Innovative Service Around the Globe YAGEO

# DATA SHEET

## SURFACE-MOUNT CERAMIC MULTILAYER CAPACITORS

General data

YAGEO Phycomp

Product Specification – June 8, 2017 V.23

## PACKING

### TAPE AND REEL SPECIFICATIONS

Packing conforms fully with *"IEC 60286-3"*, *"EIA 481-1"* and *"JIS C0806"* industrial standards.

Multilayer Chip Capacitors (MLCCs) are supplied on tape on reel or in bulk case. For MLCCs with a product thickness of <1 mm, paper/PE tape is preferred. MLCCs with a product thickness of ≥ 1 mm, are supplied in embossed blister tape.

For the combination carrier/cover tape no electrostatic behaviour is observed (relative humidity ≥ 30%). The products do not stick to the cover tape. The technical and thermal properties of polycarbonate tapes are excellent, so there is no change in dimensions as a function of time. The peel off force is very stable as a function of time and temperature, and it is defined as 0.1 to 0.7 N at a peel-off speed of 300 mm/minute.

Table 1 Properties of carrier tape - polycarbonate

| 8.1/12 MM TAPE WIDTH, 0.2 MM TOLERANCE | |
|---|---|
| Thickness | 130 to 360 μm |
| Tensile strength at break | > 60 MPa |
| Elongation at break | 100 to 150% |
| Surface resistance | $< 10^{12}$ Ω/sq. |

Table 2 Properties of cover tape - polyester (antistatic)

| 5.5/9.5 MM TAPE WIDTH, 0.1 MM TOLERANCE | |
|---|---|
| Thickness | 62 μm |
| Breaking force | > 20 N / ≥ 17.6 N |
| Elongation at break | 105 ±60% |
| Surface resistance | $< 10^{11}$ Ω/sq. |

### BULK-CASE SPECIFICATION

In accordance with *"IEC 60286-6"*.

Reduced costs

- Storage
- Transport
- Machine handling
- Packing

Customized labelling (bar codes)

Available component size please see table 3

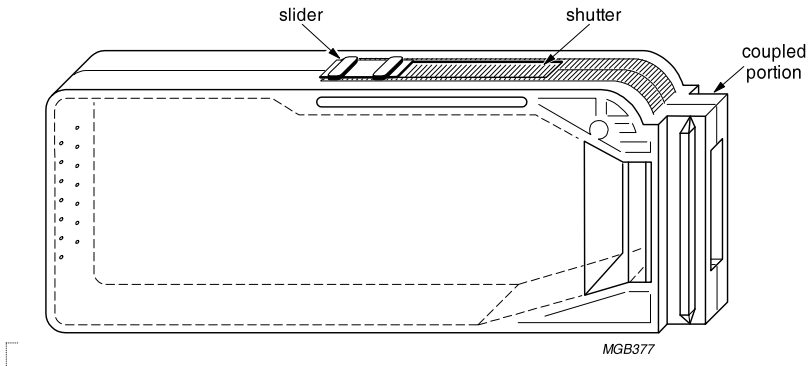



Fig. 1 Bulk-case outline

### OUTLINES

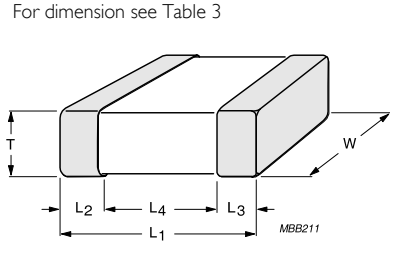



Fig. 2 Surface mounted multilayer ceramic capacitor dimension

Table 3 Packing quantities for component size; see note 1 and Fig.1

| SIZE CODE | $L_1$ (mm) | W (mm) | T (mm) | QUANTITY PER BULK CASE |
|---|---|---|---|---|
| 0402 | 1.0 | 0.5 | 0.5 | 50,000 |
| 0603 | 1.6 | 0.8 | 0.8 | 15,000 |
| 0805 | 2.0 | 1.25 | 0.6 | 10,000 |
| 0805 | 2.0 | 1.25 | 0.85 | 8,000 |
| 0805 | 2.0 | 1.25 | 1.25 | 5,000 |

**NOTE**

1. Refer to the selection charts in product data for specific values

## PAPER/PE TAPE SPECIFICATION

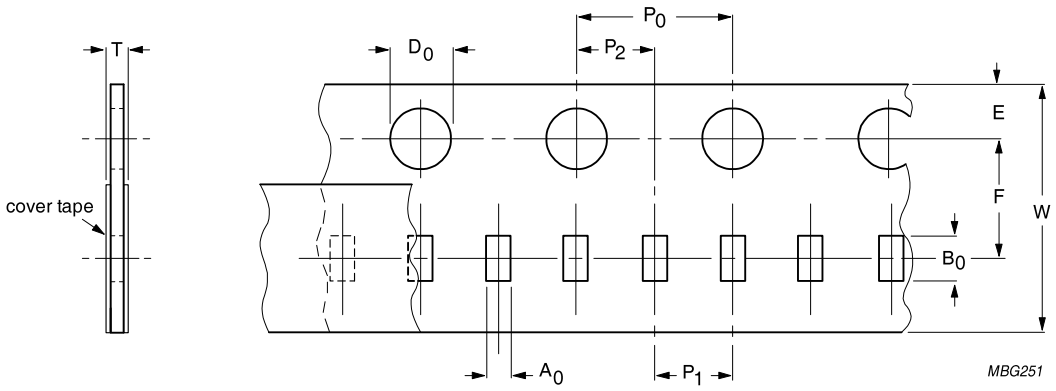



Fig. 3 Paper/PE tape

Table 4 Dimensions of paper/PE tape for relevant chip size; see Fig.3

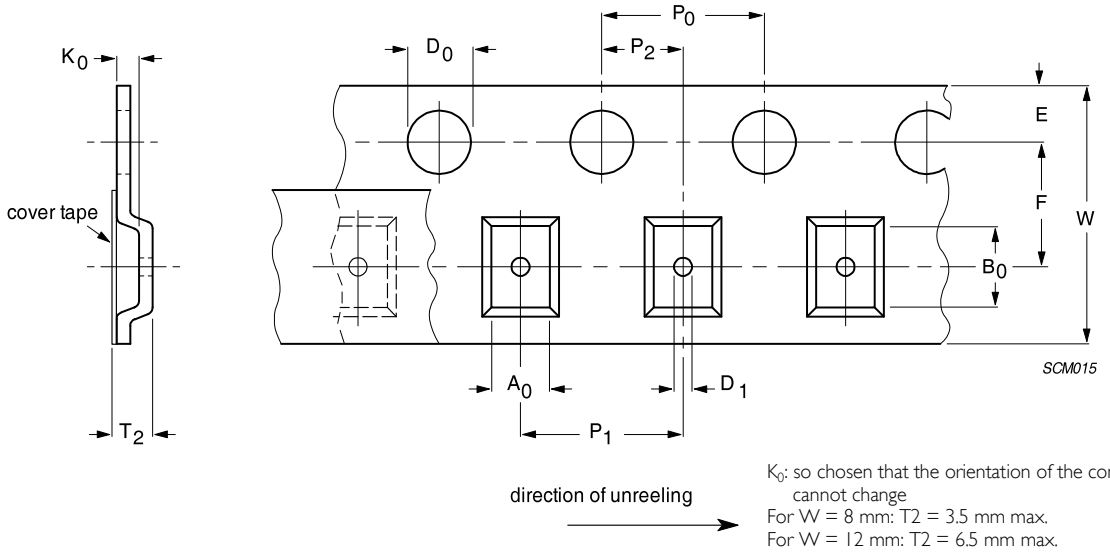
| SIZE CODE | SYMBOL | | | | | | | | | Unit: mm |
|---|---|---|---|---|---|---|---|---|---|---|
| | $A_0$ | $B_0$ | W | E | F | $P_0$ (1) | $P_1$ | $P_2$ | $\varnothing D_0$ | T |
| 01005 | 0.23 ± 0.02 | 0.43 ± 0.02 | 8.0 ± 0.20 | 1.70 ± 0.05 | 3.50 ± 0.05 | 4.0 ± 0.10 | 2.0 ± 0.05 | 2.0 ± 0.05 | 1.50 ± 0.1 | 0.31 ± 0.02 |
| 0201 | 0.37 ± 0.03 | 0.69 ± 0.05 | 8.0 ± 0.20 | 1.75 ± 0.1 | 3.50 ± 0.05 | 4.0 ± 0.10 | 2.0 ± 0.05 | 2.0 ± 0.05 | 1.55 ± 0.03 | 0.42 ± 0.05 |
| 0402 | 0.65 ± 0.15 | 1.10 ± 0.15 | 8.0 ± 0.20 | 1.75 ± 0.1 | 3.50 ± 0.05 | 4.0 ± 0.05 | 2.0 ± 0.05 | 2.0 ± 0.05 | 1.50 +0.1 /-0 | 0.60 ± 0.10 |
| 0603 | 0.95 ± 0.15 | 1.78 ± 0.15 | 8.0 ± 0.20 | 1.75 ± 0.1 | 3.50 ± 0.05 | 4.0 ± 0.05 | 4.0 ± 0.05 | 2.0 ± 0.05 | 1.50 +0.1 /-0 | 0.95 ± 0.15 |
| 0805 | 1.50 ± 0.15 | 2.26 ± 0.20 | 8.0 ± 0.20 | 1.75 ± 0.1 | 3.50 ± 0.05 | 4.0 ± 0.05 | 4.0 ± 0.05 | 2.0 ± 0.05 | 1.50 +0.1 /-0 | (0.95 / 0.75)± 0.10 |
| 1206 | 1.90 ± 0.15 | 3.50 ± 0.20 | 8.0 ± 0.20 | 1.75 ± 0.1 | 3.50 ± 0.05 | 4.0 ± 0.05 | 4.0 ± 0.05 | 2.0 ± 0.05 | 1.50 +0.1 /-0 | (0.95 / 0.75)± 0.10 |
| 4 × 0402 | 1.50 ± 0.15 | 2.26 ± 0.20 | 8.0 ± 0.20 | 1.75 ± 0.1 | 3.50 ± 0.05 | 4.0 ± 0.05 | 4.0 ± 0.05 | 2.0 ± 0.05 | 1.50 +0.1 /-0 | (0.95 / 0.75)± 0.10 |
| 4 × 0603 | 1.90 ± 0.15 | 3.50 ± 0.20 | 8.0 ± 0.20 | 1.75 ± 0.1 | 3.50 ± 0.05 | 4.0 ± 0.05 | 4.0 ± 0.05 | 2.0 ± 0.05 | 1.50 +0.1 /-0 | (0.95 / 0.75)± 0.10 |
| 0508 | 1.50 ± 0.15 | 2.26 ± 0.20 | 8.0 ± 0.20 | 1.75 ± 0.1 | 3.50 ± 0.05 | 4.0 ± 0.05 | 4.0 ± 0.05 | 2.0 ± 0.05 | 1.50 +0.1 /-0 | (0.95 / 0.75)± 0.10 |
| 0612 | 1.90 ± 0.15 | 3.50 ± 0.20 | 8.0 ± 0.20 | 1.75 ± 0.1 | 3.50 ± 0.05 | 4.0 ± 0.05 | 4.0 ± 0.05 | 2.0 ± 0.05 | 1.50 +0.1 /-0 | (0.95 / 0.75)± 0.10 |

**NOTE**

1. $P_0$ pitch tolerance over any 10 pitches is ±0.2 mm
2. 4 x 0402 stands for 0508 array
3. 4 x 0603 stands for 0612 array

## BLISTER TAPE SPECIFICATION

For dimension see Table 4




$K_0$: so chosen that the orientation of the component cannot change
For W = 8 mm: T2 = 3.5 mm max.
For W = 12 mm: T2 = 6.5 mm max.

**Fig. 4** Blister tape

**Table 5** Dimensions of blister tape for relevant chip size; see Fig.4

| SIZE CODE | SYMBOL | | | | | | | | | | | | | Unit: mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $A_0$ | | $B_0$ | | $K_0$ | | W | E | F | $\varnothing D_0$ | $\varnothing D_1$ | $P_0$ (2) | $P_1$ | $P_2$ |
| | Min. | Max. | Min. | Max. | Min. | Max. | | | | | Min. | | | |
| 0805 | 1.29 | 1.65 | 2.15 | 2.60 | 1.25 | 1.55 | 8.1 ±0.20 | 1.70 ±0.1 | 3.5 ±0.05 | 1.5 +0.1/-0.0 | 1 +0.1/-0.0 | 4.0 ±0.10 | 4.0 ±0.10 | 2.0 ±0.05 |
| 1206 | 1.70 | 2.00 | 3.40 | 3.75 | 1.22 | 2.15 | 8.1 ±0.20 | 1.70 ±0.1 | 3.5 ±0.05 | 1.5 +0.1/-0.0 | 1 +0.1/-0.0 | 4.0 ±0.10 | 4.0 ±0.10 | 2.0 ±0.05 |
| 1210 | 2.68 | 2.92 | 3.40 | 3.75 | 0.97 | 2.80 | 8.1 ±0.20 | 1.70 ±0.1 | 3.5 ±0.05 | 1.5 +0.1/-0.0 | 1 +0.1/-0.0 | 4.0 ±0.10 | 4.0 ±0.10 | 2.0 ±0.05 |
| 1808 | 2.05 | 2.42 | 4.85 | 5.20 | 1.35 | 2.35 | 12.1 ±0.20 | 1.70 ±0.1 | 5.5 ±0.05 | 1.5 +0.1/-0.0 | 1.5 +0.1/-0.0 | 4.0 ±0.10 | 8.0 ±0.10 | 2.0 ±0.05 |
| 1812 | 3.35 | 3.75 | 4.80 | 5.06 | 0.70 | 1.45 | 12.1 ±0.20 | 1.70 ±0.1 | 5.5 ±0.05 | 1.5 +0.1/-0.0 | 1.5 +0.1/-0.0 | 4.0 ±0.10 | 8.0 ±0.10 | 2.0 ±0.05 |
| 2220 | 5.12 | 5.32 | 5.84 | 6.04 | 1.28 | 1.48 | 12.0 ±0.20 | 1.70 ±0.1 | 5.5 ±0.05 | 1.5 +0.1/-0.0 | 1.5 +0.1/-0.0 | 4.0 ±0.10 | 8.0 ±0.10 | 2.0 ±0.05 |

**NOTE**

1. Typical capacitor displacement in pocket
2. $P_0$ pitch tolerance over any 10 pitches is ±0.2 mm

## REEL SPECIFICATION

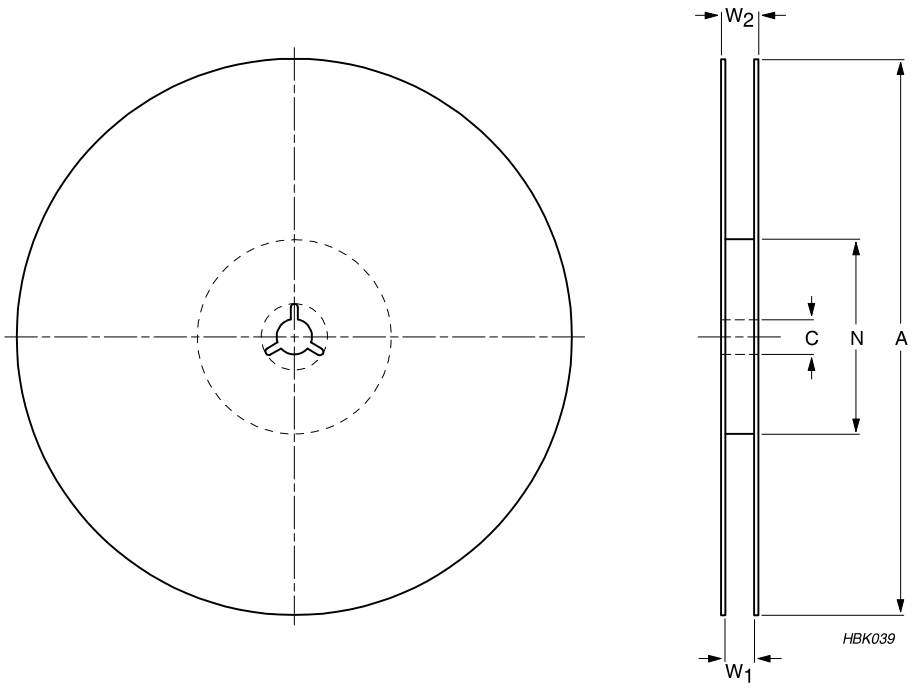



Fig. 5 Reel

Table 6 Reel dimensions; see Fig.5

| TAPE WIDTH | SYMBOL | | | | Unit: mm |
|---|---|---|---|---|---|
| | A | N | C | $W_1$ | $W_{2max.}$ |
| 8 (Ø178 mm/7") | 178 ±1.0 | 60 ±1.0 | 13 +0.50/-0.20 | 9.0 ±0.2 | 14.4 |
| 8 (Ø330 mm/13") | 330 ±1.0 | 100 ±1.0 | 13 +0.50/-0.20 | 9.0 ±0.2 | 14.4 |
| 12 (Ø178 mm/7") | 178 ±1.0 | 60 ±1.0 | 13 +0.50/-0.20 | 13.4 ±1.5 | 18.4 |

### PROPERTIES OF REEL

Material: polystyrene

Surface resistance: $<10^{10}$ Ω/sq.

## THICKNESS CLASSES AND PACKING QUANTITY

Table 7

| SIZE CODE | THICKNESS CLASSIFICATION | TAPE WIDTH QUANTITY PER REEL | Ø180 MM / 7 INCH | | Ø330 MM / 13 INCH | | QUANTITY PER BULK CASE |
|---|---|---|---|---|---|---|---|
| | | | Paper/PE | Blister | Paper/PE | Blister | |
| 0201 | 0.3 ±0.03 mm | 8 mm | 15,000 | --- | 50,000 | --- | --- |
| 0402 | 0.5 ±0.05 mm | 8 mm | 10,000 | --- | 50,000 | --- | 50,000 |
| 0603 | 0.8 ±0.1 mm | 8 mm | 4,000 | --- | 15,000 | --- | 15,000 |
| 0805 | 0.6 ±0.1 mm | 8 mm | 4,000 | --- | 20,000 | --- | 10,000 |
| | 0.85 ±0.1 mm | 8 mm | 4,000 | --- | 15,000 | --- | 8,000 |
| | 1.25 ±0.2 mm | 8 mm | --- | 3,000 | --- | 10,000 | 5,000 |
| 1206 | 0.6 ±0.1 mm | 8 mm | 4,000 | --- | 20,000 | --- | --- |
| | 0.85 ±0.1 mm | 8 mm | 4,000 | --- | 15,000 | --- | --- |
| | 1.00 / 1.15 ±0.1 mm | 8 mm | --- | 3,000 | --- | 10,000 | --- |
| | 1.25 ±0.2 mm | 8 mm | --- | 3,000 | --- | 10,000 | --- |
| | 1.6 ±0.15 mm | 8 mm | --- | 2,500 | --- | 10,000 | --- |
| | 1.6 ±0.2 mm | 8 mm | --- | 2,000 | --- | 8,000 | --- |
| 1210 | 0.6 / 0.7 ±0.1 mm | 8 mm | --- | 4,000 | --- | 15,000 | --- |
| | 0.85 ±0.1 mm | 8 mm | --- | 4,000 | --- | 10,000 | --- |
| | 1.15 ±0.1 mm | 8 mm | --- | 3,000 | --- | 10,000 | --- |
| | 1.15 ±0.15 mm | 8 mm | --- | 3,000 | --- | 10,000 | --- |
| | 1.25 ±0.2 mm | 8 mm | --- | 3,000 | --- | --- | --- |
| | 1.5 ±0.1 mm | 8 mm | --- | 2,000 | --- | --- | --- |
| | 1.6 / 1.9 ±0.2 mm | 8 mm | --- | 2,000 | --- | --- | --- |
| | 2.0 ±0.2 mm | 8 mm | --- | 2,000<br>1,000 | --- | --- | --- |
| | 2.5 ±0.2 mm | 8 mm | --- | 1,000<br>500 | --- | --- | --- |
| 1808 | 1.15 ±0.15 mm | 12 mm | --- | 3,000 | --- | --- | --- |
| | 1.25 ±0.2 mm | 12 mm | --- | 3,000 | --- | --- | --- |
| | 1.35 ±0.15 mm | 12 mm | --- | 2,000 | --- | --- | --- |
| | 1.5 ±0.1 mm | 12 mm | --- | 2,000 | --- | --- | --- |
| | 1.6 ±0.2 mm | 12 mm | --- | 2,000 | --- | --- | --- |
| | 2.0 ±0.2 mm | 12 mm | --- | 2,000 | --- | --- | --- |
| 1812 | 0.6 / 0.85 ±0.1 mm | 12 mm | --- | 2,000 | --- | --- | --- |
| | 1.15 ±0.1 mm | 12 mm | --- | 1,000 | --- | --- | --- |
| | 1.25 ±0.2 mm | 12 mm | --- | 1,000 | --- | --- | --- |
| | 1.5 ±0.1 mm | 12 mm | --- | 1,000 | --- | --- | --- |
| | 1.6 ±0.2 mm | 12 mm | --- | 1,000 | --- | --- | --- |
| | 2.0 ±0.2 mm | 12 mm | --- | 1,000 | --- | --- | --- |
| | 2.5 ±0.2 mm | 12 mm | --- | 500 | --- | --- | --- |

## LEADER/TRAILER TAPE SPECIFICATION

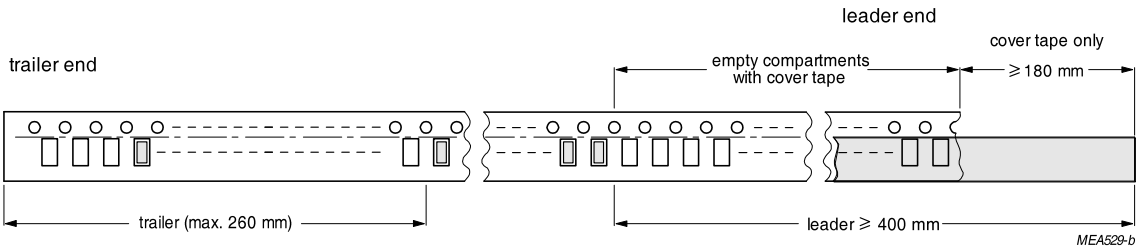



**Fig. 6** Leader/trailer tape

**Table 8** Leader/trailer tape data

| DESCRIPTION | VALUE |
|---|---|
| Minimum length of empty compartments at leader end | ≥ 400 mm of which a minimum 260 mm of empty compartments are covered with cover tape and ≥ 180 mm cover tape only |
| Minimum length of empty compartments at trailer end | ≥ 180 mm |

## LABELLING

Label examples are shown in Fig. 7


| LINE | MARKING EXPLANATION |
|---|---|
| 1 | Quantity |
| 2 | Bar code of batch no (1D) |
| 3 | Unique batch number |
| 4 | Bar code of CTC (2D) |
| 5 | Taping week code |
| 6 | Series code of reel |

**Fig. 7** Packing label

## MOUNTING

### SOLDER REPAIRS

Conventional solder repairs are carried out with a soldering iron as shown as Tab.9 . The tip of the soldering iron should not directly touch the chip component to avoid thermal shock on the interface between termination and body during mounting, repairing or de-mounting processes. Ensure the termination solder has melted before removing the chip component.

Table 9 Recommended soldering iron condition

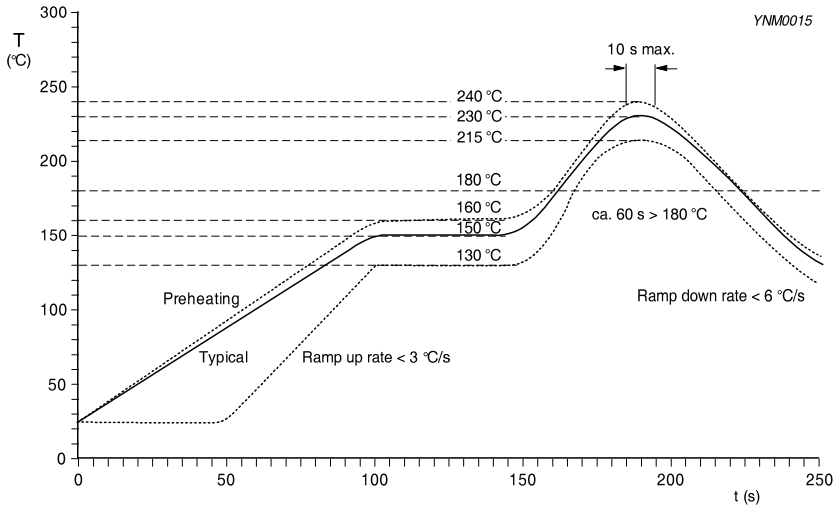
| TYPE | Temp(°C) | DURATION (SEC.) | PREHEATING TEMP(°C) | ATMOSPHERE |
|---|---|---|---|---|
| CC0201/CC0402/CC0603/CC0805/CC1206 | 350 max. | 3 max. | 150 min. | air |
| CC1210/CC1808/CC1812/CC2220 | 280 max. | 3 max. | 150 min. | air |

### SOLDERING CONDITIONS

For normal use the capacitors may be mounted on printed-circuit boards or ceramic substrates by applying wave soldering, reflow soldering or conductive adhesive in accordance with *IEC 61760-1* (Standard method for the specification of surface mounting components). For advised soldering profiles see Figs 8, 9, 10.

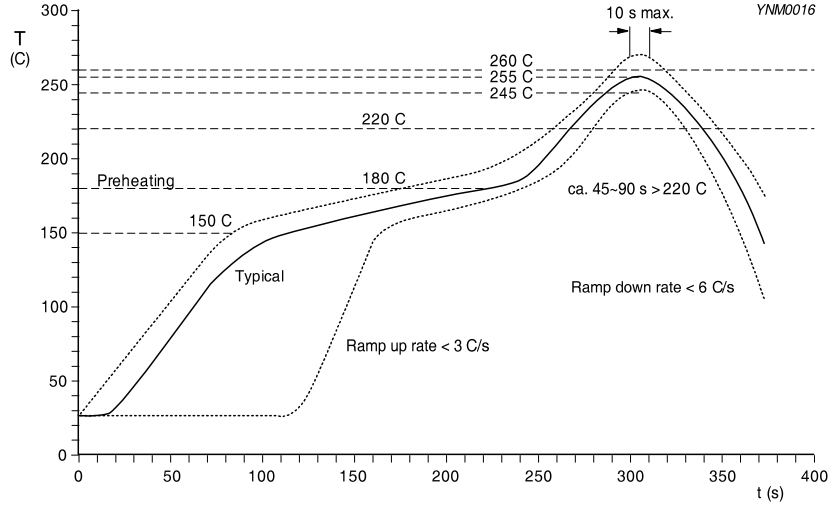
An improper combination of soldering, substrate and chip size can lead to a damaging of the component. The risk increases with the chip size and with temperature fluctuations (>100 °C).

Therefore, it is advised to use the smallest possible size and follow the dimensional recommendations given in Tables 8, 9 and 10 for reflow and wave soldering. More detailed information is available on request.



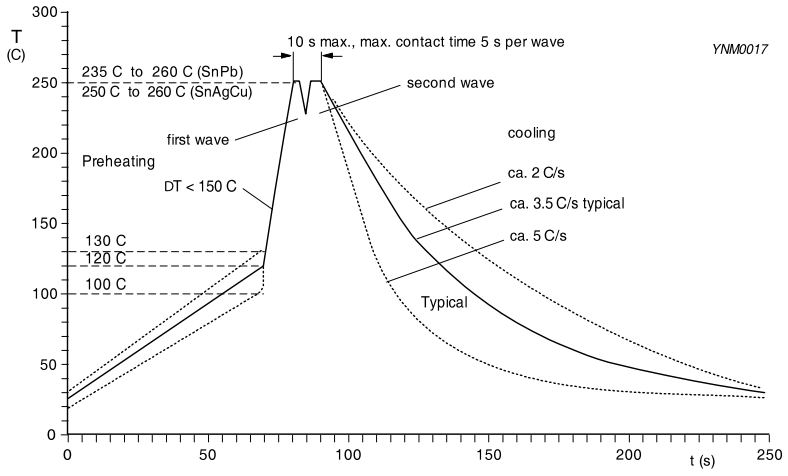

Solid line: Typical process (terminal temperature)
Dotted lines: Process limits - bottom process limit (terminal temperature) & upper process limit (top surface temperature).

Fig. 8 Infrared soldering, forced gas convection reflow soldering - Temperature/time profile for SnPb solders




Solid line: Typical process (terminal temperature)
Dotted lines: Process limits - bottom process limit (terminal temperature) & upper process limit (top surface temperature).

**Fig. 9** Infrared soldering, forced gas convection reflow soldering - Temperature/time profile for lead-free SnAgCu solders




Solid line: Typical process
Dotted lines: Process limits

**Fig. 10** Double wave soldering for SnPb and lead-free SnAgCu solder - Temperature/time profile (terminal temperature)

## FOOTPRINT DIMENSIONS

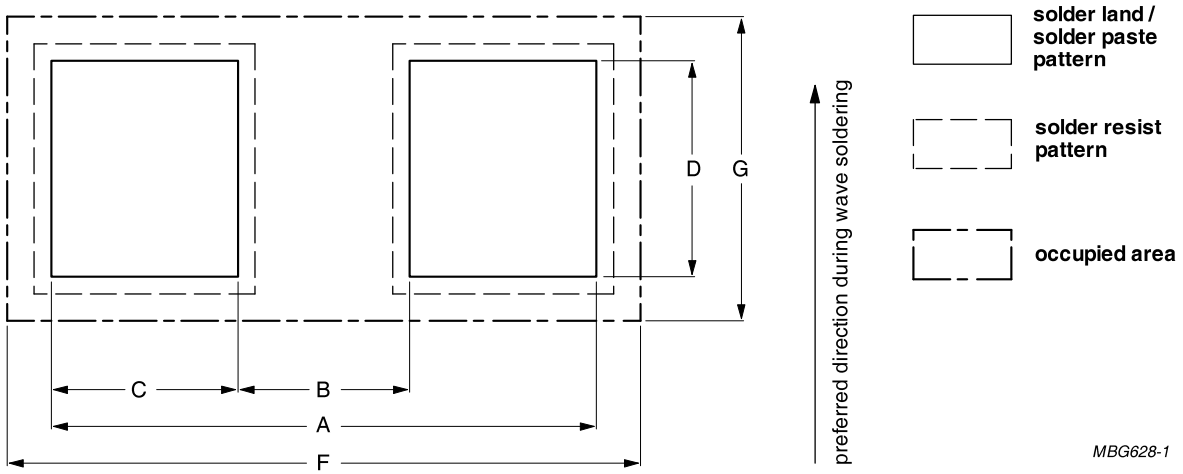



Fig. 11 **Discrete capacitors** recommended dimensions of footprint

Table 10 Reflow soldering; for footprint dimensions see Fig.11

| SIZE | FOOTPRINT DIMENSIONS | | | | | | Unit: mm |
|---|---|---|---|---|---|---|---|
| CODE | A | B | C | D | F | G | Processing remarks |
| 01005 | 0.48 ±0.08 | 0.18 ±0.02 | 0.15 ±0.03 | 0.215 ±0.15 | --- | --- | |
| 0201 | 0.8 ±0.20 | 0.25 ±0.05 | 0.28 ±0.07 | 0.3 ±0.10 | --- | --- | |
| 0402 | 1.5 ±0.15 | 0.5 ±0.15 | 0.5 ±0.15 | 0.5 ±0.15 | 1.75 ±0.15 | 0.95 ±0.15 | |
| 0603 | 2.3 ±0.15 | 0.7 ±0.15 | 0.8 ±0.15 | 0.9 ±0.15 | 2.7 ±0.15 | 1.5 ±0.15 | |
| 0603 | 2.3 ±0.25 | 0.5 ±0.25 | 0.9 ±0.25 | 0.9 ±0.25 | 2.7 ±0.25 | 1.5 ±0.25 | IR or hot plate soldering |
| 0805 | 2.8 ±0.25 | 0.9 ±0.25 | 0.95 ±0.25 | 1.4 ±0.25 | 3.2 ±0.25 | 2.1 ±0.25 | |
| 1206 | 4.0 ±0.25 | 2.0 ±0.25 | 1.0 ±0.25 | 1.8 ±0.25 | 4.4 ±0.25 | 2.5 ±0.25 | |
| 1210 | 4.0 ±0.25 | 2.0 ±0.25 | 1.0 ±0.25 | 2.7 ±0.25 | 4.4 ±0.25 | 3.4 ±0.25 | |
| 1808 | 5.4 ±0.25 | 3.3 ±0.25 | 1.05 ±0.25 | 2.3 ±0.25 | 5.8 ±0.25 | 2.9 ±0.25 | |
| 1812 | 5.4 ±0.25 | 3.3 ±0.25 | 1.05 ±0.25 | 3.5 ±0.25 | 5.8 ±0.25 | 4.1 ±0.25 | |
| 2220 | 6.6 ±0.25 | 4.5 ±0.25 | 1.05 ±0.25 | 5.3 ±0.25 | 7.0 ±0.25 | 5.9 ±0.25 | |
| 0204 | 0.55~0.65 | 0.15~0.20 | 0.2~0.25 | 0.7~1.0 | 0.95 ±0.15 | 1.75 ±0.15 | Ceramic substrate only |
| 0306 | 0.7~1.0 | 0.2~0.3 | 0.3~0.4 | 1.4~1.6 | 1.5 ±0.15 | 2.7±0.15 | |
| 0508 | 1.2~1.5 | 0.4~0.5 | 0.4~0.5 | 1.4~1.8 | 2.1 ±0.25 | 3.2 ±0.25 | |
| 0612 | 1.8~2.3 | 0.6~0.8 | 0.6~0.7 | 2.6~2.8 | 2.5 ±0.25 | 4.4 ±0.25 | |

Table 11 Wave soldering (no dummy tracks allowed for ≥ 500 V); for footprint dimensions see Fig.11

| SIZE | FOOTPRINT DIMENSIONS | | | | | | Unit: mm |
|---|---|---|---|---|---|---|---|
| CODE | A | B | C | D | F | G | Number & dimensions to dummy tracks |
| 0603 | 2.4 ±0.10 | 1.0 ±0.10 | 0.7 ±0.10 | 0.8 ±0.10 | 3.0 ±0.10 | 1.9 ±0.10 | 1 × (0.2 × 0.8) |
| 0603 | 2.7 ±0.25 | 0.9 ±0.25 | 0.9 ±0.25 | 0.8 ±0.25 | 3.2 ±0.25 | 2.1 ±0.25 | 1 × (0.3 × 0.8) |
| 0805 | 3.2 ±0.15 | 1.4 ±0.15 | 0.9 ±0.15 | 1.3 ±0.15 | 4.1 ±0.15 | 2.5 ±0.15 | 1 × (0.3 × 1.3) |
| 0805 | 3.4 ±0.25 | 1.3 ±0.25 | 1.05 ±0.25 | 1.3 ±0.25 | 4.3 ±0.25 | 2.7 ±0.25 | 1 × (0.2 × 1.3) |
| 1206 | 4.8 ±0.25 | 2.3 ±0.25 | 1.25 ±0.25 | 1.7 ±0.25 | 5.9 ±0.25 | 3.2 ±0.25 | 3 × (0.25 × 1.7 |
| 0508 | 1.3~2.1 | 0.4~0.7 | 0.5~0.7 | 1.4~1.8 | 2.5 ±0.15 | 4.1 ±0.15 | --- |
| 0612 | 2.0~2.9 | 0.6~1.0 | 0.8~0.9 | 2.6~2.8 | 3.2 ±0.25 | 5.9 ±0.25 | --- |

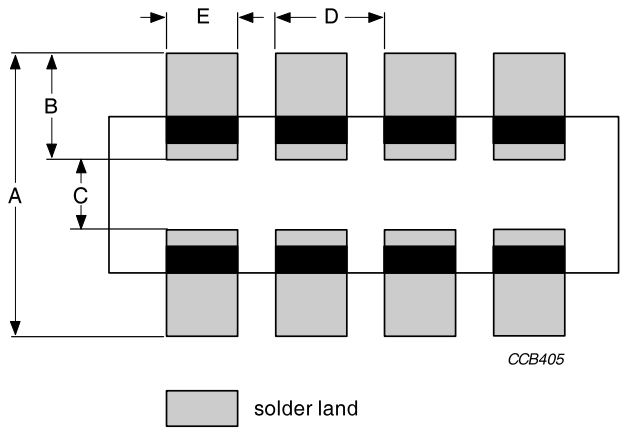



Fig. 12 Recommended footprint dimensions for C-Array

Table 12 C-Array footprint dimensions; see Fig.12

| SIZE | FOOTPRINT DIMENSIONS | | | | Unit: mm |
|---|---|---|---|---|---|
| CODE | A | B | C | D | E |
| 0405 (2 x 0402) | 1.4 ±0.15 | 0.4 ±0.05 | 0.6 ±0.05 | 0.64 | 0.35 ±0.05 |
| 0508 (4 x 0402) | 1.65 ±0.15 | 0.55 ±0.05 | 0.55 ±0.05 | 0.5 | 0.25 ±0.05 |
| 0612 (4 x 0603) | 2.54 ±0.15 | 0.89 ±0.10 | 0.76 ±0.10 | 0.80 ±0.10 | 0.45 ±0.10 |

## REVISION HISTORY

| REVISION | DATE | CHANGE NOTIFICATION |
|---|---|---|
| Version 23 | Jun.7, 2017 | - Dimensions of blister tape updated |
| Version 22 | Jan. 26, 2016 | - Size update |
| Version 21 | Oct. 19 2015 | - Mounting update |
| Version 20 | Sep. 09 2015 | - Dimensions of paper |
| Version 19 | Jan. 27 2015 | - Dimensions of paper |
| Version 18 | Jun. 10, 2014 | - Dimensions of paper |
| Version 17 | Jun. 17, 2013 | - Thickness classes and Packing quantity updated |
| Version 16 | Oct 05, 2012 | - Thickness classes and Packing quantity updated |
| Version 15 | Mar 09, 2011 | - Packing quantity added |
| Version 14 | Feb 18, 2011 | - 0201 PE tape specifications added |
| Version 13 | Sep 15, 2010 | - Dimensions of blister tape updated |
| Version 12 | Sep 18, 2009 | - PE tape specifications updated |
| Version 11 | Sep 07, 2009 | - PE tape specifications added |
| Version 10 | Jun 12, 2009 | - Paper tape specifications updated |
| Version 9 | Apr 03, 2009 | - Change to dual brand datasheet<br>- Label definition updated<br>- Reflow soldering for Sn/Pb chart updated<br>- Reflow soldering for lead free (Pb-free) chart added<br>- Double wave soldering chart updated<br>- Tests and requirements updated |
| Version 8 | Apr 11, 2006 | - Taping quality improved |
| Version 7 | Jul 10, 2003 | - Company logo updated<br>- Taping specification updated<br>- Label definition updated |