 2.7 nF | 6.8 nF | 27 nF  | 3.9 nF | 10 nF  | 33 nF  | 8.2 nF | 18 nF  | 68 nF  | 12 nF  | 27 nF  | 100 nF | 100 nF             | 040    |
|             | 2.2 nF | 5.6 nF | 10 nF  | 5.6 nF | 12 nF  | 27 nF  | 5.6 nF | 6.8 nF | 27 nF  | 8.2 nF | 10 nF  | 33 nF  | 15 nF  | 18 nF  | 68 nF  | 22 nF  | 27 nF  | 100 nF | 100 nF             | 060    |
|             |        |        |        | 8.2 nF | 18 nF  | 47 nF  | 8.2 nF | 15 nF  | 56 nF  | 12 nF  | 18 nF  | 68 nF  | 22 nF  | 33 nF  | 120 nF | 33 nF  | 47 nF  | 47 nF  | 180 nF             | 180 nF | 100 |
| <b>5KV</b>  | 220 pF | 470 pF | 1.5 nF | 560 pF | 1.0 nF | 3.3 nF | 560 pF | 1.2 nF | 3.9 nF | 680 pF | 1.5 nF | 4.7 nF | 15 nF  | 2.7 nF | 10 nF  | 6.8 nF | 12 nF  | 47 nF  | 47 nF              | 020    |
|             | 390 pF | 820 pF | 2.7 nF | 1.2 nF | 2.2 nF | 8.2 nF | 1.5 nF | 2.2 nF | 10 nF  | 1.8 nF | 3.3 nF | 12 nF  | 3.9 nF | 5.6 nF | 22 nF  | 4.7 nF | 8.2 nF | 33 nF  | 33 nF              | 040    |
|             | 390 pF | 820 pF | 2.7 nF | 1.2 nF | 2.2 nF | 8.2 nF | 1.5 nF | 2.2 nF | 10 nF  | 1.8 nF | 3.3 nF | 12 nF  | 3.9 nF | 5.6 nF | 22 nF  | 4.7 nF | 8.2 nF | 33 nF  | 33 nF              | 060    |
|             |        |        |        | 2.2 nF | 4.7 nF | 15 nF  | 2.2 nF | 4.7 nF | 18 nF  | 3.9 nF | 6.8 nF | 27 nF  | 10 nF  | 6.8 nF | 12 nF  | 47 nF  | 15 nF  | 18 nF  | 68 nF              | 68 nF | 100 |
| <b>8KV</b>  | 82 pF  | 120 pF | 390 pF | 180 pF | 270 pF | 1.0 nF | 220 pF | 390 pF | 1.2 nF | 270 pF | 470 pF | 1.5 nF | 560 pF | 1.0 nF | 2.7 nF | 680 pF | 1.5 nF | 3.9 nF | 3.9 nF             | 020    |
|             | 150 pF | 270 pF | 1.0 nF | 390 pF | 680 pF | 2.7 nF | 390 pF | 820 pF | 2.7 nF | 560 pF | 1.2 nF | 3.9 nF | 1.0 nF | 2.2 nF | 6.8 nF | 1.5 nF | 3.3 nF | 10 nF  | 10 nF              | 040    |
|             | 150 pF | 270 pF | 1.0 nF | 390 pF | 680 pF | 2.7 nF | 390 pF | 820 pF | 2.7 nF | 560 pF | 1.2 nF | 3.9 nF | 1.0 nF | 2.2 nF | 6.8 nF | 1.5 nF | 3.3 nF | 10 nF  | 10 nF              | 060    |
|             |        |        |        | 820 pF | 1.5 nF | 5.6 nF | 820 pF | 1.8 nF | 5.6 nF | 1.0 nF | 2.2 nF | 8.2 nF | 1.0 nF | 2.2 nF | 4.7 nF | 15 nF  | 2.7 nF | 6.8 nF | 22 nF              | 22 nF | 100 |
| <b>10KV</b> | 39 pF  | 39 pF  |        | 100 pF | 100 pF |        | 120 pF | 220 pF | 680 pF | 150 pF | 220 pF | 820 pF | 330 pF | 560 pF | 1.8 nF | 680 pF | 1.8 nF | 5.6 nF | 5.6 nF             | 020    |
|             | 100 pF | 100 pF |        | 220 pF | 270 pF |        | 270 pF | 470 pF | 1.5 nF | 390 pF | 680 pF | 1.8 nF | 680 pF | 1.2 nF | 3.9 nF | 1.0 nF | 1.8 nF | 1.8 nF | 5.6 nF             | 040    |
|             | 100 pF | 100 pF |        | 220 pF | 270 pF |        | 270 pF | 470 pF | 1.5 nF | 390 pF | 680 pF | 1.8 nF | 680 pF | 1.2 nF | 3.9 nF | 1.0 nF | 1.8 nF | 1.8 nF | 5.6 nF             | 060    |
|             |        |        |        | 470 pF | 560 pF | 820 pF | 560 pF | 1.0 nF | 3.9 nF | 1.2 nF | 820 pF | 1.2 nF | 5.6 nF | 1.5 nF | 2.7 nF | 10 nF  | 2.2 nF | 3.9 nF | 15 nF              | 15 nF  |
|             |        |        | 680 pF | 820 pF |        |        |        |        | 1.2 nF | 1.8 nF | 6.8 nF | 2.2 nF | 3.9 nF | 15 nF  | 3.3 nF | 5.6 nF | 22 nF  | 22 nF  | 140                |        |
|             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |                    | 180    |

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### QUICK REFERENCE DATA (Max capacitance)

|      | 4040   |        |        | 40100  |        |        | 5550   |        |        | 6660   |        |        | 8060   |        |        | 80150  |        |        | Height H<br>(1/10 mm) |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------------|
|      | NPO    | N2T    | X7R    |                       |
|      | 330 pF | 820 pF | 1.8 nF | 820 pF | 2.2 nF | 4.7 nF | 560 pF | 1.5 nF | 3.3 nF | 820 pF | 2.2 nF | 4.7 nF | 1.0 nF | 2.7 nF | 5.6 nF | 2.2 nF | 6.8 nF | 15 nF  |                       |
| 1KV  | 100 nF | 180 nF | 680 nF | 220 nF | 470 nF | 1.5 µF | 180 nF | 330 nF | 1.0 µF | 220 nF | 470 nF | 1.5 µF | 270 nF | 560 nF | 1.8 µF | 680 nF | 1.5 µF | 4.7 µF | 020                   |
|      | 150 nF | 390 nF | 1.5 µF | 330 nF | 1.0 µF | 3.3 µF | 220 nF | 680 nF | 2.2 µF | 330 nF | 820 nF | 3.3 µF | 390 nF | 1.0 µF | 3.9 µF | 1.0 µF | 2.7 µF | 10 µF  | 040                   |
|      | 270 nF | 390 nF | 1.5 µF | 680 nF | 1.0 µF | 3.3 µF | 470 nF | 680 nF | 2.2 µF | 680 nF | 820 nF | 3.3 µF | 820 nF | 1.0 µF | 3.9 µF | 2.2 µF | 2.7 µF | 10 µF  | 060                   |
|      | 390 nF | 1.2 µF | 2.7 µF | 1.0 µF | 2.7 µF | 6.8 µF | 680 nF | 1.8 µF | 4.7 µF | 1.0 µF | 2.7 µF | 6.8 µF | 1.2 µF | 3.3 µF | 8.2 µF | 3.3 µF | 8.2 µF | 22 µF  | 100                   |
|      | 680 nF | 1.5 µF | 3.9 µF | 1.8 µF | 3.9 µF | 10 µF  | 1.2 µF | 2.7 µF | 6.8 µF | 1.8 µF | 3.9 µF | 10 µF  | 2.2 µF | 4.7 µF | 12 µF  | 5.6 µF | 10 µF  | 33 µF  | 140                   |
|      | 820 nF | 1.8 µF | 5.6 µF | 2.2 µF | 4.7 µF | 15 µF  | 1.5 µF | 3.3 µF | 10 µF  | 2.2 µF | 4.7 µF | 12 µF  | 2.7 µF | 5.6 µF | 15 µF  | 5.6 µF | 12 µF  | 39 µF  | 180                   |
| 2KV  | 18 nF  | 39 nF  | 120 nF | 47 nF  | 100 nF | 330 nF | 33 nF  | 68 nF  | 220 nF | 47 nF  | 100 nF | 330 nF | 56 nF  | 120 nF | 390 nF | 150 nF | 270 nF | 1.0 µF | 020                   |
|      | 47 nF  | 68 nF  | 270 nF | 120 nF | 150 nF | 680 nF | 82 nF  | 120 nF | 470 nF | 120 nF | 150 nF | 680 nF | 150 nF | 180 nF | 820 nF | 390 nF | 470 nF | 2.2 µF | 040                   |
|      | 47 nF  | 120 nF | 270 nF | 120 nF | 330 nF | 680 nF | 82 nF  | 220 nF | 470 nF | 120 nF | 330 nF | 680 nF | 150 nF | 390 nF | 820 nF | 390 nF | 1.0 µF | 2.2 µF | 060                   |
|      | 100 nF | 180 nF | 560 nF | 220 nF | 470 nF | 1.5 µF | 150 nF | 330 nF | 1.0 µF | 220 nF | 470 nF | 1.5 µF | 270 nF | 560 nF | 1.8 µF | 680 nF | 1.5 µF | 4.7 µF | 100                   |
|      | 150 nF | 270 nF | 820 nF | 390 nF | 680 nF | 2.2 µF | 220 nF | 470 nF | 1.5 µF | 330 nF | 680 nF | 2.2 µF | 390 nF | 820 nF | 2.7 µF | 1.0 µF | 1.8 µF | 6.8 µF | 140                   |
|      | 180 nF | 390 nF | 1.2 µF | 470 nF | 1.0 µF | 2.7 µF | 330 nF | 680 nF | 2.2 µF | 470 nF | 1.0 µF | 2.7 µF | 560 nF | 1.2 µF | 3.3 µF | 1.5 µF | 2.7 µF | 8.2 µF | 180                   |
| 3KV  | 8.2 nF | 15 nF  | 56 nF  | 18 nF  | 33 nF  | 120 nF | 12 nF  | 22 nF  | 82 nF  | 18 nF  | 33 nF  | 120 nF | 22 nF  | 39 nF  | 150 nF | 56 nF  | 100 nF | 390 nF | 020                   |
|      | 12 nF  | 27 nF  | 100 nF | 33 nF  | 68 nF  | 270 nF | 22 nF  | 47 nF  | 180 nF | 27 nF  | 68 nF  | 270 nF | 39 nF  | 82 nF  | 330 nF | 82 nF  | 220 nF | 820 nF | 040                   |
|      | 22 nF  | 27 nF  | 100 nF | 56 nF  | 68 nF  | 270 nF | 39 nF  | 47 nF  | 180 nF | 56 nF  | 68 nF  | 270 nF | 68 nF  | 82 nF  | 330 nF | 180 nF | 220 nF | 820 nF | 060                   |
|      | 39 nF  | 56 nF  | 220 nF | 100 nF | 150 nF | 560 nF | 68 nF  | 100 nF | 390 nF | 82 nF  | 150 nF | 560 nF | 100 nF | 180 nF | 680 nF | 270 nF | 390 nF | 1.5 µF | 100                   |
|      | 47 nF  | 82 nF  | 330 nF | 120 nF | 220 nF | 820 nF | 82 nF  | 150 nF | 560 nF | 120 nF | 220 nF | 820 nF | 150 nF | 270 nF | 1.0 µF | 390 nF | 680 nF | 2.2 µF | 140                   |
|      | 68 nF  | 120 nF | 390 nF | 180 nF | 270 nF | 1.0 µF | 120 nF | 180 nF | 680 nF | 180 nF | 220 nF | 1.0 µF | 220 nF | 330 nF | 1.2 µF | 560 nF | 820 nF | 3.3 µF | 180                   |
| 5KV  | 2.2 nF | 4.7 nF | 18 nF  | 5.6 nF | 12 nF  | 39 nF  | 3.9 nF | 8.2 nF | 27 nF  | 5.6 nF | 12 nF  | 39 nF  | 6.8 nF | 12 nF  | 47 nF  | 18 nF  | 33 nF  | 120 nF | 020                   |
|      | 5.6 nF | 10 nF  | 39 nF  | 15 nF  | 22 nF  | 100 nF | 10 nF  | 18 nF  | 68 nF  | 15 nF  | 22 nF  | 100 nF | 18 nF  | 27 nF  | 120 nF | 39 nF  | 68 nF  | 270 nF | 040                   |
|      | 5.6 nF | 10 nF  | 39 nF  | 15 nF  | 22 nF  | 100 nF | 10 nF  | 18 nF  | 68 nF  | 15 nF  | 22 nF  | 100 nF | 18 nF  | 27 nF  | 120 nF | 39 nF  | 68 nF  | 270 nF | 060                   |
|      | 12 nF  | 18 nF  | 82 nF  | 27 nF  | 47 nF  | 180 nF | 18 nF  | 33 nF  | 120 nF | 27 nF  | 47 nF  | 180 nF | 33 nF  | 56 nF  | 220 nF | 82 nF  | 150 nF | 560 nF | 100                   |
|      | 18 nF  | 27 nF  | 120 nF | 39 nF  | 68 nF  | 270 nF | 27 nF  | 47 nF  | 180 nF | 39 nF  | 68 nF  | 270 nF | 47 nF  | 82 nF  | 330 nF | 120 nF | 220 nF | 820 nF | 140                   |
|      | 22 nF  | 39 nF  | 150 nF | 56 nF  | 100 nF | 390 nF | 39 nF  | 68 nF  | 270 nF | 56 nF  | 100 nF | 390 nF | 68 nF  | 120 nF | 470 nF | 180 nF | 270 nF | 1.2 µF | 180                   |
| 8KV  | 820 pF | 1.5 nF | 4.7 nF | 2.2 nF | 3.9 nF | 12 nF  | 1.5 nF | 2.7 nF | 8.2 nF | 1.8 nF | 3.9 nF | 12 nF  | 2.2 nF | 4.7 nF | 15 nF  | 5.6 nF | 12 nF  | 33 nF  | 020                   |
|      | 1.5 nF | 3.9 nF | 12 nF  | 3.9 nF | 10 nF  | 27 nF  | 2.7 nF | 6.8 nF | 22 nF  | 3.9 nF | 8.2 nF | 27 nF  | 4.7 nF | 10 nF  | 33 nF  | 12 nF  | 27 nF  | 82 nF  | 040                   |
|      | 1.5 nF | 3.9 nF | 12 nF  | 3.9 nF | 10 nF  | 27 nF  | 2.7 nF | 6.8 nF | 22 nF  | 3.9 nF | 8.2 nF | 27 nF  | 4.7 nF | 10 nF  | 33 nF  | 12 nF  | 27 nF  | 82 nF  | 060                   |
|      | 3.3 nF | 6.8 nF | 22 nF  | 8.2 nF | 18 nF  | 56 nF  | 5.6 nF | 12 nF  | 39 nF  | 8.2 nF | 18 nF  | 56 nF  | 10 nF  | 22 nF  | 68 nF  | 22 nF  | 56 nF  | 180 nF | 100                   |
|      | 4.7 nF | 12 nF  | 39 nF  | 12 nF  | 27 nF  | 82 nF  | 8.2 nF | 18 nF  | 56 nF  | 12 nF  | 27 nF  | 82 nF  | 15 nF  | 33 nF  | 100 nF | 39 nF  | 82 nF  | 270 nF | 140                   |
|      | 8.2 nF | 15 nF  | 47 nF  | 22 nF  | 39 nF  | 120 nF | 15 nF  | 27 nF  | 82 nF  | 18 nF  | 39 nF  | 120 nF | 22 nF  | 47 nF  | 150 nF | 56 nF  | 100 nF | 330 nF | 180                   |
| 10KV | 470 pF | 1.0 nF | 2.7 nF | 1.2 nF | 2.2 nF | 6.8 nF | 820 pF | 1.5 nF | 4.7 nF | 1.2 nF | 2.2 nF | 6.8 nF | 1.5 nF | 2.7 nF | 8.2 nF | 3.9 nF | 6.8 nF | 22 nF  | 020                   |
|      | 1.2 nF | 2.2 nF | 5.6 nF | 2.7 nF | 5.6 nF | 15 nF  | 1.8 nF | 3.9 nF | 10 nF  | 2.7 nF | 5.6 nF | 15 nF  | 3.3 nF | 6.8 nF | 18 nF  | 8.2 nF | 15 nF  | 47 nF  | 040                   |
|      | 1.2 nF | 2.2 nF | 5.6 nF | 2.7 nF | 5.6 nF | 15 nF  | 1.8 nF | 3.9 nF | 10 nF  | 2.7 nF | 5.6 nF | 15 nF  | 3.3 nF | 6.8 nF | 18 nF  | 8.2 nF | 15 nF  | 47 nF  | 060                   |
|      | 2.2 nF | 3.9 nF | 18 nF  | 5.6 nF | 10 nF  | 47 nF  | 3.9 nF | 6.8 nF | 33 nF  | 5.6 nF | 10 nF  | 47 nF  | 6.8 nF | 12 nF  | 56 nF  | 18 nF  | 33 nF  | 120 nF | 100                   |
|      | 3.3 nF | 6.8 nF | 22 nF  | 8.2 nF | 15 nF  | 56 nF  | 5.6 nF | 10 nF  | 39 nF  | 8.2 nF | 15 nF  | 56 nF  | 10 nF  | 18 nF  | 68 nF  | 27 nF  | 47 nF  | 180 nF | 140                   |
|      | 4.7 nF | 8.2 nF | 27 nF  | 12 nF  | 22 nF  | 68 nF  | 8.2 nF | 15 nF  | 47 nF  | 12 nF  | 22 nF  | 68 nF  | 12 nF  | 27 nF  | 82 nF  | 33 nF  | 68 nF  | 220 nF | 180                   |

# STACKED CAPACITOR Vertical

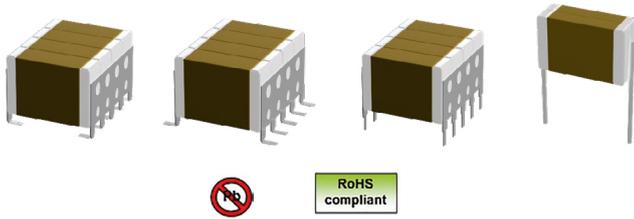
NPO N2T X7R 25V-10KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Switch Mode Power Capacitor
- DC/DC Converter



## FEATURES

- Low ESR and ESL design
- Chips mounted vertically for better ESL
- 1210 with two Chips per row
- Available with 2 leads termination
- Competitors design equivalent

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
N2T : 2200 ± 350 ppm/°C  
X7R : ± 15% with 0Vdc applied

**DISSIPATION FACTOR:**  
NPO/N2T : ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 0.025 at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**Dielectric Strength Test :**  
2.5U U≤200V | U+250V 200<U≤500 | 1.5U 500<U<1000 | 1.2U U≥1000  
for 5s with 50mA max charging current

**BURN IN :**  
Chips 24H+Stack 48H 125°C 2U U<500V | 1.5U 500≤U<1000 | 1.2U  
1000≤U≤2000 | 1U U>2000

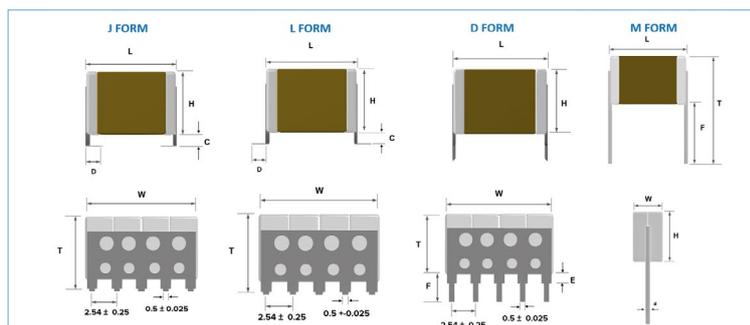
## ORDERING INFORMATION

| SRTV   | 2225   | Y   | 102   | J   | A  | L  | 2            | -   | B                    | -  |
|--------|--|---|---|---|--|--|--------------|---|----------------------|--|
| SERIES | SIZE   | DIELECTRIC  | CAPACITANCE   | TOLERANCE   | VOLTAGE  | FORM   | LEADS        | COATING   | PACKAGING            | SPECIAL  |
| SRTV   | 1210<br>1812<br>2220<br>2225<br>2825<br>3033<br>3640<br>4040<br>5550<br>6660<br>8060 | A = NPO<br>P = N2T<br>Y = X7R<br>X = BX<br>BY = 2C1 | Expressed in picofarads (pF).<br>significant, the third digit<br>give the number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if <<br>10pF and<br>0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0.25pF<br>D = ± 0.5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | X = 25V<br>A = 50V<br>B = 100V<br>C = 200V<br>E = 500V<br>F = 630V<br>G = 1000V<br>O = 1500V<br>H = 2000V<br>I = 3000V<br>L = 5000V<br>10 = 10000V | J<br>L<br>D<br>T = 2<br>leads<br>JP =<br>plain J<br>Lead | -<br>1<br>10 | -<br>I = Conformal<br>Coating<br>H = Epoxy<br>Coating | B = Reel<br>V = Bulk | -<br>BM = BME<br>Dxx = Reliability<br>spec<br>Exx = Sorting spec |

## DIMENSIONS (IN MILLIMETERS)

|                   | 1210         | 1812         | 2220         | 2225         | 3033         | 3640         | 4040         | 5440         | 5550         | 6560         | 6080         | 8060         |
|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Lenght (L)        | 3.80 ± 0.3   | 5.10 ± 0.4   | 6.20 ± 0.4   | 6.20 ± 0.4   | 8.20 ± 0.4   | 10.00 ± 0.4  | 10.80 ± 0.4  | 14.30 ± 0.4  | 14.60 ± 0.4  | 17.10 ± 0.4  | 15.80 ± 0.4  | 20.90 ± 0.4  |
| Width(W) 2 Leads  | 5.80 -0+2.5  |              |              |              |              |              |              |              |              |              |              |              |
| Width(W) 3 Leads  | 5.80 -0+2.5  | 5.80 -0+2.5  | 5.80 -0+2.5  | 5.80 -0+2.5  | 5.80 -0+2.5  | 5.80 -0+2.5  | 5.80 -0+2.5  | 5.80 -0+2.5  |              |              |              |              |
| Width(W) 4 Leads  | 8.30 -0+2.5  | 8.30 -0+2.5  | 8.30 -0+2.5  | 8.30 -0+2.5  | 8.30 -0+2.5  | 8.30 -0+2.5  | 8.30 -0+2.5  | 8.30 -0+2.5  | 8.30 -0+2.5  | 8.30 -0+2.5  | 8.30 -0+2.5  |              |
| Width(W) 5 Leads  | 10.90 -0+2.5 | 10.90 -0+2.5 | 10.90 -0+2.5 | 10.90 -0+2.5 | 10.90 -0+2.5 | 10.90 -0+2.5 | 10.90 -0+2.5 | 10.90 -0+2.5 | 10.90 -0+2.5 | 10.90 -0+2.5 | 10.90 -0+2.5 | 10.90 -0+2.5 |
| Width(W) 6 Leads  | 13.40 -0+2.5 | 13.40 -0+2.5 | 13.40 -0+2.5 | 13.40 -0+2.5 | 13.40 -0+2.5 | 13.40 -0+2.5 | 13.40 -0+2.5 | 13.40 -0+2.5 | 13.40 -0+2.5 | 13.40 -0+2.5 | 13.40 -0+2.5 | 13.40 -0+2.5 |
| Width(W) 7 Leads  | 15.90 -0+2.5 | 15.90 -0+2.5 | 15.90 -0+2.5 | 15.90 -0+2.5 | 15.90 -0+2.5 | 15.90 -0+2.5 | 15.90 -0+2.5 | 15.90 -0+2.5 | 15.90 -0+2.5 | 15.90 -0+2.5 | 15.90 -0+2.5 | 15.90 -0+2.5 |
| Width(W) 8 Leads  | 18.50 -0+2.5 | 18.50 -0+2.5 | 18.50 -0+2.5 | 18.50 -0+2.5 | 18.50 -0+2.5 | 18.50 -0+2.5 | 18.50 -0+2.5 | 18.50 -0+2.5 | 18.50 -0+2.5 | 18.50 -0+2.5 | 18.50 -0+2.5 | 18.50 -0+2.5 |
| Width(W) 9 Leads  | 21.00 -0+2.5 | 21.00 -0+2.5 | 21.00 -0+2.5 | 21.00 -0+2.5 | 21.00 -0+2.5 | 21.00 -0+2.5 | 21.00 -0+2.5 | 21.00 -0+2.5 | 21.00 -0+2.5 | 21.00 -0+2.5 | 21.00 -0+2.5 | 21.00 -0+2.5 |
| Width(W) 10 Leads | 23.60 -0+2.5 | 23.60 -0+2.5 | 23.60 -0+2.5 | 23.60 -0+2.5 | 23.60 -0+2.5 | 23.60 -0+2.5 | 23.60 -0+2.5 | 23.60 -0+2.5 | 23.60 -0+2.5 | 23.60 -0+2.5 | 23.60 -0+2.5 | 23.60 -0+2.5 |
| Width(W) 11 Leads | 26.10 -0+2.5 | 26.10 -0+2.5 | 26.10 -0+2.5 | 26.10 -0+2.5 | 26.10 -0+2.5 | 26.10 -0+2.5 | 26.10 -0+2.5 | 26.10 -0+2.5 | 26.10 -0+2.5 | 26.10 -0+2.5 | 26.10 -0+2.5 | 26.10 -0+2.5 |
| Height (H)        | 5.30 ± 0.3   | 3.20 ± 0.4   | 5.10 ± 0.4   | 6.35 ± 0.4   | 8.40 ± 0.4   | 10.20 ± 0.4  | 10.20 ± 0.4  | 10.20 ± 0.4  | 12.70 ± 0.4  | 15.20 ± 0.4  | 20.30 ± 0.4  | 15.20 ± 0.4  |
| Height (T)        | 6.60 ± 0.3   | 5.00 ± 0.4   | 6.90 ± 0.4   | 8.15 ± 0.4   | 10.20 ± 0.4  | 12.00 ± 0.4  | 12.00 ± 0.4  | 12.00 ± 0.4  | 14.50 ± 0.4  | 17.00 ± 0.4  | 22.10 ± 0.4  | 17.00 ± 0.4  |
| Lead Height (C)   | 1.3 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    |
| lead Lenght (D)   | 1.3 ± 0.3    | 1.4 ± 0.3    | 1.6 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    | 1.8 ± 0.3    |
| Lead Height (E)   | 1.0 ± 0.3    | 1.3 ± 0.3    | 1.3 ± 0.3    | 1.3 ± 0.3    | 1.3 ± 0.3    | 1.3 ± 0.3    | 1.3 ± 0.3    | 1.3 ± 0.3    | 1.3 ± 0.3    | 1.3 ± 0.3    | 1.3 ± 0.3    | 1.3 ± 0.3    |
| Lead Lenght (F)   | 4.0 ± 1.0    | 4.0 ± 1.0    | 4.5 ± 1.0    | 5.0 ± 1.0    | 6.0 ± 1.0    | 6.0 ± 1.0    | 6.0 ± 1.0    | 6.0 ± 1.0    | 6.0 ± 1.0    | 6.0 ± 1.0    | 6.0 ± 1.0    | 6.0 ± 1.0    |

Number of leads represent the number individual legs of the lead frame.



This document is subject to change without notice.

# STACKED CAPACITOR Vertical

NPO N2T X7R 25V-10KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## QUICK REFERENCE DATA (Max capacitance in $\mu\text{F}$ )

|             | Leads       | 1210                                |                   |                   | 1812              |                   |                   | 2220                                |                   |                                     | 2225                                |                   |                                    | 3033                                |                   |                   | 3740              |                   |                   | Leads            |
|-------------|-------------|-------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------------|-------------------|-------------------------------------|-------------------------------------|-------------------|------------------------------------|-------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|
|             |             | NPO                                 | N2T               | X7R               | NPO               | N2T               | X7R               | NPO                                 | N2T               | X7R                                 | NPO                                 | N2T               | X7R                                | NPO                                 | N2T               | X7R               | NPO               | N2T               | X7R               |                  |
| <b>min</b>  |             | 820 pF                              | 1.2 nF            | 6.8 nF            | 1.8 nF            | 3.3 nF            | 18 nF             | 3.9 nF                              | 6.8 nF            | 39 nF                               | 4.7 nF                              | 8.2 nF            | 56 nF                              | 8.2 nF                              | 15 nF             | 100 nF            | 12 nF             | 22 nF             | 150 nF            |                  |
| <b>25V</b>  | 2           | <i>820 nF</i>                       | 270 nF            | 39 $\mu\text{F}$  | 220 nF            | 390 nF            | 22 $\mu\text{F}$  | <i>470 nF</i>                       | 1.0 $\mu\text{F}$ | <i>47 <math>\mu\text{F}</math></i>  | 270 nF                              | 1.0 $\mu\text{F}$ | <i>10 <math>\mu\text{F}</math></i> | 330 nF                              | 1.2 $\mu\text{F}$ | 8.2 $\mu\text{F}$ | 470 nF            | 1.8 $\mu\text{F}$ | 12 $\mu\text{F}$  | 2                |
|             | 3           | <i>820 nF</i>                       | 390 nF            | 82 $\mu\text{F}$  | 390 nF            | 680 nF            | 39 $\mu\text{F}$  | <i>820 nF</i>                       | 1.5 $\mu\text{F}$ | <i>82 <math>\mu\text{F}</math></i>  | 470 nF                              | 1.8 $\mu\text{F}$ | <i>18 <math>\mu\text{F}</math></i> | 680 nF                              | 2.7 $\mu\text{F}$ | 15 $\mu\text{F}$  | 680 nF            | 2.7 $\mu\text{F}$ | 18 $\mu\text{F}$  | 3                |
|             | 4           | <i>1.2 <math>\mu\text{F}</math></i> | 560 nF            | 120 $\mu\text{F}$ | 560 nF            | 1.0 $\mu\text{F}$ | 56 $\mu\text{F}$  | <i>1.2 <math>\mu\text{F}</math></i> | 2.2 $\mu\text{F}$ | <i>120 <math>\mu\text{F}</math></i> | 680 nF                              | 2.7 $\mu\text{F}$ | <i>27 <math>\mu\text{F}</math></i> | 820 nF                              | 3.3 $\mu\text{F}$ | 18 $\mu\text{F}$  | 820 nF            | 3.3 $\mu\text{F}$ | 18 $\mu\text{F}$  | 4                |
|             | 5           | <i>1.5 <math>\mu\text{F}</math></i> | 680 nF            | 150 $\mu\text{F}$ | 820 nF            | 1.2 $\mu\text{F}$ | 82 $\mu\text{F}$  | <i>1.5 <math>\mu\text{F}</math></i> | 2.7 $\mu\text{F}$ | <i>180 <math>\mu\text{F}</math></i> | 680 nF                              | 2.7 $\mu\text{F}$ | <i>39 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$                   | 3.9 $\mu\text{F}$ | 22 $\mu\text{F}$  | 1.2 $\mu\text{F}$ | 5.6 $\mu\text{F}$ | 33 $\mu\text{F}$  | 5                |
|             | 6           | <i>2.2 <math>\mu\text{F}</math></i> | 820 nF            | 220 $\mu\text{F}$ | 1.0 $\mu\text{F}$ | 1.5 $\mu\text{F}$ | 100 $\mu\text{F}$ | <i>2.2 <math>\mu\text{F}</math></i> | 3.3 $\mu\text{F}$ | <i>220 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$                   | 3.9 $\mu\text{F}$ | <i>47 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | 33 $\mu\text{F}$  | 1.5 $\mu\text{F}$ | 6.8 $\mu\text{F}$ | 39 $\mu\text{F}$  | 6                |
|             | 7           | <i>2.2 <math>\mu\text{F}</math></i> | 820 nF            | 220 $\mu\text{F}$ | 1.2 $\mu\text{F}$ | 1.8 $\mu\text{F}$ | 120 $\mu\text{F}$ | <i>2.2 <math>\mu\text{F}</math></i> | 3.9 $\mu\text{F}$ | <i>270 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | <i>56 <math>\mu\text{F}</math></i> | 1.5 $\mu\text{F}$                   | 5.6 $\mu\text{F}$ | 33 $\mu\text{F}$  | 1.8 $\mu\text{F}$ | 6.8 $\mu\text{F}$ | 47 $\mu\text{F}$  | 7                |
|             | 8           | <i>2.7 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$ | 270 $\mu\text{F}$ | 1.5 $\mu\text{F}$ | 2.2 $\mu\text{F}$ | 150 $\mu\text{F}$ | <i>2.7 <math>\mu\text{F}</math></i> | 4.7 $\mu\text{F}$ | <i>270 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | <i>68 <math>\mu\text{F}</math></i> | 1.8 $\mu\text{F}$                   | 6.8 $\mu\text{F}$ | 39 $\mu\text{F}$  | 2.2 $\mu\text{F}$ | 8.2 $\mu\text{F}$ | 56 $\mu\text{F}$  | 8                |
|             | 9           | <i>3.3 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$ | 330 $\mu\text{F}$ | 1.5 $\mu\text{F}$ | 2.2 $\mu\text{F}$ | 150 $\mu\text{F}$ | <i>3.3 <math>\mu\text{F}</math></i> | 5.6 $\mu\text{F}$ | <i>330 <math>\mu\text{F}</math></i> | 1.5 $\mu\text{F}$                   | 5.6 $\mu\text{F}$ | <i>68 <math>\mu\text{F}</math></i> | 1.8 $\mu\text{F}$                   | 6.8 $\mu\text{F}$ | 47 $\mu\text{F}$  | 2.7 $\mu\text{F}$ | 10 $\mu\text{F}$  | 56 $\mu\text{F}$  | 9                |
|             | 10          | <i>3.3 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$ | 330 $\mu\text{F}$ | 1.5 $\mu\text{F}$ | 2.7 $\mu\text{F}$ | 150 $\mu\text{F}$ | <i>3.3 <math>\mu\text{F}</math></i> | 5.6 $\mu\text{F}$ | <i>330 <math>\mu\text{F}</math></i> | 1.5 $\mu\text{F}$                   | 5.6 $\mu\text{F}$ | <i>68 <math>\mu\text{F}</math></i> | 2.2 $\mu\text{F}$                   | 8.2 $\mu\text{F}$ | 47 $\mu\text{F}$  | 2.7 $\mu\text{F}$ | 10 $\mu\text{F}$  | 68 $\mu\text{F}$  | 10               |
|             | <b>50V</b>  | 2                                   | <i>560 nF</i>     | 180 nF            | 39 $\mu\text{F}$  | 220 nF            | 390 nF            | 6.8 $\mu\text{F}$                   | <i>470 nF</i>     | 1.0 $\mu\text{F}$                   | <i>47 <math>\mu\text{F}</math></i>  | 270 nF            | 1.0 $\mu\text{F}$                  | <i>10 <math>\mu\text{F}</math></i>  | 330 nF            | 1.2 $\mu\text{F}$ | 8.2 $\mu\text{F}$ | 470 nF            | 1.8 $\mu\text{F}$ | 12 $\mu\text{F}$ | 2 |
| 3           |             | <i>560 nF</i>                       | 330 nF            | 82 $\mu\text{F}$  | 390 nF            | 680 nF            | 12 $\mu\text{F}$  | <i>820 nF</i>                       | 1.5 $\mu\text{F}$ | <i>82 <math>\mu\text{F}</math></i>  | 470 nF                              | 1.8 $\mu\text{F}$ | <i>18 <math>\mu\text{F}</math></i> | 680 nF                              | 2.7 $\mu\text{F}$ | 15 $\mu\text{F}$  | 680 nF            | 2.7 $\mu\text{F}$ | 18 $\mu\text{F}$  | 3                |
| 4           |             | <i>820 nF</i>                       | 470 nF            | 120 $\mu\text{F}$ | 560 nF            | 1.0 $\mu\text{F}$ | 18 $\mu\text{F}$  | <i>1.2 <math>\mu\text{F}</math></i> | 2.2 $\mu\text{F}$ | <i>120 <math>\mu\text{F}</math></i> | 680 nF                              | 2.7 $\mu\text{F}$ | <i>27 <math>\mu\text{F}</math></i> | 820 nF                              | 3.3 $\mu\text{F}$ | 18 $\mu\text{F}$  | 1.2 $\mu\text{F}$ | 4.7 $\mu\text{F}$ | 27 $\mu\text{F}$  | 4                |
| 5           |             | <i>1.2 <math>\mu\text{F}</math></i> | 560 nF            | 150 $\mu\text{F}$ | 820 nF            | 1.2 $\mu\text{F}$ | 27 $\mu\text{F}$  | <i>1.2 <math>\mu\text{F}</math></i> | 2.7 $\mu\text{F}$ | <i>180 <math>\mu\text{F}</math></i> | 680 nF                              | 2.7 $\mu\text{F}$ | <i>39 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$                   | 3.9 $\mu\text{F}$ | 22 $\mu\text{F}$  | 1.2 $\mu\text{F}$ | 5.6 $\mu\text{F}$ | 33 $\mu\text{F}$  | 5                |
| 6           |             | <i>1.5 <math>\mu\text{F}</math></i> | 680 nF            | 220 $\mu\text{F}$ | 1.0 $\mu\text{F}$ | 1.5 $\mu\text{F}$ | 33 $\mu\text{F}$  | <i>1.5 <math>\mu\text{F}</math></i> | 3.3 $\mu\text{F}$ | <i>220 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$                   | 3.9 $\mu\text{F}$ | <i>47 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | 33 $\mu\text{F}$  | 1.5 $\mu\text{F}$ | 6.8 $\mu\text{F}$ | 39 $\mu\text{F}$  | 6                |
| 7           |             | <i>1.8 <math>\mu\text{F}</math></i> | 820 nF            | 220 $\mu\text{F}$ | 1.2 $\mu\text{F}$ | 1.8 $\mu\text{F}$ | 39 $\mu\text{F}$  | <i>1.8 <math>\mu\text{F}</math></i> | 3.9 $\mu\text{F}$ | <i>270 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | <i>56 <math>\mu\text{F}</math></i> | 1.5 $\mu\text{F}$                   | 5.6 $\mu\text{F}$ | 33 $\mu\text{F}$  | 1.8 $\mu\text{F}$ | 6.8 $\mu\text{F}$ | 47 $\mu\text{F}$  | 7                |
| 8           |             | <i>1.8 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$ | 270 $\mu\text{F}$ | 1.5 $\mu\text{F}$ | 2.2 $\mu\text{F}$ | 47 $\mu\text{F}$  | <i>1.8 <math>\mu\text{F}</math></i> | 4.7 $\mu\text{F}$ | <i>270 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | <i>68 <math>\mu\text{F}</math></i> | 1.8 $\mu\text{F}$                   | 6.8 $\mu\text{F}$ | 39 $\mu\text{F}$  | 2.2 $\mu\text{F}$ | 8.2 $\mu\text{F}$ | 56 $\mu\text{F}$  | 8                |
| 9           |             | <i>2.2 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$ | 330 $\mu\text{F}$ | 1.5 $\mu\text{F}$ | 2.2 $\mu\text{F}$ | 47 $\mu\text{F}$  | <i>2.2 <math>\mu\text{F}</math></i> | 5.6 $\mu\text{F}$ | <i>330 <math>\mu\text{F}</math></i> | 1.5 $\mu\text{F}$                   | 5.6 $\mu\text{F}$ | <i>68 <math>\mu\text{F}</math></i> | 1.8 $\mu\text{F}$                   | 6.8 $\mu\text{F}$ | 47 $\mu\text{F}$  | 2.7 $\mu\text{F}$ | 10 $\mu\text{F}$  | 56 $\mu\text{F}$  | 9                |
| 10          |             | <i>2.2 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$ | 330 $\mu\text{F}$ | 1.5 $\mu\text{F}$ | 2.7 $\mu\text{F}$ | 47 $\mu\text{F}$  | <i>2.2 <math>\mu\text{F}</math></i> | 5.6 $\mu\text{F}$ | <i>330 <math>\mu\text{F}</math></i> | 1.5 $\mu\text{F}$                   | 5.6 $\mu\text{F}$ | <i>68 <math>\mu\text{F}</math></i> | 2.2 $\mu\text{F}$                   | 8.2 $\mu\text{F}$ | 47 $\mu\text{F}$  | 2.7 $\mu\text{F}$ | 10 $\mu\text{F}$  | 68 $\mu\text{F}$  | 10               |
| <b>100V</b> |             | 2                                   | <i>390 nF</i>     | 180 nF            | 18 $\mu\text{F}$  | 150 nF            | 390 nF            | 4.7 $\mu\text{F}$                   | <i>330 nF</i>     | 1.0 $\mu\text{F}$                   | <i>22 <math>\mu\text{F}</math></i>  | 270 nF            | 1.0 $\mu\text{F}$                  | <i>10 <math>\mu\text{F}</math></i>  | 330 nF            | 1.2 $\mu\text{F}$ | 8.2 $\mu\text{F}$ | 470 nF            | 1.8 $\mu\text{F}$ | 12 $\mu\text{F}$ | 2 |
|             | 3           | <i>390 nF</i>                       | 330 nF            | 39 $\mu\text{F}$  | 270 nF            | 680 nF            | 8.2 $\mu\text{F}$ | <i>560 nF</i>                       | 1.5 $\mu\text{F}$ | <i>39 <math>\mu\text{F}</math></i>  | 470 nF                              | 1.8 $\mu\text{F}$ | <i>18 <math>\mu\text{F}</math></i> | 680 nF                              | 2.7 $\mu\text{F}$ | 15 $\mu\text{F}$  | 680 nF            | 2.7 $\mu\text{F}$ | 18 $\mu\text{F}$  | 3                |
|             | 4           | <i>560 nF</i>                       | 470 nF            | 56 $\mu\text{F}$  | 390 nF            | 1.0 $\mu\text{F}$ | 12 $\mu\text{F}$  | <i>1.2 <math>\mu\text{F}</math></i> | 2.2 $\mu\text{F}$ | <i>56 <math>\mu\text{F}</math></i>  | 680 nF                              | 2.7 $\mu\text{F}$ | <i>27 <math>\mu\text{F}</math></i> | 820 nF                              | 3.3 $\mu\text{F}$ | 18 $\mu\text{F}$  | 1.2 $\mu\text{F}$ | 4.7 $\mu\text{F}$ | 27 $\mu\text{F}$  | 4                |
|             | 5           | <i>680 nF</i>                       | 560 nF            | 68 $\mu\text{F}$  | 560 nF            | 1.2 $\mu\text{F}$ | 18 $\mu\text{F}$  | <i>1.2 <math>\mu\text{F}</math></i> | 2.7 $\mu\text{F}$ | <i>82 <math>\mu\text{F}</math></i>  | 680 nF                              | 2.7 $\mu\text{F}$ | <i>39 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$                   | 3.9 $\mu\text{F}$ | 22 $\mu\text{F}$  | 1.2 $\mu\text{F}$ | 5.6 $\mu\text{F}$ | 33 $\mu\text{F}$  | 5                |
|             | 6           | <i>1.0 <math>\mu\text{F}</math></i> | 680 nF            | 100 $\mu\text{F}$ | 680 nF            | 1.5 $\mu\text{F}$ | 22 $\mu\text{F}$  | <i>1.0 <math>\mu\text{F}</math></i> | 3.3 $\mu\text{F}$ | <i>100 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$                   | 3.9 $\mu\text{F}$ | <i>47 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | 33 $\mu\text{F}$  | 1.5 $\mu\text{F}$ | 6.8 $\mu\text{F}$ | 39 $\mu\text{F}$  | 6                |
|             | 7           | <i>1.2 <math>\mu\text{F}</math></i> | 820 nF            | 120 $\mu\text{F}$ | 820 nF            | 1.8 $\mu\text{F}$ | 27 $\mu\text{F}$  | <i>1.2 <math>\mu\text{F}</math></i> | 3.9 $\mu\text{F}$ | <i>120 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | <i>56 <math>\mu\text{F}</math></i> | 1.5 $\mu\text{F}$                   | 5.6 $\mu\text{F}$ | 33 $\mu\text{F}$  | 1.8 $\mu\text{F}$ | 6.8 $\mu\text{F}$ | 47 $\mu\text{F}$  | 7                |
|             | 8           | <i>1.2 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$ | 120 $\mu\text{F}$ | 1.0 $\mu\text{F}$ | 2.2 $\mu\text{F}$ | 27 $\mu\text{F}$  | <i>1.2 <math>\mu\text{F}</math></i> | 4.7 $\mu\text{F}$ | <i>150 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | <i>68 <math>\mu\text{F}</math></i> | 1.8 $\mu\text{F}$                   | 6.8 $\mu\text{F}$ | 39 $\mu\text{F}$  | 2.2 $\mu\text{F}$ | 8.2 $\mu\text{F}$ | 56 $\mu\text{F}$  | 8                |
|             | 9           | <i>1.5 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$ | 150 $\mu\text{F}$ | 1.2 $\mu\text{F}$ | 2.2 $\mu\text{F}$ | 33 $\mu\text{F}$  | <i>1.5 <math>\mu\text{F}</math></i> | 5.6 $\mu\text{F}$ | <i>150 <math>\mu\text{F}</math></i> | 1.5 $\mu\text{F}$                   | 5.6 $\mu\text{F}$ | <i>68 <math>\mu\text{F}</math></i> | 1.8 $\mu\text{F}$                   | 6.8 $\mu\text{F}$ | 47 $\mu\text{F}$  | 2.7 $\mu\text{F}$ | 10 $\mu\text{F}$  | 56 $\mu\text{F}$  | 9                |
|             | 10          | <i>1.5 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$ | 150 $\mu\text{F}$ | 1.2 $\mu\text{F}$ | 2.2 $\mu\text{F}$ | 33 $\mu\text{F}$  | <i>1.5 <math>\mu\text{F}</math></i> | 5.6 $\mu\text{F}$ | <i>150 <math>\mu\text{F}</math></i> | 1.5 $\mu\text{F}$                   | 5.6 $\mu\text{F}$ | <i>68 <math>\mu\text{F}</math></i> | 2.2 $\mu\text{F}$                   | 8.2 $\mu\text{F}$ | 47 $\mu\text{F}$  | 2.7 $\mu\text{F}$ | 10 $\mu\text{F}$  | 68 $\mu\text{F}$  | 10               |
|             | <b>200V</b> | 2                                   | <i>180 nF</i>     | 560 nF            | 3.3 $\mu\text{F}$ | 100 nF            | 560 nF            | 3.3 $\mu\text{F}$                   | <i>150 nF</i>     | 1.2 $\mu\text{F}$                   | <i>8.2 <math>\mu\text{F}</math></i> | 270 nF            | 1.0 $\mu\text{F}$                  | <i>6.8 <math>\mu\text{F}</math></i> | 330 nF            | 1.2 $\mu\text{F}$ | 8.2 $\mu\text{F}$ | 470 nF            | 1.8 $\mu\text{F}$ | 12 $\mu\text{F}$ | 2 |
| 3           |             | <i>180 nF</i>                       | 820 nF            | 4.7 $\mu\text{F}$ | 180 nF            | 820 nF            | 4.7 $\mu\text{F}$ | <i>270 nF</i>                       | 1.8 $\mu\text{F}$ | <i>12 <math>\mu\text{F}</math></i>  | 470 nF                              | 1.8 $\mu\text{F}$ | <i>12 <math>\mu\text{F}</math></i> | 680 nF                              | 2.7 $\mu\text{F}$ | 15 $\mu\text{F}$  | 680 nF            | 2.7 $\mu\text{F}$ | 18 $\mu\text{F}$  | 3                |
| 4           |             | <i>270 nF</i>                       | 1.0 $\mu\text{F}$ | 6.8 $\mu\text{F}$ | 270 nF            | 1.0 $\mu\text{F}$ | 6.8 $\mu\text{F}$ | <i>2.7 <math>\mu\text{F}</math></i> | 15 $\mu\text{F}$  | <i>15 <math>\mu\text{F}</math></i>  | 560 nF                              | 2.7 $\mu\text{F}$ | <i>15 <math>\mu\text{F}</math></i> | 820 nF                              | 3.3 $\mu\text{F}$ | 18 $\mu\text{F}$  | 1.2 $\mu\text{F}$ | 4.7 $\mu\text{F}$ | 27 $\mu\text{F}$  | 4                |
| 5           |             | <i>330 nF</i>                       | 1.2 $\mu\text{F}$ | 8.2 $\mu\text{F}$ | 390 nF            | 1.2 $\mu\text{F}$ | 8.2 $\mu\text{F}$ | <i>3.3 <math>\mu\text{F}</math></i> | 18 $\mu\text{F}$  | <i>18 <math>\mu\text{F}</math></i>  | 680 nF                              | 3.3 $\mu\text{F}$ | <i>22 <math>\mu\text{F}</math></i> | 1.0 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | 27 $\mu\text{F}$  | 1.2 $\mu\text{F}$ | 5.6 $\mu\text{F}$ | 33 $\mu\text{F}$  | 5                |
| 6           |             | <i>470 nF</i>                       | 1.5 $\mu\text{F}$ | 10 $\mu\text{F}$  | 470 nF            | 1.5 $\mu\text{F}$ | 10 $\mu\text{F}$  | <i>4.7 <math>\mu\text{F}</math></i> | 22 $\mu\text{F}$  | <i>22 <math>\mu\text{F}</math></i>  | 1.0 $\mu\text{F}$                   | 3.9 $\mu\text{F}$ | <i>27 <math>\mu\text{F}</math></i> | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | 33 $\mu\text{F}$  | 1.5 $\mu\text{F}$ | 6.8 $\mu\text{F}$ | 39 $\mu\text{F}$  | 6                |
| 7           |             | <i>560 nF</i>                       | 1.8 $\mu\text{F}$ | 12 $\mu\text{F}$  | 560 nF            | 1.8 $\mu\text{F}$ | 12 $\mu\text{F}$  | <i>5.6 <math>\mu\text{F}</math></i> | 27 $\mu\text{F}$  | <i>27 <math>\mu\text{F}</math></i>  | 1.2 $\mu\text{F}$                   | 4.7 $\mu\text{F}$ | <i>27 <math>\mu\text{F}</math></i> | 1.5 $\mu\text{F}$                   | 6.8 $\mu\text{F}$ | 39 $\mu\text{F}$  | 1.8 $\mu\text{F}$ | 6.8 $\mu\text{F}$ | 47 $\mu\text{F}$  | 7                |
| 8           |             | <i>560 nF</i>                       | 2.2 $\mu\text{F}$ |                   |                   |                   |                   |                                     |                   |                                     |                                     |                   |                                    |                                     |                   |                   |                   |                   |                   |                  |



# STACKED CAPACITOR High Compact

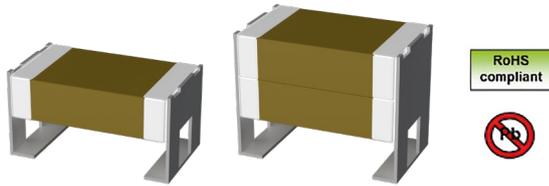
10V - 2000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Smoothing signals
- Energy storage
- Converters, inverters



## FEATURES

- Low ESR and ESL design
- Auto range based on AECQ -200 generic requirement
- Extended range based on commercial grade
- High Reliability Copper Beryllium Lead Frame
- Available in Tin or SnPb Plating

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**

NPO, X7R : - 55°C, + 125°C  
X5R : - 55°C, + 85°C  
Y5V : - 25°C, + 85°C

**TEMPERATURE COEFFICIENT :**

X7R : ± 15% with 0Vdc applied  
X5R : ± 15% with 0Vdc applied  
Y5V : +30% -80% with 0Vdc applied

**DISSIPATION FACTOR :**

NPO : ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
          : ≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 5% (10V), ≤ 3.5% (16V and 25V) and ≤ 2.5% (50V to 2000V)  
X5R : ≤ 15% (6.3V), ≤ 10% (16V, 25V, 35V)  
Y5V : ≤ 12.5% (16V)

**INSULATION RESISTANCE (IR) :**

25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**

2.5U U≤200V | U+250V 200<U≤500 | 1.5U 500<U<1000 | 1.2U U≥1000  
for 5s with 50mA max charging current

## ORDERING INFORMATION

| SRH   | D                         | 1210                 | Y  | 106  | K  | Q   | -                                 | A                          | B         | -                            |
|-------|---------------------------|----------------------|--|--|--|---|-----------------------------------|----------------------------|-----------|------------------------------|
| SERIE | CHIPS                     | SIZE                 | DIELECTRIC                               | CAPACITANCE  | TOLERANCE  | VOLTAGE   | LEAD FRAME                        | RANGE                      | PACKAGING | SPECIAL                      |
| SRH   | S = 1 chip<br>D = 2 chips | 1210<br>1812<br>2220 | A = NPO<br>Y = X7R<br>S = X5R<br>V = Y5V | Expressed in picofarads (pF)<br>The first two digits are significant, the third digit gives the number of noughts<br>Example : 102 = 1 000pF | J = ± 5% (1 chip NPO)<br>K = ± 10% (1 chip Class II/ 2 chips NPO)<br>M = ± 20% (1 or 2 chips Class II) | Q = 10V<br>J = 16 V<br>X = 25 V<br>A = 50 V<br>U = 63 V<br>B = 100 V<br>P = 250 V<br>E = 500 V<br>F = 630 V<br>G = 1000 V<br>O = 1500 V<br>H = 2000 V | - = Tin Plated<br>N = SnPb Plated | A = AECQ<br>E = Commercial | B = Reel  | Dxx = Reliability parameters |

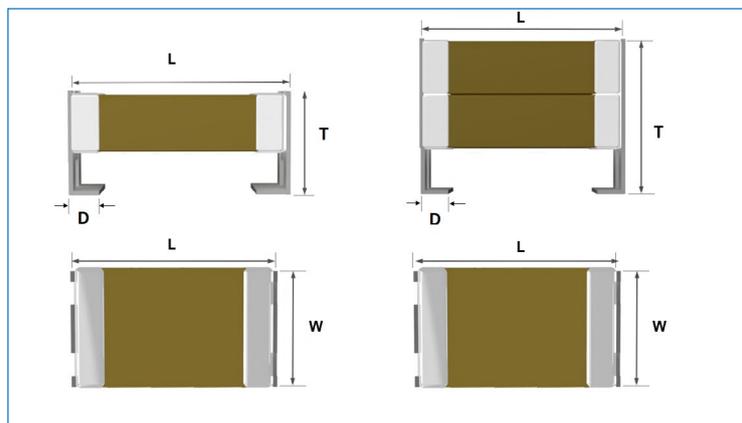
For any other size, voltage and tolerance please contact us.

## DIMENSIONS J (In millimeters)

| 1 CHIP STACK       | 1210        | 1812        | 2220        |
|--------------------|-------------|-------------|-------------|
| Length (L)         | 3.50 ± 0.30 | 5.00 ± 0.45 | 6.00 ± 0.50 |
| Width (W)          | 2.60 ± 0.30 | 3.5 ± 0.50  | 5.00 ± 0.50 |
| Max Height std (T) | 3.35 ± 0.10 | 2.90 ± 0.20 | 3.50 ± 0.30 |
| Max Height alt (T) | 3.20 ± 0.10 | 4.10 ± 0.20 | 4.10 ± 0.30 |
| Lead Width (D)     | 0.80 ± 0.15 | 1.10 ± 0.30 | 1.60 ± 0.30 |

| 2 CHIPS STACK      | 1210        | 1812        | 2220        |
|--------------------|-------------|-------------|-------------|
| Length (L)         | 3.50 ± 0.30 | 5.00 ± 0.45 | 6.00 ± 0.50 |
| Width (W)          | 2.60 ± 0.30 | 3.5 ± 0.50  | 5.00 ± 0.50 |
| Max Height std (T) | 6.15 ± 0.15 | 5.00 ± 0.5  | 5.00 ± 0.50 |
| Max Height alt (T) | 5.20 ± 0.15 | 7.20 ± 0.50 | 7.20 ± 0.50 |
| Lead Width (D)     | 0.80 ± 0.15 | 1.10 ± 0.30 | 1.60 ± 0.30 |

Refere to Value Chart for Height std or Height alt



This document is subject to change without notice.

# STACKED CAPACITOR High Compact

10V - 2000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## VALUES CHART

| SIZE         |      |        | 1210   |       |       |       |       |        |        | 1812   |       |       |       |       |        |        | 2220   |        |        |        |        |       |       |       |        |        |        |        |  |
|--------------|------|--------|--------|-------|-------|-------|-------|--------|--------|--------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|--------|--------|--------|--------|--|
| DIELECTRIC   |      |        | X7R    |       |       |       |       |        |        | X7R    |       |       |       |       |        |        | X7R    |        |        |        |        |       |       |       |        |        |        |        |  |
| MAX AUTO     |      |        | 47 µF  | 47 µF | 47 µF | 22 µF | 10 µF | 1.5 µF | 330 nF | 330 nF | 22 µF | 22 µF | 22 µF | 10 µF | 4.7 µF | 1.5 µF | 470 nF | 220 nF | 220 nF | 47 µF  | 47 µF  | 22 µF | 22 µF | 22 µF | 2.2 µF | 1.2 µF | 1.2 µF | 470 nF |  |
| MAX NON AUTO |      |        | 100 µF | 47 µF | 47 µF | 22 µF | 10 µF | 1.5 µF | 330 nF | 330 nF | 22 µF | 68 µF | 22 µF | 22 µF | 10 µF  | 2.2 µF | 1 µF   | 470 nF | 220 nF | 100 µF | 100 µF | 47 µF | 22 µF | 22 µF | 4.7 µF | 2.2 µF | 2.2 µF | 470 nF |  |
| Nb. chip     | CODE | CAP    | 10V    | 16V   | 25V   | 50V   | 100V  | 250V   | 500V   | 630V   | 10V   | 16V   | 25V   | 50V   | 100V   | 250V   | 500V   | 630V   | 1000V  | 16V    | 25V    | 50V   | 63V   | 100V  | 250V   | 500V   | 630V   | 1000V  |  |
| 1 chip       | 104  | 100 nF |        |       |       |       |       |        | A/E    | A/E    |       |       |       |       |        | A/E    | A/E    | A/E    |        |        |        |       |       |       |        |        |        |        |  |
|              | 154  | 150 nF |        |       |       |       |       |        | A/E    | A/E    |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        |        |        |        |  |
|              | 224  | 220 nF |        |       |       |       |       |        | A/E    |        |       |       |       |       |        |        | A/E    | E      |        |        |        |       |       |       |        |        |        | A/E    |  |
|              | 334  | 330 nF |        |       |       |       |       |        |        |        |       |       |       |       |        |        | E      |        |        |        |        |       |       |       |        |        |        |        |  |
|              | 474  | 470 nF |        |       |       |       |       |        | A/E    |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        | A/E    | A/E    | A/E    |  |
|              | 564  | 560 nF |        |       |       |       |       |        |        |        |       |       |       |       | A/E    |        |        |        |        |        |        |       |       |       |        | A/E    | A/E    |        |  |
|              | 684  | 680 nF |        |       |       |       |       |        | E      |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        | A/E    | A/E    |        |  |
|              | 105  | 1.0 µF |        |       |       |       |       |        |        |        |       |       |       |       |        | E      |        |        |        |        |        |       |       | A/E   | E      | E      |        |        |  |
|              | 225  | 2.2 µF |        |       |       |       |       |        | A/E    |        |       |       |       |       |        |        |        |        |        |        |        |       |       | A/E   | E      |        |        |        |  |
|              | 475  | 4.7 µF |        |       |       |       |       |        | A/E    |        |       |       |       | A/E   | E      |        |        |        |        |        |        |       |       | A/E   |        |        |        |        |  |
|              | 565  | 5.6 µF |        |       |       |       |       |        |        | A/E    |       |       |       |       |        |        |        |        |        |        |        |       |       |       | A/E    | A/E    |        |        |  |
|              | 685  | 6.8 µF |        |       |       |       |       |        |        | A/E    |       |       |       |       |        |        |        |        |        |        |        |       |       |       | A/E    | A/E    |        |        |  |
|              | 825  | 8.2 µF |        |       |       |       |       |        |        | A/E    |       |       |       |       |        |        |        |        |        |        |        |       |       |       | A/E    | A/E    |        |        |  |
|              | 106  | 10 µF  |        | A/E   | A/E   | A/E   | A/E   |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       | A/E   | A/E    | A/E    |        |        |  |
|              | 156  | 15 µF  |        |       |       |       |       |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       | E      |        |        |        |  |
|              | 226  | 22 µF  |        | A/E   | A/E   | A/E   |       |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       | E      |        |        |        |  |
|              | 476  | 47 µF  |        | E     |       |       |       |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       | E      | E      |        |        |  |
| 2 chips      | 225  | 220 nF |        |       |       |       |       |        | A/E    | A/E    |       |       |       |       |        | A/E    | A/E    | A/E    |        |        |        |       |       |       |        |        |        |        |  |
|              | 335  | 330 nF |        |       |       |       |       |        | A/E    | A/E    |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        |        |        |        |  |
|              | 474  | 470 nF |        |       |       |       |       |        | A/E    |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        |        |        | A/E    |  |
|              | 664  | 660 nF |        |       |       |       |       |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        |        |        |        |  |
|              | 105  | 1.0 µF |        |       |       |       |       |        | A/E    |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        | A/E    | A/E    | A/E    |  |
|              | 125  | 1.2 µF |        |       |       |       |       |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        |        | A/E    | A/E    |  |
|              | 155  | 1.5 µF |        |       |       |       |       |        | E      |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        | A/E    | A/E    |        |  |
|              | 225  | 2.2 µF |        |       |       |       |       |        |        |        |       |       |       |       |        | E      |        |        |        |        |        |       |       |       | A/E    | E      | E      |        |  |
|              | 475  | 4.7 µF |        |       |       |       |       |        |        |        |       |       |       |       |        | A/E    | E      |        |        |        |        |       |       |       |        |        |        |        |  |
|              | 106  | 10 µF  |        |       |       |       |       |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        |        |        |        |  |
|              | 166  | 15 µF  |        |       |       |       |       |        |        | A/E    | A/E   | A/E   |       |       |        |        |        |        |        |        |        |       |       |       |        |        |        |        |  |
|              | 226  | 22 µF  |        | A/E   | A/E   | A/E   | A/E   |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        |        |        |        |  |
|              | 336  | 33 µF  |        |       |       |       |       |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        |        |        |        |  |
|              | 476  | 47 µF  |        | A/E   | A/E   | A/E   |       |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        |        |        |        |  |
|              | 107  | 100 µF |        | E     |       |       |       |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |       |        |        |        |        |  |

A : Auto generic range E : Commercial range White : Height std Black : Height alt

| SIZE         |        |        | 1210   |        |       |       |       |       |        | 1812   |        |        |        |        |        |       | 2220  |        |        |        |        |        |        |        |       |       |   |   |
|--------------|--------|--------|--------|--------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|-------|-------|--------|--------|--------|--------|--------|--------|--------|-------|-------|---|---|
| DIELECTRIC   |        |        | NPO    |        |       |       |       |       |        | NPO    |        |        |        |        |        |       | NPO   |        |        |        |        |        |        |        |       |       |   |   |
| MAX AUTO     |        |        | 200 nF | 200 nF | 94 nF | 66 nF | 66 nF | 44 nF | -      | -      | 300 nF | 200 nF | 200 nF | 94 nF  | 94 nF  | -     | -     | -      | 940 nF | 440 nF | 300 nF | 200 nF | 300 nF | 300 nF | 66 nF | -     | - |   |
| MAX NON AUTO |        |        | 300 nF | 200 nF | 94 nF | 66 nF | 66 nF | 66 nF | 4.4 nF | 4.4 nF | 440 nF | 300 nF | 200 nF | 140 nF | 140 nF | 44 nF | 16 nF | 9.4 nF | 940 nF | 660 nF | 300 nF | 300 nF | 300 nF | 200 nF | 66 nF | 66 nF |   |   |
| Nb. chip     | CODE   | CAP    | 50V    | 100V   | 250V  | 500V  | 630V  | 1000V | 1500V  | 2000V  | 50V    | 100V   | 250V   | 500V   | 630V   | 1000V | 1500V | 2000V  | 50V    | 100V   | 250V   | 500V   | 630V   | 1000V  | 1500V | 2000V |   |   |
| 1 chip       | 122    | 1.2 nF |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       | E      |        |        |        |        |        |        |       |       |   |   |
|              | 222    | 2.2 nF |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       | A/E    |        |        |        |        |        |        |       |       |   |   |
|              | 103    | 10 nF  |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       | A/E    |        |        |        |        |        |        |       |       |   |   |
|              | 223    | 22 nF  |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 333    | 33 nF  |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       | A/E   | E | E |
|              | 473    | 47 nF  |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 683    | 68 nF  |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 104    | 100 nF |        | A/E    | A/E   |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 154    | 150 nF |        | E      |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 224    | 220 nF |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
| 334          | 330 nF |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
| 474          | 470 nF |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
| 2 chips      | 224    | 2.4 nF |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 442    | 4.4 nF |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       | E     | E |   |
|              | 203    | 20 nF  |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 443    | 44 nF  |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 663    | 66 nF  |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 943    | 94 nF  |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 143    | 140 nF |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 204    | 220 nF |        | A/E    | A/E   |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 304    | 300 nF |        | E      |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
|              | 444    | 440 nF |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
| 664          | 660 nF |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |
| 944          | 940 nF |        |        |        |       |       |       |       |        |        |        |        |        |        |        |       |       |        |        |        |        |        |        |        |       |       |   |   |

A : Auto generic range E : Commercial range White : Height std Black : Height alt

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| SIZE       |      |        | 1210 |     |     |     | 1812 |
|------------|------|--------|------|-----|-----|-----|------|
| DIELECTRIC |      |        | X5R  |     |     |     | Y5V  |
| Nb chip    | CODE | CAP    | 6.3V | 16V | 25V | 35V | 16V  |
| 1 chip     | 106  | 10 µF  |      |     |     | E   |      |
|            | 226  | 22 µF  |      |     |     | E   |      |
|            | 476  | 47 µF  |      | E   | E   |     | E    |
|            | 107  | 100 µF |      | E   |     |     |      |
|            | 227  | 220 µF | E    |     |     |     |      |
| 2 chips    | 226  | 22 µF  |      |     |     | E   |      |
|            | 476  | 47 µF  |      |     |     | E   |      |
|            | 107  | 100 µF |      | E   | E   |     | E    |
|            | 227  | 220 µF |      | E   |     |     |      |
|            | 477  | 470 µF | E    |     |     |     |      |

**A** : Auto generic range **E** : Commercial range *White* : Height std *Black* : Height alt

Contact us for any other voltage, capacitance value, tolerance...

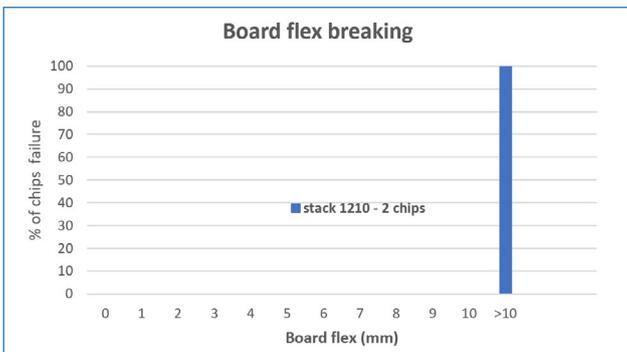
## AECQ QUALITY STANDARD

Our components are all subject so strict internal qualifications. For this series, our auto generic range is based on AECQ standards. This means that our chips will meet the quality requirements defined by the AEC.

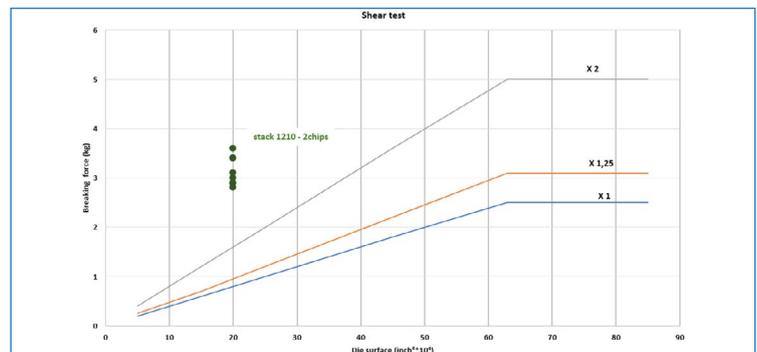
The Auto generic range of our high compact series are designed to meet the Automotive industry standard, but will not require submitting a SCD (Source Controlled Drawing). This series is therefore not AEC qualified, and will not be primarily addressed to Automotive customers. These quality standards include specific tests, such as : Shear test, board flex, environmental tests, and these stacks insure good performance and reliability.

## TYPICAL CHARACTERISTICS

### Board Flex Breaking



### Shear test



# RADIAL CAPACITOR Dipped High Power

NPO N2T X7R 25V-1000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Severe environment
- Historical design



## FEATURES

- Highly reliable design
- Epoxy coating option
- Available in NPO, N2T, BX, 2X1, X7R
- Non magnetic option
- Equivalence to most competitors design (cf file)

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
N2T : 2200 ± 350 ppm/°C  
X7R : ± 15% with 0Vdc applied

**DISSIPATION FACTOR:**  
NPO/N2T: ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 0.025 at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5Un U≤200V | U+250V 200<U≤500 | 1.5U 500<U<1000 | 1.2U U≥1000  
for 5s with 50mA max charging current

**BURN IN :**  
Chips 24H+Stack 48H 125°C 2U U<500V | 1.5U 500≤U<1000 | 1.2U U=1000

## ORDERING INFORMATION

| SRMC   | 41       | Y   | 102   | J  | A   | -                          | -                                    | H  | V                    | -   |
|--------|----------|---|---|--|---|----------------------------|--------------------------------------|--|----------------------|---|
| SERIES | SIZE     | DIELECTRIC  | CAPACITANCE   | TOLERANCE  | VOLTAGE   | TERMINATION                | LEAD                                 | COATING                                    | PACKAGING            | SPECIAL   |
| SRMC   | 31 to 96 | A = NPO<br>P = N2T<br>Y = X7R<br>X = BX<br>BY = 2C1 | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit give the number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | B = ± 0.1pF<br>C = ± 0,25pF<br>D = ± 0,5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | X = 25V<br>A = 50V<br>B = 100V<br>C = 200V<br>E = 500V<br>G = 1000V | - = Sn<br>C = Non magnetic | - = Default A,C,D Form<br>B = B Form | - = Conformal Coating<br>H = Epoxy Coating | V = Bulk<br>B = Ammo | -<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

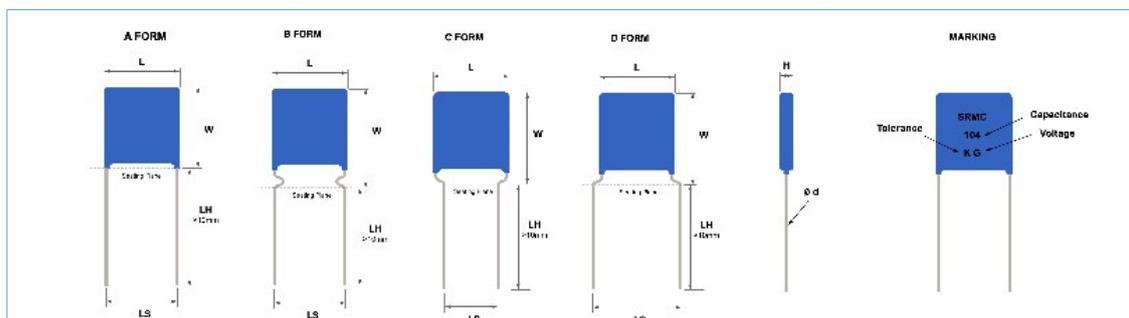
For other sizes, voltage, tolerance contact us

## DIMENSIONS (in millimeters)

| SIZE                   | 31   | 32   | 38   | 40   | 41   | 43   | 44   | 45   | 47   | 48   | 49   | 52   | 54   | 58   |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lenght (L) max         | 3.8  | 5.0  | 6.4  | 3.8  | 5.1  | 6.5  | 7.6  | 10.1 | 8.1  | 5.1  | 9.4  | 6.6  | 9.0  | 11.9 |
| Height A (W) max       | 3.8  | 5.0  | 5.6  | 3.8  | -    | 5.8  | 7.6  | 11.7 | 7.1  | -    | 7.6  | -    | 7.5  | 10.2 |
| Height B (W) max       | 6.3  | 7.5  | 8.1  | 6.3  | 7.6  | 8.3  | 10.1 | 14.4 | 9.6  | 6.3  | 10.1 | 8.1  | 10.0 | 12.7 |
| Height C (W) max       | -    | 5.0  | 5.6  | -    | -    | -    | 7.6  | 11.7 | 7.1  | -    | -    | -    | -    | -    |
| Height D (W) max       | -    | -    | -    | 3.8  | 5.1  | -    | -    | -    | -    | 3.8  | -    | 5.6  | -    | -    |
| Width (H) max          | 2.5  | 3.2  | 5.0  | 2.5  | 3.2  | 3.8  | 4.5  | 4.5  | 5.0  | 4.0  | 5.0  | 4.0  | 4.0  | 5.0  |
| Lead spacing (LS) ±0.5 | 2.54 | 2.54 | 4.30 | 5.08 | 5.08 | 5.08 | 5.08 | 5.08 | 5.60 | 6.40 | 7.00 | 7.62 | 7.62 | 9.50 |
| Lead diameter (d) ±0.1 | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| Default Lead type      | A    | C    | V    | D    | D    | A    | C    | C    | C    | D    | A    | D    | A    | A    |

| SIZE                   | 63    | 68    | 72    | 74    | 76    | 80    | 82    | 84    | 88    | 90    | 91    | 92    | 96    | 96    |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lenght (L) max         | 12.7  | 14.5  | 13.2  | 17.0  | 17.0  | 18.7  | 19.6  | 20.0  | 22.1  | 25.0  | 26.7  | 30.0  | 42.5  | 0.0   |
| Height A (W) max       | 12.3  | 12.7  | -     | 14.0  | 12.5  | 22.5  | 18.3  | 17.5  | 16.8  | 19.0  | 12.7  | 22.5  | 21.0  | 21.0  |
| Height B (W) max       | 13.5  | 15.0  | 15.0  | 15.0  | 15.0  | 25.0  | 20.8  | 20.0  | 19.3  | 21.5  | 15.4  | 25.0  | 23.5  | 23.5  |
| Height C (W) max       | -     | -     | -     | -     | -     | 22.5  | 18.3  | -     | -     | -     | -     | -     | -     | -     |
| Height D (W) max       | -     | 12.7  | 12.5  | -     | -     | 0.0   | -     | -     | -     | -     | -     | -     | -     | -     |
| Width (H) max          | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead spacing (LS) ±0.5 | 10.16 | 12.00 | 12.70 | 14.60 | 15.24 | 15.24 | 17.10 | 17.80 | 20.30 | 21.00 | 22.90 | 27.94 | 40.64 | 40.64 |
| Lead diameter (d) ±0.1 | 0.6   | 0.6   | 0.6   | 0.6   | 0.8   | 0.8   | 0.8   | 0.8   | 0.8   | 0.8   | 0.8   | 0.8   | 1.0   | 1.0   |
| Default Lead type      | A     | D     | D     | A     | A     | A     | C     | A     | A     | A     | A     | A     | A     | A     |



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# RADIAL CAPACITOR Dipped High Power

NPO N2T X7R 25V-1000V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## QUICK REFERENCE DATA (Max capacitance)

|              | SRMC31 |        |        | SRMC32 |        |        | SRMC38 |        |        | SRMC40 |        |        | SRMC41 |        |        | SRMC43 |        |        | SRMC44 |        |        |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|              | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| <b>min</b>   | 10 pF  | 47 pF  | 100 pF | 1.0 pF | 10 pF  | 33 pF  | 0.4 pF | 4.7 pF | 10 pF  | 1.0 pF | 10 pF  | 33 pF  | 1.0 pF | 4.7 pF | 10 pF  | 1.0 pF | 10 pF  | 33 pF  | 10 pF  | 47 pF  | 100 pF |
| <b>25V</b>   | 150 nF | 680 nF | 3.9 μF | 470 nF | 330 nF | 47 μF  | 220 nF | 39 nF  | 10 μF  | 82 nF  | 330 nF | 2.2 μF | 220 nF | 120 nF | 22 μF  | 82 nF  | 330 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF |
| <b>50V</b>   | 150 nF | 680 nF | 3.9 μF | 470 nF | 330 nF | 47 μF  | 220 nF | 39 nF  | 10 μF  | 82 nF  | 330 nF | 2.2 μF | 220 nF | 120 nF | 6.8 μF | 82 nF  | 330 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF |
| <b>100V</b>  | 150 nF | 680 nF | 3.9 μF | 330 nF | 330 nF | 22 μF  | 100 nF | 39 nF  | 2.2 μF | 82 nF  | 330 nF | 2.2 μF | 150 nF | 120 nF | 4.7 μF | 82 nF  | 330 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF |
| <b>200V</b>  | 150 nF | 680 nF | 3.9 μF | 150 nF | 330 nF | 1.8 μF | 22 nF  | 39 nF  | 220 nF | 82 nF  | 330 nF | 2.2 μF | 100 nF | 120 nF | 820 nF | 82 nF  | 330 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF |
| <b>250V</b>  | 150 nF | 680 nF | 3.9 μF | 150 nF | 330 nF | 1.8 μF | 22 nF  | 39 nF  | 220 nF | 82 nF  | 330 nF | 1.8 μF | 100 nF | 120 nF | 820 nF | 82 nF  | 330 nF | 1.8 μF | 150 nF | 680 nF | 3.9 μF |
| <b>500V</b>  | 150 nF | 470 nF | 1.8 μF | 68 nF  | 220 nF | 820 nF | 8.2 nF | 27 nF  | 82 nF  | 82 nF  | 270 nF | 1.0 μF | 33 nF  | 100 nF | 330 nF | 82 nF  | 270 nF | 1.0 μF | 150 nF | 470 nF | 1.8 μF |
| <b>630V</b>  | 120 nF | 390 nF | 1.2 μF | 56 nF  | 180 nF | 560 nF | 6.8 nF | 18 nF  | 47 nF  | 68 nF  | 220 nF | 680 nF | 27 nF  | 82 nF  | 270 nF | 68 nF  | 220 nF | 680 nF | 120 nF | 390 nF | 1.2 μF |
| <b>1000V</b> | 82 nF  | 270 nF | 820 nF | 39 nF  | 120 nF | 330 nF | 2.7 nF | 8.2 nF | 15 nF  | 39 nF  | 120 nF | 390 nF | 15 nF  | 47 nF  | 120 nF | 39 nF  | 120 nF | 390 nF | 82 nF  | 270 nF | 820 nF |

|              | SRMC45 |        |        | SRMC47 |        |        | SRMC48 |        |        | SRMC49 |        |        | SRMC52 |        |        | SRMC54 |        |        | SRMC58 |        |        |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|              | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| <b>min</b>   | 10 pF  | 47 pF  | 100 pF | 1.0 pF | 10 pF  | 33 pF  | 0.4 pF | 4.7 pF | 10 pF  | 1.0 pF | 10 pF  | 33 pF  | 1.0 pF | 4.7 pF | 10 pF  | 1.0 pF | 10 pF  | 33 pF  | 10 pF  | 47 pF  | 100 pF |
| <b>25V</b>   | 150 nF | 680 nF | 3.9 μF | 470 nF | 330 nF | 47 μF  | 220 nF | 39 nF  | 10 μF  | 82 nF  | 330 nF | 2.2 μF | 220 nF | 120 nF | 22 μF  | 82 nF  | 330 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF |
| <b>50V</b>   | 150 nF | 680 nF | 3.9 μF | 470 nF | 330 nF | 47 μF  | 220 nF | 39 nF  | 10 μF  | 82 nF  | 330 nF | 2.2 μF | 220 nF | 120 nF | 6.8 μF | 82 nF  | 330 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF |
| <b>100V</b>  | 150 nF | 680 nF | 3.9 μF | 330 nF | 330 nF | 22 μF  | 100 nF | 39 nF  | 2.2 μF | 82 nF  | 330 nF | 2.2 μF | 150 nF | 120 nF | 4.7 μF | 82 nF  | 330 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF |
| <b>200V</b>  | 150 nF | 680 nF | 3.9 μF | 150 nF | 330 nF | 1.8 μF | 22 nF  | 39 nF  | 220 nF | 82 nF  | 330 nF | 2.2 μF | 100 nF | 120 nF | 820 nF | 82 nF  | 330 nF | 2.2 μF | 150 nF | 680 nF | 3.9 μF |
| <b>250V</b>  | 150 nF | 680 nF | 3.9 μF | 150 nF | 330 nF | 1.8 μF | 22 nF  | 39 nF  | 220 nF | 82 nF  | 330 nF | 1.8 μF | 100 nF | 120 nF | 820 nF | 82 nF  | 330 nF | 1.8 μF | 150 nF | 680 nF | 3.9 μF |
| <b>500V</b>  | 150 nF | 470 nF | 1.8 μF | 68 nF  | 220 nF | 820 nF | 8.2 nF | 27 nF  | 82 nF  | 82 nF  | 270 nF | 1.0 μF | 33 nF  | 100 nF | 330 nF | 82 nF  | 270 nF | 1.0 μF | 150 nF | 470 nF | 1.8 μF |
| <b>630V</b>  | 120 nF | 390 nF | 1.2 μF | 56 nF  | 180 nF | 560 nF | 6.8 nF | 18 nF  | 47 nF  | 68 nF  | 220 nF | 680 nF | 27 nF  | 82 nF  | 270 nF | 68 nF  | 220 nF | 680 nF | 120 nF | 390 nF | 1.2 μF |
| <b>1000V</b> | 82 nF  | 270 nF | 820 nF | 39 nF  | 120 nF | 330 nF | 2.7 nF | 8.2 nF | 15 nF  | 39 nF  | 120 nF | 390 nF | 15 nF  | 47 nF  | 120 nF | 39 nF  | 120 nF | 390 nF | 82 nF  | 270 nF | 820 nF |

|              | SRMC60 |        |        | SRMC63 |        |        | SRMC68 |        |        | SRMC72 |        |        | SRMC74 |        |        | SRMC76 |        |        | SRMC80 |        |        |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|              | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| <b>min</b>   | 10 pF  | 47 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF |
| <b>100V</b>  | 150 nF | 680 nF | 3.9 μF | 270 nF | 1.0 μF | 5.6 μF | 270 nF | 1.0 μF | 6.8 μF | 220 nF | 820 nF | 5.6 μF | 390 nF | 1.5 μF | 10 μF  | 330 nF | 1.2 μF | 8.2 μF | 560 nF | 2.2 μF | 15 μF  |
| <b>200V</b>  | 150 nF | 680 nF | 3.9 μF | 270 nF | 1.0 μF | 5.6 μF | 270 nF | 1.0 μF | 6.8 μF | 220 nF | 820 nF | 5.6 μF | 390 nF | 1.5 μF | 10 μF  | 330 nF | 1.2 μF | 8.2 μF | 560 nF | 2.2 μF | 15 μF  |
| <b>250V</b>  | 150 nF | 680 nF | 3.9 μF | 270 nF | 1.0 μF | 5.6 μF | 270 nF | 1.0 μF | 6.8 μF | 220 nF | 820 nF | 5.6 μF | 390 nF | 1.5 μF | 10 μF  | 330 nF | 1.2 μF | 8.2 μF | 560 nF | 2.2 μF | 15 μF  |
| <b>300V</b>  | 150 nF | 680 nF | 3.3 μF | 270 nF | 1.0 μF | 5.6 μF | 270 nF | 1.0 μF | 5.6 μF | 220 nF | 820 nF | 4.7 μF | 390 nF | 1.5 μF | 8.2 μF | 330 nF | 1.2 μF | 6.8 μF | 560 nF | 2.2 μF | 15 μF  |
| <b>500V</b>  | 150 nF | 470 nF | 1.8 μF | 270 nF | 820 nF | 2.7 μF | 270 nF | 820 nF | 3.3 μF | 220 nF | 680 nF | 2.7 μF | 390 nF | 1.5 μF | 4.7 μF | 330 nF | 1.0 μF | 3.9 μF | 560 nF | 2.2 μF | 8.2 μF |
| <b>630V</b>  | 120 nF | 390 nF | 1.2 μF | 220 nF | 680 nF | 2.2 μF | 220 nF | 680 nF | 2.7 μF | 180 nF | 560 nF | 1.8 μF | 330 nF | 1.2 μF | 3.9 μF | 270 nF | 820 nF | 2.7 μF | 560 nF | 1.8 μF | 6.8 μF |
| <b>1000V</b> | 82 nF  | 270 nF | 820 nF | 120 nF | 390 nF | 1.2 μF | 150 nF | 470 nF | 1.5 μF | 120 nF | 390 nF | 1.2 μF | 220 nF | 680 nF | 2.2 μF | 180 nF | 560 nF | 1.8 μF | 390 nF | 1.2 μF | 3.9 μF |

|              | SRMC82 |        |        | SRMC84 |        |        | SRMC88 |        |        | SRMC90 |        |        | SRMC91 |        |        | SRMC92 |        |        | SRMC96 |        |        |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|              | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| <b>min</b>   | 10 pF  | 33 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF | 22 pF  | 68 pF  | 180 pF | 22 pF  | 68 pF  | 180 pF |
| <b>100V</b>  | 560 nF | 2.2 μF | 12 μF  | 560 nF | 2.2 μF | 12 μF  | 560 nF | 2.2 μF | 15 μF  | 560 nF | 2.2 μF | 15 μF  | 470 nF | 1.8 μF | 12 μF  | 820 nF | 2.7 μF | 18 μF  | 1.0 μF | 3.9 μF | 27 μF  |
| <b>200V</b>  | 560 nF | 2.2 μF | 12 μF  | 560 nF | 2.2 μF | 12 μF  | 560 nF | 2.2 μF | 15 μF  | 560 nF | 2.2 μF | 15 μF  | 470 nF | 1.8 μF | 12 μF  | 820 nF | 2.7 μF | 18 μF  | 1.0 μF | 3.9 μF | 27 μF  |
| <b>250V</b>  | 560 nF | 2.2 μF | 12 μF  | 560 nF | 2.2 μF | 12 μF  | 560 nF | 2.2 μF | 15 μF  | 560 nF | 2.2 μF | 15 μF  | 470 nF | 1.8 μF | 12 μF  | 820 nF | 2.7 μF | 18 μF  | 1.0 μF | 3.9 μF | 27 μF  |
| <b>300V</b>  | 560 nF | 2.2 μF | 12 μF  | 560 nF | 2.2 μF | 12 μF  | 560 nF | 2.2 μF | 15 μF  | 560 nF | 2.2 μF | 15 μF  | 470 nF | 1.8 μF | 12 μF  | 820 nF | 2.7 μF | 18 μF  | 1.0 μF | 3.9 μF | 27 μF  |
| <b>500V</b>  | 560 nF | 1.8 μF | 6.8 μF | 560 nF | 1.8 μF | 6.8 μF | 560 nF | 2.2 μF | 8.2 μF | 560 nF | 2.2 μF | 8.2 μF | 470 nF | 1.8 μF | 6.8 μF | 820 nF | 2.7 μF | 12 μF  | 1.0 μF | 3.9 μF | 18 μF  |
| <b>630V</b>  | 470 nF | 1.5 μF | 5.6 μF | 470 nF | 1.5 μF | 5.6 μF | 560 nF | 1.8 μF | 5.6 μF | 560 nF | 1.8 μF | 6.8 μF | 470 nF | 1.5 μF | 4.7 μF | 820 nF | 2.7 μF | 8.2 μF | 1.0 μF | 3.9 μF | 12 μF  |
| <b>1000V</b> | 330 nF | 1.0 μF | 3.3 μF | 330 nF | 1.0 μF | 3.3 μF | 390 nF | 1.2 μF | 3.9 μF | 390 nF | 1.2 μF | 3.9 μF | 270 nF | 820 nF | 2.7 μF | 470 nF | 1.5 μF | 4.7 μF | 680 nF | 2.2 μF | 6.8 μF |

1) Max Values in italic obtained with BME parts

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# RADIAL CAPACITOR Dipped High Voltage

NPO N2T X7R 1KV-15KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Severe environment
- Historical design



## FEATURES

- Highly reliable design
- Epoxy coating option
- Available in NPO, N2T, BX, 2X1, X7R
- Non magnetic option
- Equivalence to most concurrent design (cf file)
- Marking on larger components

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
- 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
N2T : 2200 ± 350 ppm/°C  
X7R : ± 15% with 0Vdc applied

**DISSIPATION FACTOR:**  
NPO/N2T : ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
                  ≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 0.025 at 1kHz  
2C1, BX : Q2,5% max

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
1.2Un for 5s with 50mA max charging current

**BURN IN :**  
Chips 24H+Stack 48H 125°C 1.2U 1000≤U≤2000 | 1U U>2000

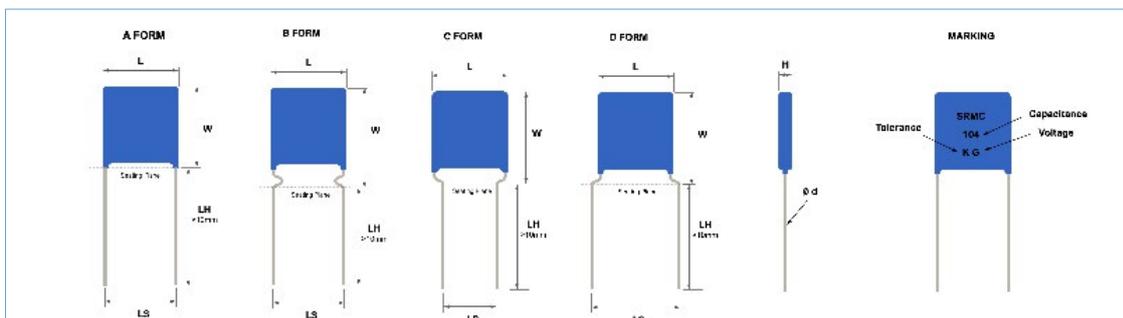
## ORDERING INFORMATION

| SRMC   | 41       | Y   | 104   | K  | G  | -                          | -   | H  | V                    | -   |
|--------|----------|---|---|--|--|----------------------------|---|--|----------------------|---|
| SERIES | SIZE     | DIELECTRIC  | CAPACITANCE   | TOLERANCE  | VOLTAGE  | TERMINATION                | LEAD  | COATING                                    | PACKAGING            | SPECIAL   |
| SRMC   | 31 to 96 | A = NPO<br>P = N2T<br>X = BX<br>Y = X7R<br>BY = 2C1 | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit give the number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | B = ± 0,1pF<br>C = ± 0,25pF<br>D = ± 0,5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | G = 1000V<br>O = 1500V<br>H = 2000V<br>I = 3000V<br>L = 5000V<br>6 = 6000V<br>8 = 8000V<br>10 = 10kV<br>12 = 12kV<br>15 = 15kV | - = Sn<br>C = Non magnetic | - = Default<br>A = A Form<br>B = B Form<br>C = C Form<br>D = D Form | - = Conformal Coating<br>H = Epoxy Coating | V = Bulk<br>B = Ammo | -<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us

## DIMENSIONS (in millimeters)

| SIZE                   | 31    | 32    | 38    | 40    | 41    | 43    | 44    | 45    | 47    | 48    | 49    | 52    | 54    | 58    |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lenght (L) max         | 3.8   | 5.0   | 6.4   | 3.8   | 5.1   | 6.5   | 7.6   | 10.1  | 8.1   | 5.1   | 9.4   | 6.6   | 9.0   | 11.9  |
| Height A (W) max       | 3.8   | 5.0   | 5.6   | 3.8   | -     | 5.8   | 7.6   | 11.7  | 7.1   | -     | 7.6   | -     | 7.5   | 10.2  |
| Height B (W) max       | 6.3   | 7.5   | 8.1   | 6.3   | 7.6   | 8.3   | 10.1  | 14.4  | 9.6   | 6.3   | 10.1  | 8.1   | 10.0  | 12.7  |
| Height C (W) max       | -     | 5.0   | 5.6   | -     | -     | -     | 7.6   | 11.7  | 7.1   | -     | -     | -     | -     | -     |
| Height D (W) max       | -     | -     | -     | 3.8   | 5.1   | -     | -     | -     | -     | 3.8   | -     | 5.6   | -     | -     |
| Width (H) max          | 2.5   | 3.2   | 5.0   | 2.5   | 3.2   | 3.8   | 4.5   | 4.5   | 5.0   | 4.0   | 5.0   | 4.0   | 4.0   | 5.0   |
| Lead spacing (LS) ±0.5 | 2.54  | 2.54  | 4.30  | 5.08  | 5.08  | 5.08  | 5.08  | 5.08  | 5.60  | 6.40  | 7.00  | 7.62  | 7.62  | 9.50  |
| Lead diameter (d) ±0.1 | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   |
| Default Lead type      | A     | C     | V     | D     | D     | A     | C     | C     | C     | D     | A     | D     | A     | A     |
| SIZE                   | 63    | 68    | 72    | 74    | 76    | 80    | 82    | 84    | 88    | 90    | 91    | 92    | 96    | 96    |
| Lenght (L) max         | 12.7  | 14.5  | 13.2  | 17.0  | 17.0  | 18.7  | 19.6  | 20.0  | 22.1  | 25.0  | 26.7  | 30.0  | 42.5  | 0.0   |
| Height A (W) max       | 12.3  | 12.7  | -     | 14.0  | 12.5  | 22.5  | 18.3  | 17.5  | 16.8  | 19.0  | 12.7  | 22.5  | 21.0  | 21.0  |
| Height B (W) max       | 13.5  | 15.0  | 15.0  | 15.0  | 15.0  | 25.0  | 20.8  | 20.0  | 19.3  | 21.5  | 15.4  | 25.0  | 23.5  | 23.5  |
| Height C (W) max       | -     | -     | -     | -     | -     | 22.5  | 18.3  | -     | -     | -     | -     | -     | -     | -     |
| Height D (W) max       | -     | 12.7  | 12.5  | -     | -     | 0.0   | -     | -     | -     | -     | -     | -     | -     | -     |
| Width (H) max          | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead spacing (LS) ±0.5 | 10.16 | 12.00 | 12.70 | 14.60 | 15.24 | 15.24 | 17.10 | 17.80 | 20.30 | 21.00 | 22.90 | 27.94 | 40.64 | 40.64 |
| Lead diameter (d) ±0.1 | 0.6   | 0.6   | 0.6   | 0.6   | 0.8   | 0.8   | 0.8   | 0.8   | 0.8   | 0.8   | 0.8   | 0.8   | 1.0   | 1.0   |
| Default Lead type      | A     | D     | D     | A     | A     | A     | C     | A     | A     | A     | A     | A     | A     | A     |



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## QUICK REFERENCE DATA (Max capacitance)

|       | SRMC31 |        |        | SRMC32 |        |        | SRMC38 |        |        | SRMC40 |        |        | SRMC41 |        |        | SRMC43/59 |        |        | SRMC44 |        |        |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------|--------|--------|--------|--------|--------|
|       | NPO    | N2T    | X7R    | NPO       | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R    | NPO    | N2T    | X7R    |
| min   | 0.1 pF | 1.0 pF | 6.8 pF | 0.4 pF | 4.7 pF | 10 pF  | 0.4 pF | 4.7 pF | 10 pF  | 0.1 pF | 1.0 pF | 6.8 pF | 0.4 pF | 4.7 pF | 10 pF  | 1.0 pF    | 4.7 pF | 10 pF  | 1.0 pF | 10 pF  | 33 pF  |
| 1KV   | 820 pF | 2.2 nF | 5.6 nF | 6.8 nF | 22 nF  | 47 nF  | 6.8 nF | 22 nF  | 47 nF  | 820 pF | 2.2 nF | 5.6 nF | 6.8 nF | 22 nF  | 47 nF  | 15 nF     | 47 nF  | 120 nF | 39 nF  | 120 nF | 330 nF |
| 1,5KV | 330 pF | 820 pF | 1.8 nF | 2.7 nF | 6.8 nF | 15 nF  | 2.7 nF | 6.8 nF | 15 nF  | 330 pF | 820 pF | 1.8 nF | 2.7 nF | 6.8 nF | 15 nF  | 8.2 nF    | 22 nF  | 39 nF  | 18 nF  | 56 nF  | 100 nF |
| 2KV   | 150 pF | 390 pF | 820 pF | 1.5 nF | 3.3 nF | 8.2 nF | 1.5 nF | 3.3 nF | 8.2 nF | 150 pF | 390 pF | 820 pF | 1.5 nF | 3.3 nF | 8.2 nF | 3.9 nF    | 8.2 nF | 22 nF  | 12 nF  | 22 nF  | 68 nF  |
| 2,5KV |        |        |        | 820 pF | 1.8 nF | 4.7 nF | 820 pF | 1.8 nF | 4.7 nF |        |        |        | 820 pF | 1.8 nF | 4.7 nF | 2.2 nF    | 5.6 nF | 12 nF  | 6.8 nF | 12 nF  | 39 nF  |
| 3KV   |        |        |        | 470 pF | 1.2 nF | 2.7 nF | 470 pF | 1.2 nF | 2.7 nF |        |        |        | 470 pF | 1.2 nF | 2.7 nF | 1.2 nF    | 3.3 nF | 8.2 nF | 2.7 nF | 10 nF  | 27 nF  |
| 4KV   |        |        |        | 220 pF | 680 pF | 1.5 nF | 220 pF | 680 pF | 1.5 nF |        |        |        | 220 pF | 680 pF | 1.5 nF | 680 pF    | 1.8 nF | 4.7 nF | 1.8 nF | 4.7 nF | 15 nF  |
| 5KV   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 390 pF    | 1.2 nF | 2.7 nF | 1.2 nF | 3.3 nF | 8.2 nF |
| 6KV   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 270 pF    | 820 pF | 1.8 nF | 680 pF | 2.2 nF | 5.6 nF |
| 8KV   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 150 pF    | 390 pF | 1.0 nF | 330 pF | 1.2 nF | 2.7 nF |
| 10KV  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 82 pF     | 220 pF |        | 270 pF | 680 pF | 1.2 nF |

|       | SRMC45 |        |        | SRMC47 |        |        | SRMC48 |        |        | SRMC49 |        |        | SRMC52 |        |        | SRMC54 |        |        | SRMC58 |        |        |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|       | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| min   | 10 pF  | 47 pF  | 100 pF | 1.0 pF | 10 pF  | 33 pF  | 0.4 pF | 4.7 pF | 10 pF  | 1.0 pF | 10 pF  | 33 pF  | 1.0 pF | 4.7 pF | 10 pF  | 1.0 pF | 10 pF  | 33 pF  | 10 pF  | 47 pF  | 100 pF |
| 1KV   | 82 nF  | 270 nF | 820 nF | 39 nF  | 120 nF | 330 nF | 2.7 nF | 8.2 nF | 15 nF  | 39 nF  | 120 nF | 390 nF | 15 nF  | 47 nF  | 120 nF | 39 nF  | 120 nF | 390 nF | 82 nF  | 270 nF | 820 nF |
| 1,5KV | 47 nF  | 120 nF | 220 nF | 18 nF  | 56 nF  | 100 nF | 1.0 nF | 2.7 nF | 5.6 nF | 22 nF  | 68 nF  | 120 nF | 8.2 nF | 22 nF  | 39 nF  | 22 nF  | 68 nF  | 120 nF | 47 nF  | 120 nF | 220 nF |
| 2KV   | 27 nF  | 56 nF  | 180 nF | 12 nF  | 22 nF  | 68 nF  | 560 pF | 1.2 nF | 2.7 nF | 15 nF  | 27 nF  | 82 nF  | 3.9 nF | 8.2 nF | 22 nF  | 15 nF  | 27 nF  | 82 nF  | 27 nF  | 56 nF  | 180 nF |
| 2,5KV | 15 nF  | 33 nF  | 100 nF | 6.8 nF | 12 nF  | 39 nF  | 270 pF | 680 pF | 1.5 nF | 8.2 nF | 15 nF  | 47 nF  | 2.2 nF | 5.6 nF | 12 nF  | 8.2 nF | 15 nF  | 47 nF  | 15 nF  | 33 nF  | 100 nF |
| 3KV   | 6.8 nF | 27 nF  | 56 nF  | 2.7 nF | 10 nF  | 27 nF  | 180 pF | 470 pF | 1.0 nF | 3.3 nF | 12 nF  | 27 nF  | 1.2 nF | 3.3 nF | 8.2 nF | 3.3 nF | 12 nF  | 27 nF  | 6.8 nF | 27 nF  | 56 nF  |
| 4KV   | 4.7 nF | 12 nF  | 39 nF  | 1.8 nF | 4.7 nF | 15 nF  | 82 pF  | 220 pF | 470 pF | 2.2 nF | 5.6 nF | 18 nF  | 680 pF | 1.8 nF | 4.7 nF | 2.2 nF | 5.6 nF | 18 nF  | 4.7 nF | 12 nF  | 39 nF  |
| 5KV   | 3.3 nF | 8.2 nF | 22 nF  | 1.2 nF | 3.3 nF | 8.2 nF |        |        |        | 1.5 nF | 3.9 nF | 10 nF  | 390 pF | 1.2 nF | 2.7 nF | 1.5 nF | 3.9 nF | 10 nF  | 3.3 nF | 8.2 nF | 22 nF  |
| 6KV   | 1.8 nF | 5.6 nF | 12 nF  | 680 pF | 2.2 nF | 5.6 nF |        |        |        | 820 pF | 2.7 nF | 6.8 nF | 270 pF | 820 pF | 1.8 nF | 820 pF | 2.7 nF | 6.8 nF | 1.8 nF | 5.6 nF | 12 nF  |
| 8KV   | 820 pF | 2.7 nF | 6.8 nF | 330 pF | 1.2 nF | 2.7 nF |        |        |        | 390 pF | 1.5 nF | 3.3 nF | 150 pF | 390 pF | 1.0 nF | 390 pF | 1.5 nF | 3.3 nF | 820 pF | 2.7 nF | 6.8 nF |
| 10KV  | 560 pF | 1.8 nF | 3.3 nF | 270 pF | 680 pF | 1.2 nF |        |        |        | 270 pF | 820 pF | 1.5 nF | 82 pF  | 220 pF |        | 270 pF | 820 pF | 1.5 nF | 560 pF | 1.8 nF | 3.3 nF |
| 12KV  | 390 pF | 1.2 nF | 2.2 nF |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 390 pF | 1.2 nF | 2.2 nF |

|       | SRMC60 |        |        | SRMC63 |        |        | SRMC68 |        |        | SRMC72 |        |        | SRMC74 |        |        | SRMC76 |        |        | SRMC80 |        |        |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|       | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| min   | 10 pF  | 47 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF |
| 1KV   | 82 nF  | 270 nF | 820 nF | 120 nF | 390 nF | 1.2 μF | 150 nF | 470 nF | 1.5 μF | 120 nF | 390 nF | 1.2 μF | 220 nF | 680 nF | 2.2 μF | 180 nF | 560 nF | 1.8 μF | 390 nF | 1.2 μF | 3.9 μF |
| 1,5KV | 47 nF  | 120 nF | 220 nF | 68 nF  | 220 nF | 390 nF | 82 nF  | 270 nF | 390 nF | 68 nF  | 180 nF | 330 nF | 120 nF | 390 nF | 680 nF | 100 nF | 270 nF | 560 nF | 220 nF | 680 nF | 1.2 μF |
| 2KV   | 27 nF  | 56 nF  | 180 nF | 47 nF  | 82 nF  | 180 nF | 47 nF  | 100 nF | 330 nF | 39 nF  | 82 nF  | 270 nF | 82 nF  | 150 nF | 470 nF | 56 nF  | 120 nF | 390 nF | 120 nF | 270 nF | 820 nF |
| 2,5KV | 15 nF  | 33 nF  | 100 nF | 27 nF  | 56 nF  | 180 nF | 27 nF  | 56 nF  | 180 nF | 22 nF  | 47 nF  | 150 nF | 47 nF  | 100 nF | 270 nF | 33 nF  | 68 nF  | 220 nF | 82 nF  | 150 nF | 560 nF |
| 3KV   | 6.8 nF | 27 nF  | 56 nF  | 12 nF  | 39 nF  | 100 nF | 12 nF  | 47 nF  | 120 nF | 10 nF  | 39 nF  | 82 nF  | 18 nF  | 68 nF  | 180 nF | 15 nF  | 56 nF  | 120 nF | 33 nF  | 120 nF | 270 nF |
| 4KV   | 4.7 nF | 12 nF  | 39 nF  | 8.2 nF | 18 nF  | 56 nF  | 8.2 nF | 22 nF  | 68 nF  | 6.8 nF | 18 nF  | 56 nF  | 12 nF  | 33 nF  | 100 nF | 10 nF  | 27 nF  | 82 nF  | 22 nF  | 56 nF  | 180 nF |
| 5KV   | 3.3 nF | 8.2 nF | 22 nF  | 5.6 nF | 12 nF  | 33 nF  | 5.6 nF | 15 nF  | 39 nF  | 4.7 nF | 12 nF  | 33 nF  | 8.2 nF | 22 nF  | 56 nF  | 6.8 nF | 18 nF  | 47 nF  | 15 nF  | 39 nF  | 100 nF |
| 8KV   | 820 pF | 2.7 nF | 6.8 nF | 1.5 nF | 4.7 nF | 12 nF  | 1.5 nF | 5.6 nF | 12 nF  | 1.2 nF | 4.7 nF | 10 nF  | 2.2 nF | 8.2 nF | 18 nF  | 1.8 nF | 6.8 nF | 15 nF  | 3.9 nF | 15 nF  | 33 nF  |
| 10KV  | 560 pF | 1.8 nF | 3.3 nF | 1.0 nF | 2.7 nF | 5.6 nF | 1.2 nF | 3.3 nF | 5.6 nF | 820 pF | 2.7 nF | 4.7 nF | 1.8 nF | 4.7 nF | 10 nF  | 1.2 nF | 3.9 nF | 6.8 nF | 2.7 nF | 8.2 nF | 15 nF  |
| 12KV  | 390 pF | 1.2 nF | 2.2 nF | 680 pF | 1.8 nF | 3.9 nF | 680 pF | 2.2 nF | 4.7 nF | 560 pF | 1.8 nF | 3.3 nF | 1.0 nF | 3.3 nF | 6.8 nF | 820 pF | 2.7 nF | 5.6 nF | 1.8 nF | 5.6 nF | 12 nF  |
| 15KV  |        |        |        | 390 pF | 1.2 nF |        | 470 pF | 1.2 nF |        | 330 pF | 1.0 nF |        | 680 pF | 1.8 nF |        | 560 pF | 1.5 nF |        | 1.2 nF | 3.3 nF |        |

|       | SRMC82 |        |        | SRMC84 |        |        | SRMC88 |        |        | SRMC81/90 |        |        | SRMC91 |        |        | SRMC92 |        |        | SRMC96 |        |        |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|       | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    | NPO       | N2T    | X7R    | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    |
| min   | 10 pF  | 33 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF | 10 pF     | 47 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF | 22 pF  | 68 pF  | 180 pF | 22 pF  | 68 pF  | 180 pF |
| 1KV   | 330 nF | 1.0 μF | 3.3 μF | 330 nF | 1.0 μF | 3.3 μF | 390 nF | 1.2 μF | 3.9 μF | 390 nF    | 1.2 μF | 3.9 μF | 270 nF | 820 nF | 2.7 μF | 470 nF | 1.5 μF | 4.7 μF | 680 nF | 2.2 μF | 6.8 μF |
| 1,5KV | 180 nF | 560 nF | 1.0 μF | 180 nF | 560 nF | 1.0 μF | 220 nF | 560 nF | 1.0 μF | 220 nF    | 680 nF | 1.2 μF | 150 nF | 470 nF | 820 nF | 270 nF | 820 nF | 1.5 μF | 390 nF | 1.2 μF | 2.2 μF |
| 2KV   | 100 nF | 220 nF | 680 nF | 100 nF | 220 nF | 680 nF | 120 nF | 220 nF | 820 nF | 120 nF    | 270 nF | 820 nF | 100 nF | 180 nF | 680 nF | 180 nF | 330 nF | 1.0 μF | 270 nF | 470 nF | 1.5 μF |
| 2,5KV | 56 nF  | 120 nF | 390 nF | 56 nF  | 120 nF | 390 nF | 68 nF  | 150 nF | 470 nF | 82 nF     | 150 nF | 560 nF | 56 nF  | 120 nF | 390 nF | 100 nF | 220 nF | 680 nF | 150 nF | 330 nF | 1.0 μF |
| 3KV   | 27 nF  | 100 nF | 220 nF | 27 nF  | 100 nF | 220 nF | 33 nF  | 120 nF | 270 nF | 33 nF     | 120 nF | 270 nF | 27 nF  | 100 nF | 220 nF | 47 nF  | 180 nF | 390 nF | 68 nF  | 270 nF | 560 nF |
| 4KV   | 18 nF  | 47 nF  | 150 nF | 18 nF  | 47 nF  | 150 nF | 22 nF  | 56 nF  | 150 nF | 22 nF     | 56 nF  | 180 nF | 18 nF  | 47 nF  | 120 nF | 27 nF  | 82 nF  | 220 nF | 47 nF  | 120 nF | 330 nF |
| 5KV   | 12 nF  | 33 nF  | 82 nF  | 12 nF  | 33 nF  | 82 nF  | 15 nF  | 39 nF  | 100 nF | 15 nF     | 39 nF  | 100 nF | 12 nF  | 27 nF  | 82 nF  | 22 nF  | 56 nF  | 120 nF | 33 nF  | 82 nF  | 220 nF |
| 8KV   | 3.3 nF | 12 nF  | 27 nF  | 3.3 nF | 12 nF  | 27 nF  | 3.9 nF | 12 nF  | 33 nF  | 3.9 nF    | 15 nF  | 33 nF  | 3.3 nF | 10 nF  | 27 nF  | 5.6 nF | 18 nF  | 47 nF  | 8.2 nF | 27 nF  | 68 nF  |
| 10KV  | 2.2 nF | 6.8 nF | 12 nF  | 2.2 nF | 6.8 nF | 12 nF  | 2.7 nF | 8.2 nF | 15 nF  | 2.7 nF    | 8.2 nF | 15 nF  | 2.2 nF | 6.8 nF | 12 nF  | 3.9 nF | 12 nF  | 22 nF  | 5.6 nF | 15 nF  | 33 nF  |
| 12KV  | 1.5 nF | 4.7 nF | 10 nF  | 1.5 nF | 4.7 nF | 10 nF  | 1.8 nF | 5.6 nF | 10 nF  | 1.8 nF    | 5.6 nF | 12 nF  | 1.5 nF | 3.9 nF | 8.2 nF | 2.2 nF | 6.8 nF | 15 nF  | 3.9 nF | 10 nF  | 22 nF  |
| 15KV  | 1.0 nF | 2.7 nF |        | 1.0 nF | 2.7 nF |        | 1.0 nF | 3.3 nF |        | 1.2 nF    | 3.3 nF |        | 820 pF | 2.7 nF |        | 1.5 nF | 4.7 nF |        | 2.2 nF | 6.8 nF |        |

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# RADIAL CAPACITOR Encapsulated

NPO N2T X7R 25V-15KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Severe environment
- Historical design



## FEATURES

- Leded radial MLCC capacitor
- Epoxy molded
- High reliability, 100% burn in
- Available in NPO, N2T, BX, 2X1, X7R
- Equivalent to wide range of competitors design
- Custom voltage, package size, capacitance value on request
- Tested in accordance to CECC 32100 and AEC-Q200
- NPO version CECC 30600 et NFC 83-131 compliant
- X7R version CECC 30700 et NFC 83-132 compliant
- 2C1 version NF 83-132 compliant
- High Reliability option : 168 hours burn in
- Laser marked

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**

X7R, N2T : - 55°C, + 125°C  
NPO : - 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**

NPO : ± 30ppm  
N2T : -2200 ± 350 ppm/°C  
X7R : ± 15% with 0Vdc applied

**DISSIPATION FACTOR:**

NPO/N2T : ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 0.025 at 1kHz

**INSULATION RESISTANCE (IR) :**

25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**

2.5U U≤200V | U+250V 200<U≤500 | 1.5U 500<U<1000 | 1.2U U≥1000  
for 5s with 50mA max charging current

**BURN IN :**

Chips 24H+Stack 48H 125°C 2U U<500V | 1.5U 500≤U<1000 | 1.2U  
1000≤U≤2000 | 1U U>2000

## ORDERING INFORMATION

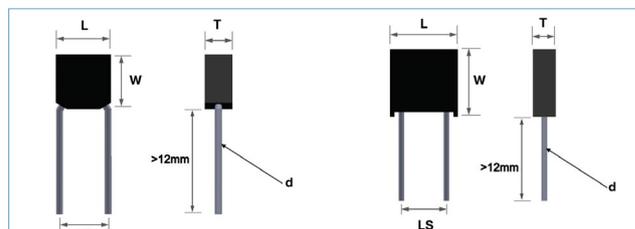
| SR     | 41       | Y   | 102   | J  | A   | -                          | V                    | XX  |
|--------|----------|---|---|--|---|----------------------------|----------------------|---|
| SERIES | SIZE     | DIELECTRIC  | CAPACITANCE   | TOLERANCE  | VOLTAGE   | TERMINATION                | PACKAGING            | SPECIAL   |
| SR     | 41 to 94 | A = NPO<br>P = N2T<br>X = BX<br>Y = X7R<br>BY=2C1 | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit give the number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>134OR0 = 1340pF | A = ±0.05pF if < 10pF and<br>0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0,25pF<br>D = ± 0,5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | X = 25 V<br>A = 50 V<br>U = 63 V<br>B = 100 V<br>C = 200 V<br>P = 250 V<br>E = 500 V<br>F = 630 V<br>G = 1 KV<br>H = 2 KV<br>I = 3 KV<br>K = 4 KV<br>L = 5 KV<br>6 = 6 KV<br>8 = 8 KV<br>10 = 10 KV<br>15 = 15 KV | - : Sn<br>C = Non magnetic | V = Bulk<br>T = Tray | -<br>BM = BME<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us

## DIMENSIONS (in millimeters)

| SIZE                   | SR41 | SR43 | SR45 | SR47 | SR50 | SR60 | SR64 | SR65 |
|------------------------|------|------|------|------|------|------|------|------|
| Length (L) max         | 4.0  | 5.0  | 7.5  | 4.0  | 5.0  | 7.5  | 10.0 | 10.5 |
| Height (W) max         | 4.5  | 5.0  | 7.5  | 4.5  | 5.0  | 7.5  | 11.0 | 9.0  |
| Width (T) max          | 2.5  | 2.5  | 2.5  | 2.5  | 2.5  | 2.5  | 3.5  | 6.5  |
| Lead spacing (LS) ±0.5 | 2.54 | 2.54 | 4.32 | 5.08 | 5.08 | 5.08 | 5.08 | 7.62 |
| Lead diameter (d) ±0.1 | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.8  | 0.8  |

| SIZE                   | SR68  | SR70  | SR74  | SR78  | SR82  | SR86  | SR90  | SR94  |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Length (L) max         | 13.0  | 13.0  | 18.4  | 18.0  | 20.0  | 28.5  | 31.0  | 45.0  |
| Height (W) max         | 12.0  | 12.0  | 12.7  | 16.0  | 19.0  | 19.0  | 24.0  | 23.0  |
| Width (T) max          | 3.5   | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   |
| Lead spacing (LS) ±0.5 | 10.16 | 10.16 | 12.20 | 15.24 | 17.80 | 19.80 | 27.90 | 40.60 |
| Lead diameter (d) ±0.1 | 0.8   | 0.8   | 0.8   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |



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# RADIAL CAPACITOR Encapsulated

NPO N2T X7R 25V-15KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## QUICK REFERENCE DATA (Max capacitance)

|       | SR41         |        |        | SR43   |        |        | SR45   |        |        | SR47   |        |        |
|-------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|       | NPO          | N2T    | X7R    | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    |
| Min   | =Datas Radi- | 0.3 pF | 2.2 pF | 0.4 pF | 4.7 pF | 10 pF  | 1.0 pF | 10 pF  | 33 pF  | 0.1 pF | 0.3 pF | 2.2 pF |
| 25V   | 15 nF        | 5.6 nF | 39 nF  | 220 nF | 56 nF  | 390 nF | 470 nF | 270 nF | 2.2 μF | 15 nF  | 5.6 nF | 39 nF  |
| 50V   | 10 nF        | 5.6 nF | 39 nF  | 150 nF | 56 nF  | 390 nF | 470 nF | 270 nF | 2.2 μF | 10 nF  | 5.6 nF | 39 nF  |
| 100V  | 10 nF        | 5.6 nF | 39 nF  | 100 nF | 56 nF  | 390 nF | 330 nF | 270 nF | 2.2 μF | 10 nF  | 5.6 nF | 39 nF  |
| 200V  | 2.2 nF       | 4.7 nF | 33 nF  | 47 nF  | 56 nF  | 390 nF | 220 nF | 270 nF | 2.2 μF | 2.2 nF | 4.7 nF | 33 nF  |
| 500V  | 560 pF       | 1.8 nF | 4.7 nF | 10 nF  | 33 nF  | 100 nF | 56 nF  | 150 nF | 470 nF | 560 pF | 1.8 nF | 4.7 nF |
| 630V  | 330 pF       | 1.0 nF | 2.7 nF | 6.8 nF | 18 nF  | 56 nF  | 33 nF  | 100 nF | 270 nF | 330 pF | 1.0 nF | 2.7 nF |
| 1000V | 120 pF       | 390 pF | 820 pF | 2.7 nF | 8.2 nF | 15 nF  | 12 nF  | 39 nF  | 82 nF  | 120 pF | 390 pF | 820 pF |
| 2000V |              |        |        | 390 pF | 1.2 nF | 2.7 nF | 2.2 nF | 6.8 nF | 18 nF  |        |        |        |

|       | SR50   |        |        | SR60   |        |        | SR64   |        |        | SR65   |        |        |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|       | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| Min   | 220 nF | 68 nF  | 390 nF | 470 nF | 330 nF | 1.8 μF | 120 nF | 470 nF | 2.7 μF | 150 nF | 680 nF | 3.9 μF |
| 25V   | 150 nF | 68 nF  | 390 nF | 470 nF | 330 nF | 1.8 μF | 120 nF | 470 nF | 2.7 μF | 150 nF | 680 nF | 3.9 μF |
| 50V   | 100 nF | 68 nF  | 390 nF | 330 nF | 330 nF | 1.8 μF | 120 nF | 470 nF | 2.7 μF | 150 nF | 680 nF | 3.9 μF |
| 100V  | 47 nF  | 68 nF  | 390 nF | 220 nF | 330 nF | 1.8 μF | 120 nF | 470 nF | 2.7 μF | 150 nF | 680 nF | 3.9 μF |
| 200V  | 15 nF  | 33 nF  | 120 nF | 68 nF  | 150 nF | 560 nF | 120 nF | 270 nF | 1.2 μF | 150 nF | 390 nF | 1.8 μF |
| 500V  | 12 nF  | 22 nF  | 68 nF  | 47 nF  | 100 nF | 330 nF | 82 nF  | 220 nF | 1.0 μF | 120 nF | 330 nF | 1.2 μF |
| 630V  | 3.9 nF | 8.2 nF | 22 nF  | 18 nF  | 39 nF  | 120 nF | 56 nF  | 150 nF | 560 nF | 82 nF  | 220 nF | 820 nF |
| 1000V | 820 pF | 1.2 nF | 3.9 nF | 3.3 nF | 6.8 nF | 22 nF  | 18 nF  | 27 nF  | 120 nF | 27 nF  | 39 nF  | 180 nF |
| 2000V | 270 pF | 470 pF | 1.5 nF | 1.2 nF | 2.7 nF | 8.2 nF | 4.7 nF | 12 nF  | 39 nF  | 6.8 nF | 15 nF  | 56 nF  |
| 3000V | 120 pF | 180 pF | 820 pF | 680 pF | 1.2 nF | 4.7 nF | 3.3 nF | 6.8 nF | 27 nF  | 4.7 nF | 10 nF  | 39 nF  |
| 4000V |        |        |        | 390 pF | 820 pF | 2.7 nF | 2.2 nF | 3.9 nF | 15 nF  | 3.3 nF | 5.6 nF | 22 nF  |
| 5000V |        |        |        | 120 pF | 220 pF | 680 pF | 680 pF | 1.5 nF | 4.7 nF | 1.0 nF | 2.2 nF | 6.8 nF |
| 8000V |        |        |        | 68 pF  | 150 pF | 390 pF | 470 pF | 820 pF | 2.2 nF | 680 pF | 1.2 nF | 3.3 nF |
| 10KV  |        |        |        |        |        |        |        |        |        | 470 pF | 820 pF | 2.2 nF |
| 12KV  |        |        |        |        |        |        |        |        |        | 270 pF | 560 pF | 1.8 nF |

|      | SR68   |        |        | SR70   |        |        | SR74   |        |        | SR78   |        |        |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|      | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| Min  | 10 pF  | 47 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 10 pF  | 33 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF |
| 100V | 220 nF | 820 nF | 5.6 μF | 270 nF | 1.0 μF | 5.6 μF | 270 nF | 1.0 μF | 6.8 μF | 330 nF | 1.2 μF | 8.2 μF |
| 200V | 220 nF | 820 nF | 5.6 μF | 270 nF | 1.0 μF | 5.6 μF | 270 nF | 1.0 μF | 6.8 μF | 330 nF | 1.2 μF | 8.2 μF |
| 500V | 220 nF | 560 nF | 2.7 μF | 270 nF | 680 nF | 2.7 μF | 270 nF | 820 nF | 3.3 μF | 330 nF | 1.0 μF | 3.9 μF |
| 630V | 180 nF | 470 nF | 1.8 μF | 220 nF | 560 nF | 2.2 μF | 220 nF | 560 nF | 2.7 μF | 270 nF | 680 nF | 2.7 μF |
| 1KV  | 120 nF | 330 nF | 1.2 μF | 120 nF | 330 nF | 1.2 μF | 150 nF | 390 nF | 1.5 μF | 180 nF | 470 nF | 1.8 μF |
| 2KV  | 39 nF  | 56 nF  | 270 nF | 47 nF  | 56 nF  | 270 nF | 47 nF  | 68 nF  | 330 nF | 56 nF  | 82 nF  | 390 nF |
| 3KV  | 10 nF  | 22 nF  | 82 nF  | 12 nF  | 27 nF  | 100 nF | 12 nF  | 27 nF  | 120 nF | 15 nF  | 33 nF  | 120 nF |
| 4KV  | 6.8 nF | 15 nF  | 56 nF  | 8.2 nF | 15 nF  | 56 nF  | 8.2 nF | 18 nF  | 68 nF  | 10 nF  | 22 nF  | 82 nF  |
| 5KV  | 4.7 nF | 8.2 nF | 33 nF  | 5.6 nF | 10 nF  | 33 nF  | 5.6 nF | 10 nF  | 39 nF  | 6.8 nF | 12 nF  | 47 nF  |
| 6KV  | 2.7 nF | 5.6 nF | 18 nF  | 2.7 nF | 5.6 nF | 22 nF  | 3.3 nF | 6.8 nF | 22 nF  | 3.9 nF | 8.2 nF | 27 nF  |
| 8KV  | 1.2 nF | 3.3 nF | 10 nF  | 1.5 nF | 3.3 nF | 12 nF  | 1.8 nF | 3.9 nF | 12 nF  | 2.2 nF | 4.7 nF | 15 nF  |
| 10KV | 1.0 nF | 1.8 nF | 4.7 nF | 1.0 nF | 5.6 nF | 1.2 nF | 1.2 nF | 2.2 nF | 5.6 nF | 1.5 nF | 2.7 nF | 6.8 nF |
| 12KV | 680 pF | 1.2 nF | 3.3 nF | 680 pF | 1.2 nF | 3.9 nF | 820 pF | 1.5 nF | 4.7 nF | 1.0 nF | 1.8 nF | 5.6 nF |
| 15KV | 390 pF | 680 pF |        | 470 pF | 820 pF |        | 470 pF | 820 pF |        | 560 pF | 1.0 nF |        |

|      | SR82   |        |        | SR86   |        |        | SR90   |        |        | SR94   |        |        |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|      | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| Min  | 10 pF  | 33 pF  | 100 pF | 10 pF  | 47 pF  | 100 pF | 22 pF  | 68 pF  | 180 pF | 22 pF  | 68 pF  | 180 pF |
| 100V | 560 nF | 2.2 μF | 12 μF  | 560 nF | 2.2 μF | 15 μF  | 820 nF | 3.3 μF | 18 μF  | 1.0 μF | 3.9 μF | 27 μF  |
| 200V | 560 nF | 2.2 μF | 12 μF  | 560 nF | 2.2 μF | 15 μF  | 820 nF | 3.3 μF | 18 μF  | 1.0 μF | 3.9 μF | 27 μF  |
| 500V | 560 nF | 1.8 μF | 6.8 μF | 560 nF | 2.2 μF | 8.2 μF | 820 nF | 2.7 μF | 12 μF  | 1.0 μF | 3.9 μF | 18 μF  |
| 630V | 470 nF | 1.2 μF | 5.6 μF | 560 nF | 1.5 μF | 6.8 μF | 820 nF | 2.2 μF | 8.2 μF | 1.0 μF | 3.3 μF | 12 μF  |
| 1KV  | 330 nF | 820 nF | 3.3 μF | 390 nF | 1.0 μF | 3.9 μF | 560 nF | 1.5 μF | 5.6 μF | 820 nF | 2.2 μF | 8.2 μF |
| 2KV  | 100 nF | 150 nF | 680 nF | 120 nF | 180 nF | 820 nF | 180 nF | 220 nF | 1.2 μF | 270 nF | 390 nF | 1.8 μF |
| 3KV  | 27 nF  | 68 nF  | 220 nF | 33 nF  | 82 nF  | 270 nF | 47 nF  | 100 nF | 390 nF | 68 nF  | 150 nF | 560 nF |
| 4KV  | 18 nF  | 39 nF  | 150 nF | 22 nF  | 47 nF  | 180 nF | 33 nF  | 68 nF  | 220 nF | 47 nF  | 100 nF | 330 nF |
| 5KV  | 12 nF  | 22 nF  | 82 nF  | 15 nF  | 27 nF  | 100 nF | 22 nF  | 39 nF  | 150 nF | 33 nF  | 56 nF  | 220 nF |
| 6KV  | 6.8 nF | 15 nF  | 56 nF  | 8.2 nF | 18 nF  | 68 nF  | 12 nF  | 27 nF  | 82 nF  | 18 nF  | 39 nF  | 120 nF |
| 8KV  | 3.9 nF | 8.2 nF | 27 nF  | 4.7 nF | 10 nF  | 33 nF  | 5.6 nF | 15 nF  | 47 nF  | 8.2 nF | 22 nF  | 68 nF  |
| 10KV | 2.7 nF | 4.7 nF | 12 nF  | 3.3 nF | 5.6 nF | 15 nF  | 4.7 nF | 8.2 nF | 22 nF  | 6.8 nF | 12 nF  | 33 nF  |
| 12KV | 1.8 nF | 3.3 nF | 10 nF  | 2.2 nF | 3.9 nF | 12 nF  | 2.7 nF | 5.6 nF | 15 nF  | 4.7 nF | 8.2 nF | 22 nF  |
| 15KV | 1.0 nF | 1.8 nF |        | 1.2 nF | 2.2 nF |        | 1.8 nF | 3.3 nF |        | 2.7 nF | 4.7 nF |        |

1) Max Values in italic obtained with BME part

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# AXIAL CAPACITOR Encapsulated

NPO N2T X7R 25V-5KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Severe environment
- Historical design



## FEATURES

- Leaded radial MLCC capacitor
- Epoxy molded
- High reliability. 100% burn in
- Available in NPO. N2T. BX. 2X1. X7R
- Equivalent to wide range of competitors design
- Custom voltage. package size. capacitance value on request
- Tested in accordance to CECC 32100 and AEC-Q200
- NPO version CECC 30600 et NFC 83-131 compliant
- X7R version CECC 30700 et NFC 83-132 compliant
- 2C1 version NF 83-132 compliant
- High Reliability option : 168 hours burn in

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
X7R. N2T : - 55°C. + 125°C  
NPO : - 55°C. + 125°C

**TEMPERATURE COEFFICIENT :**  
NPO : ± 30ppm  
N2T : -2200 ± 350 ppm/°C  
X7R : ± 15% with 0Vdc applied

**DISSIPATION FACTOR:**  
NPO/N2T : ≤ 1.10<sup>-3</sup> at 1Vrms and 1MHz for values ≤ 1000pF  
≤ 1.10<sup>-3</sup> at 1Vrms and 1KHz for values > 1000pF  
X7R : ≤ 0.025 at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5U U≤200V | U+250V 200<U≤500 | 1.5U 500<U<1000 | 1.2U U≥1000  
for 5s with 50mA max charging current

**BURN IN :**  
Chips 24H+Stack 48H 125°C 2U U<500V | 1.5U 500≤U<1000 | 1.2U  
1000≤U≤2000 | 1U U>2000

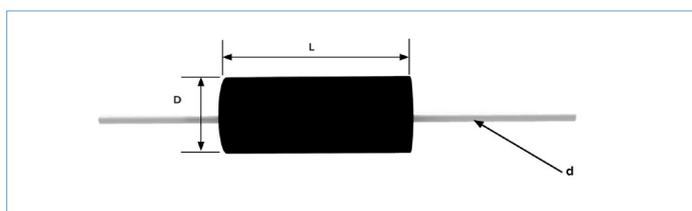
## ORDERING INFORMATION

| SA     | 70                         | Y   | 102   | J  | A   | V                    | -   |
|--------|----------------------------|---|---|--|---|----------------------|---|
| SERIES | SIZE                       | DIELECTRIC  | CAPACITANCE   | TOLERANCE  | VOLTAGE   | PACKAGING            | SPECIAL   |
| SA     | 40<br>50<br>60<br>70<br>80 | A = NPO<br>P = N2T<br>X = BX<br>Y = X7R<br>BY=2C1 | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit give the number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>1340R0 = 1340pF | A = ±0.05pF if < 10pF and<br>0.05% if > 10pF<br>B = ± 0.1pF<br>C = ± 0.25pF<br>D = ± 0.5pF<br>F = ± 1%<br>G = ± 2%<br>J = ± 5%<br>K = ± 10%<br>M = ± 20% | X = 25 V<br>A = 50 V<br>U = 63 V<br>B = 100 V<br>C = 200 V<br>P = 250 V<br>E = 500 V<br>F = 630 V<br>G = 1 KV<br>H = 2 KV<br>I = 3 KV<br>K = 4 KV<br>L = 5 KV | V = Bulk<br>T = Tray | -<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us

## DIMENSIONS (in millimeters)

| SIZE                   | SA40 | SA50 | SA60 | SA70 | SA75 | SA80 | SA90 |
|------------------------|------|------|------|------|------|------|------|
| Length (L) ±0.4        | 4.3  | 6.4  | 6.6  | 10.0 | 11.0 | 12.7 | 17.5 |
| Diameter (D) ±0.4      | 2.5  | 2.5  | 3.9  | 3.9  | 5.5  | 6.4  | 8.9  |
| Lead diameter (d) ±0.1 | 0.5  | 0.5  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| Lead minimal length    | 38   | 38   | 38   | 38   | 38   | 38   | 38   |



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# AXIAL CAPACITOR Encapsulated

NPO N2T X7R 25V-5KV



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## QUICK REFERENCE DATA (Max capacitance)

|              | SA40   |        |        | SA50   |        |        | SA60   |        |        | SA70   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|              | NPO    | N2T    | X7R | NPO | N2T | X7R | NPO | N2T | X7R | NPO | N2T | X7R |
| <i>Min</i>   | 0.1 pF | 0.3 pF | 2.2 pF | 0.1 pF | 1.0 pF | 6.8 pF | 0.4 pF | 4.7 pF | 10 pF  | 0.4 pF | 4.7 pF | 10 pF  |
| <i>25V</i>   | 27 nF  | 5.6 nF | 1.0 μF | 470 nF | 15 nF  | 4.7 μF | 220 nF | 68 nF  | 22 μF  | 220 nF | 68 nF  | 22 μF  |
| <i>50V</i>   | 10 nF  | 5.6 nF | 1.0 μF | 47 nF  | 15 nF  | 4.7 μF | 150 nF | 68 nF  | 10 μF  | 150 nF | 68 nF  | 10 μF  |
| <i>100V</i>  | 10 nF  | 5.6 nF | 100 nF | 33 nF  | 15 nF  | 1.0 μF | 100 nF | 68 nF  | 4.7 μF | 100 nF | 68 nF  | 4.7 μF |
| <i>200V</i>  | 2.2 nF | 5.6 nF | 39 nF  | 10 nF  | 15 nF  | 100 nF | 47 nF  | 68 nF  | 390 nF | 47 nF  | 68 nF  | 390 nF |
| <i>250V</i>  | 2.2 nF | 5.6 nF | 27 nF  | 10 nF  | 15 nF  | 82 nF  | 47 nF  | 68 nF  | 330 nF | 47 nF  | 68 nF  | 330 nF |
| <i>500V</i>  | 1.0 nF | 2.7 nF | 6.8 nF | 3.3 nF | 10 nF  | 27 nF  | 39 nF  | 47 nF  | 180 nF | 39 nF  | 47 nF  | 180 nF |
| <i>630V</i>  | 680 pF | 1.5 nF | 3.9 nF | 2.7 nF | 6.8 nF | 15 nF  | 39 nF  | 39 nF  | 120 nF | 39 nF  | 39 nF  | 120 nF |
| <i>1000V</i> | 220 pF | 560 pF | 1.2 nF | 1.0 nF | 2.2 nF | 5.6 nF | 33 nF  | 22 nF  | 47 nF  | 33 nF  | 22 nF  | 47 nF  |
| <i>1500V</i> | 68 pF  | 180 pF | 390 pF | 270 pF | 680 pF | 2.2 nF | 2.7 nF | 6.8 nF | 18 nF  | 2.7 nF | 6.8 nF | 18 nF  |
| <i>2000V</i> |        |        |        | 150 pF | 390 pF | 820 pF | 1.2 nF | 3.3 nF | 8.2 nF | 1.2 nF | 3.3 nF | 8.2 nF |

|              | SA75   |        |        | SA80   |        |        | SA90   |        |        |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|              | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    | NPO    | N2T    | X7R    |
| <i>Min</i>   | 1.0 pF | 4.7 pF | 10 pF  | 1.0 pF | 10 pF  | 33 pF  | 1.0 pF | 10 pF  | 33 pF  |
| <i>25V</i>   | 220 nF | 120 nF | 22 μF  | 470 nF | 330 nF | 47 μF  | 470 nF | 330 nF | 47 μF  |
| <i>50V</i>   | 220 nF | 120 nF | 6.8 μF | 470 nF | 330 nF | 47 μF  | 470 nF | 330 nF | 47 μF  |
| <i>100V</i>  | 150 nF | 120 nF | 4.7 μF | 330 nF | 330 nF | 15 μF  | 330 nF | 330 nF | 15 μF  |
| <i>200V</i>  | 100 nF | 120 nF | 820 nF | 150 nF | 330 nF | 1.8 μF | 150 nF | 330 nF | 2.2 μF |
| <i>250V</i>  | 100 nF | 120 nF | 820 nF | 150 nF | 330 nF | 1.8 μF | 150 nF | 330 nF | 1.8 μF |
| <i>500V</i>  | 47 nF  | 100 nF | 330 nF | 100 nF | 220 nF | 820 nF | 100 nF | 270 nF | 1.0 μF |
| <i>630V</i>  | 47 nF  | 82 nF  | 270 nF | 100 nF | 180 nF | 560 nF | 100 nF | 220 nF | 680 nF |
| <i>1000V</i> | 15 nF  | 47 nF  | 120 nF | 100 nF | 120 nF | 330 nF | 100 nF | 120 nF | 390 nF |
| <i>1500V</i> | 8.2 nF | 18 nF  | 56 nF  | 18 nF  | 56 nF  | 150 nF | 22 nF  | 68 nF  | 180 nF |
| <i>2000V</i> | 3.9 nF | 8.2 nF | 22 nF  | 12 nF  | 22 nF  | 68 nF  | 12 nF  | 27 nF  | 82 nF  |

1) Max Values in italic obtained with BME part

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# 4 LEADS CAPACITOR Encapsulated

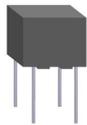
X7R 50V-500V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## APPLICATIONS

- Severe environment
- Historical design



## FEATURES

- 4 Leaded radial MLCC capacitor
- Epoxy molded
- High reliability. 100% burn in
- Equivalent to concurrent design
- Straight or Crossed Electrodes
- Marking

## ELECTRICAL PARAMETERS

**ELECTRICAL CHARACTERISTICS :**  
at + 25°C unless otherwise specified

**OPERATING TEMPERATURE :**  
X7R, N2T : - 55°C, + 125°C

**TEMPERATURE COEFFICIENT :**  
X7R : ± 15% with 0Vdc applied

**DISSIPATION FACTOR:**  
X7R : ≤ 0.025 at 1kHz

**INSULATION RESISTANCE (IR) :**  
25°C/Un 10<sup>5</sup> MOhm or 1000 Ohm-Farad whichever is less  
125°C/Un 10<sup>4</sup> MOhm or 100 Ohm-Farad whichever is less

**DIELECTRIC STRENGTH TEST :**  
2.5U U≤200V | U+250V 200<U≤500

**BURN IN :**  
Chips 24H+Stack 48H 125°C 2U U<500V | 1.5U 500≤

## QUICK REFERENCE DATA (Max capacitance)

|      | SF10/15 | SF20/25 | SF30/35 | SF40/45 | SF50/55 |
|------|---------|---------|---------|---------|---------|
|      | X7R     | X7R     | X7R     | X7R     | X7R     |
| Min  | 1 µF    | 1.5 µF  | 1.8 µF  | 3.3 µF  | 5.6 µF  |
| 50V  | 18 µF   | 27 µF   | 39 µF   | 82 µF   | 120 µF  |
| 100V | 5.6 µF  | 10 µF   | 18 µF   | 27 µF   | 39 µF   |
| 200V | 2.7 µF  | 3.9 µF  | 6.8 µF  | 12 µF   | 18 µF   |
| 500V | 1.5 µF  | 1.8 µF  | 3.3 µF  | 5.6 µF  | 8.2 µF  |

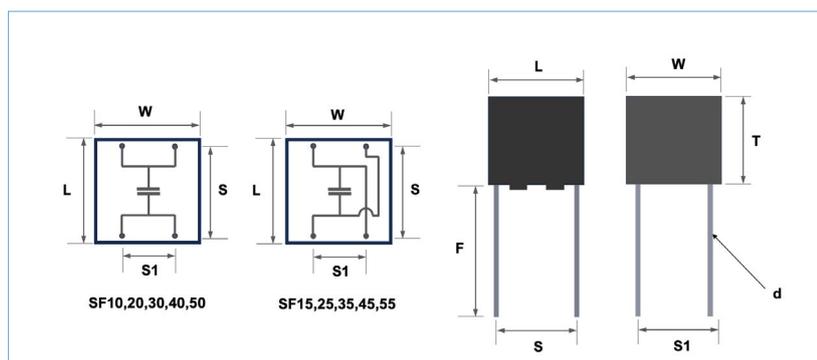
## ORDERING INFORMATION

| SF     | 70   | Y          | 102   | M                      | A   | V         | -   |
|--------|--|------------|---|------------------------|---|-----------|---|
| SERIES | SIZE   | DIELECTRIC | CAPACITANCE   | TOLERANCE              | VOLTAGE   | PACKAGING | SPECIAL   |
| SF     | 10<br>15<br>20<br>25<br>30<br>35<br>40<br>45<br>50<br>55 | Y = X7R    | Expressed in picofarads (pF).<br>The first two digits are significant, the third digit give the number of noughts.<br>Example : 102 = 1 000pF<br><br>For special values<br>R is used as decimal separator<br>Example 12R7 = 12.7pF<br>134OR0 = 1340pF | K = ± 10%<br>M = ± 20% | A = 50 V<br>B = 100 V<br>C = 200 V<br>E = 500 V | V = Bulk  | -<br>Dxx = Reliability spec<br>Exx = Sorting spec |

For other sizes, voltage, tolerance contact us

## DIMENSIONS (in millimeters)

| SIZE                   | SF10  | SF15  | SF20  | SF25  | SF30  | SF35  | SF40  | SF45  | SF50  | SF55  |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lenght (L) ±0.5        | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Width (W) ±0.5         | 19.0  | 20.0  | 19.0  | 20.0  | 19.0  | 20.0  | 19.0  | 20.0  | 19.0  | 20.0  |
| Height (T) max         | 6.5   | 6.5   | 8.0   | 8.0   | 12.5  | 12.5  | 20.0  | 20.0  | 30.0  | 30.0  |
| Lead Spacing (S) ±0.5  | 17.8  | 15.24 | 17.8  | 15.24 | 17.8  | 15.24 | 17.8  | 15.24 | 17.8  | 15.24 |
| Lead Spacing (S1) ±0.5 | 10.16 | 12.7  | 10.16 | 12.7  | 10.16 | 12.7  | 10.16 | 12.7  | 10.16 | 12.7  |
| Lead diameter (d) ±0.1 | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lead lenght (F) min    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    |



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# 4 LEADS CAPACITOR Encapsulated

X7R 50V-500V



**SRT**  
MICROCÉRAMIQUE  
MLCC CAPACITORS

## QUICK REFERENCE DATA (Max capacitance)

|      | SF10/15     | SF20/25     | SF30/35     | SF40/45     | SF50/55     |
|------|-------------|-------------|-------------|-------------|-------------|
|      | X7R         | X7R         | X7R         | X7R         | X7R         |
| Min  | 1 $\mu$ F   | 1.5 $\mu$ F | 1.8 $\mu$ F | 3.3 $\mu$ F | 5.6 $\mu$ F |
| 50V  | 18 $\mu$ F  | 27 $\mu$ F  | 39 $\mu$ F  | 82 $\mu$ F  | 120 $\mu$ F |
| 100V | 5.6 $\mu$ F | 10 $\mu$ F  | 18 $\mu$ F  | 27 $\mu$ F  | 39 $\mu$ F  |
| 200V | 2.7 $\mu$ F | 3.9 $\mu$ F | 6.8 $\mu$ F | 12 $\mu$ F  | 18 $\mu$ F  |
| 500V | 1.5 $\mu$ F | 1.8 $\mu$ F | 3.3 $\mu$ F | 5.6 $\mu$ F | 8.2 $\mu$ F |

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## APPLICATIONS

- If good electronic design dictates whenever it is possible to use standard components with multiple sources, some special needs can be only addressed with a custom developed product, as to allow gain in performance, compacity, reliability.
- With our highly flexible production, our offer in standard products covers a wide range of products, always without obsolescence.
- In addition to this standard range, designer can work with SRT-Microcéramique engineers to develop any combination of ceramic, voltage, capacity, package, reliability program to fit their exact needs.

## OBSOLESCENCE

- The need to produce and maintain some electronic design for tens of years, often collides with the obsolescence policies of the major manufacturers. SRT-Microcéramique can provide strict equivalents to competitors designs, SMD, Stacks, Dipped, Encapsulated radials, axials... and insure its production overtime with its no obsolescence policy.

## FORMAT

- For cross references needs or specific designs we can propose any SMD format between 0402 and 80300.
- Barcap, 4 corners, discs, arrays... can be proposed

## CERAMIC

- In addition to its wide range of ceramic, type 1, type 2, N2T for power and pulse application, SRT-Microcéramique can also offer positive temperature coefficients, high temperature type 1 etc...

## VOLTAGE

- Any specific voltage that is not in our standard range can be added (1100V, 1200V etc...) in order to optimize the component design.
- Very high voltage design up to 32KV.

## CAPACITY

- Specific capacitance values that are not in the standard ISO range can be proposed.
- The codification of the specific P/N is based on the capacitance in picofarad with R as a decimal separator
- ex : 45,3pf = 45R3, 8320pf = 8320R0, 12.2nF = 12200R0

## TERMINATION

- Any combination of components and termination, even if not present in our standard catalog can be proposed.
- Change of termination on any component, even if not produced by SRT, especially high value BME products is possible : Gold termination, dipped lead, dipped SAC, Silver-Palladium etc...

## PACKAGE

- Any combination of stacks, leaded, dipped, encapsulated in any specific format can be proposed with PME SRT components or qualified BME high capacitance components.

## SORTING

- SRT-Microcéramique, proposes on a regular basis, very high precision sorting for some of its customers.
- Up to 0.05% in Type 1, on specific value or cells.

## RELIABILITY

- Depending on the Reliability need of the component, specific qualifications and testing programs can be agreed upon in addition to our standard process.
- Burn-In, LAT, RCS etc...
- SRT-Microcéramique regularly works with space, medical and defense customers.

## DESIGN PROCESS

- Working directly with our engineers and depending on the development difficulty, custom design can be proposed in 8 to 10 weeks.
- The first samples could require some tooling and development cost, but every effort will be made to propose consistent and as competitive as possible price for production volume.
- A specific datasheet for the custom product will be provided and the no obsolescence policy will guarantee the production over the years.





### SIZE

| SRT               | EXXELIA                                | AVX       | SYFER |
|-------------------|--|-----------|-------|
| 0306 (on demand)  |  | 0306/LD16 |       |
| 0402              | CEC/CNC 19 ...SHL                      | 0402      | 0402  |
| 0403 (on demand)  | CEC/CNC 17                             |           |       |
| 0405 (on demand)  |  |           |       |
| 0504              | CEC/CNC 1                              |           |       |
| 0505              | ...SHA                                 |           |       |
| 0508              | CER/CNR 2                              | 0508/LD17 |       |
| 0603              | CEC/CNC 19 R14 ...SHS                  | 0603      | 0603  |
| 0612 (on demand)  | CER/CNR 12                             | 0612/LD18 |       |
| 0709 (on demand)  | ...SHR                                 |           |       |
| 0711 (on demand)  | ...SHD                                 |           |       |
| 0805              | CEC/CNC 2 R15 ...SHF                   | 0805      | 0805  |
| 0907 (on demand)  | CEC/CNC 18                             |           |       |
| 1005 (on demand)  | CEC/CNC 8                              |           |       |
| 1111              | ...SHB/...NHB                          |           |       |
| 1206              | CEC/CNC 12 R18 ...SHN                  | 1206      | 1206  |
| 1210              | CEC/CNC 4 S41 ...SHT                   | 1210      | 1210  |
| 1515              | C1/C2/C4 78                            |           |       |
| 1605              | CEC/CNC 9                              |           |       |
| 1806              | CEC/CNC 3                              |           |       |
| 1808              |  |           | 1808  |
| 1812              | CEC/CNC 6 S43 C1/C2/C4 79              | 1812      | 1812  |
| 1825              | CEC/CNC 70 C1/C2/C4 90                 | 1825      | 1825  |
| 2210 (on demand)  | CEC/CNC 5                              |           |       |
| 2220              | CEC/CNC 7 S47 C1/C2/C4 80 ...CLX       | 2220      | 2220  |
| 2225              | CEC/CNC 71 C1/C2/C4 91 ...R2225 ...CPX | 2225      | 2225  |
| 2528 (on demand)  | CEC/CNC W                              |           |       |
| 2825              | C1/C2/C4 81                            |           |       |
| 3030 (on demand)  | CEC/CNC X                              |           |       |
| 3040 (on demand)  | CEC/CNC 72                             |           |       |
| 3033              | ...R3033                               |           |       |
| 3333              | C1/C2/C4 82                            |           |       |
| 3640              |  | 3640      | 3640  |
| 3740              | ...R3740                               |           |       |
| 4040              | C1/C2/C4 83 ...CPE/...CLE              |           |       |
| 5440              | C1/C2/C4 84 ...R5440                   |           |       |
| 5550              | C1/C2/C4 89 ...R5550                   |           | 5550  |
| 6080              | ...R6080                               |           |       |
| 6560              | C1/C2/C4 85                            |           |       |
| 7065              | ...CLF                                 |           |       |
| 8060              | ...R8060                               |           | 8060  |
| 45107 (on demand) | ...R45107                              |           |       |
| 11283 (on demand) | C1/C2/C4 87                            |           |       |
| 16080 (on demand) | C1/C2/C4 88                            |           |       |

### CERAMIC

| CERAM  | SRT     | EXXELIA                        | AVX  | SYFER         |
|--------|---------|--------------------------------|------|---------------|
| NPO    | xxA...  | CEC CER ...R..N C1...          | ...A | C/Q/U/A/K/F/G |
| BX     | xxX...  | CNC                            |      | B             |
| 2C1    | xxBY... | CNC                            |      | R             |
| X7R    | xxY...  | CNC CNR ...R..X ...R...T C2... | ...C | X/J/S/E/D     |
| High Q | xxQ...  | ...CH ...SH ...CL ...CP        |      |               |



### TERMINATION

| CERAM                  | SRT       | EXXELIA | AVX | SYFER |
|------------------------|-----------|---------|-----|-------|
| Ag                     | Q         | Q       |     |       |
| Ag+Ni+dipSn/Pb60/40    | H         | T       |     |       |
| Ag/Pd/Pt+dipSn/Pb60/40 | on demand | H       |     |       |
| Ag+Ni +eISn/Pb95/5     | I         | C       |     |       |
| Ag+Ni +eISn/Pb60/40    | on demand | D       |     |       |
| Ag+Ni +dipSn/Pb60/40   | H         | E       |     |       |
| Ag+Ni+Au               | W         | G       | G   |       |
| Ag+PoLY+Ni+Sn/Pb95/5   | on demand | YC      |     |       |
| Ag+PoLY+Ni+Sn/Pb60/40  | on demand | YD      |     |       |
| Ag+ Poly +Ni+Au        | on demand | YG      |     |       |
| Ag/Pd/Pt ROHS          | F         | W       |     |       |
| Ag ROHS                | Q         | QW      |     |       |
| Ag/Pd/Pt+ dip Sn ROHS  | on demand | HW      |     |       |
| Ag+Ni+ eI SnAg ROHS    | on demand | CW      |     |       |
| Ag + Ni + eI Sn ROHS   | X         | EW      | T   | J     |
| Ag + Ni + Au ROHS      | W         | GW      |     |       |
| Ag+Poly+Ni+Sn ROHS     | P         | YCW     | Z/X | H     |
| Ag+ Poly +Ni+Au ROHS   | on demand | YGW     |     |       |
| Sn/Cu/Ag               | C         | C       |     | 2     |
| Ag/Pd                  | F         | A       | 1   | F     |



### SIZE

| LEAD SP MM | SRT    | EXXELIA  | AVX                    | SYFER                               |
|------------|--------|--|------------------------|-------------------------------------|
| 2,54       | SRMC31 | TC 77-5<br>TCN 72-5  | SR15                   | 8111M<br>LE0805                     |
|            | SRMC32 | TCE TCX TCN TXR 78-5<br>TCN 73-5   | SR20                   | 8121M<br>LR1206                     |
| 4,32       | SRMC38 | TKD 79<br>TKD 90   | SV01                   | LE1515                              |
| 5,08       | SRMC40 | TCE TCX TCN TXR 77-1<br>TCE TCX TCN TXR 78-1<br>TCN 72-1                                 |                        | LD0805<br>8111N<br>LD1206<br>LD1210 |
|            | SRMC41 | TCL 79<br>TCL 90<br>TCF 78<br>TCN 73-1   | SR21                   |                                     |
|            | SRMC43 | TCF 79<br>TCL 80<br>TCL 91<br>non magn S43   |                        | LE1812                              |
|            | SRMC44 | TCE TCX TCN TXR 79-5<br>TCN 74-5<br>R 2225<br>TCF 80<br>TCF 90<br>TCF 91<br>non magn S47 | SV13/SV63<br>SR30      | 8131M<br>LB2225                     |
|            | SRMC45 | TCE TCX TCN TXR 80-5<br>TCN 75-5<br>TEF 3033<br>R 3033                                   | SR40<br>SV14/SV64      | 8141M                               |
| 5,60       | SRMC47 | TKD 80<br>TKD 91   | SV02/SV52              |                                     |
| 6,35       | SRMC48 |  | SR22                   | LQ1206                              |
| 7,00       | SRMC49 | TKD 81   | SV03/SV53              | LE2520                              |
| 7,62       | SRMC52 |  | SR27                   |                                     |
|            | SRMC54 | TCL 81<br>TCF 81   | SV04/SV54              | 8121T<br>8131T                      |
| 9,52       | SRMC58 | TKD 82   | SV05/SV55              | LE3530                              |
| 10,16      | SRMC60 | TCL 82<br>TCF 82   |                        |                                     |
|            | SRMC63 | R 3740<br>TEF 3740<br>TCE TCX TCN TXR 76-5   | SR50<br>SV15/SV65      | 8151M                               |
| 12,10      | SRMC68 | TKD 83   | SV07/SV57              | LE4540                              |
| 12,70      | SRMC72 | TCL 83<br>TCF 83   |                        |                                     |
|            | SRMC74 | TKD 84<br>TEF 5550   | SV08/SV58              | 8161M<br>LE5550                     |
| 15,24      | SRMC76 | TCL 84<br>TCL 89<br>R 5550<br>TCF 84   |                        |                                     |
|            | SRMC80 | R 6080<br>TEF 6080   |                        |                                     |
| 17,10      | SRMC82 | TKD 85   | SV09/SV59              | LE6560<br>8165M                     |
|            | SRMC84 | TCL 85<br>TCF 85<br>R 6560   |                        |                                     |
| 20,30      | SRMC88 | R 8060   | SV17/SV67<br>SV16/SV66 | LE7565                              |
| 21,00      | SRMC90 | TEF 8060   |                        | 8111M                               |
|            | SRMC91 | TKD 87   | SV10                   |                                     |
| 29,94      | SRMC92 | TCL 87<br>TCF 87   | SV11                   |                                     |
|            | SRMC96 | TKD 88<br>TCL 88<br>TCF 88   |                        |                                     |

### CERAMIC/TERMINATION

| CERAM | SRT        | EXXELIA  | AVX                    | SYFER           |
|-------|------------|--|------------------------|-----------------|
| NPO   | SRMCxxA... | TCE...   | SRxxxA...              | 81...C...       |
|       |            | Non magnetic N...<br>TCK1... TCL1... TCF1... TKD1... | SLxxxA...<br>ARxxxA... | LE0805          |
| BX    | SRMCxxX... | TCX...   | SR20                   | 8121M<br>LR1206 |
| X7R   | SRMCxxY... | TXR...   | SRxxxC...              | 81...X...       |
|       |            | Non magnetic X...<br>TCK2... TCL2... TCF2... TKD2... | SLxxxC...<br>ARxxxC... |                 |



### SIZE

| LEAD SP MM | SRT       | EXXELIA  | AVX  | SYFER      |
|------------|-----------|--|------|------------|
| 2.54       | SR41      | TCE TCX TCN TXR 61<br>LA 1<br>LA 2<br>TCE 11 L/Y TCN 31 Y<br>TCE 13 L/Y  |      |            |
|            | SR43      | TCE TCX TCN TXR 62<br>TCE 11 L/I TCN 31 I<br>TCE 13 L/I  | MR04 |            |
| 4.32       | SR45      |  |      | Syfer 1515 |
| 5.08       | SR47      | TCE TCX TCN TXR 62N<br>CK 05<br>TCE 11 NY TCN 31 NY<br>TCE 13 NY   |      |            |
|            | SR50      | TCE TCX TCN TXR 50<br>TCE TCX TCN TXR 62N<br>LA 3<br>TCE 11 N/I TCN 31 N/I<br>TCE 13 N/I<br>TCN 19 low capa  | MR05 |            |
|            | SR60      | TCE TCX TCN TXRK 79<br>TCE TCX TCN TXRK 90<br>CK 06<br>TCE TCX TCN TXR 60<br>TCE TCX TCN TXR 63<br>LA 5A<br>LA 5B<br>LA 5C<br>TCE TCX TCN TXRK 80<br>TCE TCX TCN TXRK 91<br>TCE 11 L/J TCN 30 J<br>TCE 13 L/J TCN 31 J<br>TCN 19 high capa | MR06 |            |
|            | SR64      | TCE TCX TCN TXR 64<br>TCE 11 L/O TCN 30 O<br>TCE 13 L/O TCN 31 O   |      | Syfer 2520 |
| 7.62       | SR65      | TCE TCX TCN TXRK 81  |      | -          |
| 10.16      | SR68      |  | MR07 |            |
|            | SR70      | TCE TCX TCN TXRK 82  | MR08 | Syfer 4540 |
|            | SF10/SF15 | TCN83-1/TCN-86-1   |      |            |
|            | SF20/SF25 | TCN83-2/TCN-86-2   |      |            |
|            | SF30/SF35 | TCN83-3/TCN-86-3   |      |            |
|            | SF40/SF45 | TCN83-4/TCN-86-4   |      |            |
|            | SF50/SF55 | TCN83-5/TCN-86-5   |      |            |
| 12.20      | SR74      | TCE TCX TCN TXRK 83  |      | Syfer 5550 |
| 15.20      | SR78      | TCE TCX TCN TXRK 84<br>TCE TCX TCN TXRK 89   |      |            |
| 17.30      | SR82      | TCE TCX TCN TXRK 85  |      | Syfer 6560 |
| 19.80      | SR86      |  |      | Syfer 7565 |
| 27.90      | SR90      | TCE TCX TCN TXRK 87  |      |            |
| 40.60      | SR94      | TCE TCX TCN TXRK 88  |      |            |

### CERAMIC/TERMINATION

| CERAM | SRT      | EXXELIA                    | AVX       | SYFER                 |
|-------|----------|----------------------------|-----------|-----------------------|
| NPO   | SRxxA... | TCE...<br>TCK1...<br>LA1-5 | MRxxxA... | xxxxN...<br>xxxxRN... |
| BX    | SRxxX... | TCX...                     |           |                       |
| 2C1   | SRxxBY   | CK5... CK6...              |           |                       |
| X7R   | SRxxY... | TCN<br>TCK2<br>TCK4        | MRxxxC... | xxxxB...<br>xxxxRB... |



### SIZE

| DIAMETER | SRT     | EXXELIA  | AVX     | KEMET   |
|----------|---------|----------|---------|---------|
| 2.5      | SA40... | TC52R... | MA10... | C114... |
|          | SA50... |          | MA20... | C124... |
| 3.9      | SA60... | TC53R... |         |         |
|          | SA70... | TC54R... | MA30... | C192... |
| 5.5      | SA75... | TC55R... |         |         |
| 6.4      | SA80... |          | MA40... | C202... |

### CERAMIC/TERMINATION

| CERAM | SRT      | EXXELIA | AVX       | KEMET     |
|-------|----------|---------|-----------|-----------|
| NPO   | SAXxA... | TCE...  | MA...A... | C....G... |
| BX    | SAXX...  | TCX...  |           | C....X... |
| 2C1   | SAXxBY   | TCN...  |           |           |
| X7R   | SAXxY... | TXR...  | MA...C... | C....R... |



### SIZE

| SRT       | EXXELIA    | AVX             |
|-----------|------------|-----------------|
| SRMC1210  |            |                 |
| SRMC1812  |            |                 |
| SRMC1825  |            |                 |
| SRMC2220  |            |                 |
| SRMC2225  | SC00       |                 |
| SRMC2825  |            |                 |
| SRMC3033  | SC01/TEV53 | CH42-44/CH41-44 |
| SRMC3640  | SC02/TEV54 | CH52-54/CH51-54 |
| SRMC4040  |            |                 |
| SRMC40150 |            | CH82-84/CH81-84 |
| SRMC5550  | SC04/TEV55 | CH62-64/CH61-64 |
| SRMC6080  | SC06/TEV56 | CH72-74/CH71-74 |
| SRMC60110 |            | CH87-89/CH86-89 |
| SRMC6660  | SC05       |                 |
| SRMC8060  | SC07/TEV65 | CH77-79/CH76-79 |
| SRMC80100 | SC10       |                 |
| SRMC80150 | SC12/TEV58 | CH92-94/CH91-94 |

### FORM

| FORM    | SRT      | EXXELIA         | AVX     |
|---------|----------|-----------------|---------|
| L       | ...L...  | ...DL...        | ...0A7  |
| J       | ...J...  | ...DJ...        | ...0A8  |
| D       | ...D...  | ...DN...        | ...0A0  |
| M       | ...M...  |                 |         |
| 4 Wires | ...Ux... | ...U4.../TEV... | ...3xx4 |

### CERAMIC

| CERAM | SRT     | EXXELIA         | AVX     |
|-------|---------|-----------------|---------|
| NPO   | ...A... |                 |         |
| X7R   | ...Y... | ...X.../...T... | ...C... |



### SIZE

| SRT         | EXXELIA    | KEMET       |
|-------------|------------|-------------|
| SRTV1210... |            |             |
| SRTV1812... |            |             |
| SRTV2220... |            | L1G...69... |
| SRTV2225... |            | L1G...70... |
| SRTV3033... | ..SV01...  |             |
| SRTV3640... | ..SV02...  |             |
| SRTV4040... |            |             |
| SRTV5440... |            |             |
| SRTV5550... | ...SV01... |             |
| SRTV6560... | ...SV05... |             |
| SRTV6080... | ...SV07... |             |
| SRTV8060... | ...SV07... |             |

### EXEMPLE

- SRT : SRTV3740Y106KAT6BE25 = Exxelia : 500SV02X106KW2C



### SERIES

| EXXELIA | LECLANCHE CAPACITORS |
|---------|----------------------|
| A64     | CKM 501-4BDF         |
| A64S    | MKP d                |
| A74     | CKM 501-4BDF         |
| BIK     | PPM g                |
| HT77    | KN g                 |
| KM 311  | CKM 311              |
| KM 501  | CKM 501              |
| KM 94   | MKS SMD              |
| KM711   | MKP df / MKS df      |
| KM82    | MKS gb               |
| KSP4    | KC-4                 |
| MKT     | MKT b                |
| MPA4W   | CKT 501-4BDF         |
| PHM912  | MKNHV                |
| PLP3    | PPM r                |
| PLS3    | KPh/KSh              |
| PM 50   | MKT g                |
| PM 60   | MKT d                |
| PM 7    | MKT df               |
| PM 89   | MKT-4 a              |
| PM 90   | MKT-4 g              |
| PM 94   | MKT SMD              |
| PM90-R2 | MKT SMF              |
| PMA 64  | MKT g/ga             |
| PMR 64  | MKP g                |
| PP 20   | PPM h                |
| PP 78 A | PPM d                |
| PP 78 R | PPM g                |
| PP12W   | PPM c2               |
| PPS 16  | KP                   |
| PRM 4   | CKM 501-4BG          |
| R64S    | MKP g                |
| RA 1    | KPS d                |
| RA 2    | KPS d                |
| RA 3    | KPS d                |
| RA 4    | KPS d                |
| RA 75   | KPS d                |
| SP270UL | MKS df               |
| SP2767  | PPM 110-1.0 dv (K)   |
| SP289UL | MKS df               |
| SP2961  | MKT-4 50-4.7 a (K)   |
| SP2962  | MKT-4 50-15.0 a (K)  |
| SP2986W | PAM 85-2.0 cv2 (K)   |
| SP3187  | PPM 150-047 c (K)    |
| SP3188  | PPM 210-025 c (K)    |



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