径向激光电容器 AXLAL LASER MLCC

Feature

*体积小，容量大，适合自动安装的卷（编）带包装。
Miniature size, large capacitance, tape and reel packaging suitable for auto-placement

*环氧树脂封装，从而具有优良的防潮性能、机械强度及耐热性。
Epoxy resin coating creates excellent performance in humidity resistance, mechanical strength and heat resistance

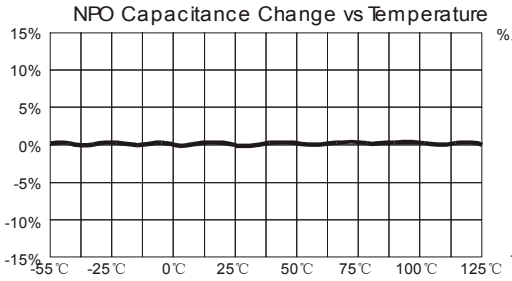
*工业生产标准尺寸及多种脚型产品。
Standard size, various lead configuration

介质种类 Dielectric Type	I类介质 Class I	II类介质 Class II		
介质材料 Dielectric Material	温度补偿型 Temperature Compensating	X7R (B)	Z5U(E)	Y5V(Y/F)
电气性能 Electrical Properties	电气性能最稳定，几乎不随温度、电压和时间的变化而变化。The electrical properties is the most stable one and has little change with temperature, voltage and time.	具有较高的介电常数，容量可做到比I类电容器高，具有稳定的温度特性。X7R material has high dielectric constant, and its capacitance is higher than class I. These capacitors are classified as having a semi-stable T.C..	温度特性介于X7R和Y5V之间，容量稳定性相对较差，对温度、电压等条件较敏感。Temperature characteristic is between that of X7R and Y5V. The capacitance is unstable and sensible to temperature and voltage.	介电常数最大，但温度特性较差，对温度、电压等条件较敏感。Y5V material has highest dielectric constant. Its capacitance and dissipation is sensible to temperature and voltage.
应用 Application	适用于低损耗，稳定性要求高的高频电路，如滤波器、振动器和计时电路等。Used in applications where low-losses and high-stability are required, such as filters, oscillators, and timing circuits so on.	适用于容量范围广，稳定性要求不高的电路中，如隔直、耦合、旁路及鉴频等电路中。Used over a wide temperature range , such in these kinds of circuits, DC-blocking, coupling, bypassing, frequency discriminating etc.	适用于要求大容量，使用温度范围接近于室温的旁路、耦合等，及低直流偏压电路中。Ideally suited for bypassing and coupling application circuits operating with low DC bias in the environment approaching to room temperature.	适用于要求大容量，温度变化不大的电路中 Used over a moderate temperature range in application where high capacitance is required.
容量范围 Available capacitance range	0.5pF~4.7nF	100pF~0.22uF	2.2nF~1.2uF	

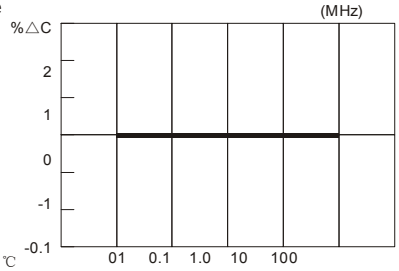
■容量变化及温度特性、电压、频率曲线图
CAPACITANCE CHANGE VS TEMPERATURE CHARACTERISTIC;VOLTAGE;FREQUENCY PROFILES

- NPO

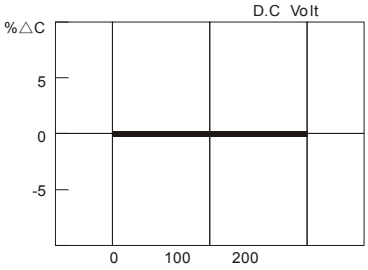
(1)容量变化及温度特性



(2)频率(Frequency)

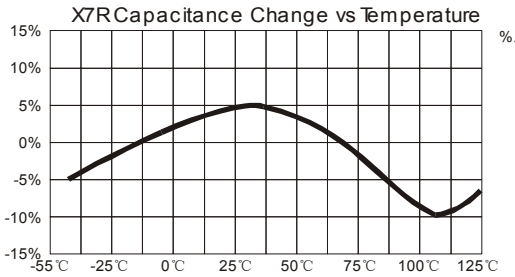


(3)直流电压(DC voltage)

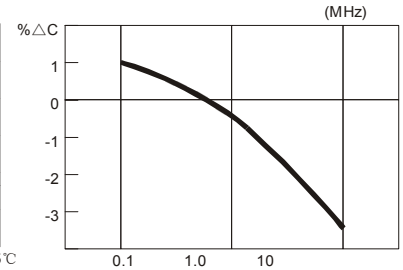


- X7R

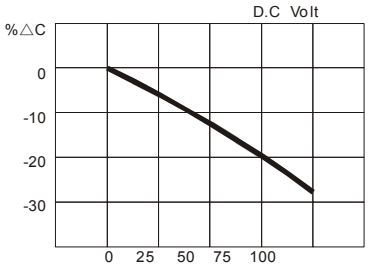
(1)容量变化及温度特性



(2)频率(Frequency)

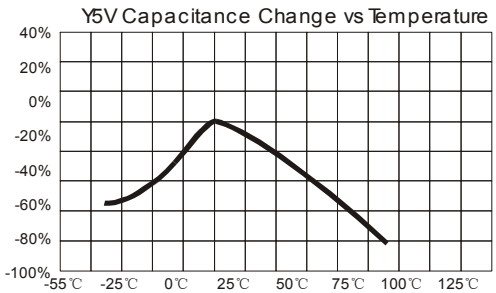


(3)直流电压(DC voltage)

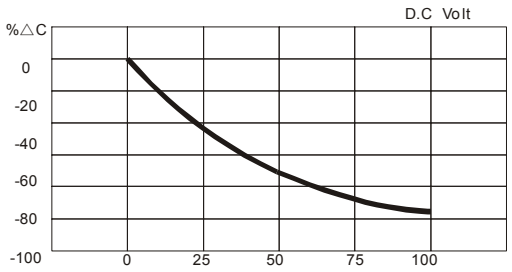


- Y5V

(1)容量变化及温度特性



(2)直流电压(DC voltage)

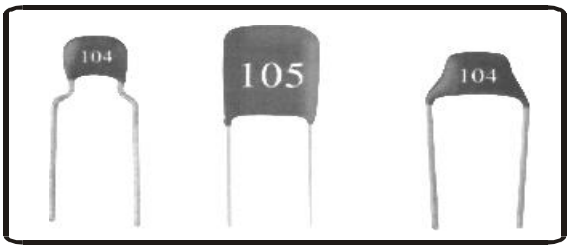


径向激光电容器 AXLAL LASER MLCC

CT4 - 0805 Y 104 Z 500 P F3

↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑

A B C D E F G H



A：

产品类别 Product Type	
CC4	I类径向引线独石电容器 Class I Dielectric Radial Leaded MLCC
CT4	II类径向引线独石电容器 Class II Dielectric Radial Leaded MLCC

B: 单位：英寸 Unit：inches

本体外形尺寸规格（长×宽） Nominal Body Size（Length ×Width）			
0805	0.17 ×0.15	1812	0.34 ×0.26
1206	0.20 ×0.18	2225	0.41 ×0.37
1210	0.20 ×0.22	3035	0.50 ×0.41

C：

温度特性 Temperature Characteristics			
CG	C0G	0±30ppm/℃	-55~+125 ℃
N	NP0		
B	X7R	±15%	-55~+125 ℃
Y/F	Y5V	-80%~+30%	-25~+85 ℃
E	Z5U	-56%~+22%	+10~+85 ℃

D：

标称容量 Nominal Capacitance
前两位为有效数字，后一位表示零的个数。 First two digits are significant, and the third digit is number of zero. 例如； For example: 104=100000pF 5R6=5.6pF

E：

容量偏差 Tolerance			
C	±0.25pF	K	±10%
D	±0.5pF	M	±20%
J	±5.0%	Z	-20~+80%

F：

额定电压 Rated Voltage
前两位为有效数字，后一位表示零的个数。 First two digits are significant, and the third digit is number of zero. 例如 For example: 500=50V; 101=100V

G：

产品类别 Packaging Style		
P	盒带包装 Ammo	编带 Tape
T	卷盒包装 Reel	
空白 Blank	散包装 Bulk	

H：

脚距（单位：mm） Lead Space（Unit：mm）			
F1	2.54	F4	7.50
F2	4.57	F5	3.50
F3	5.08		

粤興科技

引线陶瓷电容器可靠性及测试方法
Reliability and Test Method for General Leaded MLCC

<table>
<tr><th>项目
Item</th><th colspan="2">技术要求
Technical Specification</th><th colspan="4">测试方法和备注
Test Method and Remarks</th></tr>
<tr><td rowspan="6">容量
Capacitance
(C)</td><td rowspan="3">I类
Class I</td><td rowspan="3">应符合指定的误差级别
within the specified tolerance.</td><td>标称容量
Capacitance</td><td>测试频率
Measuring Frequency</td><td colspan="2">测试电压
Measuring Voltage</td></tr>
<tr><td>≤1000pF</td><td>1MHZ±10%</td><td colspan="2" rowspan="2">1.0±0.2V</td></tr>
<tr><td>＞1000 pF</td><td>1KHZ±10%</td></tr>
<tr><td rowspan="3">II类
Class II</td><td rowspan="3">应符合指定的误差级别
within the specified tolerance.</td><td colspan="4">对于Ⅱ类电容器，测试前应先预处理
The capacitance should be pretreated before measured(only for class Ⅱ).</td></tr>
<tr><td colspan="2">测试频率
Measuring Frequency</td><td colspan="2">测试电压
Measuring Voltage</td></tr>
<tr><td colspan="2">1KHZ±10%</td><td>B:
1.0±0.2V</td><td>E/ Y/ F
0.5±0.2V</td></tr>
<tr><td rowspan="5">损耗角正切
Dissipation Factor
(DF)</td><td rowspan="3">I类
Class I</td><td rowspan="3">$C_R \geqslant 50pF$
DF ⩽ 0.15%
$C_R < 50pF$
DF ⩽ $1.5[(150/C_R)+7] \times 10^{-4}$</td><td>标称容量
Capacitance</td><td>测试频率
Measuring Frequency</td><td>测试电压
Measuring Voltage</td></tr>
<tr><td>≤1000pF</td><td>1MHZ±10%</td><td rowspan="2">1.0±0.2V</td></tr>
<tr><td>＞1000 pF</td><td>1KHZ±10%</td></tr>
<tr><td rowspan="2">II类
Class II</td><td>B</td><td>DF ≤3.5%</td><td colspan="3">测试频率: 1KHZ±10%; 测试电压: 1.0±0.2V
Measuring Frequency Measuring Voltage</td></tr>
<tr><td>E/ Y
(F)</td><td>≤7.5% (C_R ≤ 0.1uF)
≤10.0%
(1uF ＞ C_R ＞ 0.1uF)
≤15% (C_R ⩾1uF)</td><td colspan="3">测试频率: 1KHZ±10%
Measuring Frequency
测试电压:0.5±0.2V
Measuring Voltage</td></tr>
<tr><td rowspan="2">绝缘电阻
Insulation Resistance</td><td>I类
Class I</td><td colspan="2">C≤10nF
IR⩾10000MΩ
C>10nF
R.C⩾100 ΩF</td><td colspan="3" rowspan="2">测试电压:额定电压
Measuring Voltage: Rated Voltage
测试时间: 60±5秒
Duration: 60±5s</td></tr>
<tr><td>II类
Class II</td><td colspan="2">C≤25nF
IR⩾4000MΩ
C>25nF
R.C⩾100 ΩF</td></tr>
</table>

<table>
<tr><th>项目
Item</th><th>技术要求
Technical Specification</th><th>测试方法和备注
Test Method and Remarks</th></tr>
<tr><td rowspan="2">耐电压
Withstanding Voltage</td><td rowspan="2">不应有介质被击穿或损伤
No breakdown or damage.</td><td>端子间Between terminals：
测试电压 持续时间: 5±1秒
Measuring Voltage： Duration: 5±1s
Ⅰ类:250%额定电压
Class Ⅰ:250% Rated voltage
Ⅱ类:250%额定电压
Class Ⅱ:250% Rated voltage
充/放电电流不应超过50mA
The charge/ discharge current is less than 50mA.</td></tr>
<tr><td>端子与外装间Between terminals and body：
施加电压：2.5U_R 持续时间： 1~5s
Voltage: 2.5 times rated voltage Duration： 1~5s
金属制小球法 Small metallic ball method
将电容器本体插入盛满直径为1mm的金属小球的容器中，但保留距端头处2mm的本体不插入。试验电压施加在短路回路端子和金属小球之间。
Small metallic balls with 1mm diameters shall be put in a vessel and the test capacitor shall be submerged except 2mm from the top of its component body and the terminals. The test voltage shall be applied between the short-circuited terminals and the metallic balls.</td></tr>
<tr><td>可焊性
Solder ability</td><td>上锡率应大于75%
Lead wire shall be at least 75% covered with a new solder coating.</td><td>将电容器引线浸入含有25%松香的酒精溶液中，然后浸入温度为:230±5℃的金属焊锡（63Sn/37Pb）中 2±0.5秒，注意：电容器本体底面距离锡面约1.5~2mm，
The terminal of capacitor is dipping into a 25% rosin solution of ethanol and then into molten solder(63Sn/37Pb）of 230±5℃ for 2±0.5s. In both cases the depth of dipping is up to about 1.5~2mm from the terminal body.</td></tr>
<tr><td>耐焊接热
Resistance to Soldering Heat</td><td><table><tr><td>项目
Item</td><td>ΔC/C≤</td></tr><tr><td>Class I</td><td>± 2.5% or ± 0.25pF</td></tr><tr><td>B</td><td>±10%</td></tr><tr><td>E / Y(F)</td><td>±20%</td></tr></table>外观无可见损伤
No significant abnormality in appearance.</td><td>锡温：260 ±5℃ 时间： 10 ±1s
Solder temperature: 260 ±5℃ Duration: 10 ±1s
浸入条件：将电容器插入厚度为1.6mm，孔径为1.0mm的PC板。
Immersed conditions: Inserted into the PC board (with t=1.6mm, hole=1.0mm diameter)
对于I类介质，试验后，应在标准条件下恢复4~24小时后才测试。
Recovery: For class I, 4 to 24 hours of recovery under the standard condition after test.
对于II类介质，在试验前应先进行如下预处理： 150(-10,+0) ℃，1小时，接着在标准条件下恢复48 ±4 小时。
Preconditioning（Class II）: 1 hour of preconditioning at 150(-10,+0) ℃, followed by 48 ±4 hours of recovery under the standard condition.
恢复：对于II类介质试验后，应在标准条件下恢复48 ±4小时才测试。
Recovery（ Class II） : 48 ±4 hours of recovery under the standard condition after test.</td></tr>
</table>

<table>
<tr><th>项目
Item</th><th>技术要求
Technical Specification</th><th>测试方法和备注
Test Method and Remarks</th></tr>
<tr><td rowspan="4">高温负荷
High Temperatu-re Loading Test</td><td>外观无可见损伤
No significant abnormality in appearance.</td><td rowspan="4">温度
Temperature
<table><tr><td>CG（N）/</td><td>X7R</td><td>Y5V</td><td>Z5U</td></tr><tr><td colspan="2">125(-0,+3)℃</td><td colspan="2">85(-0,+3) ℃</td></tr></table>
电压：1.5倍额定电压
Applied voltage: 1.5 times rated voltage
充放电流不超过50mA
The charge/ discharge current is less than 50mA.
时间：1000（-0，+48）小时
Duration: 1000（-0，+48）hours
恢复时间：
Recovery Time：
I类介质：24 ±2小时，
Class I Dielectric : 24 ±2 hours
II类介质：48 ±4小时。
Class II Dielectric: 48 ±4 hours</td></tr>
<tr><td>容量变化Capacitance Change:
I类介质Class I:
≤ ±3% or ±0.3pF
取较大值Whichever is larger.
II类介质Class II: B:≤ ±12.5%
E / F(Y): ≤ ±30%</td></tr>
<tr><td>损耗角正切Dissipation Factor:
I类介质：小于原始值的两倍
Class I：Not more than twice of initial value.
II类介质Class II：
B: ≤ 5.0%
E / F(Y): ≤12.5% (C_R ≤ 0.1uF)
≤15.0%(1uF > C_R > 0.1uF)
≤17.5% (C_R ≥1uF)</td></tr>
<tr><td>绝缘电阻Insulation Resistance:
≥ 500MΩ or 25 Ω.F
取较小值Whichever is smaller.</td></tr>
<tr><td>耐溶剂性
Solvent Resistance</td><td>外观无可见损伤或异常,标记清晰。
No defects or abnormalities in appearance and legible marking.</td><td>溶剂温度：23±5℃ Solvent temperature:
将样品浸在溶剂中1分钟，用脱脂棉在样品有标志部位刷10次，重复3次.
put the sample into solvent 1 Min, and then take it out and brush sample’s notation area 10 times with pledget , repeat 3 times.</td></tr>
</table>

* 以上所示“标准条件”解释如下：

温度：5~35℃， 湿度：45~85%， 气压：86~106kPa

* Note on standard condition: " standard condition " referred to herein should be defined as follows:

5 to 35℃ of temperature, 45 to 75% of relative humidity, and 86 to 106kPa of atmospheric pressure.

若测试结果有争议时，仲裁试验用标准大气条件为：

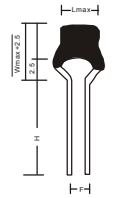
温度：25±1℃， 相对湿度：48%~52%， 气压：86~106kPa

* When there are questions concerning measurement results:

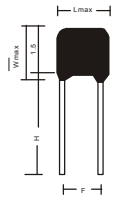
In order to provide correlation data, the test should be conducted under a condition of 25 degrees plus/minus 1 centigrade of temperature, 48% through 52% of relative humidity and 86 through 106 kPa of atmospheric pressure.

径向激光电容器 AXLAL LASER MLCC

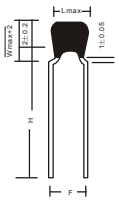
- 尺寸、工作电压、容量工作关系表
  SIZE CODE, CAPACITANCE AND VOLTAGE



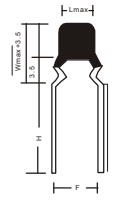
a



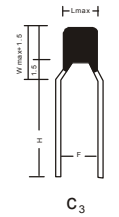
b



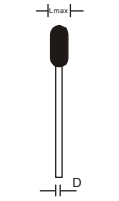
C_1



C_2



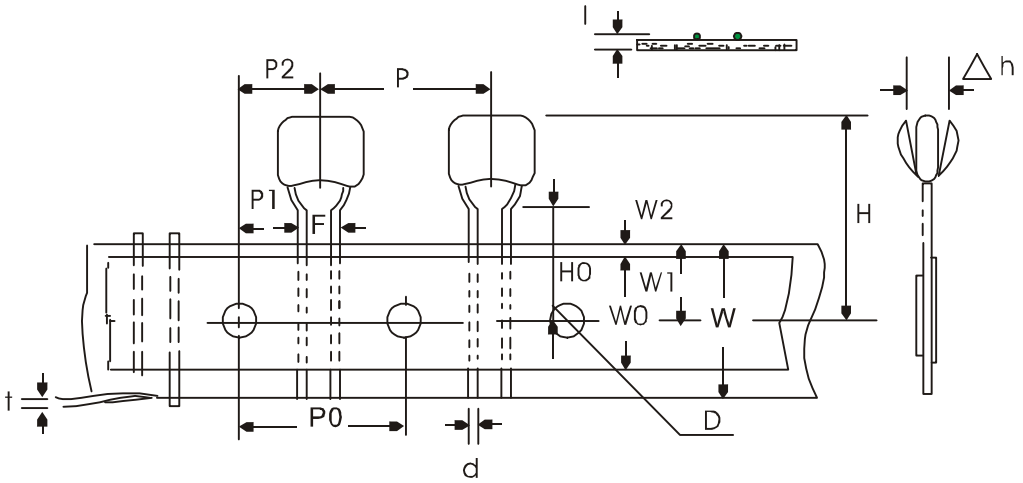
C_3



尺寸规格 Size code	外形 shape	Dimensions:(mm) F (±0.5)	Hmin (±1)	Lmax	Wmax	Tmax	工作电压 Voltage	容量范围Capacitance (PF) COG(NPO)	X7R	Y5V (Z5U)
0805	a b C1 C2 C3	2.54 2.54 5.08 5.08 5.08	5.0 10.0 5.0 10.0 5.0 5.0 10.0	4.2	3.8	3.8	25V 50V 100V	OR5~ 332 OR5~ 222 O5R~ 102	331~ 104 331~ 104 331~ 104	103~ 105 103~ 684
1206	a b C1	2.54 3.50 5.08	10.0	5.0	4.5	3.8	25V 50V 100V	OR5~ 682 OR5~ 472 OR5~ 392	102~ 224 102~ 104 102~ 105	103~ 125 103~ 105
1210	b C1	3.50 5.08	10.0	7.6	5.5	3.8	25V 50V 100V	561~ 103 561~ 682 561~ 472	102~ 334 102~ 224 102~ 105	104~ 155
1812	b	4.57	10.0	6.5	6.5	3.8	25V 50V 100V	102~ 153 102~ 103 102~ 682	103~ 474 103~ 334 103~ 105	154~ 335
2225	b	5.50	10.0	10.5	9.5	4.2	25V 50V 100V	102~ 223 102~ 223 102~ 103	103~ 105 103~ 105 103~ 474	684~ 475
3035	b	7.50	10.0	12.5	10.5	4.2	25V 50V 100V	102~ 104 102~ 473 102~ 333	103~ 225 103~ 205 103~ 105	105~ 106 105~ 685

* 脚长根据客户要求而定。
Lead spacing determined by customer requirements.

- 包装形式 PACKAGING STYLE

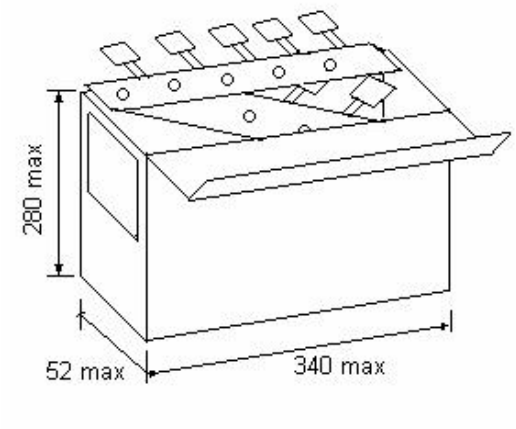


Note:P1= 3.85mm for F= 5.0mm P1= 5.1mm for F= 2.5mm

代号 Code	P	P0	P1	P2	d	△h	W	W0	W1	W2	H	H0	D	t
尺寸 Dim.	12.7	12.7	3.85 5.1	6.35	0.5	0	18.5	12	9	1.5	32.25	15~20	4.0	0.7
误差 Tol.	±0.2	±0.2	0.7	±1.3	±0.1	±2	±1	±1	±0.5	±1.5	Max.	±0.5	±0.2	Max.

盒带包装

Ammo Packaging



卷带包装

Tape and Reel Packaging