

■ 径向引线多层陶瓷电容器
Radial Lead 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

CT4	0805	B	104	K	500	P	F3
A	B	C	D	E	F	G	H

A:

产品类别 Product Type	
代号 Code	类别 Type
CC4	I 类径向引线多层陶瓷电容器 Class I Dielectric Radial Leded Mlcc
CT4	II 类径向引线多层陶瓷电容器 Class II Dielectric Radial Leded Mlcc

B:

单位：英寸

UNIT: INCHES

本体外形尺寸规格（长 x 宽） Nominal Body Size (Length x Width)			
0805	0.17x0.15	1812	0.34 × 0.26
1206	0.20x0.18	1209/1210	0.22 × 0.22

C:

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

D:

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

E:

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 适用 C<10PF C,D for C<10PF NP0:C.D.J.K.M, X7R:K.M.N,S,Z, Y5V:M,N,S,Z							

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
散包装 Bulk	空白 Blank	

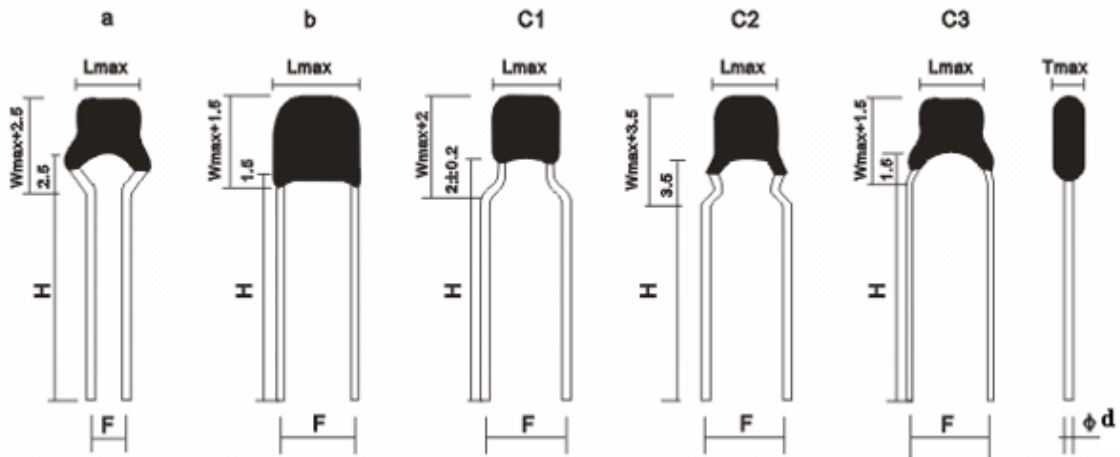
H

脚距 (单位: mm) Lead Space (Unit: mm)	
F1	2.54
F2	4.57
F3	5.08

◆尺寸、工作电压、容量关系表

Size code, capacitance and voltage

尺寸规格 Size code	外形 Shape	尺寸 (单位: mm) Dimensions (Unit: mm)						工作电压 Voltage	标称容量范围 Available Capacitance Range		
		F	H	L	W	T	Φd		C0G (NP0)	X7R	
		±0.5	±1.0	max	max	max	±0.1				
0805	a	2.54						25	0R5~272	101~105	102~105
	b	2.54	5								
	c1	5.08	10	4.2	3.8	3.8	0.50				
	c2	5.08	25					50	0R5~272	101~105	102~105
	c3	5.08									
1206	b	2.54	5					25	0R5~562	101~225	102~225
	C1	5.08	10	5.5	4.5	3.8	0.50				
	C2	5.08	25					50	0R5~562	101~225	102~225
1209/1210	C1	5.08	10	5.5	5.5	3.8	0.50	25	100~103	471~105	472~155
								50	100~103	471~105	472~155
1812	b	4.57	10	8.5	6.5	3.8	0.50	25	100~153	471~225	103~225
								50	100~153	471~225	103~225



其它规格可直接和我们联系。

Others are available, contact FH.

◆可靠性测试方法
Reliability Test Method

项目 Item	技术要求 Technical Specification		测试方法和备注 Test Method and Remarks		
容量 Capacitance (C)	I类 Class I	应符合指定的误差级别 within the specified tolerance.	标称容量 Capacitance	测试频率 Measuring Frequency	测试电压 Measuring Voltage
			C≤1000pF	1MHZ±10%	1.0±0.2V
	C>1000 pF	1KHZ±10%			
	II类 Class II	应符合指定的误差级别 within the specified tolerance.	标称容量 Capacitance	测试频率 Measuring Frequency	测试电压 Measuring Voltage
C≤10uF			1KHZ±10%	1.0±0.2V	
损耗角正切 Dissipation Factor (DF)	I类 Class I	C≥50pF DF≤0.15% C<50pF DF≤1.5[(150/C)+7] X10 ⁻⁴	标称容量 Capacitance	测试频率 Measuring Frequency	测试电压 Measuring Voltage
			≤1000pF	1MHZ±10%	1.0±0.2V
			>1000 pF	1KHZ±10%	
	II类 Class II	B	DF ≤3.5%	标称容量 Capacitance	测试频率 Measuring Frequency
			C≤10uF	1KHZ±10%	1.0±0.2V
绝缘电阻 Insulation Resistance	I类 Class I	C≤10nF IR≥10000MΩ C>10nF R. C≥100 ΩF	测试电压: 额定电压 Measuring Voltage: Rated Voltage		
	II类 Class II	C≤25nF IR≥4000MΩ C>25nF R.C≥100 ΩF	测试时间: 60±5 秒 Duration: 60±5s 测试湿度: ≤75% Test Humidity: ≤75% 测试温度: 25°C±3°C Test Temperature: 25°C±3°C 测试充放电电流: ≤50mA Test Current: ≤50mA		

项目 Item	技术要求 Technical Specification	测试方法和备注 Test Method and Remarks
耐电压 Withstand-ing Voltage	不应有介质被击穿或损伤 No breakdown or damage.	<p>测试电压 Measuring Voltage :</p> <p>I类:300%额定电压 Class I :300% Rated voltage</p> <p>II类:250%额定电压 ClassII:250% Rated voltage</p> <p>持续时间: 5±1 秒 Duration: 5±1s</p> <p>充/放电电流不应超过 50mA The charge/ discharge current is less than 50mA.</p> <hr/> <p>端子与外装间 Between terminals and body:</p> <p>施加电压: 2.5UR 持续时间: 1~5s Voltage: 2.5 times rated voltage Duration: 1~5s</p> <p>金属制小球法 Small metallic ball method</p> <p>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.</p>
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°C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°C 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.	<p>锡温: 260 ±5°C Solder temperature: 260 ±5°C</p> <p>时间: 10 ±1 s Duration: 10 ±1 s</p> <p>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)</p> <p>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.</p> <p>对于 II 类介质, 在试验前应先进行如下预处理: 150(-10,+0) °C, 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) °C, followed by 48 ±4 hours of recovery under the standard condition.</p> <p>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.</p>

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	$\Delta C/C$ COG: $\leq \pm 3\%$ 或 $\pm .3pF$ X7R: $\leq \pm 12.5\%$ Y(F): $\leq \pm 30\%$	电压: 1.5 倍额定电压 时间: 1000 小时 温度: COG/X7R 125°C, Y5V 85°C 充电电流: 不应超过 50mA 放置条件: 室温 放置时间: 24 小时 (COG), 或 48 小时 (X7R/Y5V), Applied Voltage: 2Rated Voltage Duration: 1000h Temperature: 125°C Charge/ Discharge Current: 50mA max. Recovery Conditions: Room Temperature Recovery Time: 24h (COG), or 48h (X7R/Y5V)
	DF COG: $Cr \geq 30pF \leq 0.5\%$ $Cr < 30pF \leq 1 / (400 + 20Cr)$ X7R: $\leq 5.0\%$ Y(F): $\leq 12.5\% (CR \leq 0.1\mu F)$ $\leq 15.0\% (1\mu F > CR > 0.1\mu F)$ $\leq 17.5\% (CR \geq 1\mu F)$	
	IR 绝缘电阻 Insulation Resistance: $\geq 500M \Omega$ or $25 \Omega \cdot F$ 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	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. 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.
	弯折强度 Bending Strength	
	无引线断裂或松动等可见不良。 No abnormality such as cut lead or looseness.	

*以上所示“标准条件”解释如下: 温度: 5~35°C, 相对湿度: 45~85%, 气压: 86~106kPa

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

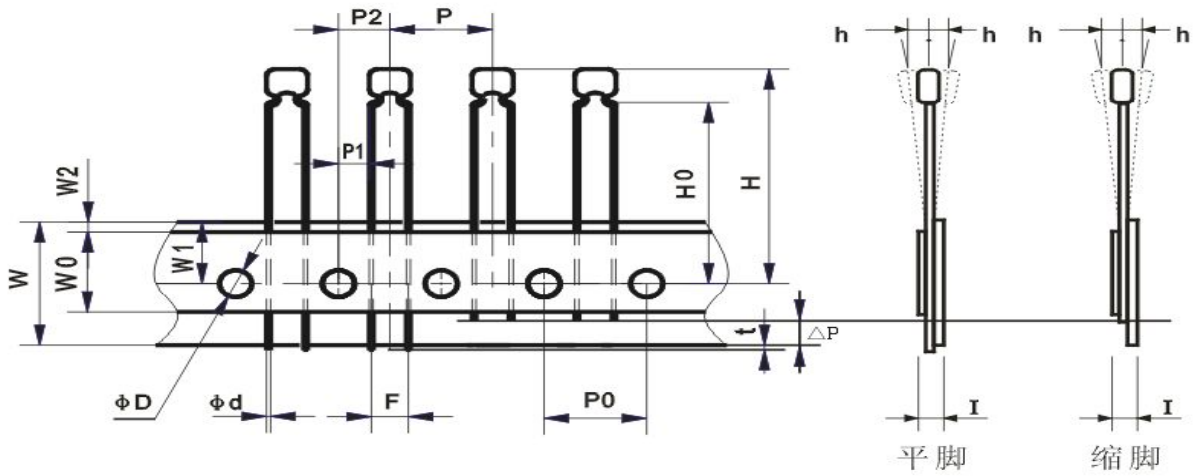
5 to 35°C of temperature, 45 to 75% of relative humidity, and 86 to 106kPa of atmospheric pressure.

* 若测试结果有争议时, 仲裁试验用标准大气条件为: 温度: $25 \pm 1^\circ C$, 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



代号 Code	P	P0	P1	P2	d	Δ h	W	W0	W1	W2	H	H0	I	D	t	ΔP
尺寸 Dim.	12.7	12.7	3.85 5.1	6.35	0.5 0	0	18.5	8 10	9	1.5	32.25	16 19.5	1.42	4.0	0	0≤P<12
误差 Tol.	± 1.0	± 0.2	± 0.7	± 1.3	± 0.1	± 1.0	± 1.0	± 1.0	± 0.5	± 1.5	Max.	± 1.0	Ma x	± 0.2	Max	

*注意 Note:

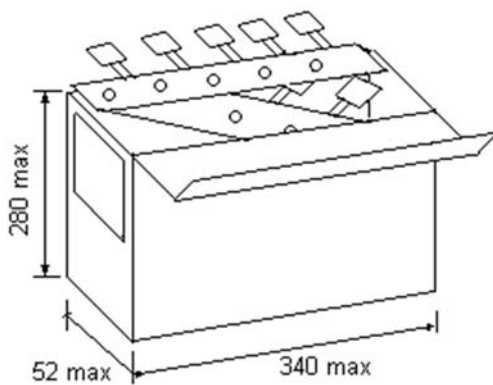
P1=3.85mm for F=5.08mm; P1=5.1mm for F=2.54mm.

Ammo Packaging/Tape and Reel Packaging: H0=16±1mm (Pin size 7mm) ;

H0=19.5±1mm (Pin size 7mm) .

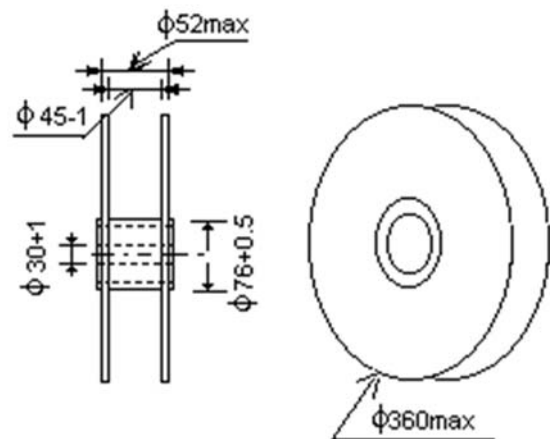
盒带包装

Ammo Packaging



卷带包装

Tape and Reel Packaging



* 包装数量

Packaging Quantity

尺寸规格 Size Code	散包装 Bulk		盒带包装 Ammo	卷带包装 Tape and Reel
	pin≤25mm	pin>25mm		
0805	1000pcs	500pcs	2500pcs	4000pcs
1206	1000pcs	500pcs	2500pcs	2000pcs
1209/1210	1000pcs	500pcs	2000pcs	2000pcs
1812	1000pcs	500pcs	1000pcs	1000pcs