

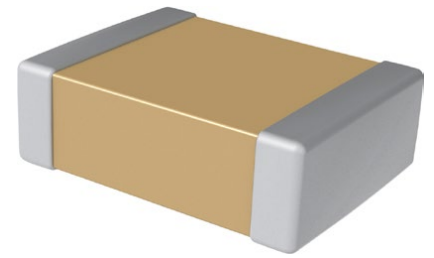
Multilayer Capacitors, SMD

Multilayer Ceramic Capacitors, 0402, NPO



Features

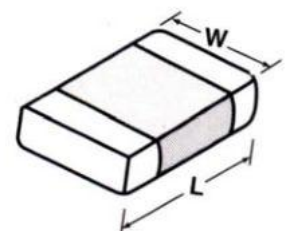
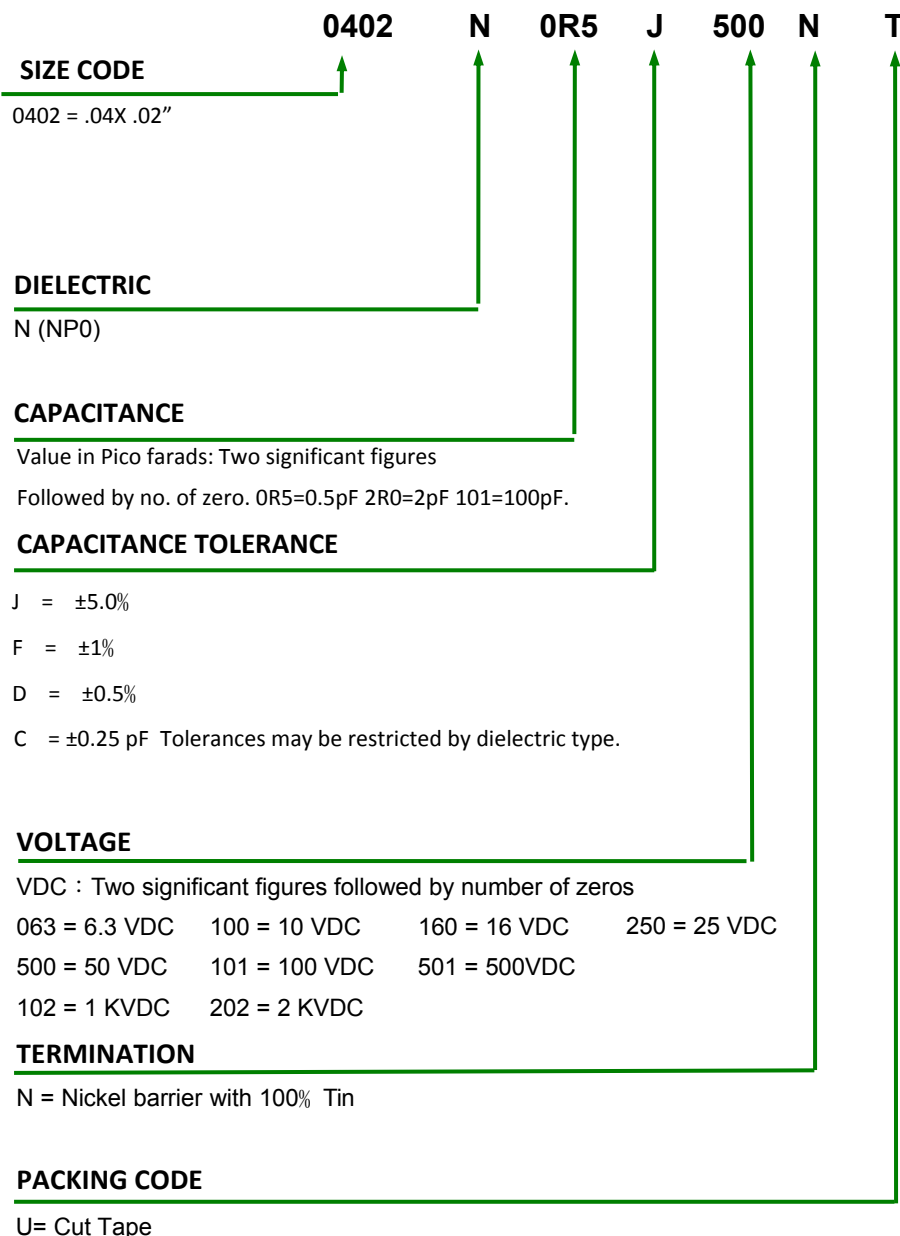
- Various temperature characteristics cover a wide range in small size
- Mounted either by flow or reflow soldering methods
- Excellent dielectric strength due to uniform structure of dielectric layers



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



Dimension : (UNIT mm)

	0402
L	1±0.05
W	0.50±0.05

Multilayer Capacitors, SMD

Multilayer Ceramic Capacitors, 0402, NPO



SPECIFICATION:

Rated voltage	50 VDC
Construction form	0402
Ceramic type	NPO
Dimensions L x H x W	1.0 x 0.5 x 0.5 mm
Temperature range	-55...+125 °C
Height	0.5 mm
Length	1.0 mm
Width	0.5 mm

PRODUCT RANGE:

Art. Nr.	Capacitance	Capacitance tolerance
RND 150-0402N0R5C500NU	0.5 pF	±0.25 pF
RND 150-0402N100F500NU	10 pF	±1%
RND 150-0402N101F500NU	100 pF	±1%
RND 150-0402N101J250NU	100 pF	±5%
RND 150-0402N101J500NU	100 pF	±5%
RND 150-0402N130J500NU	13 pF	±5%
RND 150-0402N150F500NU	15 pF	±1%
RND 150-0402N151F500NU	150 pF	±1%
RND 150-0402N160J500NU	16 pF	±5%
RND 150-0402N161J500NU	160 pF	±5%
RND 150-0402N1R0C500NU	1.0 pF	±0.25 pF
RND 150-0402N1R5C500NU	1.5 pF	±0.25 pF
RND 150-0402N200J500NU	20 pF	±5%
RND 150-0402N201J500NU	200 pF	±5%
RND 150-0402N220F500NU	22 pF	±1%
RND 150-0402N240J500NU	24 pF	±5%
RND 150-0402N2R0C500NU	2 pF	±0.25 pF
RND 150-0402N300J500NU	30 pF	±5%
RND 150-0402N330F500NU	33 pF	±1%
RND 150-0402N360J500NU	36 pF	±5%
RND 150-0402N3R0C500NU	3 pF	±0.25 pF
RND 150-0402N430J500NU	43 pF	±5%
RND 150-0402N470F500NU	47 pF	±1%
RND 150-0402N4R0C500NU	4 pF	±0.25 pF
RND 150-0402N510J500NU	51 pF	±5%
RND 150-0402N5R0C500NU	5 pF	±0.25 pF
RND 150-0402N620J500NU	62 pF	±5%
RND 150-0402N680F500NU	68 pF	±1%
RND 150-0402N6R0D500NU	6 pF	±0.5 pF
RND 150-0402N750J500NU	75 pF	±5%

Art. Nr.	Capacitance	Capacitance tolerance
RND 150-0402N7R0D500NU	7 pF	±0.5 pF
RND 150-0402N8R0D500NU	8 pF	±0.5 pF
RND 150-0402N910J500NU	91.0 pF	±5%
RND 150-0402N9R0D500NU	9 pF	±0.5 pF
RND 150-C0402N100J500NU	10 pF	±5%
RND 150-C0402N101J500NU	100 pF	±5%
RND 150-C0402N120J500NU	12 pF	±5%
RND 150-C0402N121J500NU	120 pF	±5%
RND 150-C0402N150J500NU	15 pF	±5%
RND 150-C0402N151J500NU	150 pF	±5%
RND 150-C0402N180J500NU	18 pF	±5%
RND 150-C0402N181J500NU	180 pF	±5%
RND 150-C0402N220J500NU	22 pF	±5%
RND 150-C0402N221J500NU	220 pF	±5%
RND 150-C0402N270J500NU	27 pF	±5%
RND 150-C0402N330J500NU	33 pF	±5%
RND 150-C0402N331J500NU	330 pF	±5%
RND 150-C0402N390J500NU	39 pF	±5%
RND 150-C0402N470J500NU	47 pF	±5%
RND 150-C0402N471J500NU	470 pF	±5%
RND 150-C0402N560J500NU	56 pF	±5%
RND 150-C0402N680J500NU	68 pF	±5%
RND 150-C0402N820J500NU	82 pF	±5%

PCB design

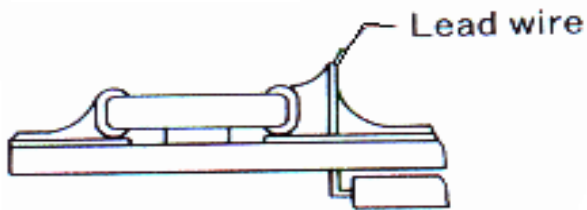
Chip components are susceptible to board stress since the component itself is mounted directly on the board. They are also sensitive to mechanical and thermal stress when solder, which may cause chip cracked.

Please take solder form and component layout into consideration to eliminate stress.

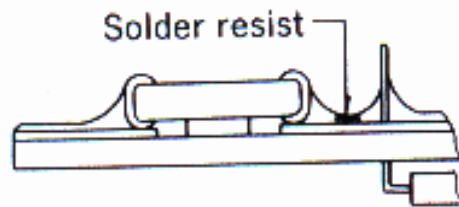
Pattern form

(1) Placing of chip components and component.

incorrect

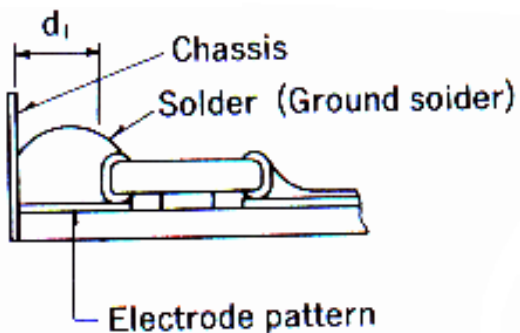


correct

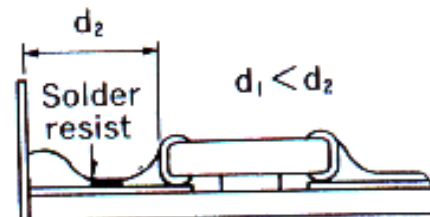


(2) Placing close to chassis.

incorrect

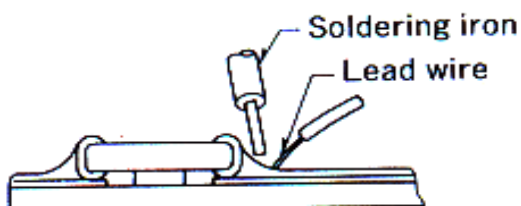


correct

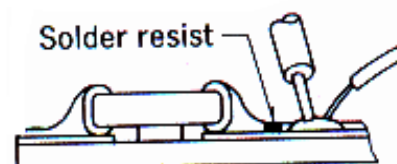


(3) Placing leaded components after chip component.

incorrect

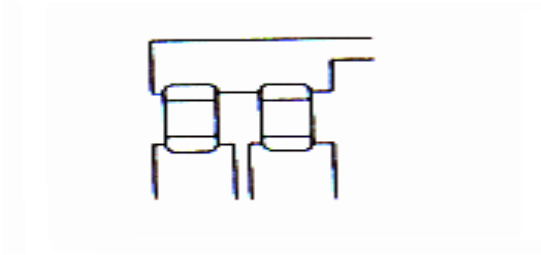


correct

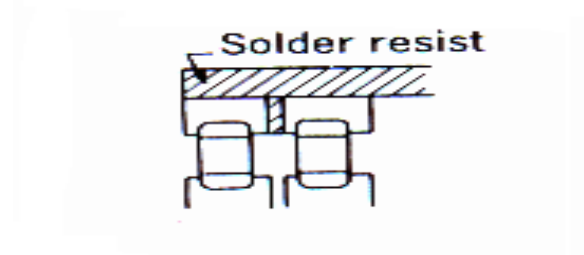


(4) Lateral mounting

incorrect



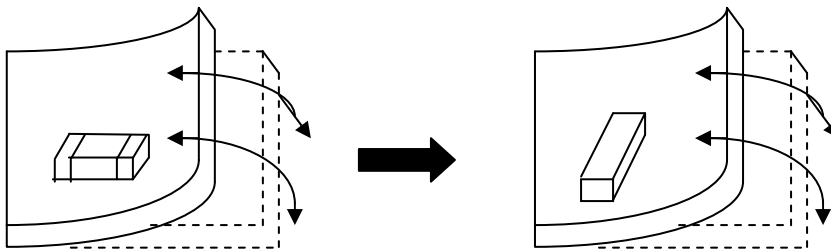
correct



Component direction

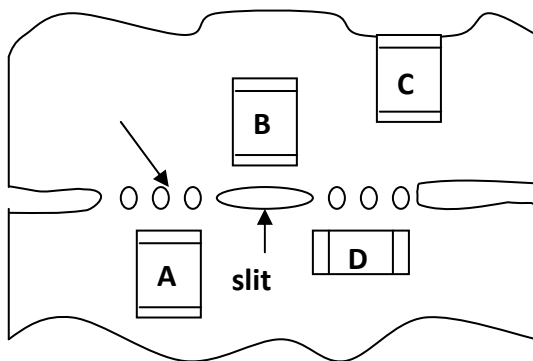
To design a mounting position that minimizes the stress imposed on the chip during flexing or bending of the board.

(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: $A > C > B = D$



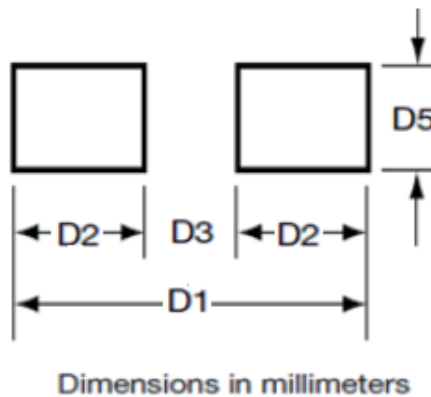
12.3. Land Pattern

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.



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