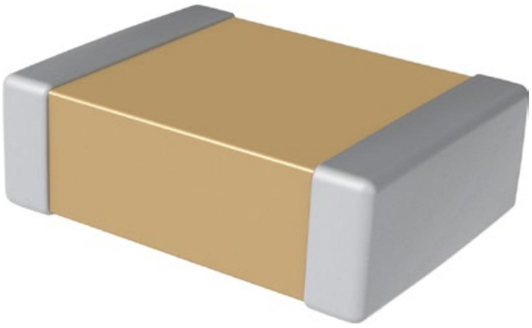
Multilayer Capacitors, SMD
Multilayer Ceramic Capacitors, 1206, X7R



SPECIFICATION:

Construction form	1206
Ceramic type	X7R
Dimensions L x H x W	3.2 x 1.65 x 1.6 mm
Temperature range	-55...+125 °C
Height	1.65 mm
Length	3.2 mm
Width	1.6 mm

PRODUCT RANGE:

Art. Nr.	Capacitance	Rated voltage	Capacitance tolerance
RND 150-1206B102K101NT	1.0 nF	100 VDC	±10%
RND 150-1206B102K102N3	1.0 nF	1000 VDC	±10%
RND 150-1206B102K201NT	1.0 nF	200 VDC	±10%
RND 150-1206B102K202N3	1.0 nF	2000 VDC	±10%
RND 150-1206B102K500NT	1.0 nF	50 VDC	±10%
RND 150-1206B102K501N3	1.0 nF	500 VDC	±10%
RND 150-1206B102K631N3	1.0 nF	630 VDC	±10%
RND 150-1206B103J101NT	10 nF	100 VDC	±5%
RND 150-1206B103K101NT	10 nF	100 VDC	±10%
RND 150-1206B103K102N3	10 nF	1000 VDC	±10%
RND 150-1206B103K201NT	10 nF	200 VDC	±10%
RND 150-1206B103K500NT	10 nF	50 VDC	±10%
RND 150-1206B103K501N3	10 nF	500 VDC	±10%
RND 150-1206B103K631N3	10 nF	630 VDC	±10%
RND 150-1206B104J101N3	100 nF	100 VDC	±5%
RND 150-1206B104J500NT	100 nF	50 VDC	±5%
RND 150-1206B104K101N3	100 nF	100 VDC	±10%
RND 150-1206B104K160NT	100 nF	16 VDC	±10%
RND 150-1206B104K201N2	100 nF	200 VDC	±10%
RND 150-1206B104K250NT	100 nF	25 VDC	±10%
RND 150-1206B104K500NT	100 nF	50 VDC	±10%
RND 150-1206B105J500N2	1.0 µF	50 VDC	±5%
RND 150-1206B105K100N3	1.0 µF	10 VDC	±10%
RND 150-1206B105K160N3	1.0 µF	16 VDC	±10%
RND 150-1206B105K250N3	1.0 µF	25 VDC	±10%
RND 150-1206B105K500N2	1.0 µF	50 VDC	±10%
RND 150-1206B106K100N2	10 µF	10 VDC	±10%
RND 150-1206B106K160N2	10 µF	16 VDC	±10%
RND 150-1206B123K500NT	12 nF	50 VDC	±10%
RND 150-1206B151K102N3	150 pF	1000 VDC	±10%
RND 150-1206B151K202N3	150 pF	2000 VDC	±10%

Art. Nr.	Capacitance	Rated voltage	Capacitance tolerance
RND 150-1206B152K500NT	1.5 nF	50 VDC	±10%
RND 150-1206B153K500NT	15 nF	50 VDC	±10%
RND 150-1206B154K101N3	150 nF	100 VDC	±10%
RND 150-1206B155K160N3	1.5 µF	16 VDC	±10%
RND 150-1206B182K500NT	1.8 nF	50 VDC	±10%
RND 150-1206B183K500NT	18 nF	50 VDC	±10%
RND 150-1206B221K101NT	220 pF	100 VDC	±10%
RND 150-1206B221K102N3	220 pF	1000 VDC	±10%
RND 150-1206B221K202N3	220 pF	2000 VDC	±10%
RND 150-1206B221K500NT	220 pF	50 VDC	±10%
RND 150-1206B221K631NT	220 pF	630 VDC	±10%
RND 150-1206B222K101NT	2.2 nF	100 VDC	±10%
RND 150-1206B222K102N2	2.2 nF	1000 VDC	±10%
RND 150-1206B222K201NT	2.2 nF	200 VDC	±10%
RND 150-1206B222K500NT	2.2 nF	50 VDC	±10%
RND 150-1206B222K631N3	2.2 nF	630 VDC	±10%
RND 150-1206B223K101NT	22 nF	100 VDC	±10%
RND 150-1206B223K201N3	22 nF	200 VDC	±10%
RND 150-1206B223K500NT	22 nF	50 VDC	±10%
RND 150-1206B223K631N2	22 nF	630 VDC	±10%
RND 150-1206B224J500N3	220 nF	50 VDC	±5%
RND 150-1206B224K100NT	220 nF	10 VDC	±10%
RND 150-1206B224K101N2	220 nF	100 VDC	±10%
RND 150-1206B224K160NT	220 nF	16 VDC	±10%
RND 150-1206B224K250NT	220 nF	25 VDC	±10%
RND 150-1206B224K500N3	220 nF	50 VDC	±10%
RND 150-1206B225K100N3	2.2 µF	10 VDC	±10%
RND 150-1206B225K160N3	2.2 µF	16 VDC	±10%
RND 150-1206B225K250N2	2.2 µF	25 VDC	±10%
RND 150-1206B272K500NT	2.7 nF	50 VDC	±10%
RND 150-1206B273K500NT	27 nF	50 VDC	±10%
RND 150-1206B274K250N3	270 nF	25 VDC	±10%
RND 150-1206B331K201NT	330 pF	200 VDC	±10%
RND 150-1206B331K500NT	330 pF	50 VDC	±10%
RND 150-1206B332K101NT	3.3 nF	100 VDC	±10%
RND 150-1206B332K631N3	3.3 nF	630 VDC	±10%
RND 150-1206B333K101N3	33 nF	100 VDC	±10%
RND 150-1206B333K500NT	33 nF	50 VDC	±10%
RND 150-1206B333K631N2	33 nF	630 VDC	±10%
RND 150-1206B334K160NT	330 nF	16 VDC	±10%
RND 150-1206B334K250N3	330 nF	25 VDC	±10%
RND 150-1206B334K500N3	330 nF	50 VDC	±10%
RND 150-1206B391K500NT	390 pF	50 VDC	±10%
RND 150-1206B393K500NT	39 nF	50 VDC	±10%
RND 150-1206B394K250NT	390 nF	25 VDC	±10%
RND 150-1206B471K101NT	470 pF	100 VDC	±10%
RND 150-1206B471K102N3	470 pF	1000 VDC	±10%
RND 150-1206B471K201NT	470 pF	200 VDC	±10%
RND 150-1206B471K202N3	470 pF	2000 VDC	±10%
RND 150-1206B471K500NT	470 pF	50 VDC	±10%
RND 150-1206B471K631N3	470 pF	630 VDC	±10%
RND 150-1206B472K101NT	4.7 nF	100 VDC	±10%
RND 150-1206B472K102N2	4.7 nF	1000 VDC	±10%
RND 150-1206B472K500NT	4.7 nF	50 VDC	±10%
RND 150-1206B472K501N3	4.7 nF	500 VDC	±10%
RND 150-1206B472K631N3	4.7 nF	630 VDC	±10%
RND 150-1206B473K101N3	47 nF	100 VDC	±10%
RND 150-1206B473K201N2	47 nF	200 VDC	±10%

Art. Nr.	Capacitance	Rated voltage	Capacitance tolerance
RND 150-1206B473K500NT	47 nF	50 VDC	±10%
RND 150-1206B474J500N2	470 nF	50 VDC	±5%
RND 150-1206B474K100N3	470 nF	10 VDC	±10%
RND 150-1206B474K160N3	470 nF	16 VDC	±10%
RND 150-1206B474K250N3	470 nF	25 VDC	±10%
RND 150-1206B474K500N2	470 nF	50 VDC	±10%
RND 150-1206B475K250N2	4.7 µF	25 VDC	±10%
RND 150-1206B475K500N2	4.7 µF	50 VDC	±10%
RND 150-1206B561K500NT	560 pF	50 VDC	±10%
RND 150-1206B564K250N3	560 nF	25 VDC	±10%
RND 150-1206B681K102N3	680 pF	1000 VDC	±10%
RND 150-1206B681K202N3	680 pF	2000 VDC	±10%
RND 150-1206B681K500NT	680 pF	50 VDC	±10%
RND 150-1206B681K631N3	680 pF	630 VDC	±10%
RND 150-1206B682K500NT	6.8 nF	50 VDC	±10%
RND 150-1206B683K500NT	68 nF	50 VDC	±10%
RND 150-1206B684K160N3	680 nF	16 VDC	±10%
RND 150-1206B684K250N3	680 nF	25 VDC	±10%
RND 150-1206B684K500N2	680 nF	50 VDC	±10%

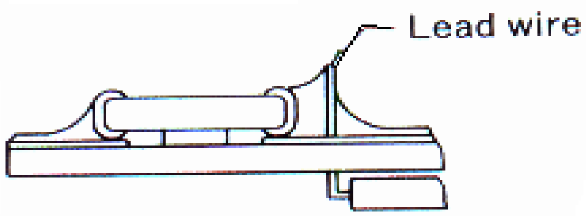
PCB design

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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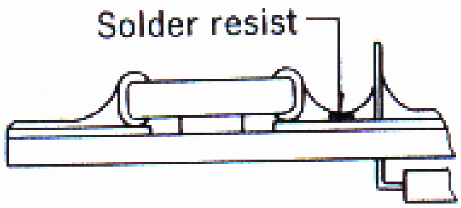
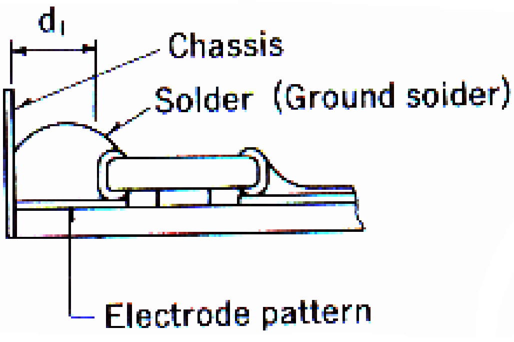


(2) Placing close to chassis.

incorrect



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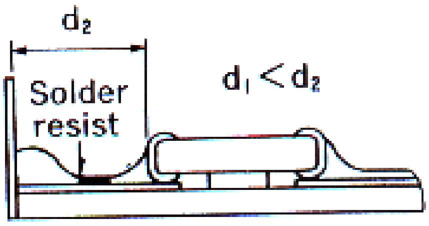
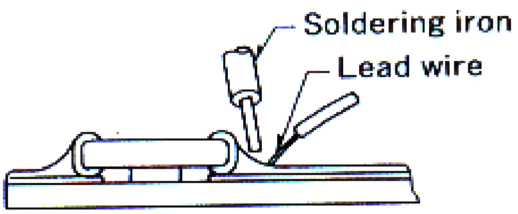


(3) Placing leaded components after chip component.

incorrect



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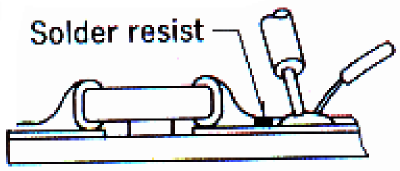
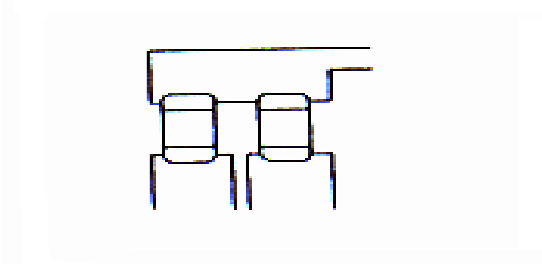
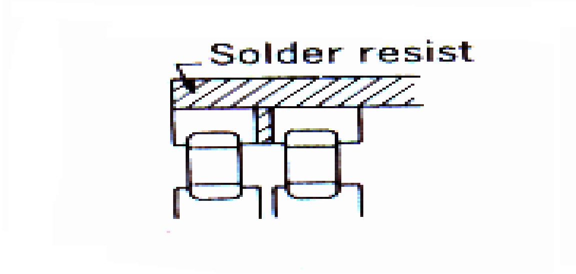


(4) Lateral mounting

incorrect



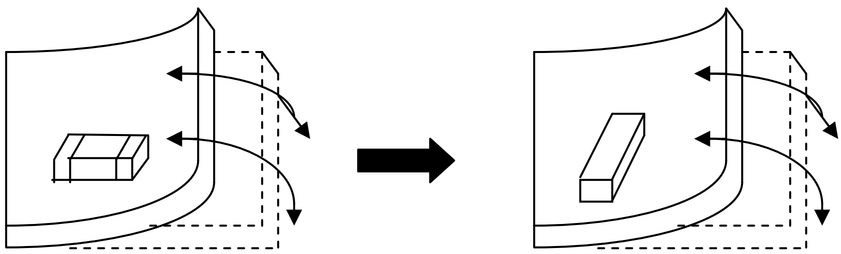
correct



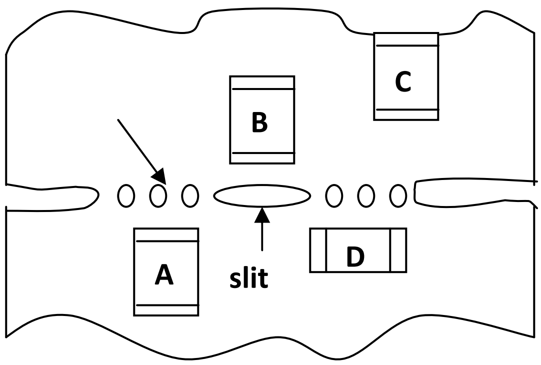
Component direction

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



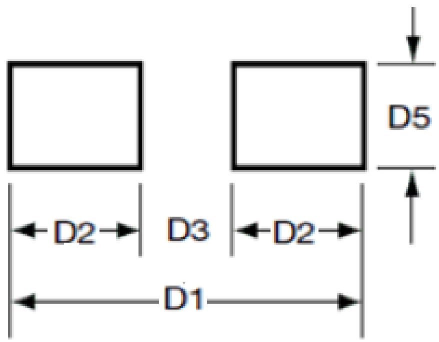
12.3. Land Pattern

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