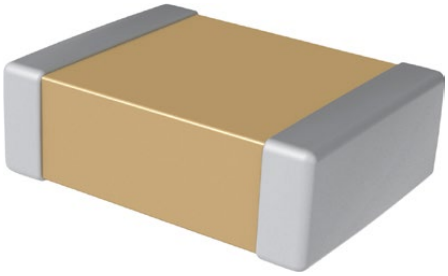
Multilayer Capacitors, SMD

Multilayer Ceramic Capacitors, 0603, X7R

RND components

Features



- Various temperature characteristics cover a wide range in small size
- Mounted either by flow or reflow soldering methods
- Excellent dielectric strength due to uniform structure of dielectric layers

Applications

- MLCC are used extensively in computers, communicative products, and the detail applications which including the followings:
- Discharge of stored energy
- Blockage of direct current
- Coupling of circuit components
- By-passing of an AC signal
- Frequency discrimination
- Transient voltage and Arc suppression
- Surge protection

Part Numbering

0603 B 101 J 101 N T

SIZE CODE

0603 = .06X .03”

DIELECTRIC

B (X7R)

CAPACITANCE

Value in Pico farads: Two significant figures

Followed by no. of zero. 0R5=0.5pF 2R0=2pF 101=100pF.

CAPACITANCE TOLERANCE

J = ±5.0%

K = ±10%

Tolerances may be restricted by dielectric type.

VOLTAGE

VDC：Two significant figures followed by number of zeros

063 = 6.3 VDC 100 = 10 VDC 160 = 16 VDC 500 = 50 250 = 25 VDC

VDC 101 = 100 VDC 501 = 500VDC 102 = 1 KVDC

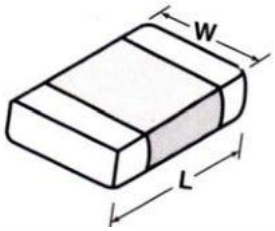
202 = 2 KVDC

TERMINATION

N = Nickel barrier with 100% Tin

PACKING CODE

T= Cut Tape



Dimension : (UNIT mm)

	0603
L	1.6±0.10
W	0.80±0.10

Multilayer Capacitors, SMD

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SPECIFICATION:

Construction form	0603
Ceramic type	X7R
Dimensions L x H x W	1.6 x 0.6 x 0.6 mm
Temperature range	-55..+125 °C
Height	0.6 mm
Length	1.6 mm
Width	0.6 mm

PRODUCT RANGE:

Art. Nr.	Capacitance	Rated voltage	Capacitance tolerance
RND 150-0603B101K101NT	100 pF	100 VDC	±10%
RND 150-0603B101K500NT	100 pF	50 VDC	±10%
RND 150-0603B102J101NT	1.0 nF	100 VDC	±5%
RND 150-0603B102J500NT	1.0 nF	50 VDC	±5%
RND 150-0603B102K101NT	1.0 nF	100 VDC	±10%
RND 150-0603B102K201NT	1.0 nF	200 VDC	±10%
RND 150-0603B102K500NT	1.0 nF	50 VDC	±10%
RND 150-0603B103J101NT	10 nF	100 VDC	±5%
RND 150-0603B103J500NT	10 nF	50 VDC	±5%
RND 150-0603B103K101NT	10 nF	100 VDC	±10%
RND 150-0603B103K160NT	10 nF	16 VDC	±10%
RND 150-0603B103K250NT	10 nF	25 VDC	±10%
RND 150-0603B103K500NT	10 nF	50 VDC	±10%
RND 150-0603B104J160NT	100 nF	16 VDC	±5%
RND 150-0603B104J250NT	100 nF	25 VDC	±5%
RND 150-0603B104J500NT	100 nF	50 VDC	±5%
RND 150-0603B104K500NT	100 nF	50 VDC	±10%
RND 150-0603B105K160NT	1.0 µF	16 VDC	±10%
RND 150-0603B122K500NT	1.2 nF	50 VDC	±10%
RND 150-0603B123K250NT	12 nF	25 VDC	±10%
RND 150-0603B123K500NT	12 nF	50 VDC	±10%
RND 150-0603B151K101NT	150 pF	100 VDC	±10%
RND 150-0603B151K500NT	150 pF	50 VDC	±10%
RND 150-0603B152J101NT	1.5 nF	100 VDC	±5%
RND 150-0603B152J500NT	1.5 nF	50 VDC	±5%
RND 150-0603B152K101NT	1.5 nF	100 VDC	±10%
RND 150-0603B152K500NT	1.5 nF	50 VDC	±10%
RND 150-0603B153J500NT	15 nF	50 VDC	±5%
RND 150-0603B153K250NT	15 nF	25 VDC	±10%
RND 150-0603B153K500NT	15 nF	50 VDC	±10%
RND 150-0603B154K100NT	150 nF	10 VDC	±10%

Art. Nr.	Capacitance	Rated voltage	Capacitance tolerance
RND 150-0603B154K160NT	150 nF	16 VDC	±10%
RND 150-0603B154K250NT	150 nF	25 VDC	±10%
RND 150-0603B182K500NT	1.8 nF	50 VDC	±10%
RND 150-0603B183K500NT	18 nF	50 VDC	±10%
RND 150-0603B221K101NT	220 pF	100 VDC	±10%
RND 150-0603B221K500NT	220 pF	50 VDC	±10%
RND 150-0603B222K101NT	2.2 nF	100 VDC	±10%
RND 150-0603B222K500NT	2.2 nF	50 VDC	±10%
RND 150-0603B223K160NT	22 nF	16 VDC	±10%
RND 150-0603B223K250NT	22 nF	25 VDC	±10%
RND 150-0603B223K500NT	22 nF	50 VDC	±10%
RND 150-0603B224K100NT	220 nF	10 VDC	±10%
RND 150-0603B224K160NT	220 nF	16 VDC	±10%
RND 150-0603B224K250NT	220 nF	25 VDC	±10%
RND 150-0603B225K063NT	2.2 µF	6.3 VDC	±10%
RND 150-0603B271K500NT	270 pF	50 VDC	±10%
RND 150-0603B272K500NT	2.7 nF	50 VDC	±10%
RND 150-0603B273K250NT	27 nF	25 VDC	±10%
RND 150-0603B273K500NT	27 nF	50 VDC	±10%
RND 150-0603B331K101NT	330 pF	100 VDC	±10%
RND 150-0603B331K500NT	330 pF	50 VDC	±10%
RND 150-0603B332J500NT	3.3 nF	50 VDC	±5%
RND 150-0603B332K101NT	3.3 nF	100 VDC	±10%
RND 150-0603B332K500NT	3.3 nF	50 VDC	±10%
RND 150-0603B333J500NT	33 nF	50 VDC	±5%
RND 150-0603B333K160NT	33 nF	16 VDC	±10%
RND 150-0603B333K250NT	33 nF	25 VDC	±10%
RND 150-0603B333K500NT	33 nF	50 VDC	±10%
RND 150-0603B334K100NT	330 nF	10 VDC	±10%
RND 150-0603B334K160NT	330 nF	16 VDC	±10%
RND 150-0603B334K250NT	330 nF	25 VDC	±10%
RND 150-0603B391K500NT	390 pF	50 VDC	±10%
RND 150-0603B392K500NT	3.9 nF	50 VDC	±10%
RND 150-0603B393K160NT	39 nF	16 VDC	±10%
RND 150-0603B393K250NT	39 nF	25 VDC	±10%
RND 150-0603B393K500NT	39 nF	50 VDC	±10%
RND 150-0603B471J101NT	470 pF	100 VDC	±5%
RND 150-0603B471K101NT	470 pF	100 VDC	±10%
RND 150-0603B471K500NT	470 pF	50 VDC	±10%
RND 150-0603B472J101NT	4.7 nF	100 VDC	±5%
RND 150-0603B472J500NT	4.7 nF	50 VDC	±5%
RND 150-0603B472K101NT	4.7 nF	100 VDC	±10%
RND 150-0603B472K500NT	4.7 nF	50 VDC	±10%
RND 150-0603B473J250NT	47 nF	25 VDC	±5%
RND 150-0603B473K160NT	47 nF	16 VDC	±10%
RND 150-0603B473K250NT	47 nF	25 VDC	±10%
RND 150-0603B473K500NT	47 nF	50 VDC	±10%
RND 150-0603B474K100NT	470 nF	10 VDC	±10%
RND 150-0603B474K160NT	470 nF	16 VDC	±10%
RND 150-0603B474K250NT	470 nF	25 VDC	±10%
RND 150-0603B561K500NT	560 pF	50 VDC	±10%
RND 150-0603B562K500NT	5.6 nF	50 VDC	±10%
RND 150-0603B563K160NT	56 nF	16 VDC	±10%
RND 150-0603B563K250NT	56 nF	25 VDC	±10%
RND 150-0603B563K500NT	56 nF	50 VDC	±10%
RND 150-0603B681K101NT	680 pF	100 VDC	±10%
RND 150-0603B681K500NT	680 pF	50 VDC	±10%
RND 150-0603B682K500NT	6.8 nF	50 VDC	±10%

Art. Nr.	Capacitance	Rated voltage	Capacitance tolerance
RND 150-0603B683K160NT	68 nF	16 VDC	±10%
RND 150-0603B683K250NT	68 nF	25 VDC	±10%
RND 150-0603B683K500NT	68 nF	50 VDC	±10%
RND 150-0603B684K100NT	680 nF	10 VDC	±10%
RND 150-0603B821K500NT	820 pF	50 VDC	±10%
RND 150-0603B822K500NT	8.2 nF	50 VDC	±10%
RND 150-0603B823K250NT	82 nF	25 VDC	±10%
RND 150-0603B823K500NT	82 nF	50 VDC	±10%
RND 150-0603B222J500NT	2.2 nF	50 VDC	±5%

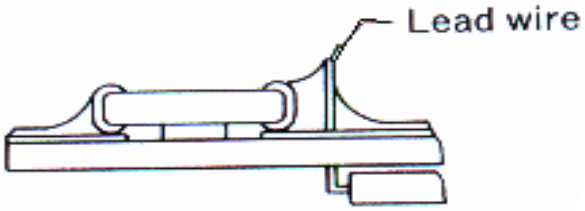
PCB design

Chip components are susceptible to board stress since the component itself is mounted directly on the board. They are also sensitive to mechanical and thermal stress when solder, which may cause chip cracked.
Please take solder form and component layout into consideration to eliminate stress.

Pattern form

(1) Placing of chip components and component.

incorrect



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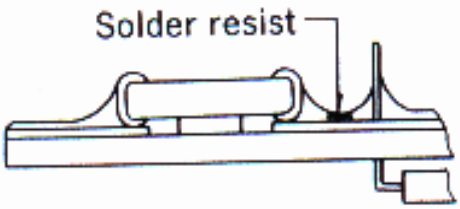
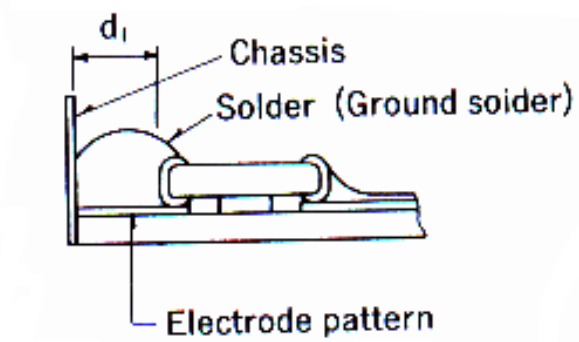


(2) Placing close to chassis.

incorrect



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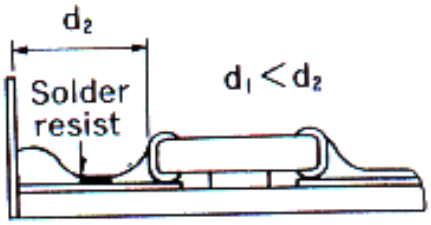

(3) Placing leaded components after chip component.

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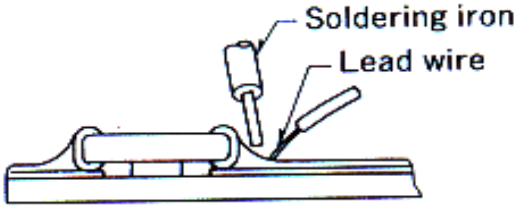

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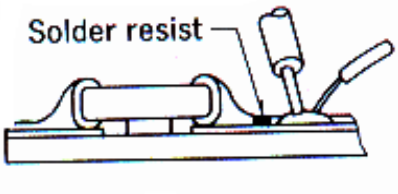

(4) Lateral mounting

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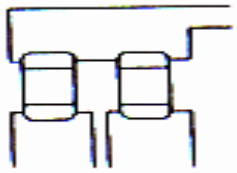

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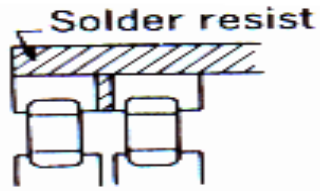
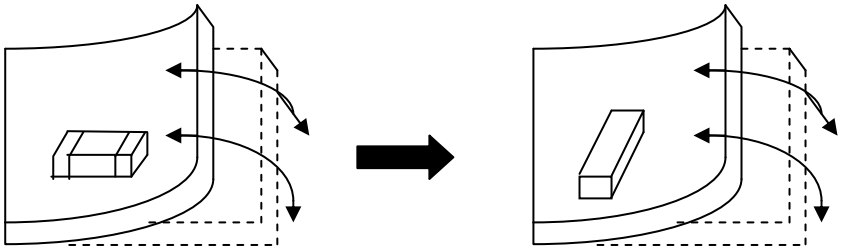


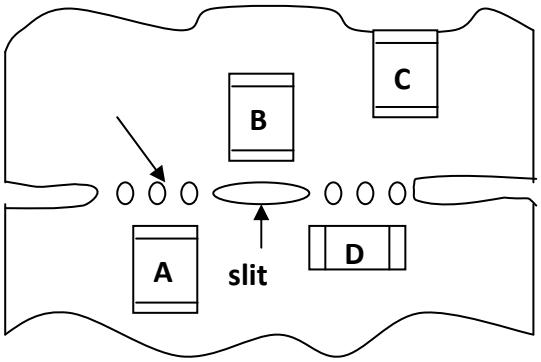
Component direction

To design a mounting position that minimizes the stress imposed on the chip during flexing or bending of the board.

(1) put the component lateral to the direction in which stress acts.



(2) Component layout close to board separation point.
Susceptibility to stress in the order: A＞C＞B＝D



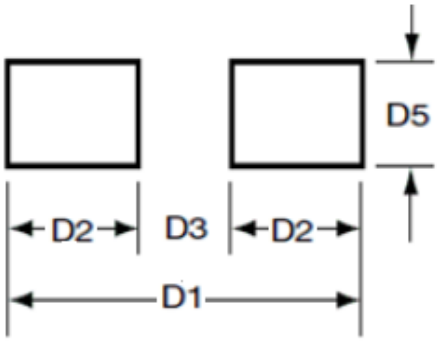
12.3. Land Pattern

When capacitors are mounted on P.C. board, the amount of solder directly affect the performance of capacitors. Therefore, the following items should be carefully considered in the design of solder land pattern.

(1) The greater the amount of solder, the higher the stress on the chip capacitors, and lead to cracking and breaking likely. It is necessary the appropriate size and configuration of the solder pads should be designed to have proper amount of solder on the termination.

(2) When two or more capacitors are soldered together onto the same land or pad, the pad must be designed so that each capacitor's soldering point is separated by solder-resist.

The following diagram and table for recommended pad dimensions.



Dimensions in millimeters

Type	0201	0402	0603	0805	1206	1210	1808	1812	1825	2220	2225
D1	0.65	1.50	2.30	2.80	4.00	4.00	5.40	5.30	5.30	7.00	7.00
D2	0.21	0.50	0.80	0.90	0.90	0.90	1.05	0.90	0.90	1.35	1.35
D3	0.23	0.50	0.70	1.00	2.20	2.20	3.30	3.50	3.50	4.30	4.30
D5	0.30	0.50	0.80	1.30	1.60	2.50	2.30	3.80	6.50	5.00	6.50

Unit: mm