

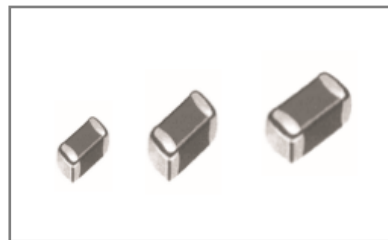
■车规叠层片式铁氧体大电流磁珠

Automotive Grade Multilayer Chip Ferrite High Current Beads

◆特征

Feature

- * 体积小
Miniature volume.
- * 漏磁小，不产生耦合，可靠性高
No cross coupling between inductors due to low magnetic shield and high reliability.
- * 无引线，适合高密度表面贴装
No lead, ideal for high density SMT installation.
- * 优良的可焊性及耐热冲击性，适合回流焊
Superior solderability and resistance to soldering heat, suitable for reflow soldering.
- * 通过 AEC-Q200 符合性测试
Pass AEC-Q200 compliance test.



◆应用

Application

- * 汽车多媒体和无线连接系统、车身与舒适系统
Automotive multimedia, wireless connection system and body comfort system.

◆型号表示法

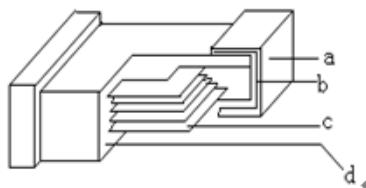
Part Number

ABW	201209	U	121	T
①	②	③	④	⑤

① 产品代号 Product Code		② 规格尺寸(L×W×T) Dimensions (mm)		③ 材料代号 Material Code	④ 阻抗(Ω) Impedance		⑤ 包装方式 Packaging Style	
ABW	车规叠层铁氧体大电流磁珠	100505	1.0×0.5×0.5	U	示例		T	卷带盘装
	Automotive Grade Multilayer Chip Ferrite High Current Beads	160808	1.6×0.8×0.8		Example			Tape & Reel
		201209	2.0×1.2×0.9		110	11	B	散装
		321609	3.2×1.6×0.9		121	120		Bulk
					102	1000		

◆产品结构 Product Structure

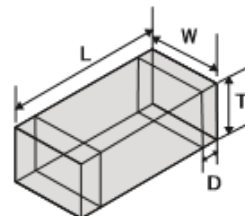
- a. 镀层 Ni/Sn plating
- b. 银层 Ag layer
- c. 内电极 Inner electrode
- d. 瓷体 Body



◆规格尺寸

Dimension

Part No	L(mm)	W(mm)	T(mm)	D(mm)
100505 (0402)	1.0±0.15 (0.040±0.006)	0.5±0.15 (0.020±0.006)	0.5±0.15 (0.020±0.006)	0.25±0.1 (0.010±0.004)
160808 (0603)	1.6±0.20 (0.063±0.008)	0.8±0.20 (0.031±0.008)	0.8±0.20 (0.031±0.008)	0.3±0.2 (0.01±0.008)
201209 (0805)	2.0±0.20 (0.079±0.008)	1.2±0.20 (0.047±0.008)	0.9±0.20 (0.035±0.008)	0.5±0.3 (0.020±0.012)
321609 (1206)	3.2±0.20 (0.126±0.008)	1.6±0.20 (0.063±0.008)	0.9±0.20 (0.035±0.008)	0.5±0.3 (0.020±0.012)



◆电性能参数

Electrical Characteristics

* 阻抗测试条件: E4982A 或等同仪器, 测试电压 50mV±5mV, 温度 15℃~35℃, 湿度 25%~75%。

Impedance testing conditions: E4982A or equivalent, test voltage 50mV ± 5mV, Temperature 15℃~35℃, Humidity 25%~75%.

* 直流电阻测试条件: RM3542A 或等同仪器, 温度 15℃~35℃, 湿度 25%~75%。

RDC Testing conditions: RM3542A or equivalent, Temperature 15℃~35℃, Humidity 25%~75%.

* 额定电流: 施加额定电流, 产品表面温升不超过 40℃。

Rated current: Apply the rated current, and the surface temperature rise of the product shall not exceed 40℃.

1005 Type

型号 Part NO	误差范围 Tolerance	标称阻抗 Impedance(Ω)	测试频率 Test frequency(MHz)	直流电阻 DCR (Ω)Max	额定电流 Ir (mA)Max
ABW100505U000T	0~15Ω	0	100	0.04	800
ABW100505U050T	0~15Ω	5	100	0.04	800
ABW100505U070T	0~11Ω	7	100	0.04	800
ABW100505U090T	5~13Ω	9	100	0.04	800
ABW100505U110T	7~15Ω	11	100	0.04	800
ABW100505U150T	9~21Ω	15	100	0.04	800
ABW100505U190T	12~25Ω	19	100	0.06	700
ABW100505U260T	±25%	26	100	0.06	700
ABW100505U310T	±25%	31	100	0.08	700
ABW100505U500T	±25%	50	100	0.15	600
ABW100505U600T	±25%	60	100	0.15	600
ABW100505U700T	±25%	70	100	0.20	450
ABW100505U750T	±25%	75	100	0.20	450
ABW100505U800T	±25%	80	100	0.20	450
ABW100505U101T	±25%	100	100	0.20	450
ABW100505U121T	±25%	120	100	0.25	450
ABW100505U151T	±25%	150	100	0.25	450
ABW100505U181T	±25%	180	100	0.40	300

型号 Part NO	误差范围 Tolerance	标称阻抗 Impedance(Ω)	测试频率 Test frequency(MHz)	直流电阻 DCR (Ω)Max	额定电流 Ir (mA)Max
ABW100505U221T	$\pm 25\%$	220	100	0.40	300
ABW100505U301T	$\pm 25\%$	300	100	0.50	300
ABW100505U501T	$\pm 25\%$	500	100	0.65	200
ABW100505U601T	$\pm 25\%$	600	100	0.70	200
ABW100505U801T	$\pm 25\%$	800	100	0.90	200
ABW100505U102T	$\pm 25\%$	1000	100	1.00	200

1608 Type

型号 Part NO	误差范围 Tolerance	标称阻抗 Impedance(Ω)	测试频率 Test frequency(MHz)	直流电阻 DCR (Ω)Max	额定电流 Ir (mA)Max
ABW160808U000T	0~15 Ω	0	100	0.08	1000
ABW160808U050T	0~15 Ω	5	100	0.08	1000
ABW160808U070T	0~11 Ω	7	100	0.08	1000
ABW160808U090T	5~13 Ω	9	100	0.08	1000
ABW160808U110T	7~15 Ω	11	100	0.08	1000
ABW160808U150T	9~21 Ω	15	100	0.08	1000
ABW160808U190T	12~25 Ω	19	100	0.08	1000
ABW160808U260T	$\pm 25\%$	26	100	0.08	1000
ABW160808U300T	$\pm 25\%$	30	100	0.08	1000
ABW160808U310T	$\pm 25\%$	31	100	0.08	1000
ABW160808U500T	$\pm 25\%$	50	100	0.12	1000
ABW160808U600T	$\pm 25\%$	60	100	0.12	1000
ABW160808U700T	$\pm 25\%$	70	100	0.15	1000
ABW160808U800T	$\pm 25\%$	80	100	0.15	1000
ABW160808U101T	$\pm 25\%$	100	100	0.15	1000
ABW160808U121T	$\pm 25\%$	120	100	0.15	1000
ABW160808U151T	$\pm 25\%$	150	100	0.20	1000
ABW160808U181T	$\pm 25\%$	180	100	0.20	1000
ABW160808U221T	$\pm 25\%$	220	100	0.20	1000
ABW160808U301T	$\pm 25\%$	300	100	0.25	1000
ABW160808U501T	$\pm 25\%$	500	100	0.30	1000
ABW160808U601T	$\pm 25\%$	600	100	0.30	1000
ABW160808U801T	$\pm 25\%$	800	100	0.55	500
ABW160808U102T	$\pm 25\%$	1000	100	0.55	500

2012 Type

型号 Part NO	误差范围 Tolerance	标称阻抗 Impedance(Ω)	测试频率 Test frequency(MHz)	直流电阻 DCR (Ω)Max	额定电流 Ir (mA)Max
ABW201209U000T	0~15 Ω	0	100	0.03	3000
ABW201209U050T	0~15 Ω	5	100	0.03	3000
ABW201209U070T	0~11 Ω	7	100	0.03	3000

ABW201209U090T	5~13Ω	9	100	0.03	3000
ABW201209U110T	7~15Ω	11	100	0.03	3000
ABW201209U150T	9~21Ω	15	100	0.03	3000
ABW201209U190T	12~25Ω	19	100	0.03	3000
ABW201209U300T	±25%	30	100	0.05	3000
ABW201209U310T	±25%	31	100	0.05	3000
ABW201209U360T	±25%	36	100	0.06	3000
ABW201209U600T	±25%	60	100	0.06	3000
ABW201209U700T	±25%	70	100	0.08	2500
ABW201209U800T	±25%	80	100	0.08	2500
ABW201209U101T	±25%	100	100	0.10	2500
ABW201209U121T	±25%	120	100	0.10	2000
ABW201209U151T	±25%	150	100	0.10	2000
ABW201209U181T	±25%	180	100	0.15	2000
ABW201209U201T	±25%	200	100	0.15	2000
ABW201209U221T	±25%	220	100	0.15	2000
ABW201209U301T	±25%	300	100	0.20	2000
ABW201209U331T	±25%	330	100	0.25	1500
ABW201209U501T	±25%	500	100	0.25	1500
ABW201209U601T	±25%	600	100	0.25	1500
ABW201209U801T	±25%	800	100	0.30	800
ABW201209U102T	±25%	1000	100	0.30	800
ABW201209U122T	±25%	1200	100	0.45	800
ABW201209U152T	±25%	1500	100	0.50	700

3216 Type

型号 Part NO	误差范围 Tolerance	标称阻抗 Impedance(Ω)	测试频率 Test frequency(MHz)	直流电阻 DCR (Ω)Max	额定电流 Ir (mA)Max
ABW321609U000T	0~15Ω	0	100	0.04	4000
ABW321609U050T	0~15Ω	5	100	0.04	4000
ABW321609U070T	0~11Ω	7	100	0.04	4000
ABW321609U090T	5~13Ω	9	100	0.05	4000
ABW321609U110T	7~15Ω	11	100	0.05	4000
ABW321609U150T	9~21Ω	15	100	0.05	3000
ABW321609U190T	12~25Ω	19	100	0.05	3000
ABW321609U260T	±25%	26	100	0.05	3000
ABW321609U280T	±25%	28	100	0.07	3000
ABW321609U300T	±25%	30	100	0.07	3000
ABW321609U310T	±25%	31	100	0.07	3000
ABW321609U500T	±25%	50	100	0.07	3000
ABW321609U600T	±25%	60	100	0.07	3000
ABW321609U700T	±25%	70	100	0.07	3000
ABW321609U800T	±25%	80	100	0.07	3000

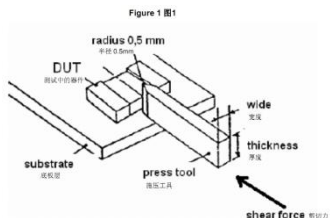
型号 Part NO	误差范围 Tolerance	标称阻抗 Impedance(Ω)	测试频率 Test frequency(MHz)	直流电阻 DCR (Ω)Max	额定电流 Ir (mA)Max
ABW321609U101T	$\pm 25\%$	100	100	0.07	3000
ABW321609U121T	$\pm 25\%$	120	100	0.07	3000
ABW321609U151T	$\pm 25\%$	150	100	0.12	2500
ABW321609U181T	$\pm 25\%$	180	100	0.12	2500
ABW321609U221T	$\pm 25\%$	220	100	0.12	2500
ABW321609U301T	$\pm 25\%$	300	100	0.15	2000
ABW321609U501T	$\pm 25\%$	500	100	0.20	2000
ABW321609U601T	$\pm 25\%$	600	100	0.20	2000
ABW321609U801T	$\pm 25\%$	800	100	0.25	2000
ABW321609U102T	$\pm 25\%$	1000	100	0.25	2000
ABW321609U122T	$\pm 25\%$	1200	100	0.35	1000
ABW321609U152T	$\pm 25\%$	1500	100	0.45	500

◆可靠性测试方法

Reliability Test Method

序号 No.	项目 Items	要求 Requirements	试验方法及备注 Test Methods and Remarks
1	工作温度范围 Operating Temperature Range	$-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$	包含产品表面温升 Includes product surface temperature rise
2	可焊性 Solder ability	无可见损伤; 电极面 95%以上覆盖新的焊料。 95% or more of electrode area shall be coated by new solder.	焊槽法; 无铅焊锡; 温度 $(245 \pm 5)^{\circ}\text{C}$; 浸渍时间 $(3 \pm 0.3) \text{ s}$ 。 Solder bath; Lead-free solder; Temperature $(245 \pm 5)^{\circ}\text{C}$; Immersion timer $(3 \pm 0.3) \text{ seconds}$.
3	耐焊接热 Resistance to Soldering Heat	无可见损伤; 阻抗: $\Delta Z/Z \leq \pm 30\%$ 。 No Visible damage; Impedance: $\Delta Z/Z \leq \pm 30\%$	方法 1: 焊槽法; 温度 $(260 \pm 5)^{\circ}\text{C}$; 浸渍时间 $(10 \pm 1) \text{ s}$ 。 Method 1: Solder bath; Temperature $(260 \pm 5)^{\circ}\text{C}$; Immersion timer $(10 \pm 1) \text{ seconds}$ 。 方法 2: 三次回流焊。 Method 2: 3 reflow soldering.
4	弯曲 Board flex	无可见损伤; 阻抗: $\Delta Z/Z \leq \pm 30\%$ 。 No Visible damage; Impedance: $\Delta Z/Z \leq \pm 30\%$	电感器安装在厚 1.6mm 环氧玻璃布板上, 以 1mm/s 的速度向下弯曲 2mm; 维持时间 $60\text{s} \pm 5\text{s}$ 。 The testing samples shall be mounted on a 100mm \times 40mm FR4 PCB board, which is 1.6mm \pm 0.2mm thick. Bending shall be applied to the 2.0mm with 1.0mm/sec; Duration: $60 \pm 5\text{s}$ 。

序号 No.	项目 Items	要求 Requirements	试验方法及备注 Test Methods and Remarks
5	振动 Vibration	无可见损伤; 阻抗: $\Delta Z/Z \leq \pm 30\%$. No Visible damage; Impedance: $\Delta Z/Z$ within $\pm 30\%$	频率 10Hz~2000Hz; 加速度 5g; 一个循环 20 分钟; X、Y、Z 三个方向每个方向 12 个循环, 共 36 个循环; . The entire frequency range of 10 to 2000 Hz and return to 10 Hz shall be traversed in 20 minutes. This cycle shall be preformed 12 time in each of three mutually perpendicular directions (total of 36 times), so that the motion shall be applied for a total period of approximately 12 hours. Peak value 5g.
6	高温存储 High Temperature Exposure (Storage)	无可见损伤; 阻抗: $\Delta Z/Z \leq \pm 30\%$. No Visible damage; Impedance: $\Delta Z/Z \leq \pm 30\%$	温度 125℃; 不通电; 持续时间 1000h; 试验结束后 (24±4)h 内进行电性能测量。 Temperature 125℃; Unpowered; Duration 1000h; Measurement at (24±4) hours after test conclusion.
7	偏高湿度(高温高湿) Biased Humidity	无可见损伤; 阻抗: $\Delta Z/Z \leq \pm 30\%$. No Visible damage; Impedance: $\Delta Z/Z \leq \pm 30\%$	温度 85℃; 湿度 85RH%; 持续时间 1000 小时, 不通电。 试验结束后 24±4 小时内进行测试。 Temperature 85℃;Relative humidity 85%; Duration 1000 h; Unpowered. Measurement at 24±4 hours after test conclusion.
8	工作寿命 Operational Life	无可见损伤; 阻抗: $\Delta Z/Z \leq \pm 30\%$. No Visible damage; Impedance: $\Delta Z/Z \leq \pm 30\%$	温度 125℃; 施加电流: 常温额定电流的 1/2; 持续时间: 1000 小时。 试验结束后 24±4 小时内进行测试。 Temperature 125℃; Test current: half of Rated current at normal temperature; Duration 1000 h; Measurement at 24±4 hours after test conclusion.
9	温度循环 Temperature Cycling	无可见损伤; 阻抗: $\Delta Z/Z \leq \pm 30\%$. No Visible damage; Impedance: $\Delta Z/Z \leq \pm 30\%$	高温 125℃; 低温 -40℃; 高、低温下暴露时间各 30 分钟; 转换时间 ≤ 1min; 循环次数 1000 次。 试验结束后 24±4 小时内进行测试。 High Temperature +125℃;low temperature -40℃; Duration at each temperature 30 min; Transition time ≤ 1 min. Severity 1000 cycles; Measurement at 24±4 hours after test conclusion.
10	机械冲击 Mechanical Shock	无可见损伤; 阻抗: $\Delta Z/Z \leq \pm 30\%$. No Visible damage; Impedance: $\Delta Z/Z \leq \pm 30\%$	正半弦波; 峰值加速度 100g; 脉冲持续时间 6ms; 三轴六向各 3 次, 共 18 次。 Half sine wave. Peak value 100g. Normal duration 6 ms; Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks)

序号 No.	项目 Items	要求 Requirements	试验方法及备注 Test Methods and Remarks
11	端子强度 Terminal Strength (SMD)	无可见电极损伤和电极脱落; No visible electrode damage or electrode detachment.	<p>试样安装在环氧玻璃布板上, 施加 1005 规格: 5N, \geq 1608 规格: 17.7N 的力到试样的侧面, 保持 $60s \pm 1s$。 The testing samples shall be mounted on the testing epoxy boards, exerting force on side of the samples, Size 1005: 5N; \geq Size 1608: 17.7N, Duration $60s \pm 1s$.</p> 

◆ 产品特性曲线图

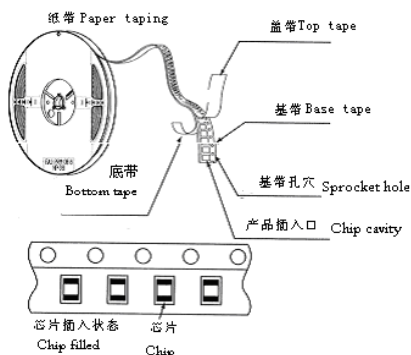
Product Characteristic Curve

见附表。See attached table.

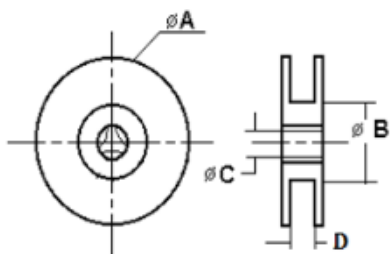
◆ 包装

Packaging

● 编带图 Taping drawings



● 卷盘尺寸 Reel dimensions (Unit: mm)

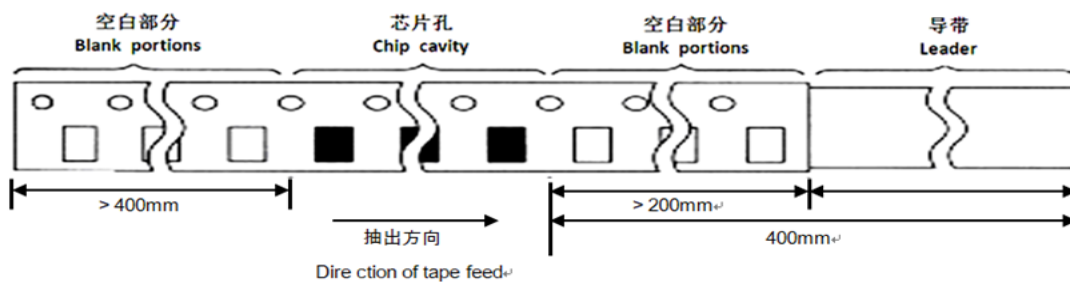


型号 Size	A	B	C	D
7 inch	178 \pm 2.0	60 \pm 2.0	13.0 \pm 1.0	9.5 \pm 2.0

说明: 7 inch 适用 060303、100505、160808、201209、321609、322513、451616 尺寸。

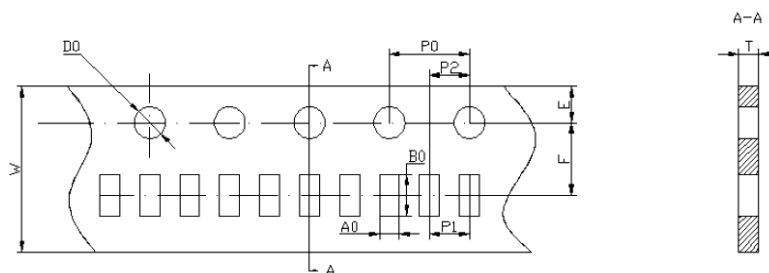
Note: 7 inch is available in 060303, 100505, 160808, 201209, 321609, 322513, 451616 sizes.

● 导带及空格部分 Leader and blank portion



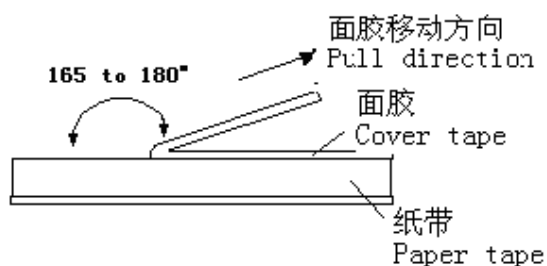
● 编带尺寸 Taping dimensions (Unit: mm)

* 纸带 Paper tape



Part NO.	A0	B0	W	F	E	P1	P2	P0	D0	T
100505	0.59±0.10	1.12±0.10	8.00±0.20	3.50±0.10	1.75±0.20	2.00±0.10	2.00±0.10	4.00±0.20	1.55±0.10	0.60±0.10
160808	1.05±0.20	1.85±0.20	8.00±0.20	3.50±0.10	1.75±0.20	2.00±0.20	2.00±0.10	4.00±0.20	1.55±0.10	0.95±0.10
201209	1.45±0.20	2.35±0.20	8.00±0.20	3.50±0.10	1.75±0.20	2.00±0.20	2.00±0.10	4.00±0.20	1.55±0.10	0.95±0.10
321609	1.90±0.20	3.46±0.20	8.00±0.20	3.50±0.10	1.75±0.20	4.00±0.20	2.00±0.10	4.00±0.20	1.55±0.10	0.95±0.10

* 剥离力检验 Peeling off force



(1) 盖带的剥离力：沿面胶移动方向拉时要求剥离力为 0.1N~0.7N。

Peeling force should be 0.1~0.7N pulling in the direction of arrow.

(2) 剥离速度：300mm/min。

Speed of peeling off: 300mm/min.

(3) 在纸带剥落时，面胶不能有破损，不能粘纸带。

The cover bond should not be damaged and bond the tape when it peeled off.

● 包装数量（单位：粒） Packaging number (Unit: Pcs)

类型 SIZE	321609	201209	160808	100505
每卷数量 REEL	4000	4000	4000	10000
每盒数量 BOX	40000	40000	40000	100000
每箱数量 CASE	240000	240000	240000	600000

● 标签粘贴位置 Label stick station

卷盘标签 Reel label	纸盒标签 Carton label	纸盒标签 Carton label	外箱标签 Outer box label
			

◆ 推荐焊接条件 Recommend Soldering Conditions

● 焊接条件 Soldering Conditions

- * 产品适用于回流焊 Products can be applied to reflow soldering.
- * 焊接要求

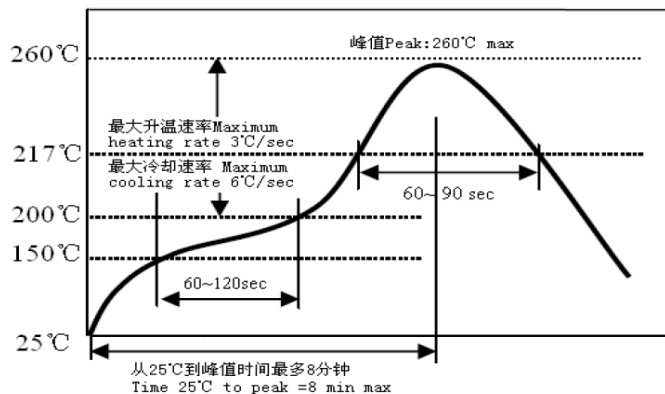
(1) 预热时，产品表温与焊料温度的温差最大不允许超出 150℃，焊接完冷却时，产品表温与溶剂温度之间的温差最大不超过 100℃。预热不足有可能引发产品表面裂纹，从而导致产品品质下降。

Pre-heating should be in such a way that the temperature difference between solder and ferrite surface is limited to 150℃ max. Also cooling into solvent after soldering should be in such way that the temperature difference is limited to 100℃ max. Un-enough pre-heating may cause cracks on the ferrite, resulting in the deterioration of product quality.

(2) 产品要在以下画出的曲线允许的范围进行焊接。其它焊接条件可能引起产品电极的腐蚀。当焊接重复时，允许的时间为第一次做的累计时间。

Products should be soldered within the following allowable range indicated by the slanted line. The excessive soldering conditions may cause the corrosion of the electrode. When soldering is repeated, allowable time is the accumulated time.

● 回流焊曲线 Reflow soldering profile



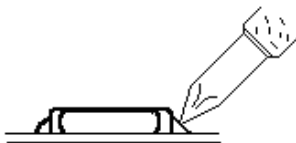
- (1) 预热条件: 150 ~ 200°C / 60 ~ 120 秒; PREHEAT CONDITION: 150 ~ 200°C / 60 ~ 120 SEC
- (2) 允许大于 217°C 时间: 60—90 秒; ALLOWED TIME ABOVE 217°C: 60~90 SEC
- (3) 最大温度: 260 °C; MAX TEMP: 260 °C
- (4) 最高温的最大时间: 10 秒; MAX TIME AT MAX TEMP: 10 SEC
- (5) 焊膏: Sn/3.0Ag/0.5Cu; SOLDER PASTE: Sn/3.0Ag/0.5Cu
- (6) 回流焊次数: 最多 2 次; ALLOWED REFLOW TIME: 2X MAX

● 手工焊接 Iron soldering

烙铁温度: 350°C Perform soldering at 350°C on 30W max

功率: 最大为 30W Time: < 5S

烙铁停留时间: < 5S (注意不要将烙铁碰到产品端电极) Take care not to apply the tip of the soldering iron to the terminal electrodes



◆ 清洗 Cleaning

● 清洗条件 Cleaning Conditions

- (1) 清洗温度: 60°C (最高) Cleaning temperature : 60°C max
- (2) 清洗时间: 1 分钟 (最少) Cleaning time: 1 minute min.
- (3) 超声波功率: 最大为 200W Ultrasonic output power: 200W max

◆ 存储要求 Storage Requirements

● 存储期限 Storage period

距电感公司出厂检验时间 1 年内, 产品可以使用检验时间可以通过包装外侧标记的检验号确认。若时间超过 1 年, 应检查焊接性能后方可使用。

Products which inspected inductor company over 1 year ago should be examined and used, which can be Confirmed with inspection No. marked on the container. Solder ability should be checked if this period is exceeded.

● 存储条件 Storage conditions

- (1) 存放货物的库房应满足以下条件: 温度: -10 ~ +40°C, 相对湿度: 30 ~ 70%。
- (2) 禁止将产品保管在腐蚀性物质中, 如硫磺、氯气或酸, 否则将引起端头氧化, 导致降低焊接性。
- (3) 为了避免受潮气、灰尘等物质的影响, 产品应保管于货架上。
- (4) 产品保管在库房中, 应避免热冲击、振动以及直接光照等等。
- (5) 产品应密封包装。

(1) Products should be storage in the warehouse on the following conditions:

Temperature : -10~+40°C Humidity: 30~70% relative humidity

(2) Don't keep products in corrosive gases such as sulfur, chlorine gas or acid , or it may cause oxidization of Electrodes resulting in poor solder ability.

(3) Products should be stored on the palette for the prevention of the influence from humidity, dust and so on.

(4) Products should be stored in the warehouse without heat shock, vibration, direct sunlight and so on.

(5) Products should be stored under the airtight packaged condition.

◆ ODS (消耗臭氧层物质) 的使用情况 Usage Of ODS

对于以下所列物质, 我公司在生产过程中绝不使用。

ODS: CCl₄ (四氯化碳)、HCFC 等。

For ODS listed below , we don't use in process.

ODS: CCl₄, HCFC, etc.

◆注意事项 Notes

- (1) 若本次承认的为“整体无铅”产品，则表明该产品符合 RoHS 指令的要求。
- (2) 本承认书保证我司产品作为一个单体时的质量情况，当我司产品被安装到贵司产品上时请保证贵司的产品已根据贵司的规范进行了有效评价和确认。
- (3) 如果贵司对我司产品的试用已超过了本测试规范所界定的产品功能，对于此所引发的失效我司将不予保证。

(1) If the parcel label on product is "Unitary lead free" that indicate the products in accord with ROHS appointed requests.

(2) This product specification guarantees the quality of our product as a single unit, Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.

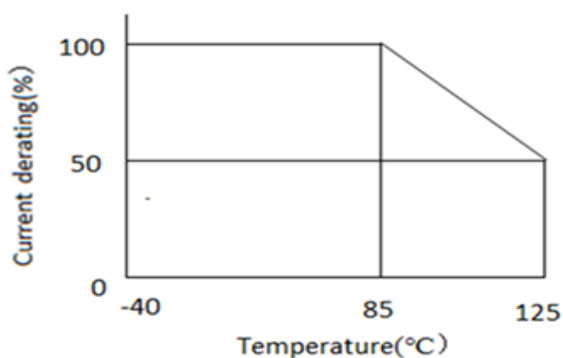
(3) We can't warrant against failure caused by any use of our product that deviates from the intended use as described in this product specification.

◆备注 Remark

- (1) 工作温度范围：-40℃~+125℃（包含产品表面温升）；

Operating Temperature Range: -40℃~+125℃ (Includes product surface temperature rise);

- (2) 当工作温度超过+85℃时，产品的额定电流必须降额使用。具体请根据工作温度使用图示的降额曲线。When Operating Temperatures exceed +85℃, the rated current of the product must be derated for use. Please apply the derating curve shown in chart according to the operating temperature.



■ 修订履历 Revision of resume

版本 Version	日期 Date	修订内容 Revised content	修订人 Revision author
17.01	2017-10-20	首次发行 Initial issue	徐雪枫
23.01	2023-1-10	修改了产品适用范围, 修改了存储期限. Modified the application scope, Modified the storage period.	徐雪枫
23.02	2023-2-23	修改了可靠性试验项目弯曲、端电子强度的维持时间; 增加了静电放电项目, 抗弯强度试验方法及要求 Modified the maintenance time of bending and electrode strength of reliability test items; Added the ESD item.	徐雪枫
23.03	2023-8-10	删除了高温存储、偏高湿度(高温高湿)周期测量要求 Delete the periodic test requirement for high temperature exposure(storage)and biased humidity 修改了可焊性的试验方法 Modified the test method of solder ability. 修改了温度循环为温度冲击 Modified the temperature cycling to temperature shock	徐雪枫
A0	2024-05-16	修改版本命名, 删除焊接、清洗、存储要求 Modified the version name to delete the welding, cleaning, and storage requirements	何佳明
A1	2025-03-10	增加焊接、清洗、存储要求, Add welding, cleaning, and storage requirements 增加工作温度范围与降额曲线说明 Increase the operating temperature range and derate curve explanation 更新频率曲线 Update frequency curve 修改卷盘尺寸命名 Modify the naming of reel sizes	李文婧

注：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 P C N 通知客户。The information provided above is the product specifications. Until the product is changed, Fenghua reserves the right to modify this content without notice. Any product changes will be notified to customers via PCN.

附表 Schedule
