

SMD Low Voltage N2T

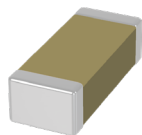
10V - 1000V



SRT
MICROCÉRAMIQUE
MLCC CAPACITORS

APPLICATIONS

- Typical uses : timing, filtering, pulse discharge



FEATURES

- Class 1,5
- Close to Class 1 stability, 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 ≤ 1000pF
≤ 1.10-3 at 1Vrms and 1KHz for values > 1000pF

INSULATION RESISTANCE (IR) :
25°C/Un 10⁵ MOhm or 1000 Ohm-Farad whichever is less
125°C/Un 10⁴ 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

| | 0402 | 0504 | 0603 | 0805 | 1206 | 1210 | 1808 | 1812 | 1825 | 2220 | 2225 | 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 | 47 pF | 47 pF | 47 pF | 47 pF |
| 10V | 1.0 nF | 5.6 nF | 5.6 nF | 15 nF | 39 nF | 56 nF | 68 nF | 120 nF | 270 nF | 270 nF | 330 nF | 560 nF | 820 nF | 1.0 µF | 1.2 µF |
| 25V | 1.0 nF | 5.6 nF | 5.6 nF | 15 nF | 39 nF | 56 nF | 68 nF | 120 nF | 270 nF | 270 nF | 330 nF | 560 nF | 820 nF | 1.0 µF | 1.2 µF |
| 50V | 1.0 nF | 5.6 nF | 5.6 nF | 15 nF | 39 nF | 56 nF | 68 nF | 120 nF | 270 nF | 270 nF | 330 nF | 560 nF | 820 nF | 1.0 µF | 1.2 µF |
| 63V | 1.0 nF | 5.6 nF | 5.6 nF | 15 nF | 39 nF | 56 nF | 68 nF | 120 nF | 270 nF | 270 nF | 330 nF | 560 nF | 820 nF | 1.0 µF | 1.2 µF |
| 100V | 1.0 nF | 5.6 nF | 5.6 nF | 15 nF | 39 nF | 56 nF | 68 nF | 120 nF | 270 nF | 270 nF | 330 nF | 560 nF | 820 nF | 1.0 µF | 1.2 µF |
| 200V | 1.0 nF | 5.6 nF | 4.7 nF | 15 nF | 39 nF | 56 nF | 68 nF | 120 nF | 270 nF | 270 nF | 330 nF | 560 nF | 820 nF | 1.0 µF | 1.2 µF |
| 250V | 820 pF | 4.7 nF | 4.7 nF | 15 nF | 39 nF | 56 nF | 68 nF | 120 nF | 270 nF | 270 nF | 330 nF | 560 nF | 820 nF | 1.0 µF | 1.2 µF |
| 500V | 270 pF | 1.8 nF | 1.8 nF | 6.8 nF | 22 nF | 39 nF | 47 nF | 82 nF | 180 nF | 180 nF | 220 nF | 390 nF | 560 nF | 680 nF | 820 nF |
| 630V | | | 1.0 nF | 3.9 nF | 12 nF | 27 nF | 33 nF | 56 nF | 120 nF | 150 nF | 180 nF | 330 nF | 470 nF | 560 nF | 680 nF |
| 1000V | | | 390 pF | 1.8 nF | 4.7 nF | 12 nF | 12 nF | 39 nF | 82 nF | 82 nF | 120 nF | 220 nF | 270 nF | 330 nF | 470 nF |

ORDERING INFORMATION

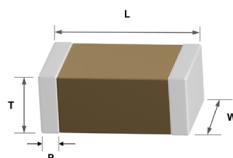
| 0805 | P | 101 | J | A | X | B | - |
|--|------------|---|---|---|---|----------------------|---|
| SIZE | DIELECTRIC | CAPACITANCE | TOLERANCE | VOLTAGE | TERMINATION | PACKAGING | SPECIAL PARAMETERS |
| 0201 0402 0504 0603 0805 1206 1210 1808 1812 1825 2220 2225 3033 3640 4040 5440 | P = N2T | Expressed in picofarads (pF). The first two digits are significant, the third digit gives the number of noughts. Example : 102 = 1 000pF | A = ±0.05pF if < 10pF and 0.05% if > 10pF B = ± 0.1pF C = ± 0,25pF D = ± 0,5pF F = ± 1% G = ± 2% J = ± 5% K = ± 10% | Q = 10V X = 25V A = 50V U = 63V B = 100V C = 200V P = 250V E = 500V F = 630V G = 1000V | X = Nickel Tin F = Palladium-Silver P = Polymer Tin (Flex) C = Copper Tin (Non magnetic) W = Nickel Gold H = Dipped SnPb I = Electrolytic SnPb Q = Solderable Silver | B = Reel V = Bulk | - Dxx = Reliability spec Exx = Sorting spec |

For other sizes, voltage, tolerance contact us.

DIMENSIONS IN MILLIMETERS

| | 0402 | 0504 | 0603 | 0805 | 1206 | 1210 | 1808 | 1812 | 1825 | 2220 | 2225 | 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 | 7.60 ± 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 | 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 |
| Termination (P) | Min | 0.10 | 0.10 | 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 | 1.20 | 1.50 | 1.50 | 1.50 |

For P termination (Polymer type) add 0.20mm to all dimensions

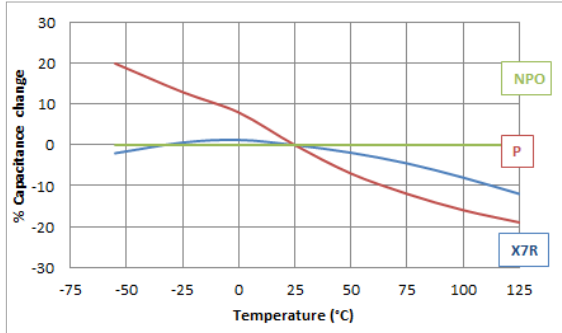


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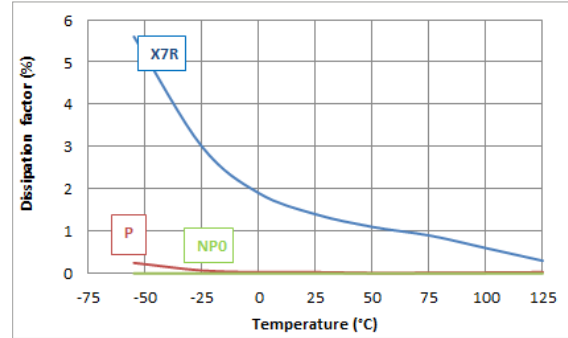


TYPICAL CHARACTERISTICS

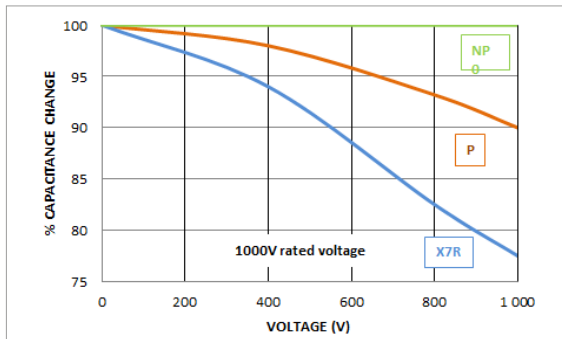
N2T Capacitance vs. temperature



N2T Dissipation factor vs. temperature



N2T Capacitance vs. voltage



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 SAC405 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.

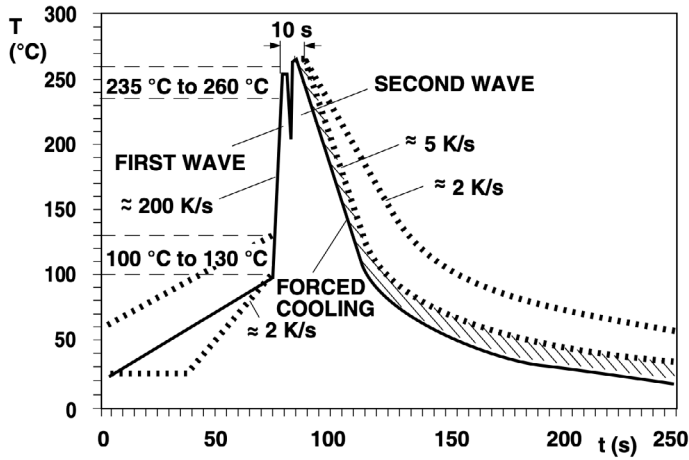
CLEANING

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.

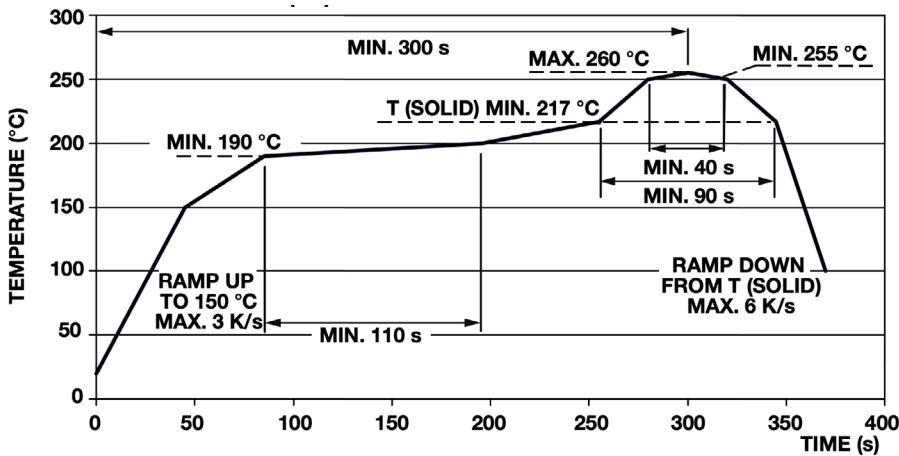
SOLDERING CONDITIONS

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

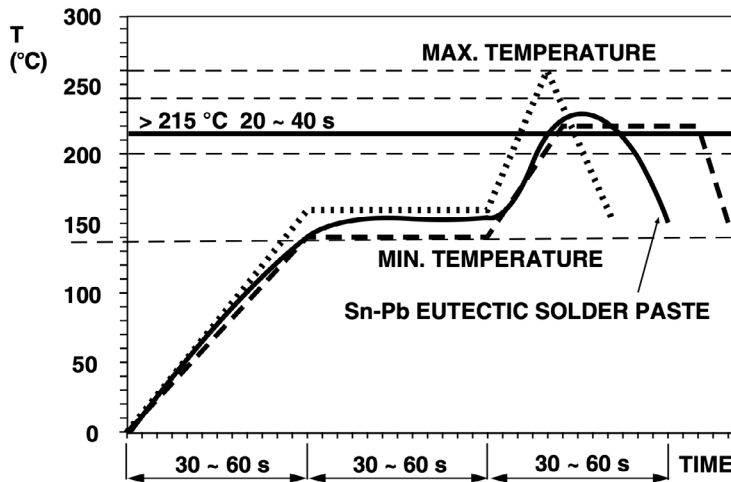
WAVE SOLDERING PROFILE



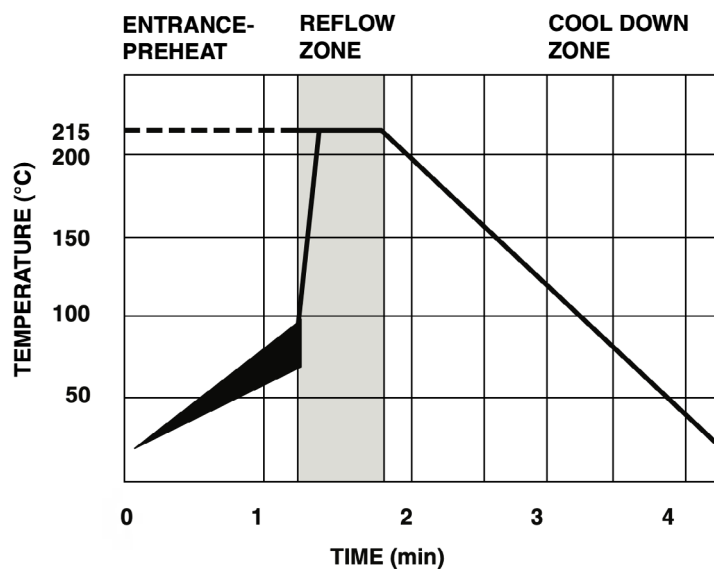
LEADFREE REFLOW SOLDERING PROFILE



SNI



VAPOUR PHASE REFLOW PROFILE



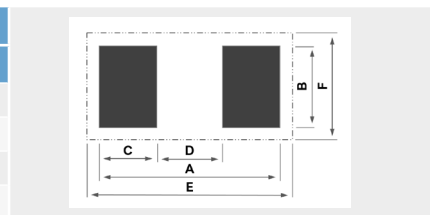
HAND SOLDERING

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

- Soldering iron tip diameter ≤ 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 $\leq 280^\circ\text{C}$ 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.

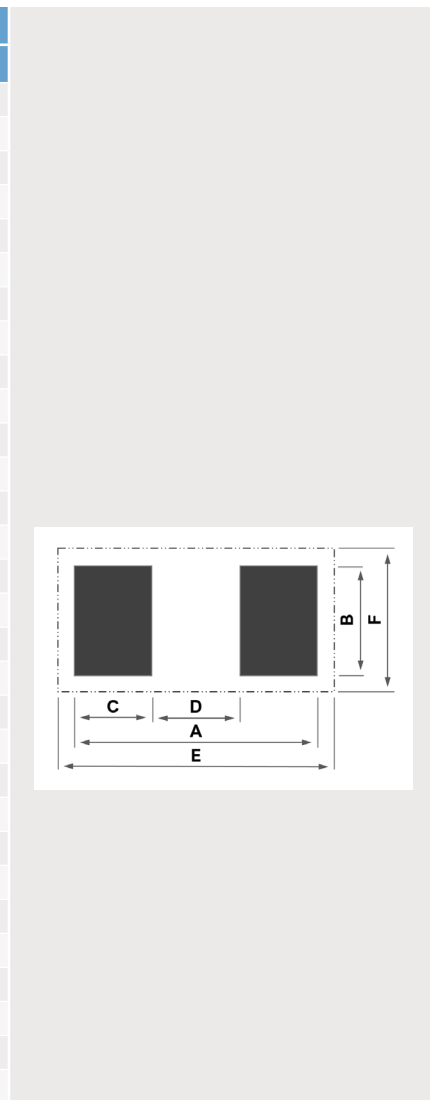
TYPICAL SMD FOOTPRINT WAVE SOLDERING

| SIZE | FOOTPRINT DIMENSIONS IN MM | | | | | |
|------|----------------------------|------|------|------|------|------|
| | A | B | C | D | E | F |
| 0603 | 2.40 | 0.80 | 0.70 | 1.00 | 3.10 | 1.40 |
| 0805 | 3.20 | 1.30 | 0.90 | 1.40 | 4.10 | 1.85 |
| 1206 | 4.80 | 1.70 | 1.25 | 2.30 | 5.90 | 2.25 |
| 1210 | 4.80 | 2.60 | 1.25 | 2.30 | 5.90 | 3.15 |



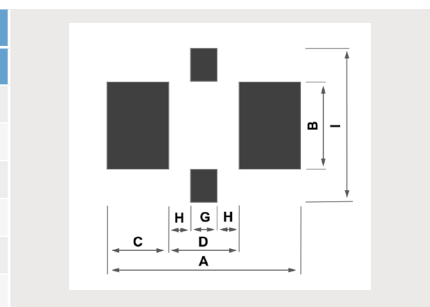
TYPICAL SMD FOOTPRINT REFLOW SOLDERING

| SIZE | FOOTPRINT DIMENSIONS IN mm | | | | | |
|-------|----------------------------|-------|------|-------|-------|-------|
| | A | B | C | D | E | F |
| 0201 | 0.65 | 0.30 | 0.21 | 0.23 | 0.90 | 0.60 |
| 0204 | 1.00 | 1.00 | 0.30 | 0.40 | 1.25 | 1.45 |
| 0402 | 1.50 | 0.50 | 0.40 | 0.70 | 1.75 | 0.95 |
| 0306 | 1.30 | 1.60 | 0.40 | 0.50 | 1.55 | 2.05 |
| 0404 | 1.50 | 1.00 | 0.40 | 0.70 | 1.75 | 1.45 |
| 0504 | 1.90 | 1.00 | 0.40 | 1.10 | 2.15 | 1.45 |
| 0505 | 1.90 | 1.30 | 0.50 | 0.80 | 2.15 | 1.75 |
| 0508 | 1.90 | 2.00 | 0.50 | 0.90 | 2.15 | 2.55 |
| 0603 | 2.30 | 0.80 | 0.60 | 1.10 | 2.55 | 1.35 |
| 0612 | 2.30 | 3.20 | 0.60 | 1.10 | 2.55 | 3.75 |
| 0805 | 2.90 | 1.25 | 0.90 | 1.10 | 3.15 | 1.80 |
| 1206 | 4.10 | 1.60 | 0.90 | 2.30 | 4.35 | 2.25 |
| 1210 | 4.10 | 2.50 | 1.00 | 2.10 | 4.35 | 3.15 |
| 1808 | 5.50 | 2.10 | 1.20 | 3.10 | 5.75 | 2.75 |
| 1812 | 5.50 | 3.30 | 1.20 | 3.10 | 5.75 | 3.95 |
| 1825 | 5.50 | 6.55 | 1.20 | 3.10 | 5.75 | 7.20 |
| 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 | 10.55 | 10.70 | 2.35 | 5.85 | 10.80 | 11.50 |
| 4040 | 11.60 | 10.70 | 2.35 | 6.90 | 11.85 | 11.50 |
| 40100 | 11.60 | 26.20 | 2.35 | 6.90 | 11.85 | 27.00 |
| 5550 | 15.50 | 13.20 | 2.35 | 10.80 | 15.75 | 14.00 |
| 6080 | 16.70 | 20.80 | 2.35 | 12.00 | 16.95 | 21.60 |
| 6660 | 18.30 | 15.70 | 2.35 | 13.60 | 18.55 | 16.50 |
| 8060 | 21.90 | 15.70 | 2.35 | 17.20 | 22.15 | 16.50 |
| 80150 | 21.90 | 38.90 | 2.35 | 17.20 | 22.15 | 39.70 |



TYPICAL FILTER FOOTPRINT REFLOW SOLDERING

| SIZE | FOOTPRINT DIMENSIONS IN mm | | | | | | |
|------|----------------------------|------|------|------|------|------|------|
| | A | B | C | D | G | H | I |
| 0603 | 2.30 | 0.80 | 0.45 | 1.40 | 0.60 | 0.40 | 1.50 |
| 0805 | 2.90 | 1.25 | 0.90 | 1.80 | 0.80 | 0.50 | 2.00 |
| 1206 | 4.10 | 1.60 | 0.90 | 2.40 | 1.00 | 0.70 | 3.00 |
| 1806 | 5.50 | 1.60 | 1.20 | 3.20 | 1.00 | 1.10 | 3.00 |
| 1812 | 5.50 | 3.30 | 1.20 | 3.90 | 1.50 | 1.20 | 4.80 |
| 2220 | 6.80 | 5.40 | 1.40 | 4.50 | 1.50 | 1.50 | 7.00 |



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ORDERING INFORMATION

| SRMC | 0603 | Y | 102 | J | A | - | L | 040 | - | - | - | B | - |
|-------|----------|------------|---|-------------------|-------------|-------------------------------|-------|--------|---------|-----------------------|----------|------------------|--------------------------------|
| SERIE | SIZE | DIELECTRIC | CAPACITANCE | TOLERANCE | VOLTAGE | TERMINAISON | FORM | HEIGHT | LEADS | COATING | CUR-RENT | PACKAGING | SPECIAL |
| - | 0201 | Q = High Q | Expressed in picofarads (pF) | A = ± 0.05pF/0.1% | Y = 4V | - = Sn lead/lead frame | - | 020 | - | - | - | B = Reel | - |
| FS | 0204 | A = NPO | The first two digits are significant, the third digit gives the number of noughts | B = ± 0.1pF | R = 6.3V | X = Nickel Tin | J | 030 | 2 to 10 | I = Conformal-Coating | 1 | V = Bulk | BM = BME |
| FK | 0402 | P = N2T | Example : 102 = 1 000pF | C = ± 0.25pF | Q = 10V | F = Palladium-Silver | L | 040 | B | H = EpoxyCoating | 2 | T = Tray Package | Dxx = Reliability spec |
| FH | 0303 | X = BX | | D = ± 0.5pF | J = 16V | P = Polymer Tin (Flex) | D | 050 | | | | W = Waffle Pack | Exx = Sorting spec |
| SREV | 0306 | Y=X7R | | E = ± 0.5% | X = 25V | C = Copper Tin (Non magnetic) | M | 060 | | | | | H = High Reliability |
| MCF | 0404 | BY=2C1 | | F = ± 1% | Z = 35V | W = Nickel Gold | T = 2 | 070 | | | | | Q = Anti-Arcing |
| M2F | 0505 | T = X7S | | G = ± 2% | A = 50V | H = Dipped SnPb | leads | 080 | | | | | E = Anti Bending |
| MPF | 0508 | S = X5R | | J = ± 5% | U = 63V | S = Dipped SAC | U = 4 | 090 | | | | | Z = Anti-Arcing + Anti-Bending |
| SRMC | 0603 | R = X6S | | K = ± 10% | B = 100V | I = Electrolytic SnPb | leads | 100 | | | | | |
| SRTV | 0612 | V = Y5V | | M = ± 20% | C = 200V | Q = Solderable Silver | | 110 | | | | | |
| SR | 0805 | | | Z = -20% +80% | P = 250V | | | 120 | | | | | |
| SA | 1206 | | | | D = 300V | | | 130 | | | | | |
| | 1210 | | | | E = 500V | | | 140 | | | | | |
| | 1808 | | | | F = 630V | | | 160 | | | | | |
| | 1812 | | | | G = 1000V | | | 180 | | | | | |
| | 1825 | | | | O = 1500V | | | | | | | | |
| | 2211 | | | | H = 2000V | | | | | | | | |
| | 2220 | | | | T = 2500V | | | | | | | | |
| | 2225 | | | | I = 3000V | | | | | | | | |
| | 2525 | | | | K = 4000V | | | | | | | | |
| | 2825 | | | | L = 5000V | | | | | | | | |
| | 3033 | | | | 6 = 6000V | | | | | | | | |
| | 3640 | | | | S = 7200V | | | | | | | | |
| | 4040 | | | | 8 = 8000V | | | | | | | | |
| | 40100 | | | | 10 = 10000V | | | | | | | | |
| | 5550 | | | | 12 = 12000V | | | | | | | | |
| | 6080 | | | | 15 = 15000V | | | | | | | | |
| | 6660 | | | | | | | | | | | | |
| | 8060 | | | | | | | | | | | | |
| | 80150 | | | | | | | | | | | | |
| | 40 to 94 | | | | | | | | | | | | |

RELIABILITY

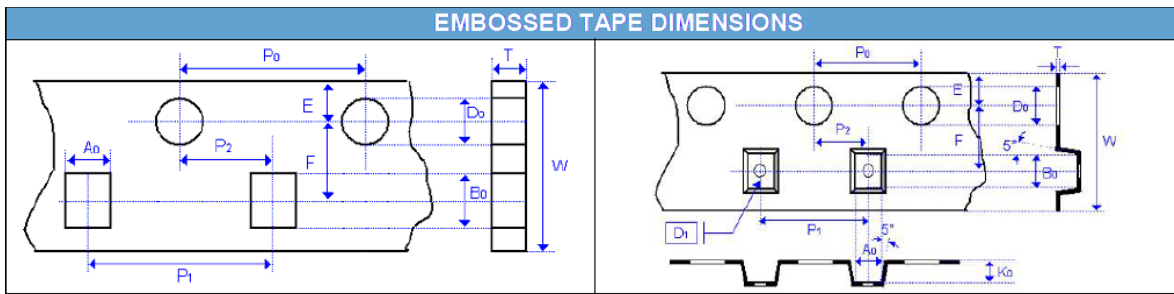
| OPTIONAL CODE | TESTING DETAIL |
|---------------|--|
| D03 | Burn-In 100% 125° 168H, no default allowed |
| D05 | Burn-In 100% 125° 168H, less than 5% default allowed VRT CEI 68-2-14 10 cycles 0V -55°C/+125°C, less than 5% default allowed 20 pieces life test 125°C, 1.5Un, 1 default allowed |
| D20 | AECQ-200 |

SORTING

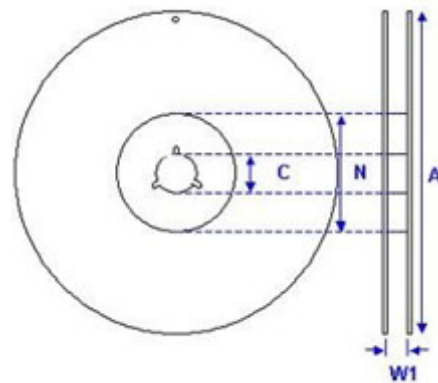
| OPTIONAL CODE | SORTING DETAIL |
|---------------|---|
| E01 | 2 cells sorting 0 to +2,5 & +2,5 to +5 (% or pF according to value) |
| E02 | 4 cells sorting -5 to -2,5 ; -2,5 to 0 ; 0 to +2,5 & +2,5 to 5 (% or pF according to value) |
| E21 | 2% cells |

PACKAGE DIMENSION AND QUANTITY

| SIZE | THICKNESS | PAPER TAPE | | PLASTIC TAPE | |
|------|------------|------------|----------|--------------|-----------|
| | | 7" REEL | 13" REEL | 7" REEL | 13" REEL |
| 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 |



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



RELIABILITY PRINCIPLES OVERVIEW

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.

TESTING

Tests conducted during each batch

| 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 | | AEC-Q200-5 | internal component integrity |
| 5/lot | Dimension | CECC-32100-4.5 | AEC-Q200-5 | according to datasheet |
| 5/lot | Resistance to soldering heat | CECC-32100-4.10 | AEC-Q200-15 | |
| 5/lot | Solderability | CECC-32100-4.11 | AEC-Q200-18 | |
| 10/lot | Voltage proof | CECC-32100-4.6.4 | | |
| 1/ceramic lot | Temperature coefficient | CECC 32100-Prgph4,7 | | 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 | High Temperature Exposure (Storage) | MIL-STD-202 Method 108 | AEC-Q200-3 | 1,000 hours at 150°C with 0V. Measurement at 24 ± 2 hours after test conclusion |
| 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 ⁻³ | ±2% | 10% initial limit |
| N2T | ≤ 6 10 ⁻³ | ±4% | 10% initial limit |
| X7R | ≤ 0.035 | ±15% | 10% initial limit |

REACH Compliance

Reach Declaration, According to Regulation (EC) N°. 1907/2006 (REACH) ; Article 33 :

- 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 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) Published January 19th, 2021 (211 Substances) :

<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) phtalate (DEHP) Benzyl butyl phtalate (BBP)
- Dibutyl phtalate (DBP) Diisobutyl phtalate (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.