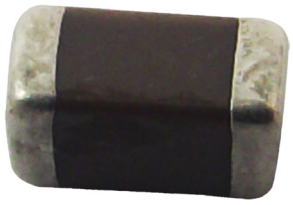
General Purpose Multilayer SMD Ceramic Capacitor
0402 to 1812 Sizes, NP0, X7R & Y5V Dielectrics (10V to 100V)

RoHS Compliant



Description:

MLCC consists of a conducting material and electrodes. To manufacture a chip-type SMT and achieve miniaturization, high density and high efficiency, ceramic condensers are used. MLCC is made by NP0, X7R and Y5V dielectric material and which provides product with high electrical precision, stability and reliability.

Features:

- A wide selection of sizes is available (0402 to 1812)
- High capacitance in given case size
- Capacitor with lead-free termination (pure Tin)

Applications:

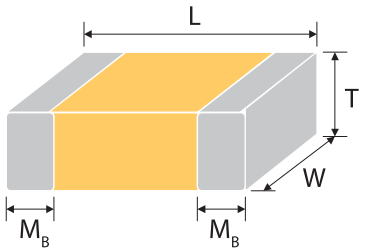
- For general digital circuit
- For power supply bypass capacitors
- For consumer electronics
- For telecommunication

How To Order:

MC	U	0805	C	102	J	C	T
	Rated voltage	**Size**	**Dielectric**	**Capacitance**	**Tolerance**	**Termination**	**Packaging style**
Multi-comp	Two significant digits followed by no. of zeros. And R is in place of decimal point. K=6.3V N=10V B=16V T=25V U=50V A=100V	Inch (mm) 0402 (1005) 0603 (1608) 0805 (2012) 1206 (3216) 1210 (3225) 1812 (4532)	C=NP0 (C0G) R=X7R F=Y5V	Two significant digits followed by no. of zeros. And R is in place of decimal point. eg.: 0R5=0.5pF 1R0=1.0pF 102=10×10^2 =1,000pF	B = ±0.1pF C = ±0.25pF D = ±0.5pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20% Z = -20/+80%	C=Cu/Ni/Sn L=Ag/Ni/Sn (for partial NP0 items)	T =7" reeled G = 13" reeled

Partial NP0 items are with Ag/Ni/Sn terminations, please ref to below product range of NPO dielectric for detail.

External Dimensions:



The outline of MLCC

Size Inch (mm)	L (mm)	W (mm)	T (mm)/Symbol		Remark	M_B (mm)
0402 (1005)	1 ±0.05	0.5 ±0.05	0.5 ±0.05	N	#	0.25 +0.05/-0.1
0603 (1608)	1.6 ±0.1	0.8 ±0.1	0.8 ±0.07	S	-	0.4 ±0.15
	1.6 +0.15/-0.1	0.8 +0.15/-0.1	0.8 +0.15/-0.1	X	-	
0805 (2012)	2 ±0.15	1.25 ±0.1	0.6 ±0.1	A	-	0.5 ±0.2
			0.8 ±0.1	B	-	
			1.25 ±0.1	D	#	
	2 ±0.2	1.25 ±0.2	1.25 ±0.2	I	#	

Size Inch (mm)	L (mm)	W (mm)	T (mm)/Symbol		Remark	M_B (mm)
1206 (3216)	3.2 ±0.15	1.6 ±0.15	0.8 ±0.1	B	-	0.6 ±0.2
			0.95 ±0.1	C	-	
			1.15 ±0.15	J	#	
			1.25 ±0.1	D	#	
			1.6 ±0.2	G	#	
	3.2 +0.3/-0.1	1.6 +0.3/0.1	1.6 +0.3/-0.1	P	#	
1210 (3225)	3.2 ±0.3	2.5 ±0.2	0.95 ±0.1	C	#	0.75 ±0.25
			1.25 ±0.1	D	#	
	3.2 ±0.4	2.5 ±0.3	1.6 ±0.2	G	#	
			2 ±0.2	K	#	
			2.5 ±0.3	M	#	
1812 (4532)	4.5 ±0.4	3.2 ±0.3	1.25 ±0.1	D	#	0.75 ±0.25
			2 ±0.2	K	#	

Reflow soldering only is recommended.

General Electrical Data:

Dielectric	NP0	X7R	Y5V
Size	0402, 0603, 0805, 1206, 1210, 1812		
Capacitance*	0.5pF to 0.1µF	100pF to 0.82µF	10nF to 0.68µF
Capacitance tolerance**	Cap≤5pF: B (±0.1pF), C (±0.25pF) 5pF<Cap<10pF: C (±0.25pF), D (±0.5pF) Cap≥10pF: F (±1%), G (±2%), J (±5%), K (±10%)	J (±5%), K (±10%), M (±20%)	M (±20%), Z (-20/+80%)
Rated voltage (WVDC)	10V, 16V, 25V, 50V, 100V	6.3V, 10V, 16V, 25V, 50V, 100V	
DF (Tan δ)*	Cap<30pF: Q≥400+20C Cap≥30pF: Q≥1,000	Note 1	
Operating temperature	-55°C to +125°C		-25 to +85°C
Capacitance change	±30ppm	±15%	+30/-80%
Termination	Ni/Sn (lead-free termination)		

* Measured at the condition of 30~70% related humidity.
NP0: Apply 1 ±0.2Vrms, 1MHz ±10% for Cap≤1,000pF and 1 ±0.2Vrms, 1kHz ±10% for Cap>1,000pF, 25°C at ambient temperature
X7R: Apply 1.0±0.2Vrms, 1.0kHz±10%, at 25°C ambient temperature.
Y5V: Apply 1.0±0.2Vrms, 1.0kHz±10%, at 20°C ambient temperature.

** Preconditioning for Class II MLCC : Perform a heat treatment at 150 ±10°C for 1 hour, then leave in ambient condition for 24±2 hours before measurement.

Note 1:

X7R/X5R/X6S

Rated vol.	D.F.≦	Exception of D.F. ≦	
≧100V	≦2.5%	≦3%	1206≧0.47μF
		≦5%	0805>0.1μF, 0603≧0.068μF
≧50V	≦2.5%	≦3%	0201(50V); 0603≧0.047μF; 0805≧0.18μF;1206≧0.47μF
		≦5%	1210≧4.7μF
		≦10%	0402≧0.1μF; 0603≧1μF; 0805≧1μF;1206≧4.7μF; 1210≧10μF TT series
35V	≦3.5%	≦10%	0603≧1μF; 0805≥2.2μF; 1210≧10μF
25V	≦3.5%	≦5%	0201≧0.01μF;0805≧1μF; 1210≧10μF
		≦7%	0603≧0.33μF; 1206≧4.7μF
		≦10%	0402≧0.10μF;0603≧0.47μF; 0805≧2.2μF; 1206≧6.8μF ; 1210≧22μF; TT series
		≦12.5%	0402≧1μF
16V	≦3.5%	≦5%	0201≧0.01μF; 0402≧0.033μF; 0805≧0.68μF;1206≧2.2μF;1210≧4.7μF
		≦10%	0201≧0.1μF; 0402≧0.47μF; 0603≧0.68μF;0805≧2.2μF; 1206≧4.7μF; 1210≧22μF; TT series
10V	≦5%	≦10%	0201≧0.012μF 0402≧0.33μF; 0603≧0.33μF; 0805≧2.2μF; 1206≧2.2μF; 1210≧22μF; TT series
		≦15%	0201≧0.1μF; 0402≧1μF
6.3V	≦10%	≦15%	0201≧0.1μF;0402≧1μF;0603≧10μF; 0805≧4.7μF; 1206≧47μF :1210≧100μF; TT series
		≦20%	0402≧2.2μF
4V	≦15%	-	-

Y5V

Rated vol.	D.F.≦	Exception of D.F. ≦	
≧50V	5%	7%	0603≧0.1μF; 0805≧0.47μF; 1206≧4.7μF
35V	7%	-	-
25V	5%	7%	0402≧0.047μF;0603≧0.1μF; 0805≧0.33μF;1206≧1μF; 1210≧4.7μF
		9%	0402≧0.068μF; 0603≧0.47μF; 1206≧4.7μF; 1210≧22μF
16V (C<1μF)	7%	9%	0402≧0.068μF; 0603≧0.68μF
		12.5%	0402≧0.22μF
16V (C≧1.0μF)	9%	12.5%	0603≧2.2μF; 0805≧3.3μF; 1206≧10μF; 1210≧22μF; 1812≧47μF
10V	12.5%	20%	0402≧0.47μF
6.3V	20%	-	-

Packaging Dimension And Quantity:

Size	Thickness (mm)/Symbol		Paper tape		Plastic tape	
			7" reel	13" reel	7" reel	13" reel
0402 (1005)	0.5 ±0.05	N	10k	50k	-	-
0603 (1608)	0.8 ±0.07	S	4k	15k	-	-
	0.8 +0.15/-0.1	X	4k	15k	-	-
0805 (2012)	0.6 ±0.1	A	4k	15k	-	-
	0.8 ±0.1	B	4k	15k	-	-
	1.25 ±0.1	D	-	-	3k	10k
	1.25 ±0.2	I	-	-	3k	10k
1206 (3216)	0.8 ±0.1	B	4k	15k	-	-
	0.95 ±0.1	C	-	-	3k	10k
	1.15 ±0.15	J	-	-	3k	10k
	1.25 ±0.1	D	-	-	3k	10k
	1.6 ±0.2	G	-	-	2k	10k
	1.6 +0.3/-0.1	P	-	-	2k	9k
1210 (3225)	0.95 ±0.1	C	-	-	3k	10k
	1.25 ±0.1	D	-	-	3k	10k
	1.6 ±0.2	G	-	-	2k	-
	2 ±0.2	K	-	-	1k	6k
	2.5 ±0.3	M	-	-	1k	6k
1812 (4532)	1.25 ±0.1	D	-	-	1k	5k
	2 ±0.2	K	-	-	1k	-

Unit : pieces

Reliability Test Conditions and Requirements:

No	Item	Test Condition	Requirements
1	Visual and Mechanical	-	No remarkable defect. Dimensions to conForm to individual specification sheet.

<table>
<tr><th>No</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>2</td><td>Capacitance</td><td rowspan="2">Class I: NP0
Cap≤1000pF 1.0±0.2Vrms, 1MHz±10%
Cap>1000pF 1.0±0.2Vrms, 1KHz±10%
Class II: X7R, X5R, X6S,Y5V
Cap≤10μF, 1.0±0.2Vrms, 1kHz±10% **
Cap>10μF, 0.5±0.2Vrms, 120Hz±20%

** Test condition: 0.5±0.2Vrms, 1KHz±10%
X7R: 0603≧225(10V), 0805=106(6.3V&10V)
X5R: 01R5≧103, 0201≧224 (6.3V,10V),
0402≧475 (6.3V), 0402≧225(10V), 0603=106 (6.3V,10V),
TT18X ≧475(10V) , TT15X series
X6S:0201≧224 (6.3V),0402≧225 (6.3V),</td><td>*Shall not exceed the limits given in the detailed spec.</td></tr>
<tr><td></td><td>Q/ D.F. (Dissipation Factor)</td><td>NP0: Cap≥30pF, Q≥1000; Cap<30pF,Q≥400+20C
X7R,X5R,X6S:
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F. ≦</th></tr>
<tr><td rowspan="2">≧100V</td><td rowspan="2">≦2.5%</td><td>≦3%</td><td>1206≧0.47μF</td></tr>
<tr><td>≦5%</td><td>0805>0.1μF, 0603≧0.068μF</td></tr>
<tr><td rowspan="3">≧50V</td><td rowspan="3">≦2.5%</td><td>≦3%</td><td>0201(50V); 0603≧0.047μF;
0805≧0.18μF;1206≧0.47μF</td></tr>
<tr><td>≦5%</td><td>1210≧4.7μF</td></tr>
<tr><td>≦10%</td><td>0402≧0.1μF; 0603≧1μF;
0805≧1μF;1206≧4.7μF; 1210≧10μF
TT series</td></tr>
<tr><td>35V</td><td>≦3.5%</td><td>≦10%</td><td>0603≧1μF; 0805≥2.2μF; 1210≧10μF</td></tr>
<tr><td rowspan="4">25V</td><td rowspan="4">≦3.5%</td><td>≦5%</td><td>0201≧0.01μF;0805≧1μF; 1210≧10μF</td></tr>
<tr><td>≦7%</td><td>0603≧0.33μF; 1206≧4.7μF</td></tr>
<tr><td>≦10%</td><td>0402≧0.10μF;0603≧0.47μF;0805≧2.2 μF; 1206≧6.8μF ; 1210≧22μF; TT series</td></tr>
<tr><td>≦12.5%</td><td>0402≧1μF</td></tr>
<tr><td rowspan="2">16V</td><td rowspan="2">≦3.5%</td><td>≦5%</td><td>0201≧0.01μF; 0402≧0.033μF;
0805≧0.68μF;1206≧2.2μF;1210≧4.7μF</td></tr>
<tr><td>≦10%</td><td>0201≧0.1μF; 0402≧0.47μF;
0603≧0.68μF;0805≧2.2μF; 1206≧4.7μF;
1210≧22μF; TT series</td></tr>
<tr><td rowspan="2">10V</td><td rowspan="2">≦5%</td><td>≦10%</td><td>0201≧0.012μF 0402≧0.33μF;
0603≧0.33μF; 0805≧2.2μF; 1206≧2.2μF;
1210≧22μF; TT series</td></tr>
<tr><td>≦15%</td><td>0201≧0.1μF; 0402≧1μF</td></tr>
<tr><td rowspan="2">6.3V</td><td rowspan="2">≦10%</td><td>≦15%</td><td>0201≧0.1μF;0402≧1μF;0603≧10μF;
0805≧4.7μF; 1206≧47μF :1210≧100μF;
TT series</td></tr>
<tr><td>≦20%</td><td>0402≧2.2μF</td></tr>
<tr><td>4V</td><td>≦15%</td><td>-</td><td>-</td></tr>
</table>
Y5V:
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F. ≦</th></tr>
<tr><td>≧50V</td><td>5%</td><td>7%</td><td>0603≧0.1μF; 0805≧0.47μF; 1206≧4.7μF</td></tr>
<tr><td>35V</td><td>7%</td><td>-</td><td>-</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">5%</td><td>7%</td><td>0402≧0.047μF;0603≧0.1μF;
0805≧0.33μF;1206≧1μF; 1210≧4.7μF</td></tr>
<tr><td>9%</td><td>0402≧0.068μF; 0603≧0.47μF;
1206≧4.7μF; 1210≧22μF</td></tr>
<tr><td rowspan="2">16V
(C<1μF)</td><td rowspan="2">7%</td><td>9%</td><td>0402≧0.068μF; 0603≧0.68μF</td></tr>
<tr><td>12.5%</td><td>0402≧0.22μF</td></tr>
<tr><td>16V
(C≧1.0μF)</td><td>9%</td><td>12.5%</td><td>0603≧2.2μF; 0805≧3.3μF; 1206≧10μF;
1210≧22μF; 1812≧47μF</td></tr>
<tr><td>10V</td><td>12.5%</td><td>20%</td><td>0402≧0.47μF</td></tr>
<tr><td>6.3V</td><td>20%</td><td>-</td><td>-</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>No</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>4</td><td>Dielectric Strength</td><td>To apply voltage (≤100V) 250%.
Duration: 1 to 5 sec.
Charge and discharge current less than 50mA.</td><td>No evidence of damage or flash over during test.</td></tr>
<tr><td>5</td><td>Insulation Resistance</td><td>To apply rated voltage for max. 120 sec.</td><td>10GΩ or RxC≧500Ω-F whichever is smaller.
Class II (X7R, X5R, X6S, Y5V)
<table>
<tr><th>Rated voltage</th><th>Insulation Resistance</th></tr>
<tr><td>100V: X7R</td><td rowspan="8">10GΩ or RxC≧100ΩF whichever is smaller.</td></tr>
<tr><td>50V:0603≥1μF;0805≥1μF;1206≥4.7μF; 1210≥4.7μF</td></tr>
<tr><td>35V:0805≥2.2μF;1210≧10μF</td></tr>
<tr><td>25V:0402≥1μF;0603≥2.2μF;0805≥2.2μF; 1206≥10μF;1210≥10μF</td></tr>
<tr><td>16V:0402≥0.22μF;0603≥1μF;0805≥2.2μF; 1206≥10μF;1210≥47μF</td></tr>
<tr><td>10V:0201≥47nF;0402≥0.47μF;0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF;1210≥47μF</td></tr>
<tr><td>6.3V ; 4V</td></tr>
<tr><td>50V: 0402≥0.1μF</td><td rowspan="4">10GΩ or RxC≧50 Ω-F whichever is smaller.</td></tr>
<tr><td>35V:0603≥1μF</td></tr>
<tr><td>10V:0603≥10μF</td></tr>
<tr><td>4V:0603≥22μF; 0805≥47μF</td></tr>
</table></td></tr>
<tr><td>6</td><td>Temperature Coefficient</td><td>With no electrical load.
<table>
<tr><td>T.C.</td><td>Operating Temp</td></tr>
<tr><td>NPO</td><td>-55~125°C at 25°C</td></tr>
<tr><td>X7R</td><td>-55~125°C at 25°C</td></tr>
<tr><td>X5R</td><td>-55~ 85°C at 25°C</td></tr>
<tr><td>X6S</td><td>-55~105°C at 25°C</td></tr>
<tr><td>Y5V</td><td>-25~ 85°C at 20°C</td></tr>
</table></td><td>
<table>
<tr><td>T.C.</td><td>Capacitance Change</td></tr>
<tr><td>NPO</td><td>Within ±30ppm/°C</td></tr>
<tr><td>X7R</td><td>Within ±15%</td></tr>
<tr><td>X5R</td><td>Within ±15%</td></tr>
<tr><td>X6S</td><td>Within ±22%</td></tr>
<tr><td>Y5V</td><td>Within +30%/-80%</td></tr>
</table></td></tr>
<tr><td>7</td><td>Adhesive Strength of Termination</td><td>Pressurizing force:
5N (≤0603) and 10N (>0603)
* Test time: 10±1 sec.</td><td>No remarkable damage or removal of the terminations.</td></tr>
<tr><td>8</td><td>Vibration Resistance</td><td>Vibration frequency: 10~55 Hz/min.
Total amplitude: 1.5mm
Test time: 6 hrs. (Two hrs each in three mutually perpendicular directions.)
Measurement to be made after keeping at room temp. for 24±2 hrs.</td><td>No remarkable damage.
Cap change and Q/D.F.: To meet initial spec.</td></tr>
</table>

<table>
<tr><th>No</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>9</td><td>Solderability</td><td>Solder temperature: 235±5°C
Dipping time: 2±0.5 sec.</td><td>95% min. coverage of all metalized area.</td></tr>
<tr><td>10.</td><td>Bending Test</td><td>The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1 mm per second until the deflection becomes 1 mm and then the pressure shall be maintained for 5±1 sec. Measurement to be made after keeping at room temp. for 24±2 hrs.</td><td>No remarkable damage.
Cap change:
NP0: within ±5% or 0.5pF whichever is larger
X7R, X5R, X6S: within ±12.5%
Y5V: within ±30%
(This capacitance change means the change of capacitance under specified flexure of substrate from the capacitance measured before the test.)</td></tr>
<tr><td>11</td><td>Resistance to Soldering Heat</td><td>Solder temperature: 260±5°C
Dipping time: 10±1 sec
Preheating: 120 to 150°C for 1 minute before immerse the capacitor in a eutectic solder.
Before initial measurement (Class II only): Perform 150+0/-10°C for 1 hr and then set for 24±2 hrs at room temp.
Measurement to be made after keeping at room temp. for 24±2 hrs.</td><td>No remarkable damage.
Cap change:
NP0: within ±2.5% or 0.25pF whichever is larger
X7R, X5R, X6S: within ±7.5%
Y5V: within ±20%
Q/D.F., I.R. and dielectric strength: To meet initial requirements.
25% max. leaching on each edge.</td></tr>
<tr><td>12</td><td>Temperature Cycle</td><td>Conduct the five cycles according to the temperatures and time.
<table>
<tr><th>Step</th><th>Temp. (°C)</th><th>Time (min.)</th></tr>
<tr><td>1</td><td>Min. operating temp. +0/-3</td><td>30±3</td></tr>
<tr><td>2</td><td>Room temp.</td><td>2~3</td></tr>
<tr><td>3</td><td>Max. operating temp. +3/-0</td><td>30±3</td></tr>
<tr><td>4</td><td>Room temp.</td><td>2~3</td></tr>
</table>
Before initial measurement (Class II only): Perform 150+0/-10°C for 1 hr and then set for 24±2 hrs at room temp.
Measurement to be made after keeping at room temp. for 24±2 hrs.</td><td>No remarkable damage.
Cap change:
NP0: within ±2.5% or 0.25pF whichever is larger
X7R, X5R, X6S: within ±7.5%
Y5V: within ±20%
Q/D.F., I.R. and dielectric strength: To meet initial requirements.</td></tr>
</table>

<table>
<tr><th>No</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>13</td><td>Humidity
(Damp Heat)
Steady State</td><td>Test temp.: 40±2°C
Humidity: 90~95% RH
Test time: 500+24/-0hrs.
Before initial measurement (Class II only): Perform 150+0/-10°C for 1 hr and then set for 24±2 hrs at room temp.
Measurement to be made after keeping at room temp. for 24±2 hrs.</td><td>No remarkable damage.
Cap change:
NP0: within ±5% or 0.5pF whichever is larger
X7R, X5R, X6S: ≥10V**,within ±12.5%; ≦6.3V within ±25%;
TT series & C≥ 1uF,within ±25%
**10V: 0603≧4.7μF;0402≧1μF;0201≧0.1μF, within ±25%;
Y5V: ≥10V, within ±30%; ≦6.3V, within +30/-40%
Q/D.F. value:
NP0: More than 30pF Q≥350, 10pF≤C≤30pF, Q≥275+2.5C
Less than 10pF Q≥200+10C
X7R, X5R, X6S:
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F. ≦</th></tr>
<tr><td rowspan="2">≧100V</td><td rowspan="2">≦3%</td><td>≦6%</td><td>1206≧0.47μF</td></tr>
<tr><td>≦7.5%</td><td>0805>0.1μF, 0603≧0.068μF</td></tr>
<tr><td rowspan="3">≧50V</td><td rowspan="3">≦3%</td><td>≦6%</td><td>0201(50V); 0603≧0.047μF;
0805≧0.18μF;1206≧0.47μF</td></tr>
<tr><td>≦10%</td><td>1210≧4.7μF</td></tr>
<tr><td>≦20%</td><td>0402≧0.1μF; 0603≧1μF;
0805≧1μF;1206≧4.7μF; 1210≧10μF
TT series</td></tr>
<tr><td>35V</td><td>≦5%</td><td>≦20%</td><td>0603≧1μF; 0805≥2.2μF; 1210≧10μF</td></tr>
<tr><td rowspan="4">25V</td><td rowspan="4">≦5%</td><td>≦10%</td><td>0201≧0.01μF;0805≧1μF; 1210≧10μF</td></tr>
<tr><td>≦14%</td><td>0603≧0.33μF; 1206≧4.7μF</td></tr>
<tr><td>≦15%</td><td>0402≧0.10μF;0603≧0.47μF;0805≧2.2
μF; 1206≧6.8μF ; 1210≧22μF; TT series</td></tr>
<tr><td>≦20%</td><td>0402≧1μF</td></tr>
<tr><td rowspan="2">16V</td><td rowspan="2">≦5%</td><td>≦10%</td><td>0201≧0.01μF; 0402≧0.033μF;
0805≧0.68μF;1206≧2.2μF;1210≧4.7μF</td></tr>
<tr><td>≦15%</td><td>0201≧0.1μF; 0402≧0.47μF;
0603≧0.68μF;0805≧2.2μF; 1206≧4.7μF;
1210≧22μF; TT series</td></tr>
<tr><td rowspan="2">10V</td><td rowspan="2">≦7.5%</td><td>≦15%</td><td>0201≧0.012μF 0402≧0.33μF;
0603≧0.33μF; 0805≧2.2μF; 1206≧2.2μF;
1210≧22μF</td></tr>
<tr><td>≦20%</td><td>0201≧0.1μF; 0402≧1μF TT series</td></tr>
<tr><td>6.3V</td><td>≦15%</td><td>≦30%</td><td>0201≧0.1μF;0402≧1μF;0603≧10μF;
0805≧4.7μF; 1206≧47μF :1210≧100μF;
TT series</td></tr>
<tr><td>4V</td><td>≦20%</td><td>-</td><td>-</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>No</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>13</td><td></td><td></td><td>Y5V:
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F. ≦</th></tr>
<tr><td>≧50V</td><td>7.5%</td><td>10%</td><td>0603≧0.1μF; 0805≧0.47μF; 1206≧4.7μF</td></tr>
<tr><td>35V</td><td>10%</td><td>-</td><td>-</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">7.5%</td><td>10%</td><td>0402≧0.047μF;0603≧0.1μF;
0805≧0.33μF;1206≧1μF; 1210≧4.7μF</td></tr>
<tr><td>15%</td><td>0402≧0.068μF; 0603≧0.47μF;
1206≧4.7μF; 1210≧22μF</td></tr>
<tr><td rowspan="2">16V
(C<1μF)</td><td rowspan="2">10%</td><td>12.5%</td><td>0402≧0.068μF; 0603≧0.68μF</td></tr>
<tr><td>20%</td><td>0402≧0.22μF</td></tr>
<tr><td>16V
(C≧1.0μF)</td><td>12.5%</td><td>20%</td><td>0603≧2.2μF; 0805≧3.3μF; 1206≧10μF;
1210≧22μF; 1812≧47μF</td></tr>
<tr><td>10V</td><td>20%</td><td>30%</td><td>0402≧0.47μF</td></tr>
<tr><td>6.3V</td><td>30%</td><td>-</td><td>-</td></tr>
</table>
*I.R.: ≥10V, 1GΩ or 50 Ω-F whichever is smaller.
Class II (X7R, X5R, X6S, Y5V)
<table>
<tr><th>Rated voltage</th><th>Insulation Resistance</th></tr>
<tr><td>100V: X7R</td><td rowspan="8">1GΩ or
RxC≧10 Ω-F
whichever is
smaller.</td></tr>
<tr><td>50V: 0402≥0.1μF;0603≥1μF;0805≥1μF;
1206≥4.7μF;1210≥4.7μF</td></tr>
<tr><td>35V: 0603≥1μF; 0805≥2.2μF;1210≧10μF</td></tr>
<tr><td>25V:0402≥1μF;0603≥2.2μF;0805≥2.2μF;
1206≥10μF;1210≥10μF</td></tr>
<tr><td>16V:0402≥0.22μF;0603≥1μF;0805≥2.2μF;
1206≥10μF;1210≥47μF</td></tr>
<tr><td>10V:0201≥47nF;0402≥0.47μF;0603≥0.47
μF;0805≥2.2μF;</td></tr>
<tr><td>1206≥4.7μF;1210≥47μF</td></tr>
<tr><td>6.3V ; 4V</td></tr>
</table></td></tr>
<tr><td>14</td><td>Humidity
(Damp Heat)
Load</td><td>Test temp.: 40±2°C
Humidity: 90~95%RH
Test time: 500+24/-0 hrs.
To apply voltage : rated voltage.
Before initial measurement (Class II only): To apply test voltage for 1hr at 40°C and then set for 24±2 hrs at room temp.
Measurement to be made after keeping at room temp. for 24±2 hrs.</td><td>No remarkable damage.
Cap change:
NP0: ±7.5% or 0.75pF whichever is larger.
X7R, X5R, X6S: ≥10V**,within ±12.5%; ≦6.3V within ±25%;
TT series & C≥ 1uF,within ±25%
**10V: 0603≧4.7μF;0402≧1μF;0201≧0.1μF, within ±25%;
Y5V: ≥10V, within ±30%; ≦6.3V, within +30/-40%
Q/D.F. value:
NP0: C≥30pF,Q≥200;C<30pF, Q≥100+10/3C</td></tr>
</table>

<table>
<tr><th>No</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>14</td><td>Humidity (Damp Heat) Load</td><td></td><td>
X7R, X5R, X6S:
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F. ≦</th></tr>
<tr><td rowspan="2">≧100V</td><td rowspan="2">≦3%</td><td>≦6%</td><td>1206≧0.47μF</td></tr>
<tr><td>≦7.5%</td><td>0805>0.1μF, 0603≧0.068μF</td></tr>
<tr><td rowspan="3">≧50V</td><td rowspan="3">≦3%</td><td>≦6%</td><td>0201(50V); 0603≧0.047μF;
0805≧0.18μF;1206≧0.47μF</td></tr>
<tr><td>≦10%</td><td>1210≧4.7μF</td></tr>
<tr><td>≦20%</td><td>0402≧0.1μF; 0603≧1μF;
0805≧1μF;1206≧4.7μF; 1210≧10μF
TT series</td></tr>
<tr><td>35V</td><td>≦5%</td><td>≦20%</td><td>0603≧1μF; 0805≥2.2μF; 1210≧10μF</td></tr>
<tr><td rowspan="4">25V</td><td rowspan="4">≦5%</td><td>≦10%</td><td>0201≧0.01μF;0805≧1μF; 1210≧10μF</td></tr>
<tr><td>≦14%</td><td>0603≧0.33μF; 1206≧4.7μF</td></tr>
<tr><td>≦15%</td><td>0402≧0.10μF;0603≧0.47μF;0805≧2.2
μF; 1206≧6.8μF ; 1210≧22μF; TT series</td></tr>
<tr><td>≦20%</td><td>0402≧1μF</td></tr>
<tr><td rowspan="2">16V</td><td rowspan="2">≦5%</td><td>≦10%</td><td>0201≧0.01μF; 0402≧0.033μF;
0805≧0.68μF;1206≧2.2μF;1210≧4.7μF</td></tr>
<tr><td>≦15%</td><td>0201≧0.1μF; 0402≧0.47μF;
0603≧0.68μF;0805≧2.2μF; 1206≧4.7μF;
1210≧22μF; TT series</td></tr>
<tr><td rowspan="2">10V</td><td rowspan="2">≦7.5%</td><td>≦15%</td><td>0201≧0.012μF 0402≧0.33μF;
0603≧0.33μF; 0805≧2.2μF; 1206≧2.2μF;
1210≧22μF; TT series</td></tr>
<tr><td>≦20%</td><td>0201≧0.1μF; 0402≧1μF</td></tr>
<tr><td>6.3V</td><td>≦15%</td><td>≦30%</td><td>0201≧0.1μF;0402≧1μF;0603≧10μF;
0805≧4.7μF; 1206≧47μF :1210≧100μF;
TT series</td></tr>
<tr><td>4V</td><td>≦20%</td><td>-</td><td>-</td></tr>
</table>
Y5V:
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F. ≦</th></tr>
<tr><td>≧50V</td><td>7.5%</td><td>10%</td><td>0603≧0.1μF; 0805≧0.47μF; 1206≧4.7μF</td></tr>
<tr><td>35V</td><td>10%</td><td>-</td><td>-</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">7.5%</td><td>10%</td><td>0402≧0.047μF;0603≧0.1μF;
0805≧0.33μF;1206≧1μF; 1210≧4.7μF</td></tr>
<tr><td>15%</td><td>0402≧0.068μF; 0603≧0.47μF;
1206≧4.7μF; 1210≧22μF</td></tr>
<tr><td rowspan="2">16V
(C<1μF)</td><td rowspan="2">10%</td><td>12.5%</td><td>0402≧0.068μF; 0603≧0.68μF</td></tr>
<tr><td>20%</td><td>0402≧0.22μF</td></tr>
<tr><td>16V
(C≧1.0μF)</td><td>12.5%</td><td>20%</td><td>0603≧2.2μF; 0805≧3.3μF; 1206≧10μF;
1210≧22μF; 1812≧47μF</td></tr>
<tr><td>10V</td><td>20%</td><td>30%</td><td>0402≧0.47μF</td></tr>
<tr><td>6.3V</td><td>30%</td><td>-</td><td>-</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>No</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>14</td><td>Humidity (Damp Heat) Load</td><td></td><td>*I.R.: ≥10V, 500MΩ or 25 Ω-F whichever is smaller.
Class II (X7R, X5R, X6S, Y5V)
<table>
<tr><th>Rated voltage</th><th>Insulation Resistance</th></tr>
<tr><td>100V: X7R</td><td rowspan="8">1GΩ or RxC≧10 Ω-F whichever is smaller.</td></tr>
<tr><td>50V: 0402≥0.1μF;0603≥1μF;0805≥1μF; 1206≥4.7μF;1210≥4.7μF</td></tr>
<tr><td>35V: 0603≥1μF; 0805≥2.2μF;1210≧10μF</td></tr>
<tr><td>25V:0402≥1μF;0603≥2.2μF;0805≥2.2μF; 1206≥10μF;1210≥10μF</td></tr>
<tr><td>16V:0402≥0.22μF;0603≥1μF;0805≥2.2μF; 1206≥10μF;1210≥47μF</td></tr>
<tr><td>10V:0201≥47nF;0402≥0.47μF;0603≥0.47 μF;0805≥2.2μF;</td></tr>
<tr><td>1206≥4.7μF;1210≥47μF</td></tr>
<tr><td>6.3V ; 4V</td></tr>
</table></td></tr>
<tr><td>15.</td><td>High Temperature Load (Endurance)</td><td>*Test temp.:
NP0, X7R/X7E: 125±3°C
X6S: 105±3°C
X5R, Y5V: 85±3°C
*Test time: 1000+24/-0 hrs.
*To apply voltage:
1) ≦% of rated voltage.
2) 10V≦Ur<500V:
200% of rated voltage.
3) 500V: 150% of rated voltage.
4) Ur≧630V:
120% of rated voltage.</td><td>No remarkable damage.
Cap change:
NP0: ±3.0% or ±0.3pF whichever is larger
X7R, X5R, X6S: ≥10V**,within ±12.5%; ≦6.3V within ±25%;
TT series & C≥ 1uF,within ±25%
**10V: 0603≧4.7μF;0402≧1μF;0201≧0.1μF, within ±25%;
Y5V: ≥10V, within ±30%; ≦6.3V, within +30/-40%
Q/D.F. value:
NP0: More than 30pF, Q≥350
10pF≤C<30pF, Q≥275+2.5C
Less than 10pF, Q≥200+10C</td></tr>
</table>

<table>
<tr><th>No</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>15</td><td>High Temperature Load (Endurance)</td><td>
5) 100% of rated voltage for below range.
<table>
<tr><th>Size</th><th>Dielectric</th><th>Rated voltage</th><th>Capaci-tance range</th></tr>
<tr><td>0201</td><td>X5R/X7R/ X6S</td><td>6.3V,10V</td><td>C≧0.1μF</td></tr>
<tr><td>0402</td><td>X5R/X7R/ X6S</td><td>6.3V,10V</td><td>C≧1.0μF</td></tr>
<tr><td rowspan="3">0603</td><td rowspan="3">X5R/X7R/ X6S</td><td>4V</td><td>C≧22μF</td></tr>
<tr><td>6.3V,10V</td><td>C≧4.7μF</td></tr>
<tr><td>35V</td><td>C≧1.0μF</td></tr>
<tr><td rowspan="2">0805</td><td rowspan="2">X5R/X7R/ X6S</td><td>4V</td><td>C≧47μF</td></tr>
<tr><td>6.3V</td><td>C≧22μF</td></tr>
<tr><td rowspan="2">1206</td><td>X5R/X7R/</td><td>6.3V</td><td>C≧47μF</td></tr>
<tr><td>NP0</td><td>3,000V</td><td>C≧1.5pF</td></tr>
<tr><td>TT18</td><td>Y5V</td><td>6.3V,10</td><td>C≧2.2μF</td></tr>
<tr><td>TT21</td><td>Y5V</td><td>6.3V</td><td>C≧10μF</td></tr>
<tr><td>TT31</td><td>Y5V</td><td>6.3V</td><td>C≧22μF</td></tr>
</table>
(6) 150% of rated voltage for below range.
<table>
<tr><th>Size</th><th>Dielectric</th><th>Rated voltage</th><th>Capaci-tance range</th></tr>
<tr><td>0201</td><td>X5R/X7R/ X6S</td><td>16V</td><td>C≧0.1μF</td></tr>
<tr><td rowspan="3">0402</td><td rowspan="3">X5R/X7R/ X6S</td><td>50V</td><td>C≧0.1μF</td></tr>
<tr><td>10V~25V</td><td>C≧0.22μF</td></tr>
<tr><td>Y5V</td><td>16V</td><td>C≧0.47μF</td></tr>
<tr><td rowspan="2">0603</td><td>X5R/X7R/ X6S</td><td>10V,50V</td><td>C≧1.0μF</td></tr>
<tr><td>Y5V</td><td>16V</td><td>C≧2.2μF</td></tr>
<tr><td rowspan="3">0805</td><td>X5R/X7R/ X6S</td><td>10~50V</td><td>C≧4.7μF</td></tr>
<tr><td rowspan="2">X7R</td><td>50V</td><td>C≧2.2μF</td></tr>
<tr><td>100V</td><td>C≧0.47μF</td></tr>
<tr><td>Y5V</td><td>16V</td><td>C≧4.7μF</td></tr>
<tr><td>2220</td><td>X7R</td><td>100V</td><td>C≧6.8μF</td></tr>
</table>
</td><td>
X7R, X5R, X6S:
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F. ≦</th></tr>
<tr><td rowspan="2">≧100V</td><td rowspan="2">≦3%</td><td>≦6%</td><td>1206≧0.47μF</td></tr>
<tr><td>≦7.5%</td><td>0805>0.1μF, 0603≧0.068μF</td></tr>
<tr><td rowspan="3">≧50V</td><td rowspan="3">≦3%</td><td>≦6%</td><td>0201(50V); 0603≧0.047μF; 0805≧0.18μF;1206≧0.47μF</td></tr>
<tr><td>≦10%</td><td>1210≧4.7μF</td></tr>
<tr><td>≦20%</td><td>0402≧0.1μF; 0603≧1μF; 0805≧1μF;1206≧4.7μF; 1210≧10μF TT series</td></tr>
<tr><td>35V</td><td>≦5%</td><td>≦20%</td><td>0603≧1μF; 0805≥2.2μF; 1210≧10μF</td></tr>
<tr><td rowspan="4">25V</td><td rowspan="4">≦5%</td><td>≦10%</td><td>0201≧0.01μF;0805≧1μF; 1210≧10μF</td></tr>
<tr><td>≦14%</td><td>0603≧0.33μF; 1206≧4.7μF</td></tr>
<tr><td>≦15%</td><td>0402≧0.10μF;0603≧0.47μF;0805≧2.2 μF; 1206≧6.8μF ; 1210≧22μF; TT series</td></tr>
<tr><td>≦20%</td><td>0402≧1μF</td></tr>
<tr><td rowspan="2">16V</td><td rowspan="2">≦5%</td><td>≦10%</td><td>0201≧0.01μF; 0402≧0.033μF; 0805≧0.68μF;1206≧2.2μF;1210≧4.7μF</td></tr>
<tr><td>≦15%</td><td>0201≧0.1μF; 0402≧0.47μF; 0603≧0.68μF;0805≧2.2μF; 1206≧4.7μF; 1210≧22μF; TT series</td></tr>
<tr><td rowspan="2">10V</td><td rowspan="2">≦7.5%</td><td>≦15%</td><td>0201≧0.012μF 0402≧0.33μF; 0603≧0.33μF; 0805≧2.2μF; 1206≧2.2μF; 1210≧22μF; TT series</td></tr>
<tr><td>≦20%</td><td>0201≧0.1μF; 0402≧1μF</td></tr>
<tr><td>6.3V</td><td>≦15%</td><td>≦30%</td><td>0201≧0.1μF;0402≧1μF;0603≧10μF; 0805≧4.7μF; 1206≧47μF :1210≧100μF; TT series</td></tr>
<tr><td>4V</td><td>≦20%</td><td>-</td><td>-</td></tr>
</table>
Y5V:
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F. ≦</th></tr>
<tr><td>≧50V</td><td>7.5%</td><td>10%</td><td>0603≧0.1μF; 0805≧0.47μF; 1206≧4.7μF</td></tr>
<tr><td>35V</td><td>10%</td><td>-</td><td>-</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">7.5%</td><td>10%</td><td>0402≧0.047μF;0603≧0.1μF; 0805≧0.33μF;1206≧1μF; 1210≧4.7μF</td></tr>
<tr><td>15%</td><td>0402≧0.068μF; 0603≧0.47μF; 1206≧4.7μF; 1210≧22μF</td></tr>
<tr><td rowspan="2">16V (C<1μF)</td><td rowspan="2">10%</td><td>12.5%</td><td>0402≧0.068μF; 0603≧0.68μF</td></tr>
<tr><td>20%</td><td>0402≧0.22μF</td></tr>
<tr><td>16V (C≧1.0μF)</td><td>12.5%</td><td>20%</td><td>0603≧2.2μF; 0805≧3.3μF; 1206≧10μF; 1210≧22μF; 1812≧47μF</td></tr>
<tr><td>10V</td><td>20%</td><td>30%</td><td>0402≧0.47μF</td></tr>
<tr><td>6.3V</td><td>30%</td><td>-</td><td>-</td></tr>
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<table>
<tr><th>No</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>15</td><td>High Temperature Load (Endurance</td><td>*Before initial measurement (Class II only): To apply test voltage for 1hr at test temp. and then set for 24±2 hrs at room temp.
*Measurement to be made after keeping at room temp. for 24±2 hrs</td><td>*I.R.: ≥10V, 1GΩ or 50 Ω-F whichever is smaller.
Class II (X7R, X5R, X6S, Y5V)
<table>
<tr><th>Rated voltage</th><th>Insulation Resistance</th></tr>
<tr><td>100V: X7R</td><td rowspan="8">1GΩ or RxC≧10 Ω-F whichever is smaller.</td></tr>
<tr><td>50V: 0402≥0.1μF;0603≥1μF;0805≥1μF; 1206≥4.7μF;1210≥4.7μF</td></tr>
<tr><td>35V: 0603≥1μF; 0805≥2.2μF;1210≧10μF</td></tr>
<tr><td>25V:0402≥1μF;0603≥2.2μF;0805≥2.2μF; 1206≥10μF;1210≥10μF</td></tr>
<tr><td>16V:0402≥0.22μF;0603≥1μF;0805≥2.2μF; 1206≥10μF;1210≥47μF</td></tr>
<tr><td>10V:0201≥47nF;0402≥0.47μF;0603≥0.47 μF;0805≥2.2μF;</td></tr>
<tr><td>1206≥4.7μF;1210≥47μF</td></tr>
<tr><td>6.3V ; 4V</td></tr>
</table></td></tr>
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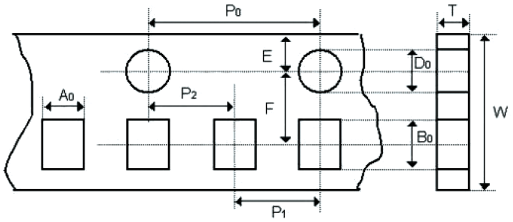
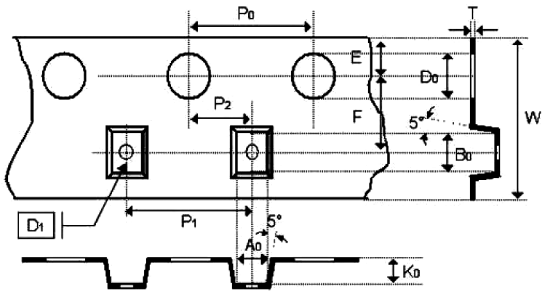
Appendixes

Tape & Reel Dimensions

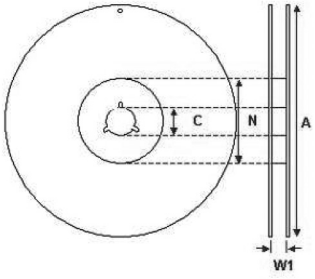


The dimension of paper tape



The dimension of plastic tape

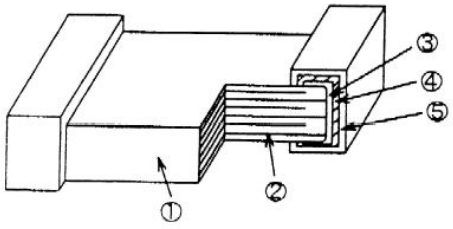
Size	0402	0603	0805			1206			1210		1812
Thickness	N	S, X	A	B	C, D, I	B	C, J, D	G	C, D, G	M	D, K
A0	0.62±0.05	1.02 ±0.05	1.5 ±0.10	1.5 ±0.1	<1.57	2 ±0.1	<1.85	<1.95	<2.97	<2.97	<3.81
B0	1.12±0.05	1.80 ±0.05	2.3 ±0.10	2.3 ±0.1	<2.40	3.5 ±0.1	<3.46	<3.67	<3.73	<3.73	<5.3
T	0.60±0.05	0.95 ±0.05	0.75 ±0.05	0.95 ±0.05	0.23 ±0.05	0.95 ±0.05	0.23±0.05	0.23 ±0.05	0.23 ±0.05	0.23 ±0.05	0.25±0.05
K0	-	-	-	-	<2.50	-	<2.5	<2.5	<2.5	<3	<2.5
W	8 ±0.1	8 ±0.1	8 ±0.1	8 ±0.10	8 ±0.1	8 ±0.1	8 ±0.1	8 ±0.1	8 ±0.1	8 ±0.1	12 ±0.2
P0	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.10	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1
10xP0	40 ±0.1	40 ±0.1	40 ±0.1	40 ±0.10	40 ±0.1	40 ±0.1	40 ±0.1	40 ±0.1	40 ±0.1	40 ±0.1	40 ±0.1
P1	2 ±0.05	4 ±0.1	4 ±0.1	4 ±0.10	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	8 ±0.1
P2	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05
D0	1.55±0.05	1.55 ±0.05	1.55 ±0.05	1.55±0.05	1.5 ±0.05	1.5 ±0.05	1.5 ±0.05	1.5 ±0.05	1.5 ±0.05	1.5 ±0.05	1.5 ±0.05
D1	-	-	-	-	1 ±0.1	-	1 ±0.1	1 ±0.1	1 ±0.1	1 ±0.1	1.5 ±0.1
E	1.75±0.05	1.75 ±0.05	1.75 ±0.05	1.75 ±0.05	1.75 ±0.1	1.75 ±0.1	1.75 ±0.1	1.75 ±0.1	1.75 ±0.1	1.75 ±0.1	1.75 ±0.1
F	3.5 ±0.05	3.5 ±0.05	3.5 ±0.05	3.5 ±0.05	3.5 ±0.05	3.5 ±0.05	3.5 ±0.05	3.5 ±0.05	3.5 ±0.05	3.5 ±0.05	5.5 ±0.05



The dimension of reel

Size	0402, 0603, 0805, 1206, 1210			1812
Reel size	7”	10”	13”	7”
C	13 +0.5/-0.2	13 +0.5/-0.2	13 +0.5/-0.2	13 +0.5/-0.2
W_1	8.4 +1.5/-0	8.4 +1.5/-0	8.4 +1.5/-0	12.4 +2.0/-0
A	178 ±0.10	250 ±1	330 ±1	178 ±0.10
N	60 +1/-0	100 ±1	100 ±1	60 +1.0/-0

Constructions:



No.	Name		NP0*	NPO, X7R, Y5V
1	Ceramic material		$BaTiO_3$ based	
2	Inner electrode		AgPd alloy	Ni
3	Termination	Inner layer	Ag	Cu
4		Middle layer	Ni	
5		Outer layer	Sn	

* Partial NPO items are with Ag/Ni/Sn terminations, please ref to product range of NPO dielectric for detail.

Storage and handling conditions

(1) To store products at 5°C to 40°C ambient temperature and 20 to 70%. related humidity conditions.

(2) The product is recommended to be used within one year after shipment. Check solderability in case of shelf life extension is needed.

Cautions:

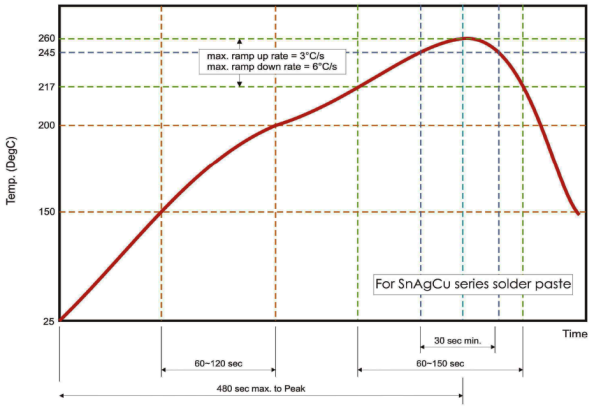
a. The corrosive gas reacts on the terminal electrodes of capacitors, and results in the poor solderability. Do not store the capacitors in the ambience of corrosive gas (e.g., hydrogen sulfide, sulfur dioxide, chlorine, ammonia gas etc.)

b. In corrosive atmosphere, solderability might be degraded, and silver migration might occur to cause low reliability.

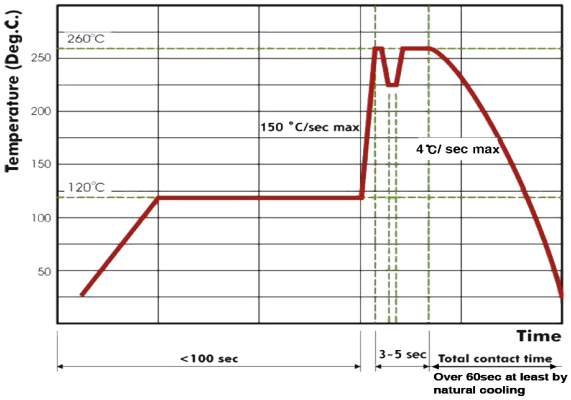
c. Due to the dewing by rapid humidity change, or the photochemical change of the terminal electrode by direct sunlight,the solderability and electrical performance may deteriorate. Do not store capacitors under direct sunlight or dewing condition. To store products on the shelf and avoid exposure to moisture.

Recommended Soldering Conditions:

The lead-free termination MLCCs are not only to be used on SMT against lead-free solder paste, but also suitable against lead-containing solder paste. If the optimized solder joint is requested, increasing soldering time, temperature and concentration of N_2 within oven are recommended.



Recommended reflow soldering profile for SMT process with SnAgCu series solder paste.



Recommended wave soldering profile for SMT process with SnAgCu series solder.