05

MLCC with Precious Metal Inner Electrodes

Type: MB

MB MLCC(Precious Metal Inner Electrode)

1 Features

1) Pd/Ag inner electrodes to achieve high reliability;
2) Pd/Ag termination is optional and applicable to conductive adhesive mounting;
3) Silver-copper-tin termination is optional and applicable to soldering mounting.

2 Application

Applicable to Filtering Circuits of MRI, Medical Implanted Devices, Devices Susceptible to Strong Magnetic Field, Electronic Test Systems and Hi-end Audio Amplifier.
C0G: Resonance Loop Circuits, Coupling Circuits and Circuits Requiring Low Insert Loss, High Capacitance Stability and Insulation Resistance;
X7R: Bypassing, Filtering, Low Frequency Coupling and Circuits Without Strict Requirements of Insert Loss and Capacitance Stability.

3 How to order

MB	0402	X7R	1H	103	K	M	B	R
Type	Case size Code	TCC	Rated V.	Nominal Capacitance	Capacitance Tolerance	Termination Type	Thickness Code	Packing
Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9

Table 1 Type

M	MLCC	B	Palladium Silver Electrode

Table 2 Case size code (mm)

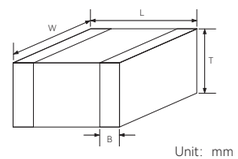
Drawing	Case size code	0402	0603	0805	1206	1210
 Unit: mm	L	1.00 ± 0.20	1.60 ± 0.15	2.00 ± 0.20	3.20 ± 0.30	3.20 ± 0.40
	W	0.50 ± 0.20	0.80 ± 0.15	1.25 ± 0.20	1.60 ± 0.30	2.50 ± 0.30
	Tmax	0.60	1.00	1.50	1.90	2.80
	B	0.41_{max}	0.6_{max}	0.50 ± 0.20	0.50 ± 0.30	0.50 ± 0.30
	Case size code	1812	2220	/	/	/
	L	4.50 ± 0.50	5.70 ± 0.50	/	/	/
	W	3.30 ± 0.40	5.00 ± 0.50	/	/	/
	Tmax	3.50	3.50	/	/	/
	B	0.70 ± 0.30	0.80 ± 0.40	/	/	/

Table 3 Temperature Coefficient

Dielectric code	TCC	Operating temperature
C0G	(0±30) ppm/℃	–55℃ ~125℃
X7R	±15%	–55℃ ~125℃

Table 4 Rated Voltage

1E	25V	1H	50V	2A	100V

Table 5 Nominal Capacitance

EIA Capacitance code in pF.1st two digit are significant figures of capacitance; 3rd digit denotes number of Zeros; R=decimal point; For examples: 103=10,000pF; 3R9=3.9pF.

MB MLCC(Precious Metal Inner Electrode)

Table 6 Capacitance tolerance			Table 7 Termination Type	
B	±0.1pF	TCC C0G: CR < 10pF	TN	Silver-Copper-Tin
C	±0.25pF			
D	±0.5pF		M	Palladium Silver
J	±5%	TCC C0G: CR≥ 10pF	N	Silver Nickel-Tin
K	±10%			
K	±10%	TCC X7R	Z	Silver Nickel-Tin&lead
M	±20%			

Table 8 thickness code		
Thickness code	Standard thickness（mm）	Thickness tolerance（mm）
B	0.50	± 0.05
8	0.80	± 0.15
C	0.85	± 0.15
D	1.00	± 0.15
E	1.25	± 0.15
F	1.25	± 0.20
H	1.60	± 0.20
I	2.00	± 0.20
M	2.30	± 0.20
V	2.50	± 0.30
L	3.20	± 0.40
N	3.80	± 0.50

Table 9 Packing		
B- Bulk with Bag	R- Reel	C- Waffle

MB MLCC(Precious Metal Inner Electrode)

4 Capacitance Value

Case sizecode	Rated Voltage	NominalCapacitance	Temperature Coefficient	
			C0G	X7R
0402	25V	Min	0R1	101
		Max	470	103
	50V	Min	0R1	101
		Max	470	103
	100V	Min	0R1	101
		Max	270	222
0603	25V	Min	0R1	471
		Max	591	104
	50V	Min	0R1	471
		Max	591	104
	100V	Min	0R1	471
		Max	331	103
0805	25V	Min	0R1	102
		Max	272	224
	50V	Min	0R1	102
		Max	272	224
	100V	Min	0R1	102
		Max	122	104
1206	25V	Min	0R5	102
		Max	682	224
	50V	Min	0R5	102
		Max	682	224
	100V	Min	0R5	102
		Max	182	184
1210	25V	Min	1R0	102
		Max	123	105
	50V	Min	1R0	102
		Max	123	105
	100V	Min	1R0	102
		Max	822	684

MB MLCC(Precious Metal Inner Electrode)

Case size code	Rated Voltage	Nominal Capacitance		
			C0G	X7R
1812	25V	Min	203	103
		Max	273	225
	50V	Min	203	103
		Max	273	225
	100V	Min	100	103
		Max	183	155
2220	25V	Min	243	104
		Max	333	335
	50V	Min	243	104
		Max	333	335
	100V	Min	472	104
		Max	223	225

Note: M(Palladium Silver) termination only for 0402、0603、0805、1206、1210 sizes.

MB MLCC(Precious Metal Inner Electrode)

5 Electrical Specifications&Test Conditions

ITEM	Test Conditions（25℃ ±2℃）	Electrical Specifications
Capacitance	Test voltage： 1.0Vrms±0.2Vrms; Test frequency: C0G Temperature Coefficient: CR ≤ 1000pF, 1.0MHz±0.1MHz; CR > 1000pF,1.0kHz±0.1kHz X7R Temperature Coefficient: CR ≤ 100pF, 1.0MHz±0.1MHz; 100pF < CR ≤ 10μF, 1.0kHz±0.1kHz	Capacitance is up to requirements
Dissipation factor tanδ		C0G Temperature Coefficient: $C_R \geq 50pF$， $tan\delta \leq 0.15\%$; $5pF<C_R<50pF$， $tan\delta \leq 1.5(150/C_R+7)\times10^{-4}$; $C_R \leq 5pF$， No test ; X7R Temperature Coefficient:≤ 2.5%
Insulation Resistance Ri	Test voltage:Rated Voltage URt Endurance:≤ 2min	25℃:$R_i \geq 100000M\Omega$ or $1000M\Omega \cdot \mu F$(whichever is lower); 125℃： $R_i \geq 10000M\Omega$ or $100M\Omega \cdot \mu F$ whichever is lower).
Withstanding Voltage	2.5U_R,5s±1s, Surge current≤ 50mA	No breakdown, flash over or visible damages

Application Instruction

1 Application Notes:

1)Mounted by conductive adhesive;

2)Other mounting methods are forbidden;

3)Sn soldering process may cause disattachement and contact issue;

4)Single mounting only, re-mounting is forbidden.

2 Quantity per Reel

Case size	Thickness	Quantity per 7#Reel pcs
0402	B	10000
0603	8	4000
0805	A	4000
	C	
	D	2000
	E	
1206	C	2000
	D	
	E	
	H	
1210	D	2000
	F	1000
	H	
	I	
	M	
	V	
1812	H	500
	I	
	M	
	V	
2220	I	500
	M	
	V	

3 Storage

Capacitors must be stored in the warehouse with the ambient temperature From -10℃ to 40℃, relative humidity below 80%, and free of acid, alkaline or detrimental gas.

The max. storage period is 18 months.