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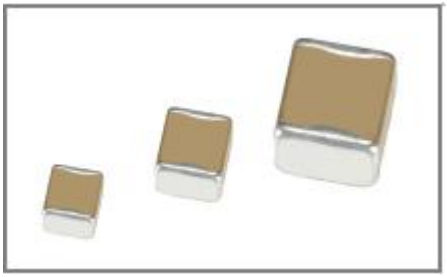


■ 安全规格认证多层片式陶瓷电容器 -AS 系列

Safety Recognized of MLCC-AS Series

◆ 特征

Feature

* 新型独石结构，体积小，电容量高，能在高压下工作
  A New monolithic structure capacitor for small,high-**capacitance** capability of operating at high-Voltage levels.
* 符合 60384-14 标准。
  Available for equipment base on 60384-14 standard
* 仅用于回流焊接
  Only for reflow soldering
* 它们实用于薄型设备。
  Fit for use on thin type equipment.

◆ 应用

Application

* 适合于无变压器的 DAA 调制调解器线路滤波器及耦合用
  Ideal for use on line filters and couplings for DAA modems without transformers.
* 适合信息设备线路滤波器用。
  Ideal for use on line filters for information equipment.

◆ 型号表示法

How To Order

AS | 20 | B | 472 | K | 302 | YB

AS → 安全型车规品 Safety Grade Automotive Series

20 → 规格 Code

规格 Code	EIA	长×宽 (L×W) mm
08	1808	4.60×2.00
12	1812	4.60×3.20
20	2220	5.70×5.00

B → 介质种类 Dielectric Code

介质种类 Dielectric Code	介质材料 Dielectric
CG	C0G
B	X7R

472 → 标称容量 Nominal Capacitance

表示方式 Express Method	实际值 Actual Value
0R5	0.5
1R0	1.0
472	47×10²

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.

K → 容量误差 Capacitance Tolerance

代码 Code	误差 Tolerance	备注 Note
A	±0.05pF	A、B、C、D 级误差适用于容量≤10pF 的产品。 These Capacitance tolerance A，B, C, D are just applicable the capacitance that equals to or less than 10pF。
B	±0.10pF	
C	±0.25pF	
D	±0.50pF	
F	±1%	
G	±2%	
J	±5%	
K	±10%	
M	±20%	

302 → 工作电压 Rated Voltage

代号 Express Method	工作电压 Actual Value
302	交流 250V DC250V

YB → 安规类型 Sate Type

代号 Code	类型 Type
YB	Y2
XA	X1
XB	X2

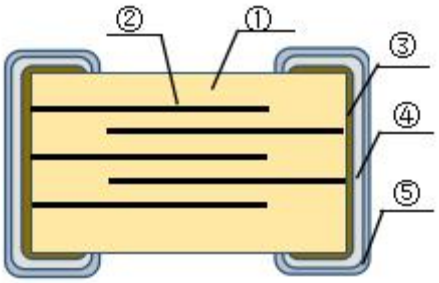
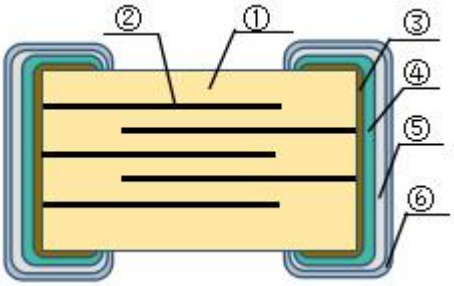
◆ 温度系数/特性

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	25℃	0±30 ppm/℃	-55℃~125℃
X7R	25℃	±15%	-55℃~125℃

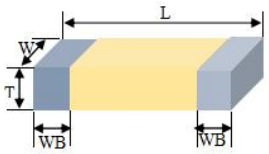
◆ 产品结构

Product Structure

项目 Item	N 端头（Cu/Ni/Sn 三层端头） N-Terminal (Cu/Ni/Sn Three-layer Terminal)	A 端头（柔性端头） A-Terminal (Flexible Terminal)
结构示意图 Structure Diagram		
代码描述 Code Description	①陶瓷介质(Ceramic Dielectric) ②镍电极(Nickel　Electrode) ③铜电极层(Copper electrode　Layer) ④镍层(Nickel　Layer) ⑤锡层(Tin Layer)	①陶瓷介质(Ceramic Dielectric) ②镍电极(Nickel　Electrode) ③铜电极层(Copper electrode　Layer) ④导电性树脂(Conductive Resin) ⑤镍层(Nickel Layer) ⑥锡层(Tin Layer)

◆ 产品尺寸

Product Dimensions

代号 Code	英制表示 British expression	公制表示 Metric expression	尺寸 Size　(mm)					示意图 Schematic diagram
			L	W	T	WB	厚度代码 Code	
AS08	1808	4620	4.60±0.50	2.00±0.30	1.60±0.30	0.60±0.30	HA	
					2.00±0.30		HB	
AS12	1812	4632	4.60±0.40	3.20±0.30	1.25±0.20	0.60±0.30	IA	
					1.60±0.30		IB	
					2.00±0.30		IC	
					2.50±0.30		ID	
AS20	2220	5750	5.70±0.40	5.00±0.40	1.60±0.30	0.70±0.30	LA	
					2.00±0.30		LB	

备注：可根据客户的特殊要求设计符合客户需求的产品。
Note：We can design according to customer special requirements.

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

* I 类电容器具体电压对应容量及厚度情况列表

A list of the specific Voltage-specific capacitors of Class I capacitors

安规类型 Safety-Grade Type	YB 安规电容器 YB Safety-Grade Capacitors		
材料 Temperature Characteristic	C0G		
尺寸 Specifications	AS08	AS12	AS20
5.0pF	HA	IB	LA
5.6pF	HA	IB	LA
6.8pF	HA	IB	LA
8.0pF	HA	IB	LA
8.2pF	HA	IB	LA
10pF	HA	IB	LA
12pF	HA	IB	LA
15pF	HA	IB	LA
18pF	HA	IB	LA
22pF	HA	IB	LA
27pF	HA	IB	LA
33pF	HA	IB	LA
39pF	HA	IB	LA
47pF	HA	IB	LA
56pF	HA	IB	LA
68pF	HA	IB	LA
100pF	HA	IB	LA
120pF	HA	IB	LA
150pF	HB	IC	LB
180pF	HB	IC	LB
220pF	HB	IC	LB
270pF	HB	IC	LB
300pF	HB	IC	LB
330pF		IC	LB
390pF		IC	LB
470pF		IC	LB
560pF		IC	LB
680pF			LB

代码 Code	HA	HB	IA	IB	IC	ID	LA	LB
YB	1.60±0.30	2.00±0.30	1.25±0.20	1.60±0.30	2.00±0.30	2.50±0.30	1.60±0.30	2.00±0.30

*II类电容器具体电压对应容量及厚度情况列表

A list of the specific Voltage-specific capacitors of Class IIcapacitors

安规类型 Safety regulation type	YB 安规电容器 YB safety capacitor
材料 Material	X7R
尺寸 Size	AS20
1nF	LB
1.2nF	LB
1.5nF	LB
1.8nF	LB
2.2nF	LB
2.7nF	LB
3.3nF	LB
3.9nF	LB
4.7nF	LB

代码 Code	HA	HB	IA	IB	IC	ID	JA	JC	LA	LB
YB	1.60±0.30	2.00±0.30	1.25±0.20	1.60±0.30	2.00±0.30	2.50±0.30	1.60±0.30	2.00±0.30	1.60±0.30	2.00±0.30

备注： 1、对应产品设计厚度，单位：mm；
2、可根据客户的特殊要求设计符合客户需求的产品

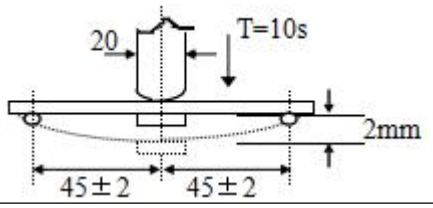
Note：1、Corresponding product design thickness，unit:mm；
2、We can design according to customer special requirements

◆ 可靠性测试

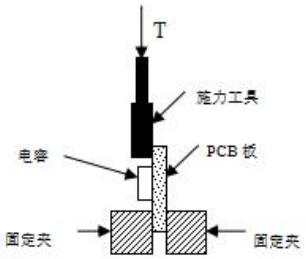
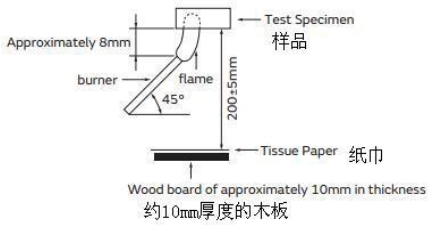
Reliability Test

序号 NO.	项目 Item	技术规格 Technical Specification	测 试 方 法 Test Method and Remarks
1	容量 Capacitance	应符合指定的误差级别 Should be within the specified tolerance.	测试温度： 25℃±3℃ Test Temperature: 25℃±3℃ I类 ClassI: ≤1000pF 测试频率 Test Frequency:1MHz±10% 测试电压 Test Voltage：1.0±0.2Vrms II类 ClassII: C≤10μF： 测试频率 Test Frequency: 1KHz±10% 测试电压 Test Voltage: 1.0±0.2Vrms
2	损耗角正切 (DF, tanδ) Dissipation Factor	I类 ClassI: Cr＜30pF：Q≥400+20C Cr≥30pF：Q≥1000 II类 ClassII：DF≤250*10-4	
3	绝缘电阻(IR) Insulation Resistance	I类 ClassI: C≤10 nF, Ri≥50000MΩ C>10 nF, Ri•C_R≥500S II类 ClassII: C≤25 nF, Ri≥10000MΩ C>25 nF, Ri•C_R≥100S	测试电压：额定电压（最高 500V） 测试时间: 60±5 秒 测试湿度：≤75% 测试温度： 25℃±3℃ 测试充放电电流：≤50mA Measuring Voltage: Rated Voltage (Max 500V) Duration: 60±5s Test Humidity: ≤75% Test Temperature: 25℃±3℃ Testing charge/discharge current: ≤50mA

序号 NO.	项目 Item	技术规格 Technical Specification	测 试 方 法 Test Method and Remarks
4	介质耐电强度 (DWV) Dielectric Withstanding Voltage	不应有介质被击穿或损伤 No breakdown or damage.	测量电压： XA、XB：DC 1075V YB、YC：AC 1500V 时　　间： 60 秒 充/放电电流：不应超过 50mA Measuring Voltage: XA、XB：DC 1075V YB、YC：AC 1500V Duration: 60s Charge/ Discharge Current: 50mA max.
5	外观 Appearance	无可见损伤 No visible damage	目视检查 Visual inspection
6	尺寸 Physical Dimension	在规定尺寸范围内 Within the specified dimensions	使用卡尺 Use caliper
7	破坏性 物理分析 DPA	无缺陷或异常 No defects or abnormalities	按照 EIA-469 Accounting to EIA-469
8	温度循环 Temperature Cycle	ΔC/C： I类　ClassI：≤±2.5%或±0.25pF， 取两者中最大者 whichever is larger. II类　Class II：-12.5%~+12.5%； 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 Appearance：No visible damage	循环次数：1000 次,一个循环分以下 4 步： 阶段 1：下限温度-55℃；时间 30 分钟； 阶段 2：常温 20℃；时间 1 分钟； 阶段 3：上限温度 125℃；时间 30 分钟； 阶段 4：常温 20℃；时间 1 分钟。 Cycling Times: 1000 times. A cycle is divided into the following 4 steps: Step1：Low- category temp. :-55℃；30 minutes； Step2：Normal temp :20℃；1 minutes； Step3：Up- category temp. :125℃；30 minutes； Step4：Normal temp :20℃；1 minute.
9	耐湿负荷 High humidity	ΔC/C： I类　ClassI：≤±3.0%或±0.3pF， 取两者中最大者 whichever is larger. II类　Class II：-12.5%~+12.5%； 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 Appearance：No visible damage	试验温度：85±2℃， 试验湿度：80~85%R.H. ， 试验时间：1000 小时， 施加电压： Ur＜1000V：额定电压 Ur≥1000V：1000V Temperature: 85℃ Humidity: 80~85%RH Voltage: Ur＜1000V : Rated Voltage Ur≥1000V : 1000V Duration: 1000h
10	耐久性 Operational Life	ΔC/C： I类　ClassI：≤±2.0%或±1pF， 取两者中最大者 whichever is larger. II类　Class II：-12.5%~+12.5%； DF：2 倍初始标准 200% to initial value.； IR： I类 ClassI：Ri≥4000MΩ或 Ri•C_R≥40S， 取两者中最小者 whichever is smaller. II类 Class II：Ri≥2000MΩ或 Ri•C_R≥50S， 取两者中最小者 whichever is smaller； 外观：无可见损伤 Appearance：No visible damage	脉冲电压试验完成后的一周内进行. 温度：125℃（C0G X7R） 时间：1000 小时 充电电流：不应超过 50mA 施加电压：XA/XB: 1.25 额定电压　YB: 1.7 额定电压 电容器串联一个 47Ω±5%电阻器；每小时一次将电压升高至 1000V，持续时间 0.1s。 This test shall be conducted within one week after the completion of impulse Voltage test. Temperature：125℃（C0G X7R） Duration: 1000h Charge/ Discharge Current: 50mA max. Applied Voltage：XA/XB:1.25 Rated Voltage YB: 1.7 Rated Voltage The capacitor is connected in series with a 47 Ω±5% resistor. Raise the Voltage to 1000V once an hour for 0.1sec.

序号 NO.	项目 Item	技术规格 Technical Specification	测 试 方 法 Test Method and Remarks
11	可焊性 Solder ability	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. 无铅焊料： 浸锡温度: 245±5℃ 浸锡时间: **3±0.3s** Lead-free soldering Solder Temperature: 245±5℃ Duration: 3±0.3s
12	耐焊接热 Resistance to Soldering Heat	ΔC/C： I类 ClassI：≤±2.5%或±0.25pF，取两者中最大者 whichever is larger. II类 Class II：-15%~+15%； 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.	将电容在 100~200℃的温度下预热 60~120 秒. 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℃; 60~120s. 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
13	静电放电 ESD	ΔC/C：同初始标准 Same to initial value； 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 Appearance：No visible damage	参照 AEC-Q200-002 方法进行 ESD 静电放电试验； 放电电压：2kV~22kV 按 2kV 步进测试。 每个样品每个电极承受两次放电，正、负级性各 1 次；样品经过指定等级的电压后符合验收标准要求，则使用原样品进入下一个电压应力等级试验。 ESD electrostatic discharge test was carried out according to AEC-Q200-002 method： Discharge Voltage: 2kV~22kV according to 2kV step test. Each sample is subjected to two discharges per electrode, one positive and one negative grade. After the sample meets the requirements of the acceptance criteria after passing the specified level of Voltage, the original sample is used to enter the next Voltage stress level test
14	抗弯曲强度 Bending Strength	ΔC/C： I类 ClassI：≤±5.0%或±0.5pF，取两者中最大者 whichever is larger. II类 Class II：-12.5%~+12.5%； 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 Appearance：No visible damage	试验基板：Al_2O_3 或 PCB 弯曲深度：≥2mm 施压速度：1mm/sec. 保持时间：60 s 应在弯曲状态下进行测量 Test Board: Al_2O_3 or PCB Warp:≥ 2mm Speed: 1mm/sec. Hold time: 60 sec The measurement should be made with the board in the bending position. 
15	振动 Vibration	ΔC/C： I类 ClassI：≤±2.5%或±0.25pF，取两者中最大者 whichever is larger. II类 Class II：-12.5%~+12.5%； 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 Appearance：No visible damage	5g 的力 20 分钟，三个方向每个方向 12 个循环。 注意：使用 8"X5" 印刷线路板，.031"厚，在长的一边有 7 个固定点，在对面的边的角有 2 个固定点。产品在距离固定点 2" 内安装。测试频率从 10-2000 赫兹。 The force of 5g is 20 minutes, and there are 12 cycles in each direction in three directions. Note: Use an 8"X5" PCB board, .031" thick, with 7 fixing points on the long side and 2 fixing points at the corners of the opposite side. The product is installed within 2" of the fixed point. Test frequency from 10-2000 Hz.

<table>
<tr><th>序号
NO.</th><th>项目
Item</th><th>技术规格
Technical Specification</th><th>测 试 方 法
Test Method and Remarks</th></tr>
<tr><td>16</td><td>机械冲击
Mechanical shock</td><td>ΔC/C：
I类 Class I：≤±2.5%或±0.25pF，
取两者中最大者
whichever is larger.
II类 Class II：-12.5%~+12.5%；
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
Appearance：No visible damage</td><td>应沿试件的 3 个互相垂直轴，在每个方向上实施 3 次冲击试验 (共计 18 次冲击)。
脉冲波形：正弦半波
持续时长：0.5 毫秒
峰值：1500g
速度变化：4.7m/s

Three impact tests (18 shocks in total) should be performed in each direction along the three perpendicular axes of the specimen.
Pulse waveform: sinusoidal half-wave
Duration: 0.5 ms
Peak: 1500g
Speed change: 4.7m/s</td></tr>
<tr><td>17</td><td>端子强度
(SMD)
Terminal strength</td><td>ΔC/C：
I类 ClassI：≤±5.0%或±0.5pF，
取两者中最大者
whichever is larger.
II类 Class II：-12.5%~+12.5%；
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
Appearance：No visible damage</td><td>如图所示
慢慢施加一个 T=17.7N 的力到电容侧面瓷体上，并保持 10+1 秒。
As shown in the picture
Slowly apply a T force to the porcelain body on the side of the capacitor and hold for 10+1 seconds.
 
</td></tr>
<tr><td>18</td><td>温度特性
Temperature characteristics</td><td><table><tr><th>项目
Item</th><th>ΔC/C</th><th>温度范围
Temperature range</th></tr><tr><td>C0G</td><td>±30ppm</td><td>-55℃~125℃</td></tr><tr><td>X7R</td><td>±15%</td><td>-55℃~125℃</td></tr></table></td><td>在下限温度、25℃、上限温度三个温度点分别测量产品电性能
The electrical properties of the product are measured at three temperature points of lower limit temperature, 25°C and upper limit temperature</td></tr>
<tr><td>19</td><td>脉冲电压
Impulse Voltage</td><td>无永久性击穿或飞弧。
No permanent breakdown or flashover。</td><td>每个电容器应承受 24 次相同极性的脉冲，脉冲间隔时间不应小于 10S，脉冲电压峰值如下：
XA=4.0 KV，XB-2.5 KV，YB=5 KV
Each capacitor shall withstand 24 pulses of the same polarity, the pulse interval time shall not be less than 10S, and the peak value of pulse Voltage like the follow ：
XA=4.0 KV，XB-2.5 KV，YB=5 KV</td></tr>
<tr><td>20</td><td>阻燃性测试
Passive Flammability</td><td>纸巾不被烧起来
The tissue paper shall not ignite.</td><td>试验电容器保持在火焰中最有利于燃烧的位置，如附图
每个样品只能暴露在火焰中一次。
火焰作用时间：30S
The capacitor under test shall be held in the flame in the position which the tissue paper shall not ignite. best promotes burning.
Each specimen shall only be exposed once to the flame.
Time of exposure to flame : 30 s
 
</td></tr>
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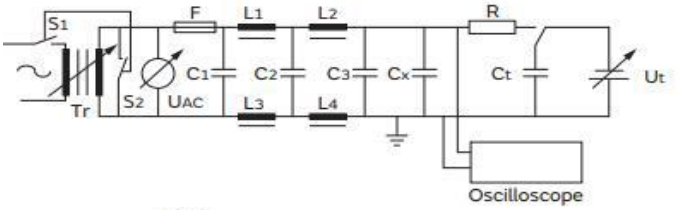
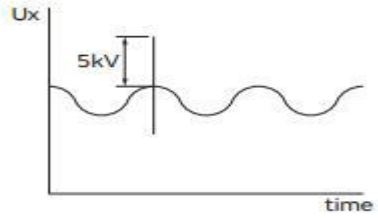
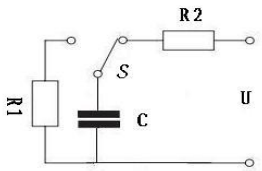
Technical Specification</th><th>测 试 方 法
Test Method and Remarks</th></tr>
<tr><td>21</td><td>自燃性测试
Active
Flammability</td><td>纯棉纱不会燃烧
Cotton yarn will not burn</td><td>在产品外部包裹至少一层但不多于两层的纯棉纱，样品经受储能电容器 20 次的放电试验，连续放电之间每次间隔时间应为 5s，最后一次放电，交流电应保持 2 分钟。
At least one layer but not more than two layers of pure cotton yarn are wrapped outside the product, and the sample is subjected to the discharge test of the energy storage capacitor for 20 times. The interval between successive discharges should be 5s, and the last discharge should be kept with alternating current for 2 minutes.
 



<table>
<tr><th>代号 Code</th><th>参数 Parameter</th></tr>
<tr><td>C1,C2</td><td>1uF±10%</td></tr>
<tr><td>C3</td><td>0.033uF±5% 10kV</td></tr>
<tr><td>L1,L2,L3,L4</td><td>1.5mH±20% 16A</td></tr>
<tr><td>Ct</td><td>3uF±5% 10Kv</td></tr>
<tr><td>R</td><td>100Ω±2%</td></tr>
<tr><td>Cx</td><td>样品电容 （Sample capacitance）</td></tr>
<tr><td>UAC</td><td>UR±5%</td></tr>
<tr><td>F</td><td>16A 保险丝（16A Fuse）</td></tr>
<tr><td>UR</td><td>额定电压 (Rated Voltage)</td></tr>
<tr><td>Ut</td><td>施加在储能钽电容器上的电压
Voltage Applied to Tantalum Capacitors for Energy Storage</td></tr>
</table></td></tr>
<tr><td>22</td><td>充放电
Capacitance Charge and Discharge</td><td>ΔC/C：
I类 ClassI：≤±2.0%或±0.2pF，取两者中最大者
whichever is larger.
II类 Class II：-10%~+10%；
DF：2 倍初始标准
200% to initial value.；
IR：
I类 ClassI：Ri≥2500MΩ或 Ri•C_R≥25S，取两者中最小者
whichever is smaller.
II类 Class II：Ri≥1000MΩ或 Ri•C_R≥25S，取两者中最小者
whichever is smaller；
外观：无可见损伤
Appearance：No visible damage</td><td>如下图所示安放被测器件 C，
承受 10000 次充放电循环：
充电电压：额定电压
充放电电流：≤1A
As shown in the following figure, the device under test C is placed and subjected to 10000 charge and discharge cycles。
Charge Voltage：Ur
Charge and discharge current：≤1A
 

<table>
<tr><th>代号
Code</th><th>参数
Parameter</th></tr>
<tr><td>C</td><td>样品电容 (Sample capacitance)</td></tr>
<tr><td>R1</td><td>放电限流电阻 Current-limiting resistor (discharge)</td></tr>
<tr><td>R2</td><td>充电限流电阻 Current-limiting resistor (charge)</td></tr>
<tr><td>U</td><td>充电电压 Charge Voltage</td></tr>
<tr><td>S</td><td>开关器件 Switching device</td></tr>
</table></td></tr>
</table>

※预处理（仅针对Ⅱ类电容器）：在 140℃~150℃下预热 1h±10min 后，在室温下放置 24±2h。

实验结束后处理（仅针对Ⅱ类电容器）：在 140℃~150℃下预热 1h±10min 后，在室温下放置 24±2h。

Pretreatment (Class II) : After preheating at 140℃~150℃ for 1h±10min, place at room temperature for 24±2h.

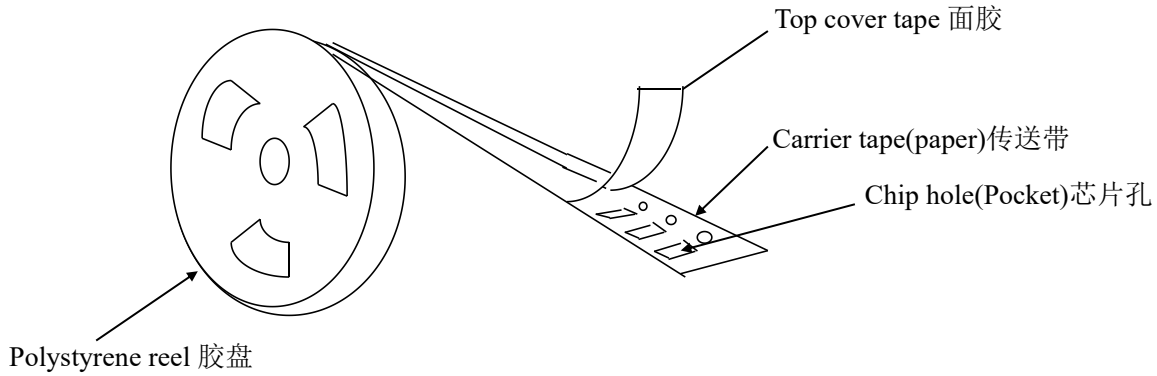
After experiment (Class II) : After preheating at 140℃~150℃ for 1h±10min, place at room temperature for 24±2h.

◆包装

Package

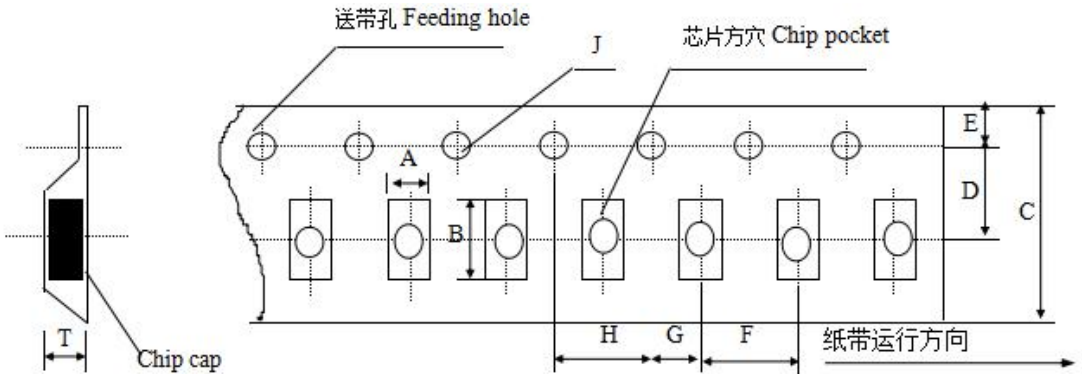
*** 塑胶卷盘结构**

Embossed Taping



*** 塑胶带尺寸结构(适合'AS08~AS20'型产品)**

Dimensions of embossed taping for AS08~AS20 type



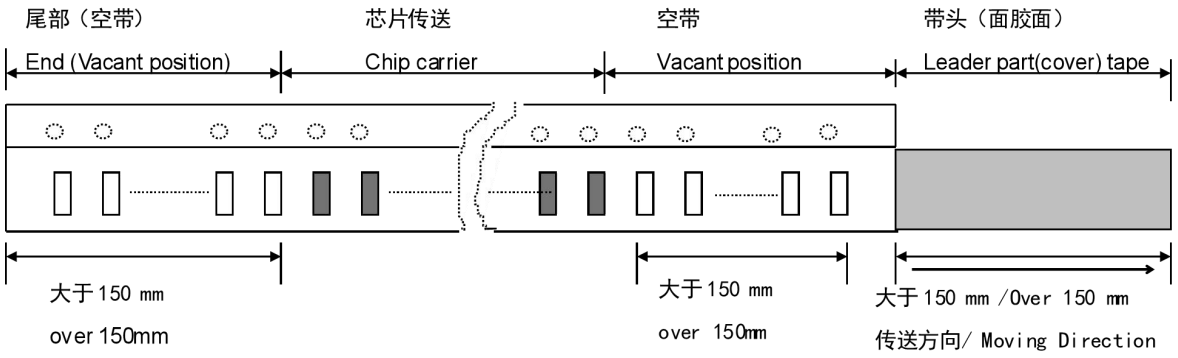
代号 Code / 规格 Tape size	A	B	C	D*	E	F	G*	H	J	T
AS08	2.20 ± 0.10	4.95 ± 0.10	12.00 ± 0.10	5.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.50 -0/+0.10	3.0 Max
AS12	3.66 ± 0.10	4.95 ± 0.10	12.00 ± 0.10	5.50 ± 0.05	1.75 ± 0.10	8.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.55 -0/+0.10	4.0 Max
AS20	6.2 ±0.1	6.7 ±0.1	12.00 ± 0.10	5.50 ± 0.05	1.75 ± 0.10	8.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.55 -0/+0.10	2.4 ± 0.10

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.

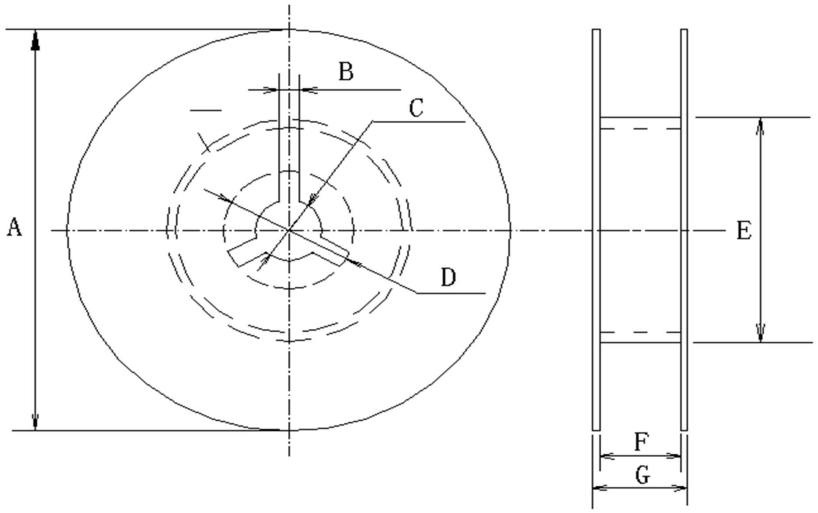
***传送带的前后结构**

Structure of leader part and end part of the carrier paper



*** 卷盘尺寸 (unit: mm)**

Reel Dimensions (unit: mm)

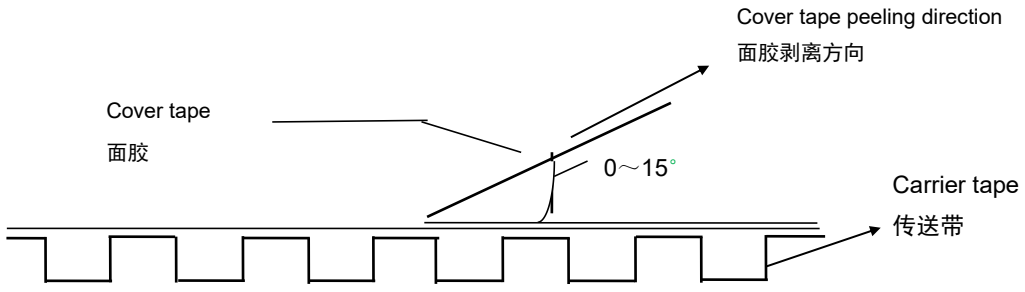


卷盘型号 **Code**	A	B	C	D	E	F	G
7′ REEL	φ178±2.0	3.0	φ13±0.5	φ21±0.8	φ50 或更大 (Greater)	10.0±1.5	12max
13′ REEL	φ330±2.0	3.0	φ13±0.5	φ21±0.8	φ50 或更大 (Greater)	10.0±1.5	12max

*** 关于卷带的说明**

Taping specification

塑料胶盘 (Plastic Tape Reel)



标准：0.1N<剥离强度<0.7N；在剥离时，纸带不能有纸碎，也不能粘在底、面胶上。

Standard: 0.1N < peeling strength < 0.7N;No paper dirty remains on the scotch when peeling and sticks to top and bottom tape.

胶带卷盘包装数量

Embossed Taping Packing Quantity

尺寸代码 SizeCode	厚度（T） Thickness	7 寸纸带卷盘（PT）	7 寸胶带卷盘（ET）	13 寸纸带卷盘（PT）	13 寸胶带卷盘（ET）
AS08	HA	——	2000	——	8000
	HB	——	2000	——	8000
AS12	IB	——	1000	——	3000
	IC	——	500	——	3000
AS20	LA	——	500	——	
	LB	——	500	——	

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

大包装 The second package

Quantity: 6 cases

数量： 10 卷

◆储存方法
Storage Methods

*MLCC 的储存条件：相对湿度为 20~70%，储存温度为 5~40℃，建议温度低于 30℃。

*MLCC 的性能可能会受到储存条件的影响，交货后请立即使用。高温高湿条件、长期储存可能会导致包装材料变质、产品端头电极氧化。如自交付后已超过六个月，使用前检查包装、外观等。如果交付后超过一年，在使用前要检查可焊性。

* 不要将电容器存放在含有腐蚀性气体(例如硫化氢、二氧化硫、氯气、氨气等)的环境中。

* 不要在阳光直射下或高湿度条件下储存电容器。

Storage Conditions for MLCC: Relative humidity: 20~70%, storage temperature: 5~40℃, recommended temperature is below 30℃.

The performance of MLCCs may be affected by storage conditions. Please use immediately after delivery. High temperature and high humidity conditions, or long-term storage, may lead to packaging material deterioration and oxidation of the product's end electrodes. If it has been over six months since delivery, check the packaging and appearance before use. If it has been over a year, check the solderability before use.

Do not store capacitors in environments containing corrosive gases (e.g., hydrogen sulfide, sulfur dioxide, chlorine, ammonia, etc.).

Do not store capacitors under direct sunlight or in high humidity conditions.

◆使用前的注意事项
Precautions For Use

***安装前的信息 Pre-installation Information:**

1、不要重复使用从设备上拆下的电容器。

2、确认额定容量、额定电压等电气特性。

3、确认施加电压下的电容特性。

4、确认使用下的机械应力。

5、确认长期存放的电容器的可焊性。

6、在测量电容之前，对长期存放的电容器进行热处理。

1.Do not reuse capacitors removed from equipment.

2.Confirm electrical characteristics such as rated capacitance and rated Voltage.

3.Confirm the capacitor characteristics under applied Voltage.

4.Confirm the mechanical stress under use conditions.

5.Confirm the solderability of capacitors stored for long periods.

6.Perform heat treatment on capacitors that have been stored for a long time before measuring capacitance.

*** 应用限制 Application Restrictions**

1、我们的产品为汽车专用电子元器件，产品的设计基于正常操作和使用条件下的通用应用和标准用途。

2、除汽车及汽车相关电子产品外，在将我们的产品用于以下对应用要求特别高的场景之前，请联系我们：航空航天设备、医疗设备、原子能设备、灾难预防设备、犯罪预防设备、电加热设备、燃烧设备、公共信息网络设备、数据处理设备、军事设备、发电控制设备、安全设备、和海底设备，或用于可能导致人身伤害、死亡或严重财产损失的其他应用场景。

3、除非您事先获得风华的书面同意，否则风华不对您或第三方因将我们的产品用于第 2 点设备而产生的任何损害承担任何责任。

1.Our products are automotive-specific electronic components, and their design is based on general applications and standard uses under normal operating and usage conditions.

2.Before using our products in the following high-reliability application scenarios other than automotive and automotive-related electronic products, please contact us: aerospace equipment, medical devices, atomic energy equipment, disaster prevention equipment, crime prevention equipment, electric heating equipment, combustion equipment, military equipment, public information network devices, data processing equipment, power generation control equipment, safety equipment, and underwater equipment, or in any other application where product failure may lead to personal injury, death, or severe property damage.

3.Unless you have prior written consent from Fenghua, Fenghua is not liable for any damages caused to you or third parties by using our products in the devices mentioned in point 2.

*** 焊接的条件与相关图表**

Soldering Condition and 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).

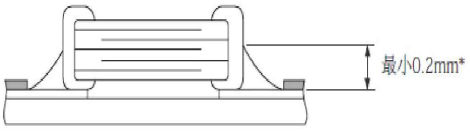
*** 推荐焊料用量**

Recommended Soldering Amounts

回流焊接的最佳焊料用量

The optimal solder fillet amounts

for re-flow soldering



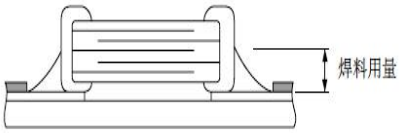
元件最小厚度的1/3。

剖面图

使用烙铁返修时的最佳焊料量

The optimal solder fillet amounts

for reworking by using soldering



剖面图

◆推荐焊接方法

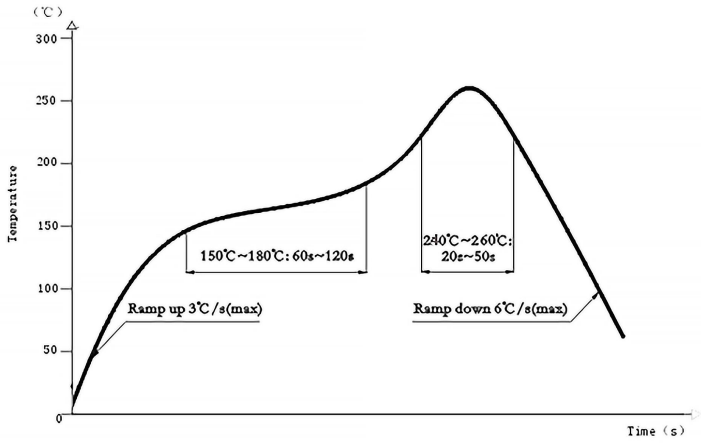
Recommended Soldering Method

规格尺寸 Size	焊接方式 Soldering Method
AS08	回流焊 Reflow Soldering
AS12	回流焊 Reflow Soldering
AS20	回流焊 Reflow Soldering

推荐焊接温度曲线图

The temperature profile for soldering

*** 回流焊接 Re-flow soldering**



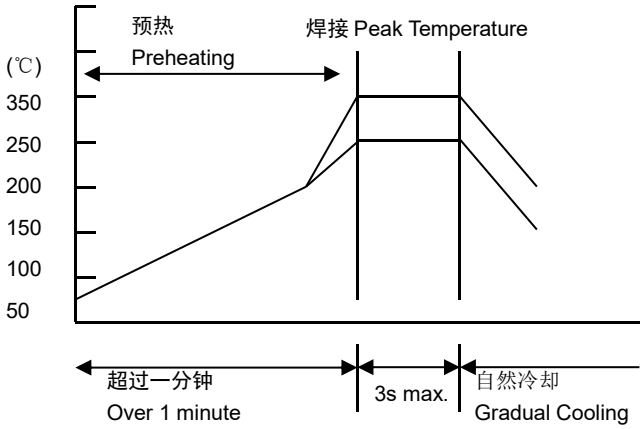
在预热时，请将焊接温度与芯片表面温度之间的温差维持在 T≤150℃。

While in preheating, please keep the temperature difference between soldering temperature and surface temperature of chips as: T≤150℃.

*** 手工焊接**

Hand soldering

温度 Temperature



项目 （Item）	建议 （Suggestions）
预热 Preheating	△≤130℃
烙铁头温度 Temperature of soldering iron head	最高 350℃ Highest temperature:350℃
烙铁功率 Power of soldering iron	最大 20W 20W at the highest
烙铁头直径 Diameter of soldering iron head	建议 1mm 1mm recommended
焊接时间 Soldering time	最长 3s 3s at the longest
锡膏量 Solder paste amount	≤1/2 芯片厚度 ≤1/2 chip thickness
限制条件 Restricted conditions	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

◆备注 Notes

1.上述所提供之内容为产品规格说明。在产品未变更时，风华保有修改此内容不另行通知之所有权利，任何产品变更将会以 PCN 通知客户。

1.The content provided above is the product specification description. Fenghua reserves the right to modify this content without further notice as long as there are no changes to the product. Any product changes will be communicated to the customer via PCN (Product Change Notification).

2.产品规格书仅供设计选型参考用，不作为交货依据。

2.The product specification is for design and selection reference only and shall not serve as a basis for delivery.

◆修订履历 Revision History

版本 Version	日期 Date	修订内容 Revision Content	修订人 Reviser
A0001	2025-1-25	按新格式要求重新整理整版内容。 Reorganize the entire content according to the new format requirements.	***
A0002	2025-5-30	更新尺寸标准 Update standard of size.	***
A0003	2025-7-18	更新 AS12 规格尺寸标准 Update the size standard of AS12	***

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