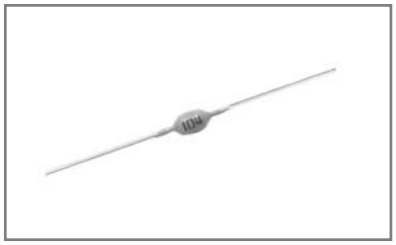
■轴向引线激光多层陶瓷电容器
Axial Lead Laser-mark MLCCs



◆特征
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.

◆应用
Application

* 一般用途品
  General purpose goods

◆型号表示法
Part Number

CT42	104	K	17	B	500	P	52
A	B	C	D	E	F	G	H

A:

产品类别 Product Type	
代号 Code	类别 Type
CC42	Ⅰ类轴向引线激光多层陶瓷电容器 Class Ⅰ Dielectric Axial Lead Laser-mark MLCCs
CT42	Ⅱ类轴向引线激光多层陶瓷电容器 Class Ⅱ Dielectric Axial Lead Laser-mark MLCCs

B:

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

C:

容量公差 Tolerance							
C	D	J	K	M	N	S	Z
±0.25pF	±0.5pF	±5.0%	±10%	±20%	±30%	+50%~-20%	+80%~-20%
C.D for C＜10PF NP0:C.D.J.K.M, X7R:K.M.N,S,Z							

D:

本体长度（单位：英寸） Nominal Body Length（ Unit：inches ）			
13	0.3	15	0.15
16	0.16	17	0.17

E:

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

F：

额定电压 Rated Voltage
前两位数字为有效数字，后一位数字表示零的个数 First two digits are significant and the third digit is number of zeros . 例如： For example: 500=50V,250=25V

G：

包装方式 Packaging Style		
编带 Tape	P	盒带包装 Ammo
	T	卷带包装 Reel

H

引脚形式（单位：mm） Lead Configuration	
26	编带内距 Tape width:26mm
52	编带内距 Tape width:52mm

◆尺寸、工作电压、容量关系表

Size code, capacitance and voltage

尺寸规格 Size Code	外形尺寸(单位：mm) Dimension(Unit: mm)			工作电压 Voltage	标称容量范围 Available Capacitance Range		
	L	D	Φd (±0.05)		C0G（NP0）	X7R	Y5V
13	1.6≤L≤3.3	1.4≤ΦD≤2.2	0.40	25V 50V	100~102 100~102	101-104 101-333	101-224 101-224
15	2.7≤L≤3.8	1.7≤ΦD≤2.3	0.40	25V 50V	100~272 100~222	101-224 101-224	101-105 101-224
16	2.8≤L≤4.0	1.8≤ΦD≤2.5	0.40	25V 50V	100~272 100~222	101-224 101-224	101-105 101-224
17	3.0≤L≤4.3	1.9≤ΦD≤2.5	0.40	25V 50V	100~272 100~222	101-224 101-224	101-105 101-224

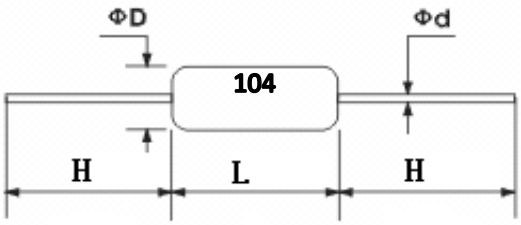
◆外形尺寸

External Dimensions

＊ 单品

Bulk Products

尺寸代码 Size Code	L (mm)	Φ D (mm)	Φd (mm)	H (mm)
13	1.6≤L≤3.3	1.4≤ΦD≤2.2	0.40±0.05	11/20 min
15	2.7≤L≤3.8	1.7≤ΦD≤2.5	0.40±0.05	11/20 min
16	2.8≤L≤4.0	1.8≤ΦD≤2.5	0.40±0.05	11/20 min
17	3.0≤L≤4.3	1.9≤ΦD≤2.5	0.40±0.05	11/20 min

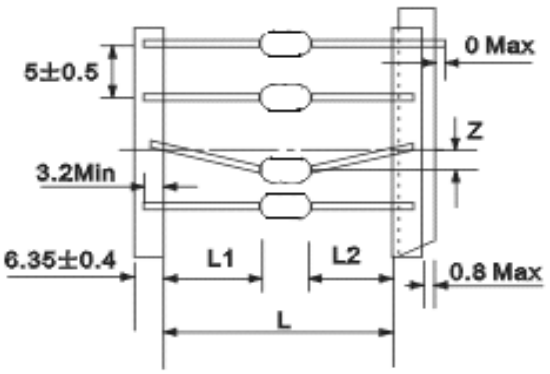


＊ 编带尺寸

Taping dimensions

单位 Unit：mm

编带方式 Tape Style	L	Z	| L1-L2 |
编带内距： 26 Tape Width:	26±1.5	0.8max	1.0max
编带内距： 52 Tape Width:	52(+2.0~-1.0)	1.2max	



◆可靠性测试方法
Reliability Test Method

<table>
<tr><td>项目
Item</td><td colspan="2">技术要求
Technical Specification</td><td colspan="3">测试方法和备注
Test Method and Remarks</td></tr>
<tr><td rowspan="4">容量
Capacitance
(C)</td><td rowspan="2">I 类
Class I</td><td rowspan="2">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>测试电压
Measuring Voltage</td></tr>
<tr><td>C≤1000pF
C＞1000 pF</td><td>1MHZ±10%
1KHZ±10%</td><td>1.0±0.2V</td></tr>
<tr><td rowspan="2">II 类
Class II</td><td rowspan="2">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>测试电压
Measuring Voltage</td></tr>
<tr><td>C≤10uF</td><td>1KHZ±10%</td><td>1.0±0.2V</td></tr>
<tr><td rowspan="4">损耗角正切
Dissipation Factor
(DF)</td><td rowspan="2">I 类
Class I</td><td rowspan="2">C≥50pF
DF≤0.15%
C＜50pF
DF≤1.5[(150/C)+7] X10^{-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
＞1000 pF</td><td>1MHZ±10%
1KHZ±10%</td><td>1.0±0.2V</td></tr>
<tr><td rowspan="2">II 类
Class II</td><td rowspan="2">B</td><td rowspan="2">DF ≤3.5%</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>C≤10uF</td><td>1KHZ±10%</td><td>1.0±0.2V</td></tr>
<tr><td rowspan="2">绝缘电阻
Insulation Resistance</td><td>I 类
Class I</td><td>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
测试湿度：≤75%
Test Humidity: ≤75%
测试温度： 25℃±3℃
Test Temprature: 25℃±3℃
测试充放电电流：≤50mA
Test Current: ≤50mA</td></tr>
<tr><td>II 类
Class II</td><td>C≤25nF
IR≥4000MΩ
C>25nF
R.C≥100 ΩF</td></tr>
</table>

项目 Item	技术要求 Technical Specification	测试方法和备注 Test Method and Remarks
耐电压 Withstandi-ng Voltage	不应有介质被击穿或损伤 No breakdown or damage.	测试电压 Measuring Voltage ： Ⅰ类:300%额定电压 Class Ⅰ:300% Rated voltage Ⅱ类:250%额定电压 ClassⅡ:250% Rated voltage 持续时间：5±1 秒 Duration: 5±1s 充/放电电流不应超过 50mA The charge/ discharge current is less than 50mA.
		端子与外装间 Between terminals and body： 施加电压：2.5UR 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.
可焊性 Solder ability	上锡率应大于 95% Lead wire shall be at least 95% covered with a new solder coating.	将电容器引线浸入含有 25%松香的酒精溶液中 5-10 秒，然后浸入温度为: 245±5℃的金属焊锡（Sn-3Ag-0.5Cu）中 2.5(+0.5,-0.5)秒，注意：电容器本体底面距离锡面约 1.5~2mm。 The lead wire of capacitor is dipping into a 25% rosin solution of ethanol for 5s-10s and then into molten solder(Sn-3Ag-0.5Cu ）of 245±5℃ for 2.5(+0.5,-0.5)s. In both cases the depth of dipping is up to about 1.5~2mm from the terminal body.
耐焊接热 Resistance to Soldering Heat	ΔC/C: C0G: ≤ ± 2.5% 或±.25pF X7R:≤±12.5% 外观无可见损伤 No significant abnormality in appearance.	锡温：260 ±5℃ 时间：10±1 s Solder temperature: 260 ±5℃ Duration: 10±1 s 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 24±2 小时后才测试。 Recovery: For class I, 24±2 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 小时后才测试。 Recovery（ Class II） : 48 ±4 hours of recovery under the standard condition after test.

项目 Item	技术要求 Technical Specification		测试方法和备注 Test Method and Remarks
高温负荷 High Temperature Loading Test	△C/C C0G:≤±3%或±.3pF X7R:≤±12.5% Y(F): ≤ ±30%		电压：1.5 倍额定电压 时间：1000 小时 温度：C0G/X7R 125℃,Y5V 85℃ 充电电流：不应超过 50mA 放置条件：室温 放置时间： 24 小时（ C0G ），或 48 小时（X7R/Y5V）， Applied Voltage: 2Rated Voltage Duration: 1000h Temperature：125℃ Charge/ Discharge Current: 50mA max. Recovery Conditions: Room Temperature Recovery Time: 24h (C0G), or 48h (X7R/Y5V)
	DF COG: Cr≥30pF ≤0.5% Cr＜30pF ≤1/（400+20Cr） X7R: ≤ 5.0% Y(F): ≤12.5% (CR ≤ 0.1uF) ≤15.0%(1uF ＞ CR ＞ 0.1uF) ≤17.5% (CR ≥1uF)		
	IR 绝缘电阻 Insulation Resistance: ≥ 500MΩ or 25 Ω.F 取较小值 Whichever is smaller		
	外观无可见损伤 Appearance no visible damage		
端头强度 Terminal Strength	抗拉强度 Tensile Strength	无引线断裂或松动等可见不良。 No abnormality such as cut lead or looseness.	固定电容器本体，沿引线方向逐步施加拉力直至 10N，然后保持 10 ±1 秒。 Fix the capacitor body, apply the force gradually to each lead in the radial direction of the capacitor until reaching 10N, and then keeping the force for 10 ±1 sec.
	弯折强度 Bending Strength		对电容器引出端施加一 2.5N 的力，使引线弯曲 90 度，持续 5 秒，然后使引线回到原始位置，接着反方向操作一次为一个循环，共重复 2 次。 Each lead wire shall be subjected to a force of 2.5N and then be bent a angle of 90 degree then returned to initial position. This operation is done over a period of 5 sec. Then second bend in the opposite direction shall be made, repeat 2 times.

*以上所示“标准条件”解释如下：温度：5~35℃，相对湿度：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.

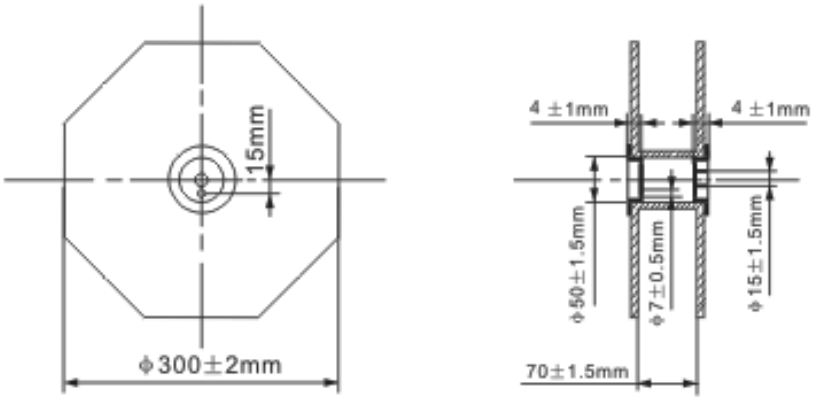
* 若测试结果有争议时，仲裁试验用标准大气条件为：温度：25±1℃，相对湿度：48%~52%， 气压：86~106kPa

* 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 to 106 kPa of atmospheric pressure.

◆包装
Packaging

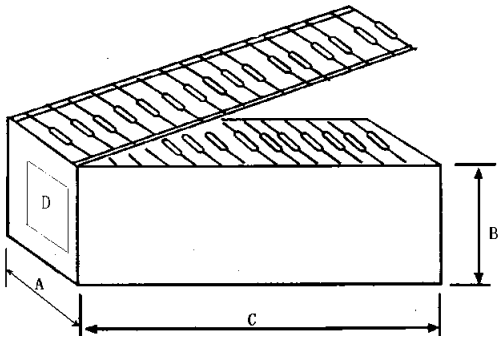
* 卷带包装

Tape and Reel Packaging



* 盒带包装

Ammo Packaging



尺寸规格 Size Code	编带方式 Tape Style	A ±5 mm	B ±5 mm	C ±5 mm	D
15/16/17	P52	80	80	265	贴标签 Lable
	P26	60	70	265	
13	P52	76	70	260	
	P26	60	70	260	

* 包装数量

Packaging Quantity

尺寸规格 Size Code	盒带包装 Ammo	卷带包装 Tape and Reel
13	5000pcs	5000pcs
15	5000pcs	5000pcs
16	5000pcs	5000pcs
17	5000pcs	5000pcs