

深圳市美隆电子有限公司
Shenzhen Meilong Electronics Co.,Ltd.

官 方 微 信

• **杭州**

浙江省杭州市拱墅区登山路428号时代电子市场1B133
电话：0571-88009133 传真：0571-88009870

• **香港**

香港葵涌葵昌道78-84号富都工业大厦3字楼307室
电话：(00852)-31184938 传真：(00852)-69450797

SANYEAR

多层片式陶瓷电容器规格书

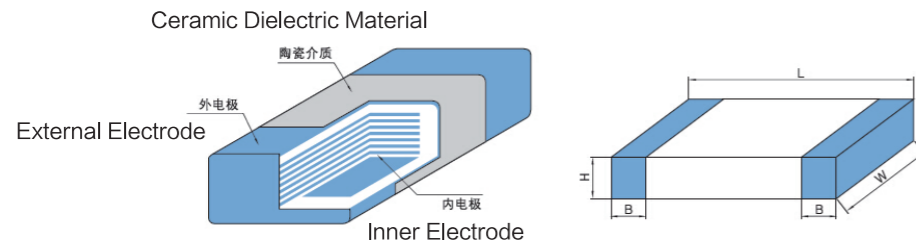
MULTILAYER CHIP CERAMIC CAPACITOR CATALOG

多层片式陶瓷电容器 Multilayer Chip Ceramic Capacitor

产品特点 Product Features

- 产品尺寸精度高，便于自动贴片机高效装配
- 端电极三层电极，适合波峰焊与回流焊；介电体与外表为同种材料，环境条件影响小
- 含有C0G到Y5V各种温度特性介质，适用于计算机、通讯、家用电器和仪器仪表灯普通电子设备
- The precision of product size is high, suitable for auto SMT machines high efficiency assembly.
- External Electrode has 3 layers, suitable for both wave and reflow soldering.
- Consist of all kinds of temperature dielectric material form C0G to Y5V, suitable for computers, communications, home appliances, instruments and other normal electronic equipments.

产品结构 Product Construction



产品尺寸 Product Dimensions

尺寸 Size	MLCC尺寸规格 (单位: mm)			
	L	W	H (max)	B (max)
01005	0.40±0.09	0.20±0.09	0.29	0.13
0201	0.60±0.09	0.30±0.09	0.39	0.20
0402	1.00±0.30	0.50±0.30	0.80	0.35
0603	1.60±0.20	0.80±0.20	1.00	0.60
0805	2.00±0.20	1.25±0.20	1.45	0.75
1206	3.20±0.30	1.60±0.30	1.90	0.80
1210	3.20±0.40	2.50±0.30	2.80	0.80
1808	4.50±0.40	2.00±0.30	2.80	1.50
1812	4.50±0.40	3.20±0.40	3.50	1.50
2220	5.70±0.50	5.00±0.40	3.50	1.30
2225	5.70±0.50	6.40±0.50	3.00	1.10

-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-

[Blue shaded header row]									

■ 产品容值范围 Product Capacitance Range

背景色代表：可生产型号

材质	COG											
	01005	0201		0402	0603	0805	1206	1210	1808	1812	2220	2225
尺寸	V _{DC}	6.3	16	10	10	10	16	16	16	16	16	16
	C _p	10	25	50	16	16	25	25	25	25	25	25
		16	50	25	25	25	50	50	50	50	50	50
		25		50	50	50						
0R47												
0R5												
0R56												
0R68												
0R82												
1R0												
1R2												
1R3												
1R5												
1R8												
2R2												
2R7												
3R3												
3R9												
4R7												
5R6												
6R8												
8R2												
9R0												
100												
120												
150												
180												
220												
270												
330												
390												
470												
560												
680												
750												
820												
101												
121												
151												
181												
221												
271												
331												
391												
471												
511												
561												
681												
821												
102												
122												
152												
182												
222												
272												
332												
392												
472												
562												
682												
822												
103												
123												
153												
183												
223												
273												
333												
473												
563												
104												

■ 产品容值范围 Product Capacitance Range

背景色代表：可生产型号

材质	X7R																								
	01005		0201		0402		0603		0805		1206	1210	1812	2220	2225										
尺寸	6.3	10	6.3	10	50	6.3	10	16	50	6.3	10	25	50	6.3	10	25	50	6.3	10	25	50	6.3	10	25	50
V _{DC}	10	16	16	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
C _p	6.3	10	16	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
101																									
121																									
151																									
181																									
221																									
241																									
271																									
331																									
391																									
471																									
511																									
561																									
681																									
821																									
102																									
122																									
152																									
182																									
222																									
272																									
332																									
392																									
472																									
562																									
682																									
822																									
103																									
123																									
153																									
183																									
223																									
273																									
333																									
393																									
473																									
563																									
823																									
104																									
124																									
154																									
184																									
224																									
274																									
334																									
394																									
474																									
564																									
684																									
824																									
105																									
155																									
225																									
275																									
335																									
395																									
475																									
565																									
106																									
226																									
476																									

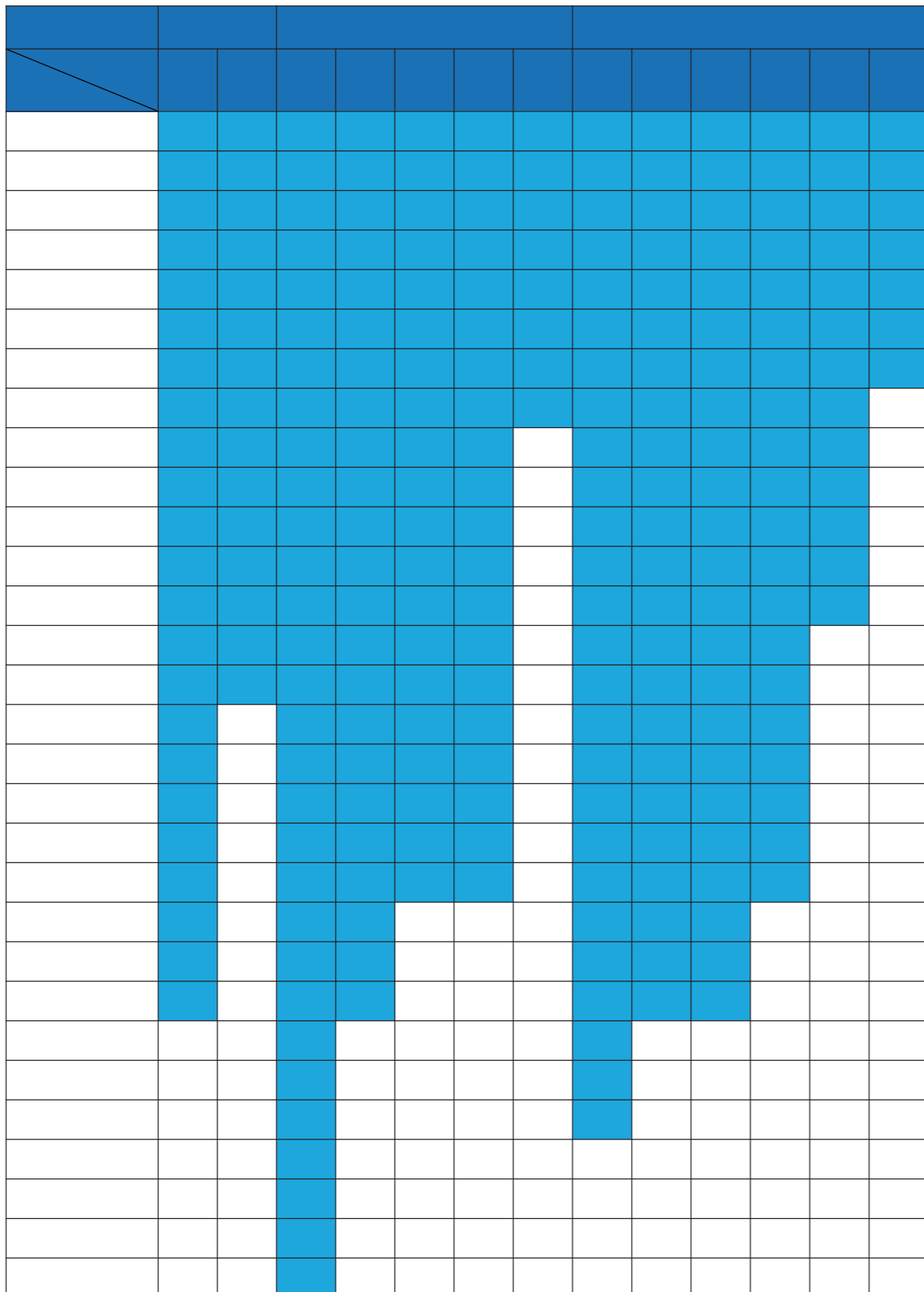
■ 产品容值范围 Product Capacitance Range

背景色代表：可生产型号

材质	Y5V																											
	0402				0603			0805				1206			1210			1808			1812		2220		2225			
尺寸	V _{DC}																											
		6.3 10	16	25	50	6.3 10	16	25	50	6.3 10	16	25	50	6.3 10	16	25	50	6.3 10	16	25	50	6.3 10	16	25	50	6.3 10	16	25
C _p																												
103																												
123																												
153																												
183																												
223																												
273																												
333																												
393																												
473																												
563																												
823																												
104																												
124																												
154																												
184																												
224																												
274																												
334																												
394																												
474																												
564																												
684																												
824																												
105																												
155																												
225																												
275																												
335																												
395																												
475																												
565																												
106																												
226																												
476																												
107																												

■ 技术指标和实验方法 Specifications and Test Method

NO	项目 Item	技术指标 Specification	实验方法 Test Method	
1	外观 Appearance	无异常 No abnormalities	通过显微镜视觉检测 (X10) On microscope	
2	尺寸 Dimension	在要求的范围内 Within the specified dimensions	采用精度不低于0.01mm千分尺 Using calipers on micrometer with tolerance no less than 0.01mm	
3	容量(c) Capacitance	在要求的范围内 Within the specified dimensions	Class I : $C_p \leq 1000\text{pF}$ 1MHz $\pm 10\%$, $1.0 \pm 0.1\text{Vrms}$ $C_p > 1000\text{pF}$ 1KHz $\pm 10\%$, $1.0 \pm 0.1\text{Vrms}$ Class II: $C_p < 10 \mu\text{F}$ 1KHz $\pm 10\%$, $1.0 \pm 0.1\text{Vrms}$ $C_p \geq 10 \mu\text{F}$ 120 $\pm 24\text{Hz}$, $1.0 \pm 0.1\text{Vrms}$	
4	损耗(Q/DF) Dissipation Factor	C0G		$C_p < 30\text{pF}, Q \geq 400+20C_p$ $C_p \geq 30\text{pF}, Q \geq 1000$
		X7R X6S X5R		<ul style="list-style-type: none"> ■ $U_R \geq 100\text{V}$ DF $\leq 7.5\%$ ■ $25\text{V} \leq U_R \leq 50\text{V}$, DF $\leq 3.5\%$ DF $\leq 10\%$ 0201 ≥ 104, 0402 ≥ 333 0603 ≥ 104, 0805 ≥ 684 1206 ≥ 225, 1210 ≥ 475 DF $\leq 12.5\%$ 0402 ≥ 474 ■ $U_R \leq 16\text{V}$, DF $\leq 5.0\%$ DF $\leq 10\%$, 0201 ≥ 104, 0402 ≥ 563 0603 ≥ 564, 0805 ≥ 105 1206 ≥ 475, 1210 ≥ 106 ■ $U_R \leq 10\text{V}$, DF $\leq 7.0\%$ DF $\leq 10\%$ 01005, 0201 ≥ 123 0402 ≥ 224, 0603 ≥ 334 0805 ≥ 225, 1206 ≥ 225 1210 ≥ 226 DF $\leq 15\%$, 0201 ≥ 104, 0402 ≥ 105 ■ $U_R = 6.3\text{V}$, DF $\leq 10\%$ DF $\leq 15\%$, 0201 ≥ 104, 0402 ≥ 105 0603 ≥ 106, 0805 ≥ 475 1206 ≥ 476, 1210 ≥ 107 DF $\leq 20\%$, 0402 ≥ 225 ■ $U_R = 4\text{V}$, DF $\leq 15\%$
		Y5V		<ul style="list-style-type: none"> ■ $U_R \geq 50\text{V}$, DF $\leq 12.5\%$ ■ $U_R = 25\text{V}$, DF $\leq 7.0\%$ DF $\leq 9\%$, 0402 ≥ 683, 0603 ≥ 474 0805 ≥ 105, 1206 ≥ 475 1210 ≥ 106 ■ $U_R = 16\text{V}$, DF $\leq 15\%$ ■ $U_R = 10\text{V}$, DF $\leq 20\%$ ■ $U_R \leq 6.3\text{V}$, DF $\leq 20\%$
		高Q		$C_p > 30\text{pF}$ $Q \geq 1000$ $1\text{pF} < C_p \leq 30\text{pF}$ $Q \geq 400+20C_p$ $C_p \leq 1\text{pF}$ $Q \geq 300$
5	绝缘电阻(IR) Insulation Resistance	C0G $R_i \geq 10\text{G}\Omega$ 或 $500\Omega \cdot \text{F}$, 取最小值 $R_i \geq 10\text{G}\Omega$ 或 $500\Omega \cdot \text{F}$, whichever is smaller	施加电压: $U_R \leq 400\text{V}$ $U_{\text{测}} = U_R$ $U_R > 400\text{V}$ $U_{\text{测}} = 400\text{V}$ 充电时间: $60 \pm 5\text{秒}$ To apply voltage: $U_R \leq 400\text{V}$ $U_{\text{测}} = U_R$ $U_R > 400\text{V}$ $U_{\text{测}} = 400\text{V}$ Charge time: $60 \pm 5\text{sec}$	

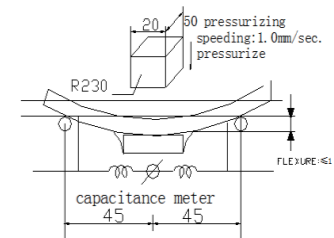


■ 技术指标和实验方法 Specifications and Test Method

NO	项目 Item	技术指标 Specification	实验方法 Test Method																								
5	绝缘电阻(IR) Insulation Resistance	<p>$Ri \geq 4G\Omega$ 或 $100\Omega \cdot F$ (以下范围为 $50\Omega \cdot F$) 取较小值</p> <p>$Ri \geq 4 G\Omega$ or $100\Omega \cdot F$ ($50\Omega \cdot F$ of below range), whichever is smaller</p> <p>以下范围below range: ■50V: 0402 ≥ 104; 0603 ≥ 225; 0805 ≥ 106; 1206 ≥ 106 ■25V: 0201 ≥ 104; 0402 ≥ 224; 0603 ≥ 106; 0805 ≥ 106; 1206 ≥ 226; 01005(X6S/ X5R) ■16V: 0603 ≥ 106; 01005 (X6S/X5R) ■10V: 0201 > 104; 0603 ≥ 106; 0805 ≥ 476; 01005(X6S/ X5R) ■6.3V: 0201 ≥ 104; 0603 ≥ 475; 1206 ≥ 106; 0100(X6SX5R) ■4V: 0603 ≥ 226; 0805 \geq 476; 1206 ≥ 107; 01005 (X6SX5R)</p>	<p>施加电压: $U_R \leq 400V$ $U_{测} = U_R$ $U_R > 400V$ $U_{测} = 400V$ 充电时间: 60 ± 5秒</p> <p>To apply voltage: $U_R \leq 400V$ $U_{测} = U_R$ $U_R > 400V$ $U_{测} = 400V$ Charge time: 60 ± 5sec</p>																								
6	耐电压 Dielectric Strength	<p>C0G X7R X6S X5R Y5V</p> <p>无介质击穿和材料裂缝 No dielectric breakdown or mechanical breakdown</p>	<p>施加电压: $U_R < 100V$: 250% $100V \leq U_R < 1000V$: 150% $U_R \geq 1000V$: 120%</p> <p>测试时间: 60 ± 5秒, 最大电流: 不超过50mA</p> <p>To apply voltage: $U_R < 100V$: 250%; $100V \leq U_R < 1000V$: 150%; $U_R \geq 1000V$: 120%</p> <p>Test time: 60 ± 5sec, Max current: should not exceed 50mA</p>																								
*7	电容量温度系数或温度特性 Capatiance Temperature Coefficient Or Temperature Characteristics	<p>C0G X7R X6S X5R Y5V</p> <p>温度系数 $\leq 0 \pm 30$ppm/°C Temperature coefficient within 0 ± 30ppm/°C</p> <p>容量变化 $\leq \pm 15\%$ Capacitance change within $\pm 15\%$</p> <p>容量变化 $\leq +22\% \sim -82\%$ Capacitance change within $+22\% \sim -82\%$</p>	<p>按系列温度顺序测试电容量 Measure capacitance under follow table list</p> <table border="1"> <thead> <tr> <th>步骤Step</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>C0G/X7R</td> <td>25 \pm 2°C</td> <td>-55 \pm 3°C</td> <td>25 \pm 2°C</td> <td>125 \pm 3°C</td> <td>25 \pm 2°C</td> </tr> <tr> <td>X6S/X5R</td> <td>25 \pm 2°C</td> <td>-55 \pm 3°C</td> <td>25 \pm 2°C</td> <td>85 \pm 3°C</td> <td>25 \pm 2°C</td> </tr> <tr> <td>Y5V</td> <td>25 \pm 2°C</td> <td>-30 \pm 3°C</td> <td>25 \pm 2°C</td> <td>85 \pm 3°C</td> <td>25 \pm 2°C</td> </tr> </tbody> </table> <p>PS: C0G预先干燥: 16-24小时. C0G Preliminary Drying for 16-24hr. ▶ $C = [(C_1 - C_2) / (C_1 * T)] * 10^6$ 或 (or) ▶ $C = (C_1 - C_2) / C_1 * 100\%$ C_1: 1-5温度下的容值 Capacitance value at 1-5 temperature ▶ T: 温度变化量(Temperature variation) ▶ $T = T_i - T_1$</p>	步骤Step	1	2	3	4	5	C0G/X7R	25 \pm 2°C	-55 \pm 3°C	25 \pm 2°C	125 \pm 3°C	25 \pm 2°C	X6S/X5R	25 \pm 2°C	-55 \pm 3°C	25 \pm 2°C	85 \pm 3°C	25 \pm 2°C	Y5V	25 \pm 2°C	-30 \pm 3°C	25 \pm 2°C	85 \pm 3°C	25 \pm 2°C
步骤Step	1	2	3	4	5																						
C0G/X7R	25 \pm 2°C	-55 \pm 3°C	25 \pm 2°C	125 \pm 3°C	25 \pm 2°C																						
X6S/X5R	25 \pm 2°C	-55 \pm 3°C	25 \pm 2°C	85 \pm 3°C	25 \pm 2°C																						
Y5V	25 \pm 2°C	-30 \pm 3°C	25 \pm 2°C	85 \pm 3°C	25 \pm 2°C																						
8	附着力 Adhesion	<p>C0G X7R X6S X5R</p> <p>无明显的损伤或端电极脱落 No remarkable damage or removal of the terminations.</p>	<p>施加压力: 5N(0201:2N; 01005:1N) 时间: 10 ± 1秒 Pressurizing force: 5N(0201:2N; 01005:1N) time: 10 ± 1sec</p>																								

■ 技术指标和实验方法 Specifications and Test Method

NO	项目 Item	技术指标 Specification		实验方法 Test Method
9	可焊性 Solderability	C0G X7R X6S X5R Y5V	端电极挂锡面积小于95% 95%min.coverage of both terminal electrodes	锡炉温度: 245 ± 5℃ 浸入时间: 2 ± 1秒 Solder temperature: 245 ± 5℃ Dipping time: 2 ± 1sec.
10	弯曲强度 Bending	外观 Appreance	无明显可见损伤 No remarkable visual damage	将电容安在测试夹具上, 按图所示方向以1.0mm/s的速率施加压力, 弯曲1mm. Solder the capacitor on testing substrate and putt on testing stand. The middle part of substrateshall successively be pressurized by pressuringrod at a rated of about 1.0mm/sec. Until the deflection become means of the 1.0mm.
		容量变化 Cap change	C0G: ± 5%或 ± 0.5pF, 取较大值 X7R/X6S/X5R: ± 12.5% Y5V: ± 30% C0G: within ± 5% or ± 0.5pF, whichever is larger X7R/X6S/X5R: within ± 12.5% Y5V: within ± 30%	
*11	耐焊锡热 Resistance to Soldering Heat	外观 Appreance	无明显可见损伤 No remarkable visual damage	预热: 120~150℃ 60秒 焊接温度: 270 ± 5%℃ 浸入时间: 10 ± 1秒 Preheating: 120~150℃ 60sec Soldering temperature :270 ± 5℃ Dipping time: 10 ± 1seconds
		容量变化 Cap change	C0G: ± 2.5%或 ± 0.5pF, 取较大值 X7R/X6S/X5R: ± 15% Y5V: ± 30% C0G: within ± 2.5% or ± 0.5pF, whichever is larger X7R/X6S/X5R: within ± 15% Y5V: within ± 30%	
		DF/IR	满足产品初始值得要求 Meets initial standard damage	
*12	温度快速循环 Temperature Cycle	外观 Appreance	无明显可见损伤 No remarkable visual damage	按下列步骤进行5次循环: To perform 5cycles of the stated environment
		容量变化 Cap change	C0G: ± 2.5%或 ± 0.25pF, 取较大值 X7R/X6S/X5R: ± 15% Y5V: ± 30% C0G: within ± 2.5% or ± 0.25pF, whichever is larger X7R/X6S/X5R: within ± 15% Y5V: within ± 30%	
		DF/IR	满足产品初始值得要求 Meets initial standard damage	



步骤 Step	温度 Temperature	时间 Time
1	下限温度+0/-3℃ Min.operating Temp.+0/-3℃	30min
2	25℃	2~3min
3	上限温度+3/-0℃ Min.operating Temp.+3/-0℃	30min
4	25℃	2~3min

NO	项目 Item	技术指标 Specification		实验方法 Test Method
		外观 Appearance	容量变化 Cap change	
*13	耐湿负荷 Damp heat with load	外观 Appearance	无明显可见损伤 No remarkable visual damage	测试温度: 40±2℃ 相对湿度: 90~95%RH 测试电压: 额定电压 (最大500V) 测试时间: 500±12hrs Test temperature:40±2℃ Humidity:90~95% RH Voltage:100% of the rated voltage(max:500V) Testing time:500±12hrs
		容量变化 Cap change	C0G: ±7.5%或±0.75pF,取较大值 X7R/X6S/X5R: ±25% Y5V: ±30%或-40%~+30% C0G:within ±7.5% or ±0.75pF, whichever is larger X7R/X6S/X5R: within ±25% Y5V:within ±30%或-40%~+30%	
		DF	初始值的2倍以下 Not more than 2 times of initial value	
		IR	Ri > 500MΩ或25Ω·F(☆为5Ω·F), 取较小值 Ri > 500MΩ或25Ω·F(5Ω·F of ☆), whichever is smaller	
*14	耐久性 Life Test	外观 Appearance	无明显可见损伤 No remarkable visual damage	温度测试: 上限类别温度±3℃ 测试电压: U _R < 100V 150% 100V ≤ U _R < 1000V 120% U _R ≥ 1000V 100% 测试时间: 1000小时 Test temperature:Max.Operating Temp. ±3℃ Voltage: U _R < 100V 150% 100V ≤ U _R < 1000V 120% U _R ≥ 1000V 100% Testing time: 1000hrs
		容量变化 Cap change	C0G: ±3%或±0.5pF,取较大值 X7R/X6S/X5R: ±25% Y5V: ±30%或-40%~+30% C0G:within ±3% or ±0.5pF, whichever is larger X7R/X6S/X5R: within ±25% Y5V:within ±30%或-40%~+30%	
		DF	初始值的2倍以下 Not more than 2 times of initial value	
		IR	Ri > 1GΩ或50Ω·F(☆为10Ω·F), 取较小值 Ri > 1GΩ或50Ω·F(10Ω·F of ☆), whichever is smaller	

注:

*A.3.7.11.12.13.14项需对II类电容器做预处理(将电容器在160℃下热处理1小时),然后在标准大气条件下恢复48±4小时,再测量初始值;

B.3.11.12.13.14项实验后在室温下放置24±2(C0G)或48±4(X7R、X6S、X5R、Y5V)小时以后再测量;

C.3.11.12.13.14项电性能测量的环境条件,温度:25℃±2℃ 相对湿度:25%~80%RH。

☆ ■ 100V:X7R

■ 50V:0402>103; 0603≥105;0805≥105;1206≥475;1210≥475

■ 25V:0201≥104;0402≥224 0603≥225; 0805≥225;1206≥106;1210≥106;01005(X6S/X5R)

■ 16V: 0201≥104;0402≥224;0603≥105; 0805≥225;1206≥106;1210≥476; 01005(X6S/X5R)

■ 10V: 0201≥473;0402≥474;0603≥474; 0805≥225;1206≥475;1210≥476; 01005(X6S/X5R)

■ ≤6.3V Class II; 01005(X6S/X5R)

Note:

A.3.7.11.12.13.14Item need to do the pretreatment of class II type capacitor(Perform a heat treatment at 160℃ for 1 hour),

Then recovery the capacitor at standard pressure conditions for 48±4 hours,Perform the initial measurement

B.3.11.12.13.14Item end of experiment Measurement to be made after being kept at room temperature for 24±2(C0G) or

48±4(X7R、X6S、X5R、Y5V)hrs.

C.3.11.12.13.14Item environmental conditions for electrical performance measurement, Temperature: 25℃±2℃ Humidity:

25%~80%RH

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Multilayer Ceramic Capacitors MLCC - SMD/SMT category:](#)

Click to view products by [SANYEAR manufacturer:](#)

Other Similar products are found below :

[M39014/02-1225V](#) [M39014/22-0631](#) [D55342E07B523DR-T/R](#) [NCA1206X7R103K50TRPF](#) [NCA1206X7R104K16TRPF](#) [NIN-FB391JTRF](#)
[NIN-FC2R7JTRF](#) [NMC0201X5R474K4TRPF](#) [NMC0402NPO220J50TRPF](#) [NMC0402X5R105K6.3TRPF](#) [NMC0402X5R224K6.3TRPF](#)
[NMC0402X7R103J25TRPF](#) [NMC0402X7R153K16TRPF](#) [NMC0603NPO1R8C50TRPF](#) [NMC0603NPO201J50TRPF](#)
[NMC0603NPO330G50TRPF](#) [NMC0603X5R475M6.3TRPF](#) [NMC0805NPO270J50TRPF](#) [NMC0805NPO820J50TRPF](#)
[NMC0805X7R224K16TRPLPF](#) [NMC0805X7R224K25TRPF](#) [NMC1206X7R102K50TRPF](#) [NMC1206X7R106K10TRPLPF](#)
[NMC1206X7R475K10TRPLPF](#) [NMC-H0805X7R472K250TRPF](#) [NMC-L0402NPO7R0C50TRPF](#) [NMC-L0603NPO2R2B50TRPF](#) [NMC-](#)
[Q0402NPO8R2D200TRPF](#) [C1206C101J1GAC](#) [C1608C0G2A221J](#) [C1608X7R1E334K](#) [C2012C0G2A472J](#) [2220J2K00562KXT](#)
[1812J2K00332KXT](#) [CDR31BX103AKWR](#) [CDR33BX104AKUR](#) [CDR33BX683AKUS](#) [CGA2B2C0G1H010C](#) [CGA2B2C0G1H040C](#)
[CGA2B2C0G1H050C](#) [CGA2B2C0G1H060D](#) [CGA2B2C0G1H070D](#) [CGA2B2C0G1H120J](#) [CGA2B2C0G1H151J](#)
[CGA2B2C0G1H181JT0Y0F](#) [CGA2B2C0G1H1R5C](#) [CGA2B2C0G1H2R2C](#) [CGA2B2C0G1H390J](#) [CGA2B2C0G1H391J](#)
[CGA2B2C0G1H3R3C](#)