Multi Layer Ceramic Capacitor

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.

POE's 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 (0603, 0805, 1206).
- High capacitance in given case size.
- Capacitor with lead-free termination (pure tin).

Applications:

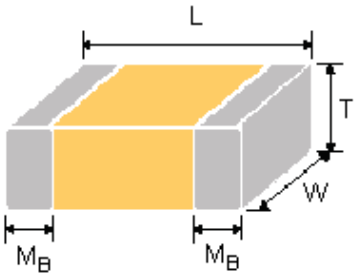
- For general digital circuit.
- For power supply bypass capacitors.
- For consumer electronics.
- For telecommunication.

External Dimensions

Size Inch (mm)	L (mm)	W (mm)	Thickness / Symbol (mm)		Remark	M_B (mm)
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	#	
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	#	
	3.2 ±0.2	1.6 ±0.2	1.6 ±0.2	G	#	
	3.2 +0.3 / -0.1	1.6 +0.3 / -0.1	1.6 +0.3 / -0.1	P	#	

Reflow soldering only is recommended.

Dimensions : Millimetres



The Outline of MLCC

General Electrical Data

Dielectric	NP0	X7R	Y5V
Size	0603, 0805, 1206		
Capacitance range*	0.5 pF to 0.039 µF	100 pF to 0.82 µF	10 nF to 0.68 µF
Capacitance tolerance**	Cap ≤ 5 pF: B (±0.1 pF), C (±0.25 pF), 5 pF < Cap < 10 pF: C (±0.25 pF), D (±0.5 pF) Cap ≥ 10 pF: F (±1%), G (±2%), J (±5%), K (±10%)	J (±5%), K (±10%), M (±20%)	M (±20%), Z (-20 / +80%)
Rated voltage (W V dc)	10 V, 16 V, 25 V, 50 V, 100 V	6.3 V, 10 V, 16 V, 25 V, 50 V, 100 V	
Tan δ*	Cap < 30 pF: Q ≥ 400 + 20 C Cap ≥ 30 pF: Q ≥ 1,000	Note 1	
Insulation resistance at Ur	≥ 10G Ω or R × C ≥ 500 Ω × F Whichever is less		
Operating temperature	-55 to +125°C		-25 to 85°C
Capacitance characteristic	±30 ppm	±15%	+30 / -80%
Termination	Ni / Sn (Lead-free termination)		

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

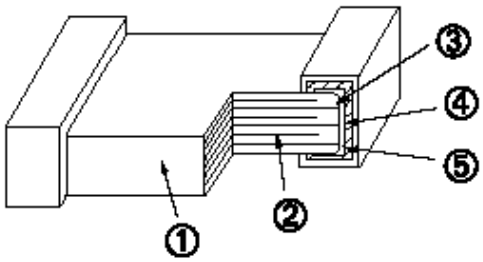
X7R / X5R

Rated Vol.	D.F.	Exception of D.F.	
≥ 50 V	≤ 2.5%	≤ 3%	0603 ≥ 0.047 µF; 0805 ≥ 0.18 µF; 1206 ≥ 0.47 µF
25 V	≤ 3.5%	≤ 7%	0603 ≥ 0.33 µF
		≤ 10%	0603 ≥ 0.47 µF
16 V	≤ 3.5%	≤ 5%	0603 ≥ 0.15 µF; 0805 ≥ 0.68 µF
		≤ 10%	0603 ≥ 0.68 µF
10 V	≤ 5%	≤ 10%	0603 ≥ 0.33 µF
6.3 V	≤ 10%	-	-

Y5V

Rated Vol.	D.F.	Exception of D.F.	
≥ 50 V	≤ 5%	≤ 7%	0603 ≥ 0.1 µF; 0805 ≥ 0. 47 µF
25 V			0603 ≥ 0.1 µF; 0805 ≥ 0. 33 µF
		≤ 9%	0603 ≥ 0.47 µF
16 V (C < 1 µF)	≤ 7%		0603 ≥ 0.68 µF
16 V (C ≥ 1 µF)	≤ 9%	-	-
10 V	≤ 12.5%	-	-
6.3 V	≤ 20%	-	-

Constructions



Construction of MLCC

No.	Name		NP0*	NP0, 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 NP0 items are with Ag / Ni / Sn terminations, please reference to product range of NP0 dielectric for detail.

Storage and handling conditions:

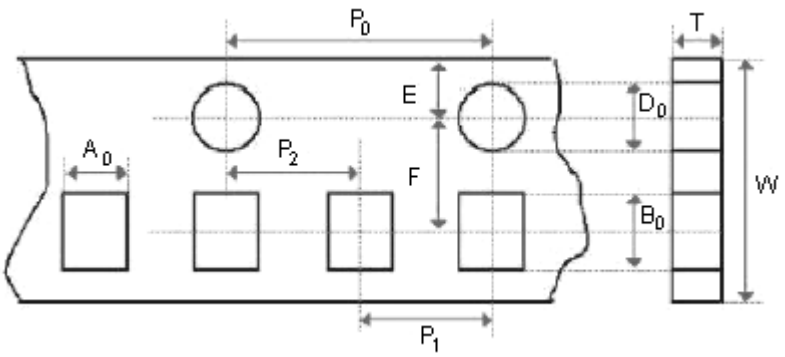
(1) To store products at 5 to 40°C ambient temperature and 20 to 70%. related humidity conditions.
(2) The product is recommended to be used within 6 months after shipment. Check solderability in case of shelf life extension is needed.

Cautions:

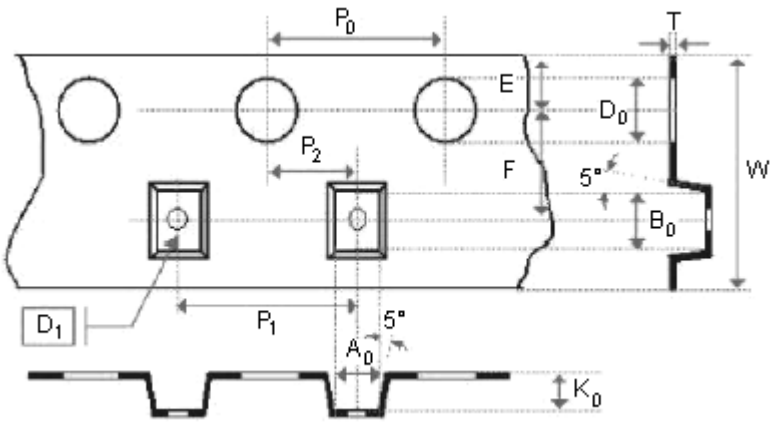
a. Don't store products in a corrosive environment such as sulfide, chloride gas, or acid. It may cause oxidization of electrode, which easily be resulted in poor soldering.
b. To store products on the shelf and avoid exposure to moisture.
c. Don't expose products to excessive shock, vibration, direct sunlight and so on.

Appendixes

Tape and Reel Dimensions

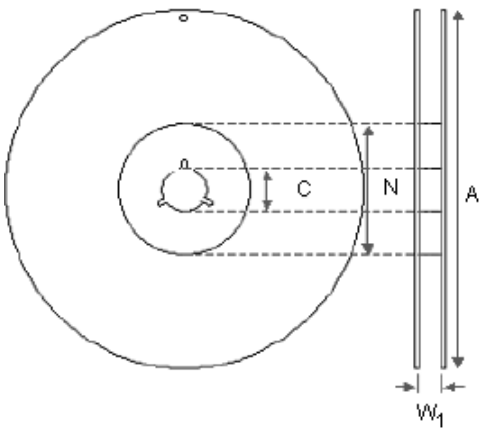


The Dimension of Paper Tape



The Dimension of Paper Tape

Size	0603	0805			1206		
Thickness	S, X	A	B	C, D, I	B	C, J, D	G
A_o	1.02 ±0.05	1.5 ±0.1	1.5 ±0.1	< 1.57	2 ±0.1	< 1.85	< 1.95
B_o	1.8 ±0.05	2.3 ±0.1	2.3 ±0.1	< 2.4	3.5 ±0.1	< 3.46	< 3.67
T	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
K_o	-	-	-	< 2.5	-	< 2.5	< 2.5
W	8 ±0.1	8 ±0.1	8 ±0.1	8 ±0.1	8 ±0.1	8 ±0.1	8 ±0.1
P_o	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1
10 × P_o	40 ±0.1	40 ±0.1	40 ±0.1	40 ±0.1	40 ±0.1	40 ±0.1	40 ±0.1
P_1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1	4 ±0.1
P_2	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05	2 ±0.05
D_o	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
D_1	-	-	-	1 ±0.1	-	1 ±0.1	1 ±0.1
E	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
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



Size	0603, 0805, 1206		
Reel Size	7"	10"	13"
C	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
A	178 ±0.1	250 ±1	330 ±1
N	60 ±1 / -0	100 ±1	100 ±1

Capacitance Range (Y5V Dielectric)

Dielectric		Y5V														
Size		0603					0805					1206				
Rated Voltage (V dc)		6.3	10	16	25	50	10	16	25	50	100	10	16	25	50	100
Capacitance	0.010 µF (103)	-	S	S	S	S	A	A	A	A	B	B	B	B	B	B
	0.015 µF (153)	-	S	S	S	S	A	A	A	A	B	B	B	B	B	B
	0.022 µF (223)	-	S	S	S	S	A	A	A	A	B	B	B	B	B	B
	0.033 µF (333)	-	S	S	S	S	A	A	A	A	B	B	B	B	B	B
	0.047 µF (473)	-	S	S	S	S	A	A	A	A	B	B	B	B	B	B
	0.068 µF(683)	-	S	S	S	S	A	A	A	A	B	B	B	B	B	B
	0.1 µF (104)	-	S	S	S	S	A	A	A	A	B	B	B	B	B	B
	0.15 µF (154)	-	S	S	S	S	A	A	A	A	-	B	B	B	B	C
	0.22 µF (224)	S	S	S	S	S	A	A	A	A	-	B	B	B	B	C
	0.33 µF (334)	-	S	S	S	-	B	B	B	B	-	B	B	B	B	-
	0.47 µF (474)	-	S	S	-	-	B	B	B	B	-	B	B	B	B	-
	0.68 µF (684)	-	S	X	-	-	B	B	D	D	-	B	B	B	B	-

Dielectric		X7R														
Size		1206					0603					0805				
Rated Voltage (V dc)		10	16	25	50	100	10	16	25	50	100	10	16	25	50	100
Capacitance	100 pF (101)	-	-	-	-	-	S	S	S	S	S	B	B	B	B	B
	120 pF (121)	-	-	-	-	-	S	S	S	S	S	B	B	B	B	B
	150 pF (151)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	180 pF (181)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	220 pF (221)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	270 pF (271)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	330 pF (331)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	390 pF (391)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	470 pF (471)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	560 pF (561)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	680 pF (681)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	820 pF (821)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	1,000 pF (102)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	1,200 pF (122)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	1,500 pF (152)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	1,800 pF (182)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	2,200 pF (222)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B

Dielectric		X7R														
Size		1206					0603					0805				
Rated Voltage (V dc)		10	16	25	50	100	10	16	25	50	100	10	16	25	50	100
Capacitance	2,700 pF (272)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	3,300 pF (332)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	3,900 pF (392)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	4,700 pF (472)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	5,600 pF (562)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	6,800 pF (682)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	8,200 pF (822)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	0.010 µF (103)	B	B	B	B	B	S	S	S	S	S	B	B	B	B	B
	0.012 µF (123)	B	B	B	B	B	S	S	S	S	-	B	B	B	B	B
	0.015 µF (153)	B	B	B	B	B	S	S	S	S	-	B	B	B	B	B
	0.018 µF (183)	B	B	B	B	B	S	S	S	S	-	B	B	B	B	B
	0.022 µF (223)	B	B	B	B	B	S	S	S	S	-	B	B	B	B	B
	0.027 µF (273)	B	B	B	B	B	S	S	S	S	-	B	B	B	B	D
	0.033 µF (333)	B	B	B	B	B	S	S	S	X	-	B	B	B	B	D
	0.039 µF (393)	B	B	B	B	B	S	S	S	X	-	B	B	B	B	D
	0.047 µF (473)	B	B	B	B	B	S	S	S	X	-	B	B	B	B	D
	0.056 µF (563)	B	B	B	B	B	S	S	S	X	-	B	B	B	B	D
	0.068 µF (683)	B	B	B	B	B	S	S	S	X	-	B	B	B	B	D
	0.082 µF (823)	B	B	B	B	B	S	S	S	X	-	B	B	B	B	D
	0.10 µF (104)	B	B	B	B	B	S	S	S	X	-	B	B	B	B	D
	0.12 µF (124)	B	B	B	B	B	S	S	X	-	-	B	B	B	D	-
	0.15 µF (154)	C	C	C	C	G	S	S	X	-	-	D	D	D	D	-
	0.18 µF (184)	C	C	C	C	G	S	S	X	-	-	D	D	D	D	-
	0.22 µF (224)	C	C	C	C	G	S	S	X	-	-	D	D	D	D	-
	0.27 µF (274)	C	C	C	D	-	X	X	X	-	-	D	D	D	-	-
	0.33 µF (334)	C	C	C	D	-	X	X	X	-	-	D	D	D	I	-
	0.39 µF (394)	C	C	J	P	-	X	X	X	-	-	D	D	D	-	-
	0.47 µF (474)	J	J	J	P	-	X	X	X	-	-	D	D	D	I	-
	0.56 µF (564)	J	J	J	P	-	-	-	-	-	-	D	D	D	-	-
	0.68 µF (684)	J	J	J	P	-	-	-	-	-	-	D	D	D	-	-
	0.82 µF (824)	J	J	J	P	-	-	-	-	-	-	D	D	D	-	-

1. The letter in cell is expressed the symbol of product thickness.
2. For more information about products with special capacitance or other data, please contact POE local representative.

Dielectric		NP0				
Size		1206				
Rated Voltage (V dc)		10	16	25	50	100
Capacitance	1.0 pF (1R0)	-	-	-	-	-
	1.2 pF (1R2)	-	-	-	-	-
	1.5 pF (1R5)	B	B	B	B	B
	1.8 pF (1R8)	B	B	B	B	B
	2.2 pF (2R2)	B	B	B	B	B
	2.7 pF (2R7)	B	B	B	B	B
	3.3 pF (3R3)	B	B	B	B	B
	3.9 pF (3R9)	B	B	B	B	B
	4.7 pF (4R7)	B	B	B	B	B
	5.6 pF (5R6)	B	B	B	B	B
	6.8 pF (6R8)	B	B	B	B	B
	8.2 pF (8R2)	B	B	B	B	B
	10 pF (100)	B	B	B	B	B
	12 pF (120)	B	B	B	B	B
	15 pF (150)	B	B	B	B	B
	18 pF (180)	B	B	B	B	B
	22 pF (220)	B	B	B	B	B
	27 pF (270)	B	B	B	B	B
	33 pF (330)	B	B	B	B	B
	39 pF (390)	B	B	B	B	B
	47 pF (470)	B	B	B	B	B
	56 pF (560)	B	B	B	B	B
	68 pF (680)	B	B	B	B	B
	82 pF (820)	B	B	B	B	B
	100 pF (101)	B	B	B	B	B
	120 pF (121)	B	B	B	B	B
	150 pF (151)	B	B	B	B	B
	180 pF (181)	B	B	B	B	B
	220 pF (221)	B	B	B	B	B
	270 pF (271)	B	B	B	B	B
	330 pF (331)	B	B	B	B	B
	390 pF (391)	B	B	B	B	B
	470 pF (471)	B	B	B	B	B

Dielectric		NPO				
Size		1206				
Rated Voltage (V dc)		10	16	25	50	100
Capacitance	560 pF (561)	B	B	B	B	B
	680 pF (681)	B	B	B	B	B
	820 pF (821)	B	B	B	B	B
	1,000 pF (102)	B	B	B	B	B
	1,200 pF (122)	B	B	B	B	B
	1,500 pF (152)	B	B	B	B	B
	1,800 pF (182)	B	B	B	B	B
	2,200 pF (222)	B	B	B	B	B
	2,700 pF (272)	B	B	B	B	B
	3,300 pF (332)	B	B	B	B	B
	3,900 pF (392)	B	B	B	B	B
	4,700 pF (472)	B	B	B	B	B
	5,600 pF (562)	B	B	B	B	B
	6,800 pF (682)	C	C	C	C	C
	8.200 pF (822)	D	D	D	D	D
	0.010 µF (103)	D	D	D	D	-
	0.012 µF (123)	D^	D^	-	-	-
	0.015 µF (153)	D^	D^	-	-	-
	0.018 µF (183)	D^	D^	-	-	-
	0.022 µF (223)	D^	D^	-	-	-
	0.027 µF (273)	D^	D^	-	-	-
	0.033 µF (333)	D^	D^	-	-	-
	0.039 µF (393)	G^	G^	-	-	-

1. The letter in cell is expressed the symbol of thickness .
2. The letter in cell with "^" mark is expressed product with Ag / Ni / Sn terminations.
3. For more information about products with special capacitance or other data, please contact POE local representative.

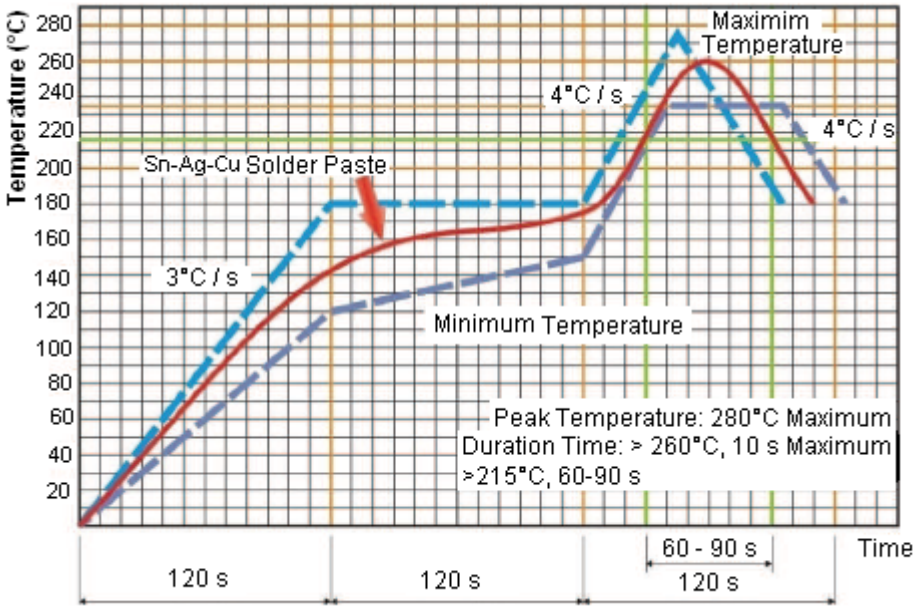
Dielectric		NP0									
Size		0603					0805				
Rated Voltage (V dc)		10	16	25	50	100	10	16	25	50	100
Capacitance	0.5 pF (0R5)	S	S	S	S	S	A	A	A	A	A
	0.6 pF (0R6)	S	S	S	S	S	A	A	A	A	A
	0.7 pF (0R7)	S	S	S	S	S	A	A	A	A	A
	0.8 pF (0R8)	S	S	S	S	S	A	A	A	A	A
	0.9 pF (0R9)	S	S	S	S	S	A	A	A	A	A
	1.0 pF (1R0)	S	S	S	S	S	A	A	A	A	A
	1.2 pF (1R2)	S	S	S	S	S	A	A	A	A	A
	1.5 pF (1R5)	S	S	S	S	S	A	A	A	A	A
	1.8 pF (1R8)	S	S	S	S	S	A	A	A	A	A
	2.2 pF (2R2)	S	S	S	S	S	A	A	A	A	A
	2.7 pF (2R7)	S	S	S	S	S	A	A	A	A	A
	3.3 pF (3R3)	S	S	S	S	S	A	A	A	A	A
	3.9 pF (3R9)	S	S	S	S	S	A	A	A	A	A
	4.7 pF (4R7)	S	S	S	S	S	A	A	A	A	A
	5.6 pF (5R6)	S	S	S	S	S	A	A	A	A	A
	6.8 pF (6R8)	S	S	S	S	S	A	A	A	A	A
	8.2 pF (8R2)	S	S	S	S	S	A	A	A	A	A
	10 pF (100)	S	S	S	S	S	A	A	A	A	A
	12 pF (120)	S	S	S	S	S	A	A	A	A	A
	15 pF (150)	S	S	S	S	S	A	A	A	A	A
	18 pF (180)	S	S	S	S	S	A	A	A	A	A
	22 pF (220)	S	S	S	S	S	A	A	A	A	A
	27 pF (270)	S	S	S	S	S	A	A	A	A	A
	33 pF (330)	S	S	S	S	S	A	A	A	A	A
	39 pF (390)	S	S	S	S	S	A	A	A	A	A
	47 pF (470)	S	S	S	S	S	A	A	A	A	A
	56 pF (560)	S	S	S	S	S	A	A	A	A	A
	68 pF (680)	S	S	S	S	S	A	A	A	A	A
	82 pF (820)	S	S	S	S	S	A	A	A	A	A
	100 pF (101)	S	S	S	S	S	A	A	A	A	A
	120 pF (121)	S	S	S	S	S	A	A	A	A	A
	150 pF (151)	S	S	S	S	S	A	A	A	A	A
	180 pF (181)	S	S	S	S	S	A	A	A	A	A
	220 pF (221)	S	S	S	S	S	A	A	A	A	A

Dielectric		NP0									
Size		0603					0805				
Rated Voltage (V dc)		10	16	25	50	100	10	16	25	50	100
Capacitance	270 pF (271)	S	S	S	S	S	A	A	A	A	A
	330 pF (331)	S	S	S	S	S	A	A	A	A	A
	390 pF (391)	S	S	S	S	S	B	B	B	B	B
	470 pF (471)	S	S	S	S	S	B	B	B	B	B
	560 pF (561)	S	S	S	S	S	B	B	B	B	B
	680 pF (681)	S	S	S	S	S	B	B	B	B	B
	820 pF (821)	S	S	S	S	S	B	B	B	B	B
	1,000 pF (102)	S	S	S	S	S	B	B	B	B	B
	1,200 pF (122)	X	X	X	X	-	B	B	B	B	B
	1,500 pF (152)	X	X	X	X	-	B	B	B	B	B
	1,800 pF (182)	X	X	X	X	-	B	B	B	B	B
	2,200 pF (222)	X	X	X	X	-	B	B	B	B	B
	2,700 pF (272)	X	X	X	X	-	D	D	D	D	D
	3,300 pF (332)	X	X	X	X	-	D	D	D	D	D
	3,900 pF (392)	-	-	-	-	-	D	D	D	D	D
	4,700 pF (472)	-	-	-	-	-	D	D	D	D	-
	5,600 pF (562)	-	-	-	-	-	D^	D^	-	-	-
	6,800 pF (682)	-	-	-	-	-	D^	D^	-	-	-
	8,200 pF (822)	-	-	-	-	-	D^	D^	-	-	-
	0.010 µF (103)	-	-	-	-	-	D^	D^	-	-	-
	0.012 µF (123)	-	-	-	-	-	D^	D^	-	-	-

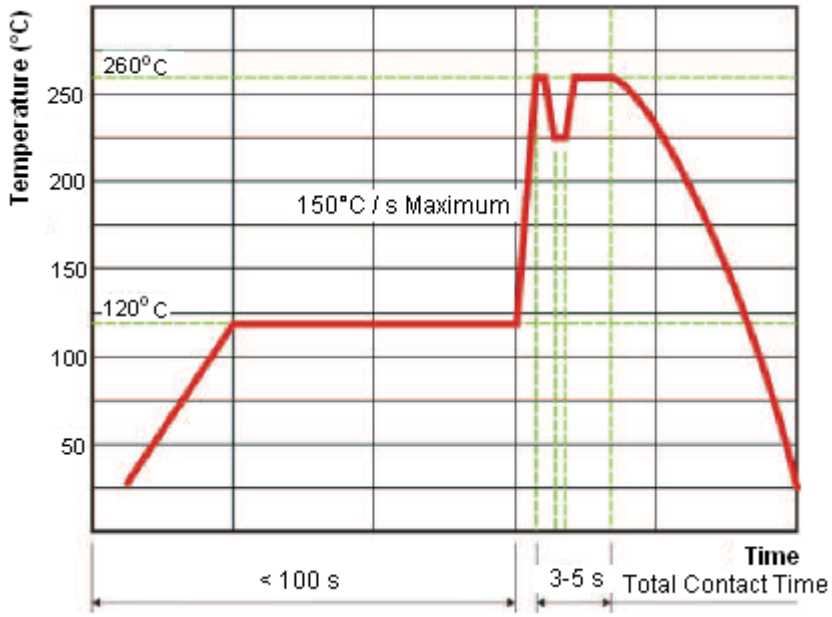
1. The letter in cell is expressed the symbol of thickness .
2. The letter in cell with "^" mark is expressed product with Ag / Ni / Sn terminations.
3. For more information about products with special capacitance or other data, please contact POE local representative.

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. If the optimized solder joint is requested, increasing soldering time, temperature and concentration of N_2 within over are recommended.



Recommended IR Reflow Soldering Profile for SMT Process with SnAgCu Series Solder Paste



Recommended Wave Soldering Profile for SMT Process with SnAgCu Series Solder

Part Number Table

Description	Part Number
Capacitor, 0805, 1 µF, 10 V	MCCA000269
Capacitor, 0805, 1 µF, 25 V	MCCA000305
Capacitor, 0805, 10 pF, 100 V	MCCA000390
Capacitor, 1206, 2.2 µF, 10 V	MCCA000415
Capacitor, 1206, 1 µF, 16 V	MCCA000429
Capacitor, 1206, 2.2 µF, 16 V	MCCA000430
Capacitor, 1206, 470 pF, 100 V	MCCA000485
Capacitor, 1206, 1 nF, 100 V	MCCA000486
Capacitor, 1206, 2.2 µF, 10 V	MCCA000415
Capacitor, 1206, 1 µF, 16 V	MCCA000429
Capacitor, 1206, 2.2 µF, 16 V	MCCA000430
Capacitor, 1206, 4.7 µF, 16 V	MCCA000431
Capacitor, 0805, 1 µF, 10 V	MCCA000269
Capacitor, 0805, 1 µF, 25 V	MCCA000305
Capacitor, 1206, 4.7 nF, 25 V	MCCA000432
Capacitor, 1206, 10 nF, 25 V	MCCA000433
Capacitor, 1206, 10 pF, 100 V	MCCA000480
Capacitor, 1206, 22 pF, 100 V	MCCA000481
Capacitor, 1206, 100 pF, 100 V	MCCA000482
Capacitor, 1206, 220 pF, 100 V	MCCA000483
Capacitor, 1206, 330 pF, 100 V	MCCA000484
Capacitor, 1206, 4.7 µF, 16 V	MCCA000431
Capacitor, 1206, 4.7 nF, 25 V	MCCA000432
Capacitor, 1206, 10 nF, 25 V	MCCA000433
Capacitor, 1206, 10 pF, 100 V	MCCA000480
Capacitor, 1206, 22 pF, 100 V	MCCA000481
Capacitor, 1206, 220 pF, 100 V	MCCA000483
Capacitor, 1206, 330 pF, 100 V	MCCA000484
Capacitor, 1206, 470 pF, 100 V	MCCA000485
Capacitor, 1206, 1 nF, 100 V	MCCA000486
Capacitor, 0603, 470 nF, 10 V	MCCA000145
Capacitor, 0805, 10 pF, 100 V	MCCA000390
Capacitor, 1206, 100 pF, 100 V	MCCA000482