



深圳振华富电子有限公司
Shenzhen Zhenhuafu Electronics Co., Ltd.

规格承认书

SPECIFICATION FOR APPROVAL

客户名称 Customer	
客户料号 Customer P/N	
型号规格 Product Type	PB2012-000/4A0(f)
拟 制 Prepared By	
审 核 Checked By	
批 准 Approved By	
签发日期 Issued Date	2024-04-18



我们已确认承认书中的产品特性和要求

We have confirmed the product features and requirements in this specification.

客户确认

Customer Approved Signature

请认真阅读承认书的相关内容，将确认签名后承认书回传给我们。

Please read the relevant contents of this specification carefully and return one duplicate of this product specification to us with your signature to acknowledge your receipt.

如果在收到承认书后 1 个月内没有回传承认书，则视为贵公司已默认接受。

If the duplicate of this specification is not returned within 1 month of receipt, the product specification will be deemed to have been received by your company.

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The final interpretation right belongs to Shenzhen Zhenhuafu Electronics Co., Ltd.

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Manufacturing Base: CEC Dongguan Industrial Base, Chigang Community, Humen Town, DG

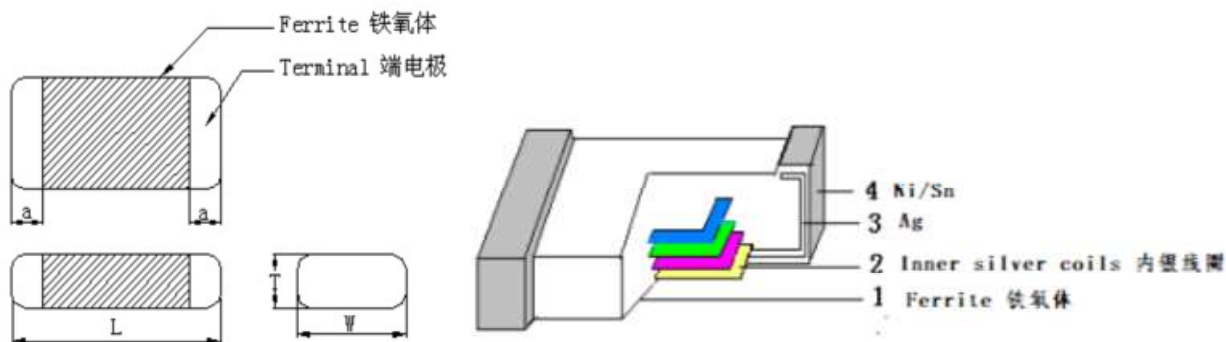
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PB2012 Series Specification

1 Scope: This specification applies to the LPB series of multilayer chip beads

2 Shape And Dimensioncs



TYPE	L	W	T	a
PB2012	2.0±0.2	1.25±0.2	0.85±0.2	0.4±0.2

3 Part Numbering

PB 2012 - 000 / 4A0 (f)

① ② ③ ④ ⑤

- ① Product symbol 系列代号
- ② Dimensions 尺寸: Length长 (L) ×Width宽 (W)
- ③ Impedance 阻抗: 000: 1~10Ω
- ④ Rated Current 额定电流: 4A0: 4000mA
- ⑤ Hazardous Substance Free Products 无有害物质产品

4 Electrical Characteristics

Part Numbering	Z(Ω)	DCR(mΩ) Max.	Rated Current (mA)
	100MHz		
PB2012-000/4A0(f)	1~10Ω	15	4000

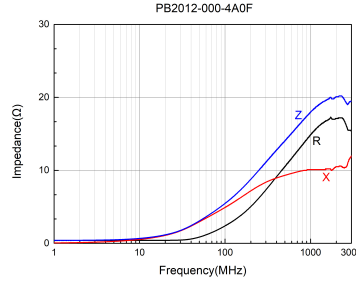
5 Operating Temperature

Operating Temperature (工作温度) : -55°C~+125°C



PB2012 Series Specification

6 Electrical Characteristics



7 Test Conditions and Test Equipment

7.1 Test Conditions

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

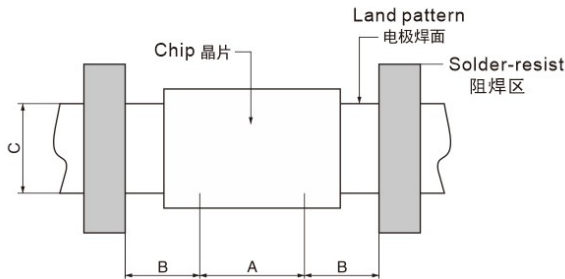
- a. Ambient Temperature: $20 \pm 15^\circ\text{C}$
- b. Relative Humidity: $65 \pm 20\%$
- c. Air Pressure: 86kPa to 106kPa

7.2 Test Equipment

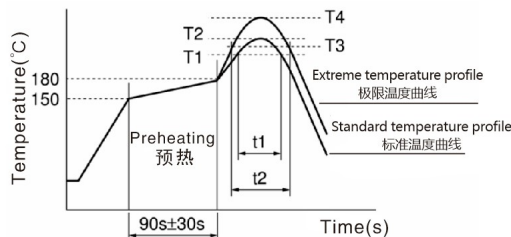
- HP4287A PACKED RF LCR METER □ HP4338B MILLIOHM METER
- B2911A PRECISION SOURCE □ E4991A RF IMPEDANCE ANALYZER

8 Recommended land pattern and Recommended soldering condition

单位: mm



Part Number 型号	Recommended land pattern 推荐焊盘尺寸		
	A	B	C
1005	0.35	0.5	0.5
1608	0.8	0.6	0.8
2012	1.0	0.8	1.2
3216	2.2	1.1	1.6

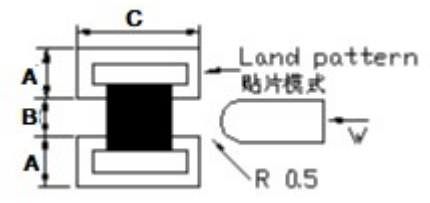
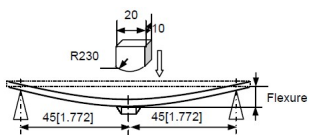


Standard temperature profile 标准温度曲线				Extreme temperature profile 极限温度曲线			
Temperature 温度(T1)	Time 时间(t1)	Peak Temperature 峰值温度(T2)	Reflow Times 回焊次数	Temperature 温度(T3)	Time 时间(t2)	Peak Temperature 峰值温度(T4)	Reflow Times 回焊次数
> 220°C	30~60s	245±3°C	≤2	> 230°C	≤60s	260°C/10s	≤2



Specification

9 Reliability and Conditions

ITEM 项目	REQUIREMENTS 要求	TEST CONDITIONS 测试条件																																								
Resistance to solder heat 耐焊性	1. No visible mechanical damage. 无可见机械损伤 2. More than 75% of the terminal shall be covered with new solder. 至少有 75% 的端电极被焊锡覆盖。 3. Impedance change: within $\pm 30\%$; Inductance change: within $\pm 10\%$; Quality factor change: within $\pm 30\%$. 阻抗变化应在 $\pm 30\%$ 以内; 电感变化在 $\pm 10\%$ 以内; Q 值变化在 $\pm 30\%$ 以内。	① Solder temperature (焊接温度): $260 \pm 3^\circ\text{C}$ ② Dip time (浸焊时间): $10 \pm 1\text{s}$ ③ Solder (焊料): Sn93.5/Ag3.0/Cu0.5 ④ Flux (助焊剂): 25% Rosin and 75% ethanol in weight. ⑤ The chip shall be stabilized at normal condition for 1~2 hours before measuring.																																								
Solderability 可焊性	1. No visible mechanical damage 无可见机械损伤 2. More than 95% of the terminal shall be covered with new solder. 至少有 95% 的端电极被焊锡覆盖。	① Solder temperature (焊接温度): $245 \pm 2^\circ\text{C}$ ② Dip time (浸焊时间): $4 \pm 1\text{s}$ ③ Solder (焊料): Sn93.5/Ag3.0/Cu0.5 ④ Flux (助焊剂): 25% Rosin and 75% ethanol in weight.																																								
Terminal Strength 端电极强度	No visible mechanical damage. 无可见机械损伤 <table border="1" data-bbox="263 1030 1053 1243"> <tr> <td></td> <td>1005</td> <td>1608</td> <td>2012</td> <td>3216</td> <td>3225</td> <td>4516</td> <td>4532</td> </tr> <tr> <td>w(N)</td> <td>5</td> <td>5</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> </tr> <tr> <td>A(mm)</td> <td>0.50</td> <td>0.60</td> <td>0.8</td> <td>1.1</td> <td>1.1</td> <td>1.3</td> <td>1.3</td> </tr> <tr> <td>B(mm)</td> <td>0.35</td> <td>0.80</td> <td>1.0</td> <td>2.2</td> <td>2.2</td> <td>3.0</td> <td>3.0</td> </tr> <tr> <td>C(mm)</td> <td>0.80</td> <td>1.2</td> <td>1.5</td> <td>2.0</td> <td>3.0</td> <td>2.0</td> <td>3.5</td> </tr> </table>		1005	1608	2012	3216	3225	4516	4532	w(N)	5	5	10	10	10	10	10	A(mm)	0.50	0.60	0.8	1.1	1.1	1.3	1.3	B(mm)	0.35	0.80	1.0	2.2	2.2	3.0	3.0	C(mm)	0.80	1.2	1.5	2.0	3.0	2.0	3.5	 <p>Land pattern 贴片模式 R 0.5</p>
	1005	1608	2012	3216	3225	4516	4532																																			
w(N)	5	5	10	10	10	10	10																																			
A(mm)	0.50	0.60	0.8	1.1	1.1	1.3	1.3																																			
B(mm)	0.35	0.80	1.0	2.2	2.2	3.0	3.0																																			
C(mm)	0.80	1.2	1.5	2.0	3.0	2.0	3.5																																			
Bending strength 抗弯强度	The body shall not be damaged by forces applied on the right 以右图测试方式过程中器件无损伤	① Solder the inductor to the test jig (glass epoxy board). ② Flexure: 2mm. ③ Pressurizing speed: 0.5mm/sec. ④ Keep time: 30sec. 																																								
Drop 跌落	1. No visible mechanical damage. 无可见机械损伤。 2. Impedance change: within $\pm 20\%$ of initial value; Inductance change: within $\pm 10\%$ of initial value; Q: within $\pm 30\%$ of initial value. 阻抗变化应在 $\pm 20\%$ 以内; 电感变化在 $\pm 10\%$ 以内; Q 值变化在 $\pm 30\%$ 以内。	Drop 10 times on a concrete floor from a height of 100cm. 从 100cm 高度跌落到混凝土地面上 10 次																																								
Vibration 振动	1. No visible mechanical damage. 无可见机械损伤 2. Impedance change: within $\pm 20\%$ of initial value; Inductance change: within $\pm 10\%$ of initial value; Q: within $\pm 30\%$ of initial value. 阻抗变化应在 $\pm 20\%$ 以内; 电感变化在 $\pm 10\%$ 以内; Q 值变化在 $\pm 30\%$ 以内。	① Frequency (频率): 10Hz~55Hz. ② Amplitude (振幅): 1.5mm ③ Direction and time: X, Y and Z directions for 2 hours. 方向和时间: XYZ 三个方向各振动 2 小时																																								



Specification

9 Reliability and Conditions

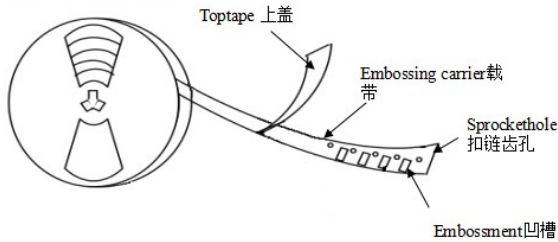
<p>Thermal shock 热冲击</p>	<p>1. No visible mechanical damage. 无可见机械损伤 2. Impedance change: within $\pm 20\%$ of initial value; Inductance change: within $\pm 10\%$ of initial value; Q: within $\pm 30\%$ of initial value. 阻抗变化应在 $\pm 20\%$ 以内; 电感变化在 $\pm 10\%$ 以内; Q 值变化在 $\pm 30\%$ 以内。</p>	<p>Step 1 (循环 1): $-55 \pm 3^\circ\text{C}$ 30\pm3 min Step 2(循环 2): $125 \pm 3^\circ\text{C}$ 30\pm3 min Number of cycle(循环次数):100 times</p>
<p>Resistance to Low Temperature 耐低温</p>	<p>1. No visible mechanical damage. 无可见机械损伤 2. Impedance change: within $\pm 20\%$ of initial value; Inductance change: within $\pm 10\%$ of initial value; Q: within $\pm 30\%$ of initial value. 阻抗变化应在 $\pm 20\%$ 以内; 电感变化在 $\pm 10\%$ 以内; Q 值变化在 $\pm 30\%$ 以内。</p>	<p>Temperature: $-55^\circ\text{C} \pm 2^\circ\text{C}$; Duration: 1000+24 hours. Measured at room temperature after placing for (24\pm2) hours. 通过额定电流, $-55^\circ\text{C} \pm 2^\circ\text{C}$ 下保持 1000+24 小时, 试验结束后在室温条件下 (24\pm2) 小时后测量。</p>
<p>Resistance to High Temperature 耐高温</p>	<p>1. No visible mechanical damage. 无可见机械损伤 2. Impedance change: within $\pm 20\%$ of initial value; Inductance change: within $\pm 10\%$ of initial value; Q: within $\pm 30\%$ of initial value. 阻抗变化应在 $\pm 20\%$ 以内; 电感变化在 $\pm 10\%$ 以内; Q 值变化在 $\pm 30\%$ 以内。</p>	<p>①Temperature: $125^\circ\text{C} \pm 2^\circ\text{C}$; ②Duration: 1000+24 hours. ③ Measured at room temperature after placing for (24\pm2) hours. $125^\circ\text{C} \pm 2^\circ\text{C}$ 下保持 1000+24 小时, 试验结束后在室温条件下 (24\pm2) 小时后测量。</p>
<p>Loading at High Temperature 高温寿命</p>	<p>1. No visible mechanical damage. 无可见机械损伤 2. Impedance change: within $\pm 20\%$ of initial value; Inductance change: within $\pm 10\%$ of initial value; Q: within $\pm 30\%$ of initial value. 阻抗变化应在 $\pm 20\%$ 以内; 电感变化在 $\pm 10\%$ 以内; Q 值变化在 $\pm 30\%$ 以内。</p>	<p>①Temperature: $85^\circ\text{C} \pm 2^\circ\text{C}$; ②Applied current :Rated current; ③Duration: 1000+24 hours. ④ Measured at room temperature after placing for (24\pm2) hours. $85^\circ\text{C} \pm 2^\circ\text{C}$ 下施加额定电流, 保持 1000+24 小时, 试验结束后在室温条件下 (24\pm2) 小时后测量。</p>
<p>Humidity load resistance 耐潮湿</p>	<p>1. No visible mechanical damage. 无可见机械损伤 2. Impedance change: within $\pm 20\%$ of initial value; Inductance change: within $\pm 10\%$ of initial value; Q: within $\pm 30\%$ of initial value. 阻抗变化应在 $\pm 20\%$ 以内; 电感变化在 $\pm 10\%$ 以内; Q 值变化在 $\pm 30\%$ 以内。</p>	<p>Temperature: $40^\circ\text{C} \pm 2^\circ\text{C}$, Time: 90~90%RH; Applied current; Rated current time: 500 hours. Measured at room temperature after placing for (24\pm2) hours. $40^\circ\text{C} \pm 2^\circ\text{C}$, 90~95%RH 条件下施加额定电流, 保持 500 小时, 试验结束后在室温条件下 (24\pm2) 小时后测量。</p>
<p>Solvent resistance 耐溶剂性</p>	<p>1. No visible mechanical damage. 无可见机械损伤 2. Impedance change: within $\pm 20\%$ of initial value; Inductance change: within $\pm 10\%$ of initial value; Q: within $\pm 30\%$ of initial value. 阻抗变化应在 $\pm 20\%$ 以内; 电感变化在 $\pm 10\%$ 以内; Q 值变化在 $\pm 30\%$ 以内。</p>	<p>Solvent: Trichlorethylene 溶剂: 三氯乙烯 Washer: Ultrasonic washer(100w) Washing time: 3 minutes 清洗: 100W 超声波清洗 3 分钟</p>



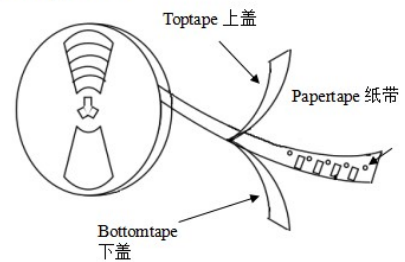
10 Packaging Style

10.1 Taping Material 包装材料

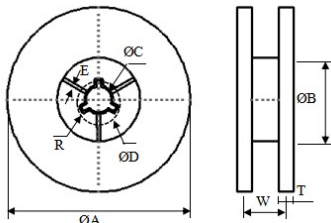
Embossing Tape 胶带



Paper Tape 纸带



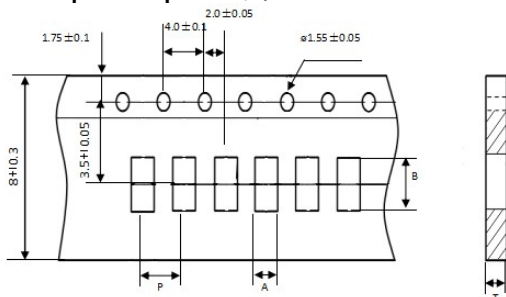
10.2 Reel Dimensions 卷轴尺寸 (mm)



Tape Width 载带宽度	A	B	C	D	E	W	T	R
8mm	178±2	60±1	13±0.5	21±0.8	2±0.5	10±1	1.5±0.5	1
12mm	178±2	60±1	13±0.5	21±0.8	2±0.5	14±1	1.5±0.5	1

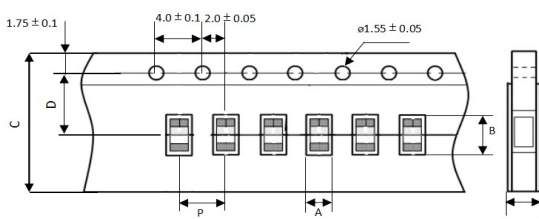
10.3 Carrier Dimensions 载带尺寸(mm)

Paper Tape 纸带



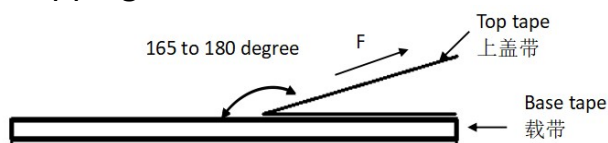
Paper Tape 纸带				
Type	A	B	P	T
1005	0.62±0.03	1.12±0.03	2.0±0.05	0.61±0.02
1608	1.0±0.1	1.6±0.03	4.0±0.1	0.95±0.10
2012	1.5±0.1	2.3±0.1	4.0±0.1	0.95±0.10
3216	1.9±0.1	3.6±0.1	4.0±0.1	0.95±0.10

Embossed Tape 胶带



Embossed Tape 胶带						
Type	A	B	C	D	P	K
1608	1.08±0.1	1.88±0.1	8±0.3	3.5±0.05	4.0±0.1	1.05±0.1
2012	1.50±0.1	2.32±0.1	8±0.3	3.5±0.05	4.0±0.1	1.20±0.1
3216	1.88±0.1	3.5±0.1	8±0.3	3.5±0.05	4.0±0.1	1.27±0.1
3225	3.1±0.1	3.8±0.1	12±0.3	5.5±0.05	4.0±0.1	1.63±0.1
4516	2.2±0.1	4.95±0.1	12±0.3	5.5±0.05	4.0±0.1	1.95±0.1
4532	3.8±0.1	4.95±0.1	12±0.3	5.5±0.05	8.0±0.1	1.90±0.1

10.4 Stripping methods and criteria 剥离方法及条件



Peeling angle 剥离角度	160° ~180°
Speed of Peeling off 剥离速率	300 mm/min
Peeling off force 剥离力	20 g to 70 g



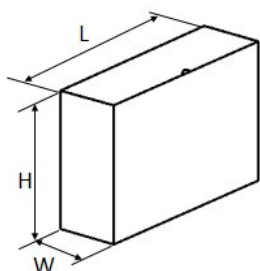
Specification

11 Storage

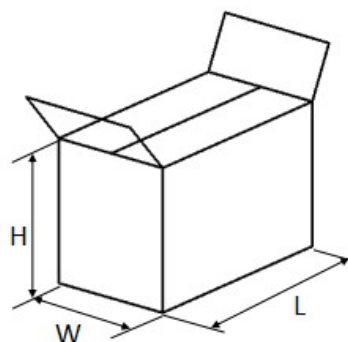
11.1 Quantity 标准数量

Type	PCS/REEL(只/卷)	PCS/INNERBOX(只/小盒)	PCS/OUTNERBOX(只/大盒)
1005	10000	50000	250000
1608	4000	20000	100000
2012	4000	20000	100000
3216	4000	20000	100000

11.2 Packaging Dimensions 包装尺寸 (mm)



L	W	H	THICK 厚度
180±3	70±3	190±3	2±0.8



L	W	H	THICK 厚度
180±3	70±3	190±3	2±0.8

11.3 Indication on the box 包装标识

- CUSORMER 客户名
- QUANTITY 数量
- PART NUMBER 料号
- LOT NUMBER 批号

11.4 Storage 储存

Please be sure to the parts at $-10^{\circ}\text{C}\sim+40^{\circ}\text{C}$, 70%RH or less, and isolate the parts from sulphic and choric atmosphere.
产品应存放于环境温度 $-10^{\circ}\text{C}\sim+40^{\circ}\text{C}$ ，相对湿度不高于 70%，且不含硫和氯的空气气氛中。

