

■ 片式排容 Arrays MLCC

◆ 特征 Feature

- * 叠层独石结构，具有高可靠性
There is high reliability on monolithic structure of laminated layers.
- * 具有优良的焊接与耐焊性能，适用于回流焊接与波峰焊接
And its character of excellent soldering ability and soldering resistance ability is suitable for reflow soldering and peak soldering.
- * 具有较高的容量且容量性能稳定
It includes high and stable capacitance.

- * 节约空间：可以节省高达 50% 的 PCB 空间位置，提高装配密度
Space saving: CA can save 50% space of the PC board and improve the assembling density.
- * 更高的体积比容：安装一块 CA 等于安装 4 块 0603 片容，减少安装次数，提高安装效率
Provide more capacitance per volumetric area: Efficiently use the side margins and thickness. Promoting mounting efficiency. One chip of CA equals to four chips of 0603 type capacitor. So it can reduce times of picking and placing.
- * 降低成本：减少放置的次数；缩短生产时间；减少设备管理费用；减少 PCB 费用
Cost saving: Reduce times for picking and placing, reduce manufacturing time, reduce the cost for manage the equipments and reduce the cost of PCB.
- * 安装简易：可进行 SMT 编带包装，由贴片机高速贴片
Easy to picking and placing: SMT package, easy to mounting.
- * 提高线路板工作效率：可以减少印刷的线路。提高线路板的运转速度，提高工作效率
Improve the working efficiency of the printed board: Reduce the amount of printed circuits and promote the working speed of the printed circuit.
- * 执行标准：GB/T 21041-2007 GB/T 21042-2007
Executive Standard: GB/T 21041-2007 GB/T 21042-2007

◆ 应用 Application

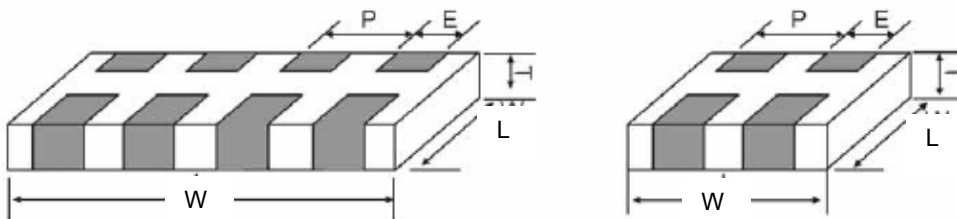
- * 适用于对元器件空间要求严格的 PCB，如手提电脑、PDA、无绳电话
Applied in PCB which require strictly about space speed, such as notebook computer, PDA and portable telephone, etc.
- * 特别适用于输入、输出接口电路
CA is best suitable to use in I/O interface circuit.



◆ 型号表示法
How To Order

6124	B	103	K	500	N	T	
介质种类 Dielectric Code		标称容量 Nominal Capacitance		额定电压 Rated Voltage 单位(unit): V		包装方式 Package Styles	
介质种类 Dielectric Code	介质材料 Dielectric	表示方式 Express Method	实际值 Actual Value	表示方式 Express Method	实际值 Actual Value	表示方式 Express Method	包装方式 Package Styles
CG	C0G	0R5	0.5	6R3	6.3	B	散包装 Bulk Bag
B	X7R	1R0	1.0	500	50×10^0	T	编带包装 Taping Package
F	Y5V	102	10×10^2	201	20×10^1		
		注：头两位数字为有效数字，第三位数字为0的个数；R为小数点。 Note: the first two digits are significant; third digit denotes number of zeros; R=decimal point.		注：头两位数字为有效数字，第三位数字为0的个数；R为小数点。 Note: the first two digits are significant; third digit denotes number of zeros; R=decimal point.			
产品尺寸及类型 Product Size And Type				端子材料 Terminal Material Styles			
尺寸规格 Size Code	长 (英寸) L(inch)	宽 (英寸) W(inch)	内置单元 Elements Inside	端子类别 Termination Styles	表示方式 Express Method		
6124	0.06	0.12	4	纯铜端子 Copper Solderable Termination	C		
5084	0.05	0.08	4	三层电镀端子 Nickel Barrier Termination	N		
5082	0.05	0.08	2				

容量误差 Capacitance Tolerance											
代码 Code	A	B	C	D	F	G	J	K	M	S	Z
误差 Tolerance	$\pm 0.05\text{pF}$	$\pm 0.10\text{pF}$	$\pm 0.25\text{pF}$	$\pm 0.50\text{pF}$	$\pm 1\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 20\%$	-20% +50%	-20% +80%
备注：A、B、C、D级误差适用于容量 $\leq 10\text{pF}$ 的产品。 Note: These Capacitance tolerance A, B, C, D are just applicable the capacitance that equals to or less than 10pF.											

◆ 产品外形及尺寸
Product shape and size


型号 Type	尺寸 (mm)				
	L	W	T	P	E
6124	1.60 ± 0.20	3.20 ± 0.20	0.80 ± 0.10 1.00 ± 0.10	0.80 ± 0.20	0.40 ± 0.10
5084	1.25 ± 0.20	2.00 ± 0.20	0.80 ± 0.10 1.00 ± 0.10	0.50 ± 0.05	0.25 ± 0.05
5082	1.25 ± 0.20	2.00 ± 0.20	0.80 ± 0.10 1.00 ± 0.10	1.00 ± 0.10	0.50 ± 0.05

◆ 温度系数/特性
Temperature Coefficient /Characteristics


介质种类 Dielectric	参考温度点 Reference Temperature Point	标称温度系数 Temperature Coefficient	工作温度范围 Operation Temperature Range
COG	20°C	0±30 ppm/°C	-55°C ~ 125°C
X7R	20°C	±15%	-55°C ~ 125°C
Y5V	20°C	-80% ~ +30%	-25°C ~ 85°C


备注：I 类电容器标称温度系数和允许偏差是采用温度在 20°C 和 85°C 之间的电容量变化来确定的，而 II 类电容器标称温度系数是按照工作范围之间的电容量相对 20°C 的电容量变化来确定的。

Note: Nominal temperature coefficient and allowed tolerance of class I are decided by the changing of the capacitance between 20°C and 85°C. Nominal temperature coefficient of class II are decided by the temperature of 20°C.



◆ 容量范围及其电压
Capacitance Range and Operating Voltage

尺寸 Dimensions	6124										
材料 Dielectric	COG				X7R				Y5V		
额定电压 Rated Voltage	16V	25V	50V	100V	16V	25V	50V	100V	16V	25V	50V
电容量 Capacitance											
0.5PF											
5 PF											
10 PF											
15 PF											
20 PF											
22 PF											
33 PF											
47 PF											
100 PF											
150 PF											
220 PF											
330 PF											
470 PF											
1000 PF											
2.2 nF											
3.3nF											
4.7nF											
6.8nF											
10 nF											
22 nF											
33 nF											
47 nF											
68 nF											
100 nF											
220 nF											



备注：1、 正常生产 2、可根据客户的特殊要求设计符合客户需求的产品

Note: 1、 Normal production 2、We can design according to the customer requirements.

尺寸 Dimensions	5084								
材料 Dielectric	COG			X7R			Y5V		
额定电压 Rated Voltage	16V	25V	50V	16V	25V	50V	16V	25V	50V
电容量 Capacitance									
0.5PF									
5 PF									
10 PF									
15 PF									
20 PF									
22 PF									
33 PF									
47 PF									
100 PF									
150 PF									
220 PF									
330 PF									
470 PF									
1000 PF									
2.2nF									
3.3nF									
4.7nF									
6.8nF									
10 nF									
22 nF									
33 nF									
47 nF									
68 nF									
100 nF									
220nF									

备注：1、  正常生产 2、可根据客户的特殊要求设计符合客户需求的产品
 Note: 1、  Normal production 2、We can design according to the customer requirements.

尺寸 Dimensions	5082								
材料 Dielectric	COG			X7R			Y5V		
额定电压 Rated Voltage	16V	25V	50V	16V	25V	50V	16V	25V	50V
电容量 Capacitance									
0.5PF									
5 PF									
10 PF									
15 PF									
20 PF									
22 PF									
33 PF									
47 PF									
100 PF									
150 PF									
220 PF									
330 PF									
470 PF									
1000 PF									
2.2nF									
3.3nF									
4.7nF									
6.8nF									
10 nF									
22 nF									
33 nF									
47 nF									
68 nF									
100 nF									
220nF									

备注：1、  正常生产 2、可根据客户的特殊要求设计符合客户需求的产品
 Note: 1、  Normal production 2、We can design according to the customer requirements.

◆ 可靠性测试
Reliability Test

项目 Item	技术规格 Technical Specification			测试方法 Test Method and Remarks			
容量 Capacitance	I 类 Class I	应符合指定的误差级别 Should be within the specified tolerance.		标称容量 Capacitance	测试频率 Measuring Frequency	测试电压 Measuring Voltage	
				≤1000pF	1MHz±10%	1.0±0.2Vrms	
				> 1000 pF	1KHz±10%		
	II 类 Class II	应符合指定的误差级别 Should be within the specified tolerance.		测试温度: 25℃±3℃ 测试频率: 1KHz±10% 测试电压: 1.0±0.2Vrms Test Temperature: 25℃±3℃ Test Frequency: 1KHz±10% Test Voltage: 1.0±0.2Vrms			
绝缘电阻 (IR) Insulation Resistance	I 类 Class I	C≤10 nF, Ri≥50000MΩ C>10 nF, Ri·Cr≥500S		测试电压: 额定电压 测试时间: 60±5 秒 测试湿度: ≤75%			
	II 类 Class II	X7R	C≤25 nF, Ri≥10000MΩ C>25 nF, Ri·Cr> 100S	测试温度: 25℃±3℃ 测试充放电电流: ≤50mA Measuring Voltage: Rated Voltage Duration: 60±5s Test Humidity: ≤75%			
		Y5V	C≤25 nF, Ri≥4000MΩ C>25 nF, Ri·Cr> 100S	Test Temperature: 25℃±3℃ Test Current: ≤50mA			
损耗角正切 (DF, tanδ) Dissipation Factor	I 类 Class I	DF			标称容量 Capacitance	测试频率 Measuring Frequency	测试电压 Measuring Voltage
		≤0.56%			Cr<5 pF	1MHz±10%	1.0±0.2Vrms
		≤1.5[(150/Cr)+7]×10 ⁻⁴			5pF≤Cr<50 pF	1MHz±10%	
		≤0.15%			50pF≤Cr≤1000 pF	1MHz±10%	
	≤0.15%			> 1000 pF	1KHz±10%		
	II 类 Class II	X7R	≥50V	25V	16V	测试温度: 25℃±3℃ 测试频率: 1KHz±10% 测试电压: 1.0±0.2Vrms Test Temperature: 25℃±3℃ Test Frequency: 1KHz±10% Test Voltage: 1.0±0.2Vrms	
≤2.5%			≤3.5%	≤5.0%			
Y5V	≥25V		16V				
	C<1.0μF: ≤7.0% C≥1.0μF: ≤9.0%		≤15%				
介质耐电强度 (DWW) Dielectric Withstanding Voltage	不应有介质被击穿或损伤 No breakdown or damage.			测量电压: I 类: 300%额定电压 II 类: 250%额定电压 时间: 1~5 秒 充/放电电流: 不应超过 50mA Measuring Voltage: Class I :300% Rated voltage Class II :250% Rated voltage Duration: 1~5s Charge/ Discharge Current: 50mA max.			
端头结合强度 Termination Adhesion	外观无可见损伤 No visible damage.			施加的力: 5N 时间: 10±1S Applied Force: 5N Duration: 10±1S			
可焊性 Solderability	上锡率应大于 95% 外观: 无可见损伤。 At least 95% of the terminal electrode is covered by new solder. Visual Appearance: No visible damage.			将电容在 80~120℃的温度下预热 10~30 秒。 Preheating conditions:80 to 120℃; 10~30s.			
				有铅焊料: (Sn/Pb: 63/37) 浸锡温度: 235±5℃ 浸锡时间: 2±0.5s Solder Temperature: 235±5℃ Duration: 2±0.5s	无铅焊料: 浸锡温度: 245±5℃ 浸锡时间: 2±0.5s Solder Temperature: 245±5℃ Duration: 2±0.5s		

项目 Item	技术规格 Technical Specification				测试方法 Test Method and Remarks													
耐焊接热 Resistance to Soldering Heat	项目 Item	C0G	X7R	Y5V	将电容在 100~200℃ 的温度下预热 10±2 分钟。 浸锡温度：265±5℃ 浸锡时间：10±1s 然后取出溶剂清洗干净，在 10 倍以上的显微镜底下观察。 放置时间：24±2 小时 放置条件：室温 Preheating conditions: 100 to 200℃; 10±2min. Solder Temperature: 265±5℃ Duration: 10±1s Clean the capacitor with solvent and examine it with a 10X(min.) microscope. Recovery Time: 24±2h Recovery condition: Room temperature													
	ΔC/C	≤±0.5%或±0.5PF, 取较大值 ≤±0.5% or ±0.5PF, whichever is larger	-5%~+10%	-10%~+20%														
	DF	同初始标准 Same to initial value.																
	IR	同初始标准 Same to initial value.																
	外观：无可见损伤 上锡率：≥95% Appearance: No visible damage. At least 95% of the terminal electrode is covered by new solder.																	
抗弯曲强度 Resistance to Flexure of Substrate (Bending Strength)	外观：无可见损伤。 Appearance: No visible damage.				试验基板：Al ₂ O ₃ 或 PCB 弯曲深度：1mm 施压速度：1mm/sec. 单位：mm 应在弯曲状态下进行测量。 Test Board: Al ₂ O ₃ or PCB Warp: 1mm Speed: 1mm/sec. Unit: mm The measurement should be made with the board in the bending position.													
	ΔC/C	≤±10%																
温度循环 Temperature Cycle	项目 Item	C0G	X7R	Y5V	预处理* (2类)：上限类别温度，1 小时 恢复：24±1h Preheating conditions: up-category temperature, 1h Recovery time: 24±1h 初始测量 Initial Measurement 循环次数：5 次，一个循环分以下 4 步： Cycling Times: 5 times, 1 cycle, 4 steps:													
	ΔC/C	≤±1%或±1PF, 取较大值 ≤±1% or ±1pF, whichever is larger	≤±10%	≤±20%														
	<table border="1"> <thead> <tr> <th>阶段 Step</th> <th>温度 (Temperature) (°C)</th> <th>时间 (Time)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>下限温度(Low- category temp.): NPO/X7R:-55 Y5V:-25</td> <td>30min</td> </tr> <tr> <td>2</td> <td>常温(Normal temp.): +20</td> <td>2~3min</td> </tr> <tr> <td>3</td> <td>上限温度(Up- category temp.): NPO/X7R: +125 Y5V:+85</td> <td>30min</td> </tr> <tr> <td>4</td> <td>常温(Normal temp.): +20</td> <td>2~3min</td> </tr> </tbody> </table>					阶段 Step	温度 (Temperature) (°C)	时间 (Time)	1	下限温度(Low- category temp.): NPO/X7R:-55 Y5V:-25	30min	2	常温(Normal temp.): +20	2~3min	3	上限温度(Up- category temp.): NPO/X7R: +125 Y5V:+85	30min	4
阶段 Step	温度 (Temperature) (°C)	时间 (Time)																
1	下限温度(Low- category temp.): NPO/X7R:-55 Y5V:-25	30min																
2	常温(Normal temp.): +20	2~3min																
3	上限温度(Up- category temp.): NPO/X7R: +125 Y5V:+85	30min																
4	常温(Normal temp.): +20	2~3min																
试验后放置 (恢复) 时间：24±2h Recovery time after test: 24±2h																		
耐湿负荷 Humidity load	ΔC/C	I 类: ±7.5%或±0.75pF, 取两者之中较大者 II 类: X7R: ≤±12.5% Y5V: ≤±30% Class I : ±7.5% or ±0.75pF, whichever is larger. Class II : B,X,BS,DS: ≤±12.5% E,F: ≤±30%			温度：40±2℃ 湿度：90~95%RH 电压：额定电压 时间：500 小时 放置条件：室温 放置时间：24 小时 (I 类); 48 小时 (II 类) Temperature: 40±2℃ Humidity: 90~95%RH Voltage: Rated Voltage Duration: 500h Recovery conditions: Room temperature Recovery Time: 24h (Class1) or 48h (Class2)													
	DF	≤2 倍初始标准 Not more than twice of initial value.																
	IR	Class I		Ri≥5000MΩ或 Ri·CR≥50S 取两者之中较小者。 Ri≥5000MΩ或 Ri·CR≥50S whichever is smaller.														
		Class II	X7R	Ri≥1000MΩ或 Ri·CR≥10S 取两者之中较小者。 Ri≥1000MΩ或 Ri·CR≥10S whichever is smaller.														
	Y5V		Ri≥400MΩ或 Ri·CR≥10S 取两者之中较小者。 Ri≥400MΩ或 Ri·CR≥10S whichever is smaller.															
外观：无损伤 Appearance: No visible damage.																		

项目 Item	技术规格 Technical Specification		测试方法 Test Method and Remarks
寿命试验 Life Test	ΔC /C	COG ±2%或±1pF, 取两者之中较大者 ±2% or ±1pF, whichever is larger.	电压: 2倍额定工作电压 时间: 1000小时 温度: 125℃ (NPO、X7R) 85℃ (Y5V) 充电电流: 不应超过50mA 放置条件: 室温 放置时间: 24小时 (I类), 或48小时 (II类), Applied Voltage: 2*Ur, except the table 1 Duration: 1000h Temperature: 125℃ (NPO、X7R) 85℃ (Y5V) Charge/ Discharge Current: 50mA max. Recovery Conditions: Room Temperature Recovery Time: 24h (Class 1), or 48h (Class2)
		X7R -20% ~ +20%	
		Y5V -30% ~ +30%	
	DF	≤2倍初始标准 Not more than twice of initial value.	
	IR	COG Ri≥4000MΩ或 Ri•CR≥40S 取两者之中较小者 Ri≥4000MΩ or Ri•CR≥40S whichever is smaller.	
X7R Ri≥2000MΩ或 Ri•CR≥50S 取两者之中较小者. Ri≥2000MΩ or Ri•CR≥50S whichever is smaller.			
外观: 无损伤 Appearance: No visible damage.			

专门预处理* (仅对2类电容器):

将电容器放在上限类别温度或按详细规范中可能规定的更高温度下经1h后, 接着在试验的标准大气条件下恢复24±1h。

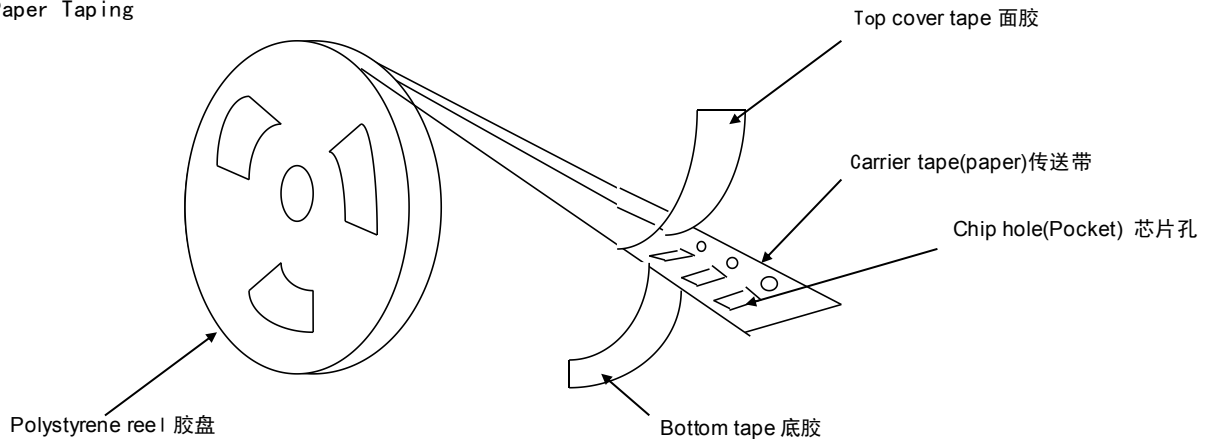
Note: Pretreatment (only for class2 capacitor)

Pretreatment (only for class2 capacitor) is a method to treat the capacitor before measurement. First, place the capacitor in the up-category temperature or other specified higher temperature environment for 1hour. Then recovery the capacitor at standard pressure conditions for 24±1hours.

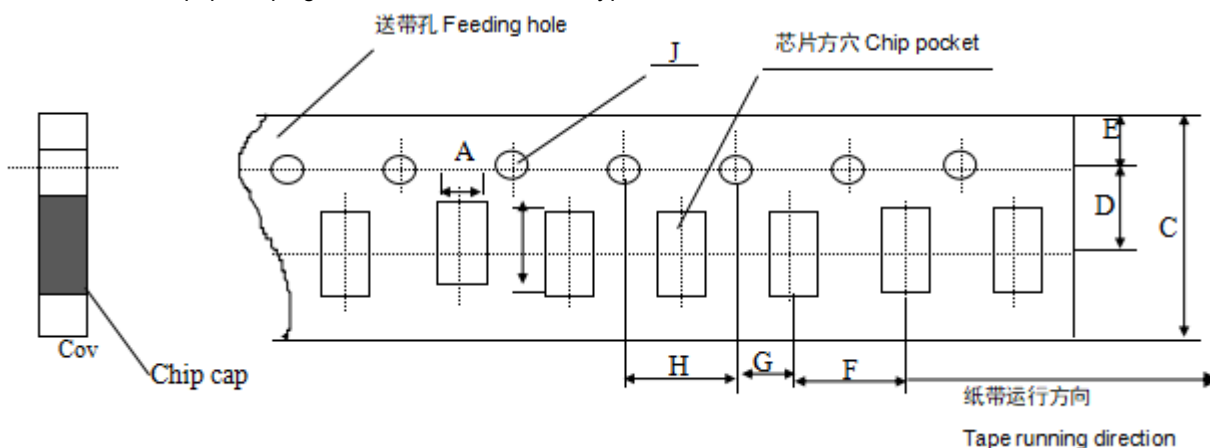
◆ 包装

Package

- * 纸带卷盘结构
Paper Taping



- * 适合 '6124, 5084, 5082' 尺寸产品的纸带尺寸
Dimensions of paper taping for 6124, 5084, 5082 types



Unit: mm

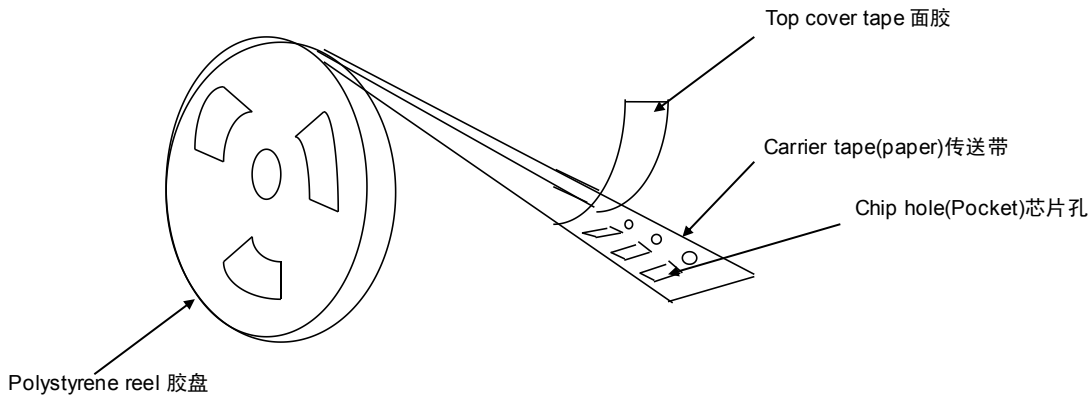
代号Code 纸带规格 paper size	A	B	C	D*	E	F	G*	H	J	T
5082	1.45 ±0.15	2.30 ±0.15	8.0 ±0.15	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.10	4.00 ±0.10	1.50 -0/+0.10	1.10 Max
5084	1.45 ±0.15	2.30 ±0.15	8.0 ±0.15	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.10	4.00 ±0.10	1.50 -0/+0.10	1.10 Max
6124	1.80 ±0.20	3.40 ±0.20	8.00 ±0.20	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.10	4.00 ±0.10	1.50 -0/+0.10	1.10 Max

注意：*表示此处对尺寸的要求非常精确。

Note: The place with "*" means where needs exactly dimensions.

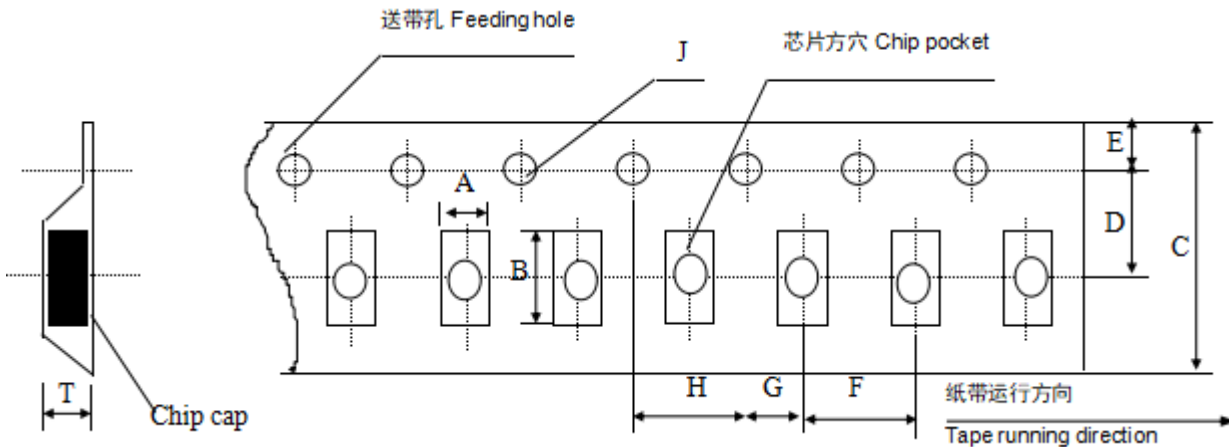
* 塑胶卷盘结构

Embossed taping



* 适合‘6124, 5084, 5082’型产品的塑胶带尺寸

Dimensions of embossed taping for 6124, 5084, 5082 type



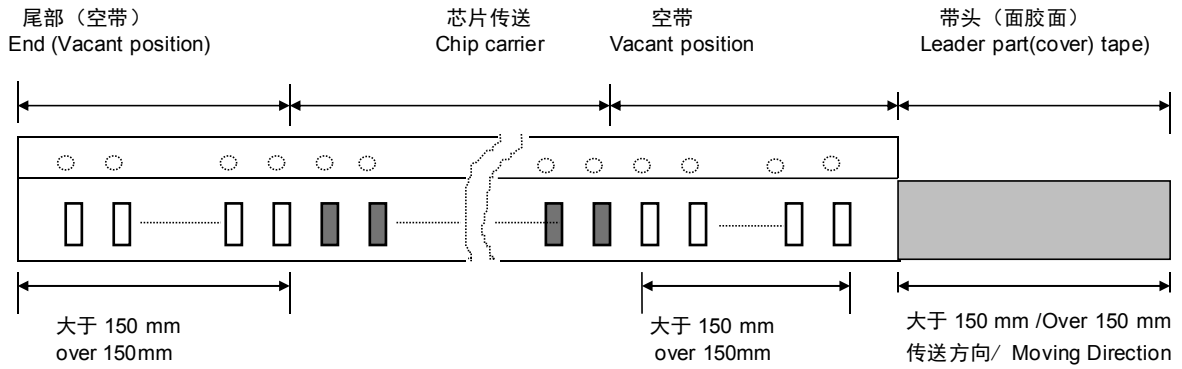
代号Code 规格 Tape size	A	B	C	D*	E	F	G*	H	J	T
5082	1.55 ±0.20	2.35 ±0.20	8.00 ±0.20	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.10	4.00 ±0.10	1.50 -0/+0.10	1.50 Max
5084	1.55 ±0.20	2.35 ±0.20	8.00 ±0.20	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.10	4.00 ±0.10	1.50 -0/+0.10	1.50 Max
6124	1.95 ±0.20	3.60 ±0.20	8.00 ±0.20	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.10	4.00 ±0.1	1.50 -0/+0.10	1.85 Max

备注：*表示此处对尺寸的要求非常精确。

Note: The place with "*" means where needs exactly dimensions.

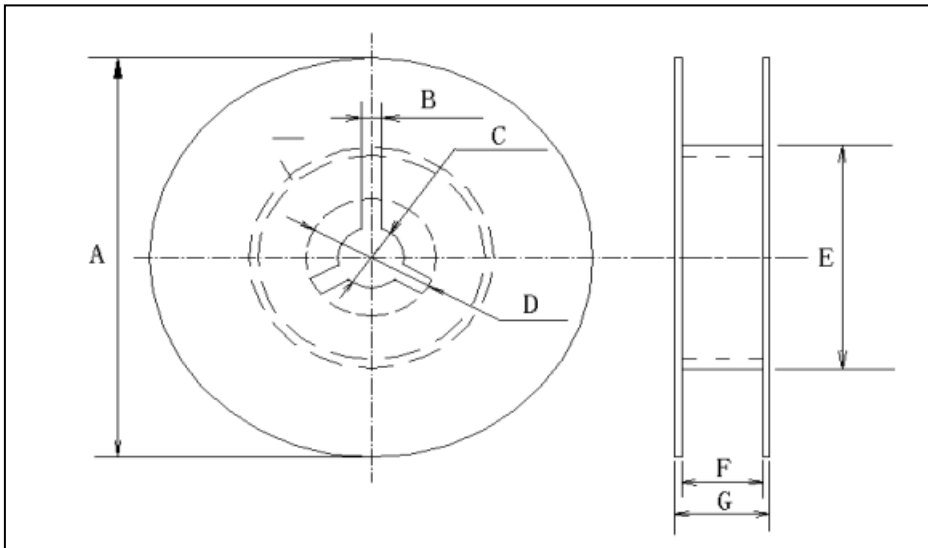
* 传送带的前后结构

Structure of leader part and end part of the carrier paper



* 卷盘尺寸

Reel dimensions (unit: mm)

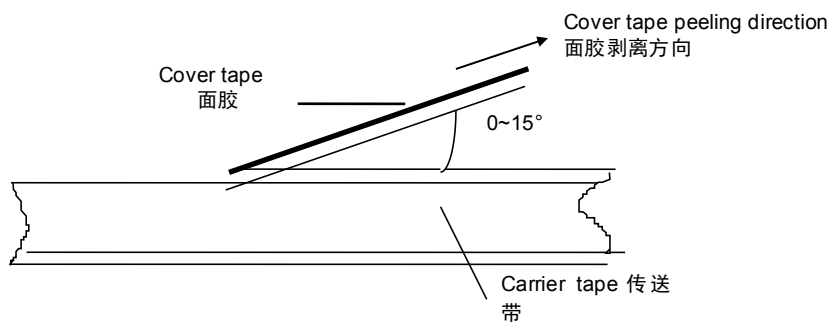


卷盘型号	A	B	C	D	E	F	G
7'REEL	$\phi 178 \pm 2.0$	3.0	$\phi 13 \pm 0.5$	$\phi 21 \pm 0.8$	$\phi 50$ 或更大 $\phi 50$ or more	10.0 ± 1.5	12max
13'REEL	$\phi 330 \pm 2.0$	3.0	$\phi 13 \pm 0.5$	$\phi 21 \pm 0.8$	$\phi 50$ 或更大 $\phi 50$ or more	10.0 ± 1.5	12max

* 关于卷带的说明: 面胶剥离强度

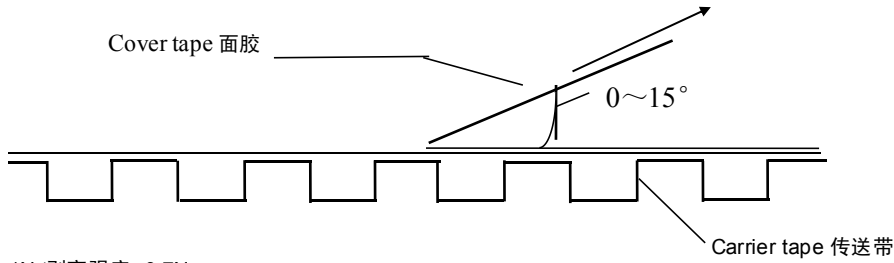
Taping specification: top tape peeling strength

* 纸带 Paper Taping



*** 塑料胶盘 Embossed Taping**

Cover tape peeling direction 面胶剥离方向


 标准: $0.1N < \text{剥离强度} < 0.7N$

 Standard: $0.1N < \text{peeling strength} < 0.7N$

在剥离时, 纸带不能有纸碎, 也不能粘在底、面胶上。

No paper dirty remains on the scotch when peeling, and sticks to top and bottom tape.

*** 塑料盒散包装**
Bulk Case Package

单位 (unit) :mm

Symbol	A	B	T	C	D	E
Dimension	6.80 ± 0.10	8.80 ± 1.00	12.00 ± 0.10	$15.00 + 0.10 / -0$	$2.00 + 0 / -0.10$	4.70 ± 0.10
Symbol	F	W	G	H	L	I
Dimension	$31.50 + 0.20 / -0$	$36.00 + 0 / -0.20$	19.00 ± 0.35	7.00 ± 0.35	110.00 ± 0.70	5.00 ± 0.35

*** 包装数量**
Packing Quantity

尺寸 (SIZE)	包装形式和数量 (Package Style & Quantity) unit: pcs				
	塑料压纹带卷盘 (EPT)	纸带卷盘 (PT)	胶带卷盘 (ET)	塑料盒散装 (BC)	一般散装 (BP)
5082 5084	----	4000	3000	10000	5000
6124	----	4000	$T \leq 1.35\text{mm}$ 3000 $T > 1.35\text{mm}$ 2000	5000	5000

注意: 包装的形式和数量可根据客户的要求来定。

Note: We can choose packing style and quantity can be according to the customer's requirement.

*** 外包装**
Outer packing

小包装 The first package

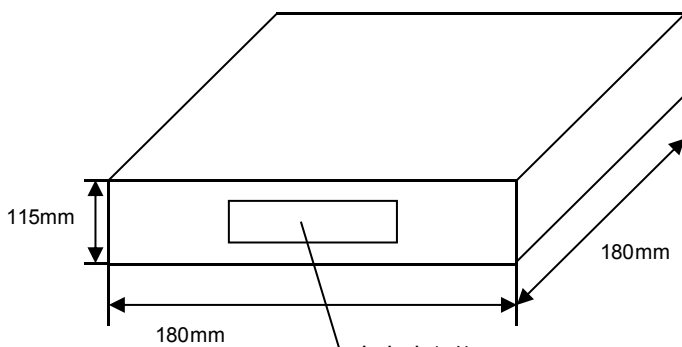
Quantity: 10 reels

数量: 10 卷

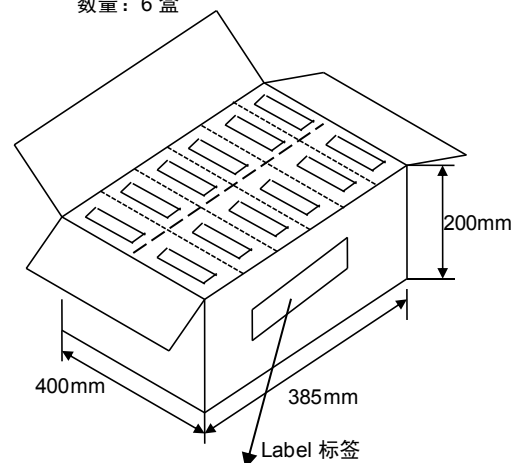
大包装 The second package

Quantity: 6 cases

数量: 6 盒



PART No 型号规格
QUANTITY 数量
DATE 日期



Production name 产品名称
Quantity 数量
Weight 重量

◆ 储存方法

Storage Methods

- * 确保芯片可焊性良好的贮存期限为 12 个月 (在包装好已交付的情况下)。
The guaranteed period for solderability is 12 months (Under deliver package condition).
- * 储存条件 Storage conditions:
 储存温度/Temperature 5~40℃ 储存相对湿度/Relative Humidity 20~70%

◆ 使用前的注意事项

Precautions For Use

多层片式瓷介电容器 (MLCC) 在短路或开路的电路中都有可能失效, 在超出本承认书或相关说明书中所述使用频率的恶劣工作环境, 或外界机械力超压作用下, 电容芯片都有可能着火、燃烧甚至爆炸, 所以在使用的时候, 首先应考虑按本承认书的有关说明来进行, 如有不明之处, 请联系我们技术部、品管部或生产部。

The Multi-layer Ceramic Capacitors (MLCC) may fail in a short circuit mode in an open circuit mode when subjected to severe conditions of electrical environment and / or mechanical stress beyond the specified "rating" and specified "conditions" in the specification, which will result in burn out, flaming or glowing in the worst case. Following "precautions for "safety" and Application Notes shall be taken in your major consideration. If you have a question about the precautions for handling, please contact our engineering section or factory.

* 焊接的条件与相关图表

Soldering Profile

为避免因温度的突然变化而引起的芯片开裂或局部爆炸的现象发生, 请按有关温度曲线图表来进行。(请参考附页中的图表)

To avoid the crack problem by sudden temperature change, follow the temperature profile in the adjacent graph (refer to the graph in the enclosure page).

* 手工焊接

Manual Soldering

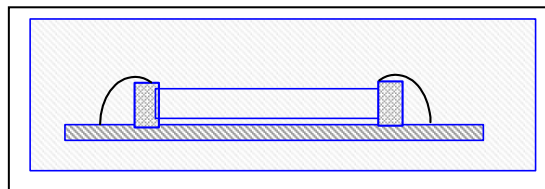
手工焊接很容易因为芯片局部受热不均而引起瓷体微裂或局部爆炸的现象, 在焊接时, 如果操作者不小心, 会使烙铁头直接同电容芯片的瓷体部分接触, 这样很容易使电容芯片因热冲击而受损或出现其他意外, 因此, 使用电烙铁手工焊接时应仔细操作, 并对电烙铁的尖端的选择和尖端温度控制应多加小心。

Manual soldering can pose a great risk of creating thermal cracks in capacitors. The hot soldering iron tip comes into direct contact with the end terminations, and operator's careless may cause the tip of the soldering iron to come into direct contact with the ceramic body of the capacitor. Therefore the soldering iron must be handled carefully, and pay much attention to the selection of the soldering iron tip and temperature contact of the tip.

* 适量的焊料

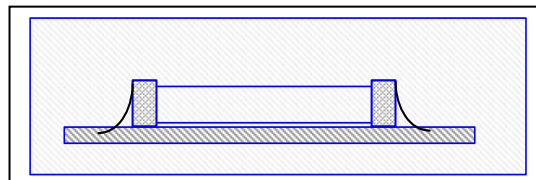
Optimum Solder Amount for Reflow Soldering

焊料过多
Too much solder



这样会因端头压力过大而可能引起芯片受损
Cracks tend to occur due to large stress.

焊料太少
Not enough solder



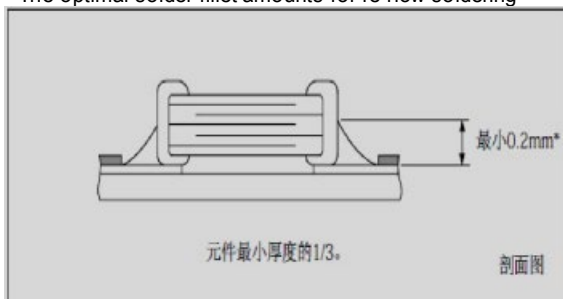
固定力量不足, 可能会引起电容芯片与线路接触不良
Weak holding force may cause bad connection between the capacitor and PCB.

* 推荐焊料用量

Recommended Soldering amounts

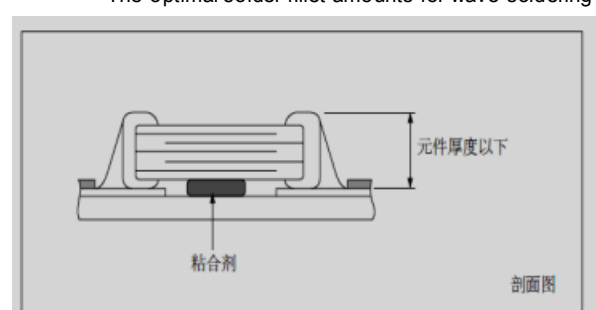
回流焊接的最佳焊料用量

The optimal solder fillet amounts for re-flow soldering



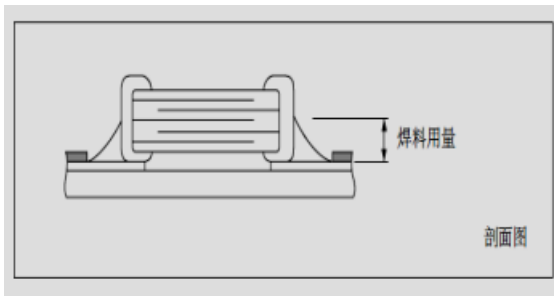
波峰焊接的最佳焊料用量

The optimal solder fillet amounts for wave soldering



使用烙铁返修时的最佳焊料量

The optimal solder fillet amounts for reworking by using soldering iron



*** 推荐焊接方式**

Recommended Soldering Method

规格尺寸 Size	温度特性 Temperature Characteristics	额定电压 Rated Voltage	容量范围 Capacitance	焊接方式 Soldering Method
5082	C0G、X7R、Y5V	/	/	R
5084	C0G、X7R、Y5V	/	/	R
6124	C0G、X7R、Y5V	/	/	R

焊接方式 Soldering method:

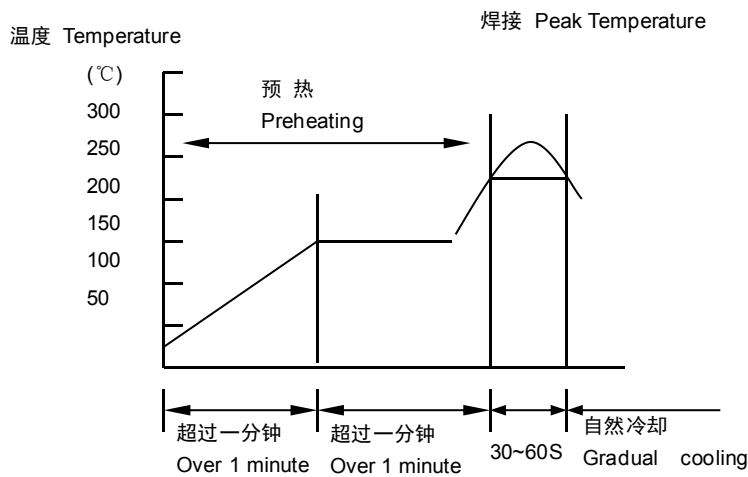
R—回流焊 Reflow Soldering

W—波峰焊 Wave Soldering

◆ 推荐焊接温度曲线图

The temperature profile for soldering

* 回流焊接 (Re-flow soldering)



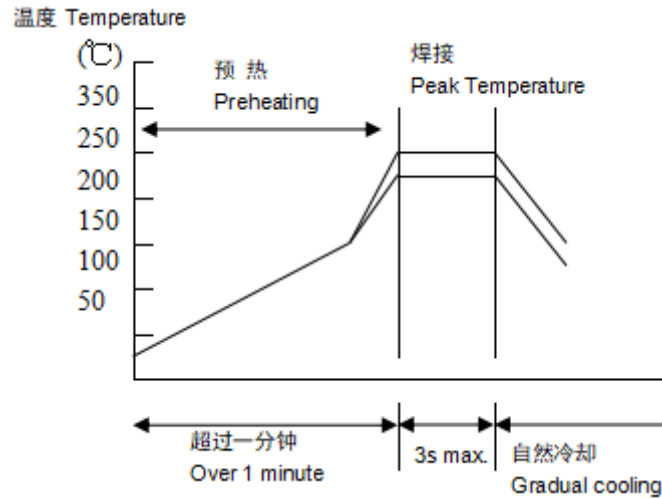
	Pb-Sn 焊接 Pb-Sn soldering	无铅焊接 Lead-free soldering
尖峰温度 Peak temperature	230°C~250°C	240°C~260°C

在预热时, 请将焊接温度与芯片表面温度之间的温差维持在 $T \leq 150^\circ\text{C}$ 。

While in preheating, please keep the temperature difference between soldering temperature and surface temperature of chips as: $T \leq 150^\circ\text{C}$.

*** 波峰焊接**

(Wave soldering)



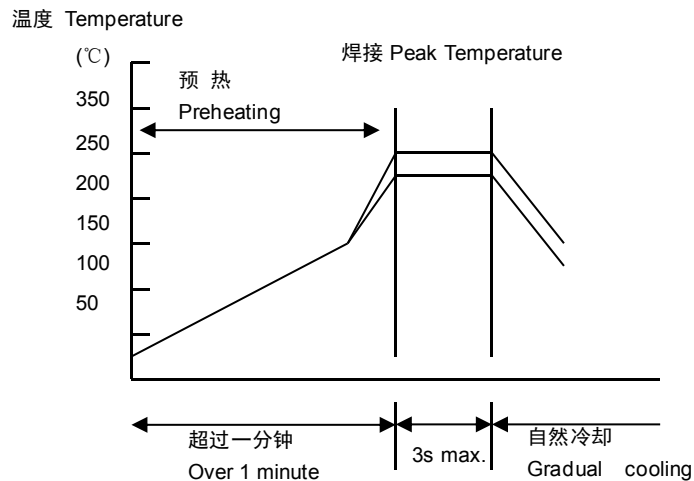
	Pb-Sn 焊接 Pb-Sn soldering	无铅焊接 Lead-free soldering
尖峰温度 Peak temperature	230℃~260℃	240℃~270℃

 在预热时, 请将焊接温度与芯片表面温度之间的温差维持在 $T \leq 150^\circ\text{C}$ 。

 While in preheating, please keep the temperature difference between soldering temperature and surface temperature of chips as: $T \leq 150^\circ\text{C}$.

*** 手工焊接**

Hand soldering



条件 Conditions:

预热 Preheating	烙铁头温度 Temperature of soldering iron head	烙铁功率 Power of soldering iron	烙铁头直径 Diameter of soldering iron head	焊接时间 Soldering time	锡膏量 Solder paste amount	限制条件 Restricted conditions
$\Delta \leq 130^\circ\text{C}$	最高 350℃ Highest temperature: 350℃	最大 20W 20W at the highest	建议 1mm 1mm recommended	最长 3s 3s at the longest	$\leq 1/2$ 芯片厚度 $\leq 1/2$ chip thickness	请勿使用烙铁头直接接触陶瓷元件 Please avoid the direct contact between soldering iron head and ceramic components

*以最新版本的内容为准