Specification For Approval

承　　认　　书

Customer Name
客 户 名 称: _____

Customer
客 户 品 名: _____

版　　本: REV.1.0　　品　　名: HCMA0518 Series

编　　号: HCDZ-GC-250036　　日　　期: 2025-01-08

Customer Approval Feedback 客 户 确 认 签 字

核准 APPROVED BY	审核 CHECKED BY	制定 DRAWN BY	发行章 Issuance
贺来明	冯鹏	陈升	

版本更改记录/Version of Changed Record

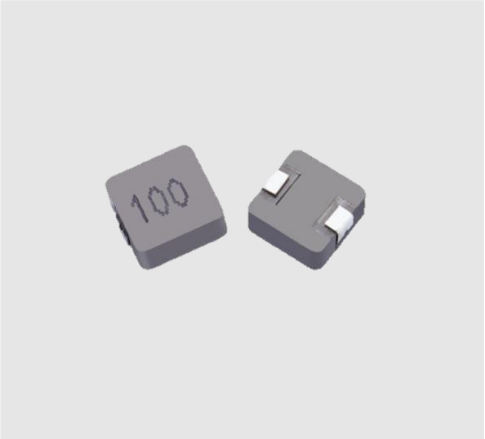
版本 Rev.	生效日期 Effective Date	更改内容 Changed Contents	更改原因 Change Reasons	批准 Approved By
1.0	2025-1-8	新发布	/	/

说明 Notes：

- 在使用产品前，用户应自行确定本产品是否适用于自身设计，本公司仅保证产品符合此规格承认书要求，或与提供样品等同货物。
- 本规格承认书如客户未回签即下订单，则视为承认此份承认书。
- Before use，the user should determine whether this product is suitable for their own design，Our company only guarantees that the product meets the requirements of this specification，Or equivalent to the sample provided.
- This specification such as customers did not sign backunder the orders, is that this specification.

合金一体成型电感/ Alloy Integrally Molded Inductor

特性/Features



- ■ 低损耗合金粉末压铸：低阻抗，寄生电容小。
- ■ 一体成型结构，闭合磁路设计减少泄漏通。
- ■ 漏磁干扰小，符合 RoHS 和 REACH 标准。
- ● Molding by alloy powder: low loss ,low impedance, small parasitic capacitance.
- ● A composite structure，Closed magnetic circuit design reduces leakage.
- ● The leakage magnetic interference is small, RoHS and REACH Compliance

用途/Applications

- ■ 应用于笔记本电脑和台式电脑，交换机和服务器基站、直流/直流转换器、电池供电设备。
- ● Laptops and PCS, Switch and servers Base stations，DC/DC converters, Battery powered devices.

产品标识/Product Identification

HCMA 0518 - 6R8 M T

① ② ③ ④ ⑤

① HCMA----Series name (淮磁 HC+合金电感 MA) 品名

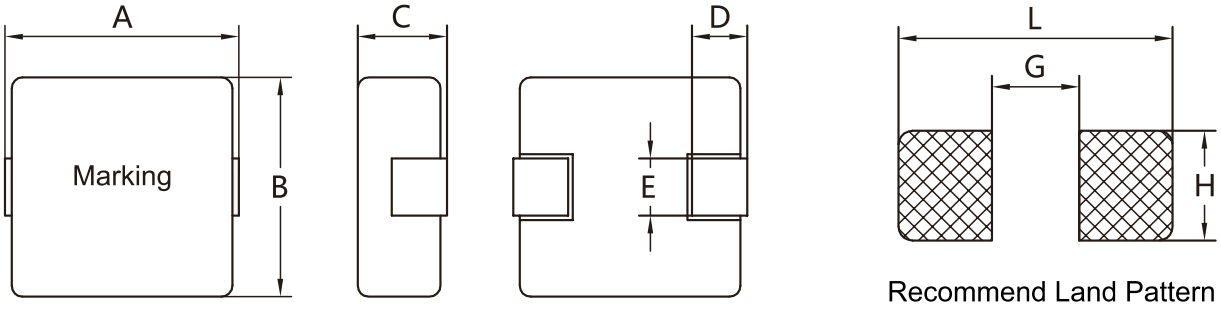
② 0518------Dimension (外形尺寸 5.7X5.2X1.8) 尺寸

③ 6R8-------Inductance Value (6R8 = 6.8μH，680=68uH) 感值

④ M ---------Inductance Tolerance (M= ±20% N=±30%) 精度

⑤ T ----------Packaging style (T: Taping 编带 B: bulk 散袋) 包装

外观尺寸/Dimensions (unit:mm)



系列 Series	尺寸/Dimensions (mm)							
	A	B	C	D	E	G	H	L
HCMA0518	5.7±0.3	5.2±0.2	1.6±0.2	1.0±0.3	2.5±0.3	2.8 Ref	2.5 Ref	6.0 Ref

规格特性表/Electronic Characteristics List

Part Number 产品型号	Inductance 感量 单位(μH)	DC Resistance 直流电阻 DCR (mΩ)	Saturation Current 饱和电流 Isat (A)		Heating Rating Current 温升电流 Irms (A)	
			Typ	Max	Typ	Max
HCMA0518-R22MT	0.22	4.2	19.0	17.0	15.0	13.0
HCMA0518-R33MT	0.33	6.4	14.0	12.0	13.0	11.0
HCMA0518-R47MT	0.47	10.2	13.0	11.5	11.0	10.0
HCMA0518-R68MT	0.68	12.4	12.0	10.8	10.0	9.0
HCMA0518-1R0MT	1	19	9.0	8.0	8.0	7.0
HCMA0518-1R5MT	1.5	27	8.5	7.5	7.0	6.0
HCMA0518-2R2MT	2.2	38	6.0	5.5	5.8	5.3
HCMA0518-3R3MT	3.3	52	5.0	4.5	5.0	4.2
HCMA0518-4R7MT	4.7	77	4.2	3.8	3.8	3.2
HCMA0518-5R6MT	5.6	95	4.0	3.5	3.3	2.8
HCMA0518-6R8MT	6.8	110	3.6	3.1	3.0	2.6
HCMA0518-8R2MT	8.2	138	3.1	2.7	2.8	2.4
HCMA0518-100MT	10	153	2.9	2.5	2.6	2.2
HCMA0518-120MT	12	212	2.6	2.3	2.4	2.1
HCMA0518-150MT	15	255	2.3	2.0	2.0	1.8

说明 Notes：

- 所有测试数据均以 25℃环境为参考。工作温度范围-40℃至+125℃.
- 温升电流：使产品温度上升到 ΔT40℃时所加载的实际直流电流值(Ta=25℃)。
- 饱和电流：电感值下降其初始值的 30%时所加载的实际直流电流值。
- 在最坏情况下，零件温度(环境温度+温升)不应超过 125℃。电路设计、元件放置、PCB 走线尺寸和厚度、气流和其他冷却规　定都会影响零件温度。应在最终应用中验证器件温度。
- All test data is referenced to 25°C ambient. Operating temperature range - 40°C to+125°C.
- Irms(A):DC current (A) that will cause an approximate ΔT of 40°C (reference ambient temperature is 25° C).
- Isat (A):DC current (A) that will cause L0 to drop approximately 30%.
- The part temperature (ambient + temp rise) should not exceed 125°C. under worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should beverified in the end application .

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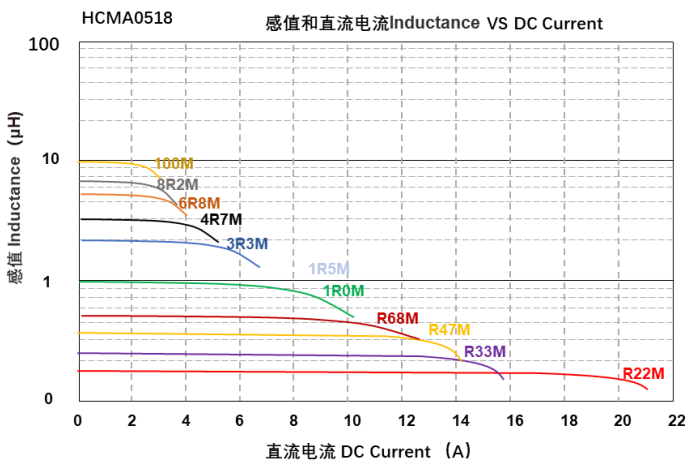
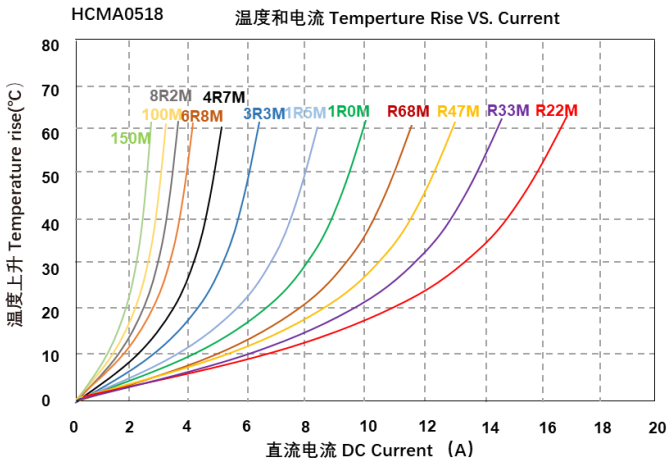
电性性能曲线/ Typical Performance Curves

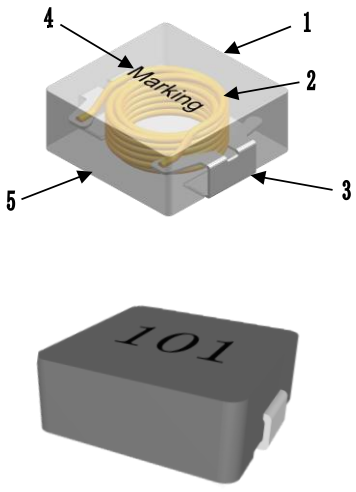




测试仪器/Measuring Instrument :

L:HIOKI3532-50　　DCR:HIOKI 3540　　Isat / Irise:HP4284+42841A

材料清单/Material List

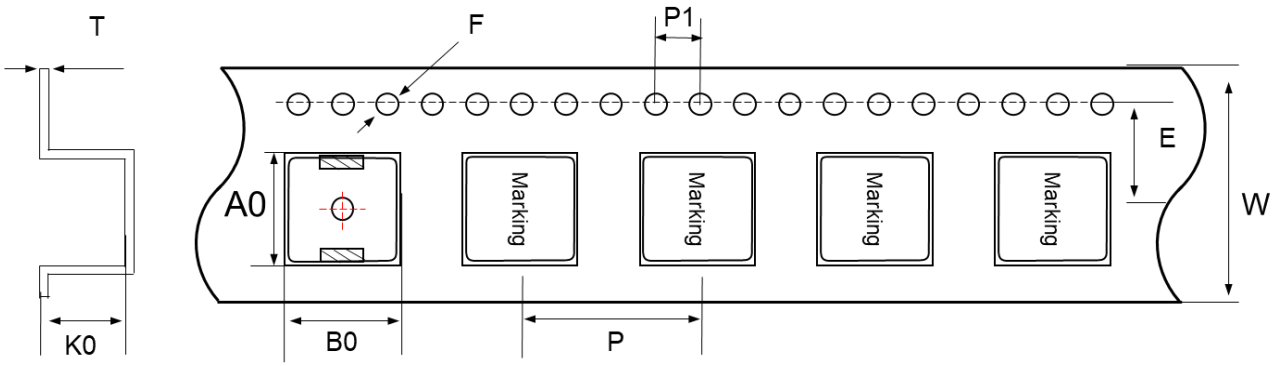


NO	Items	Materials
1	Core	Metal Powder.
2	Wire	Polyamide-imide Wire or equivalent.
3	Clip	100% Pb free solder.（Ni+Sn---Plating）
4	Ink	Halogen-free ketone.
5	paint	Epoxy resin.

A

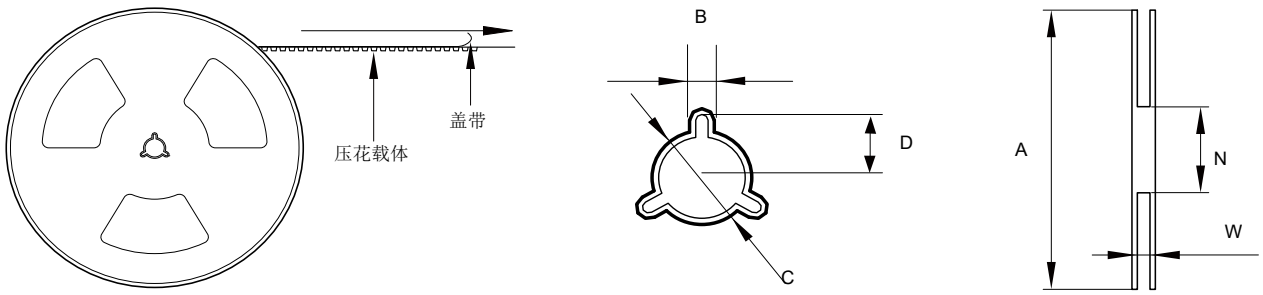
包装标识/Packaging and Marking

1. 载带尺寸/Carrier Tape Dimensions:



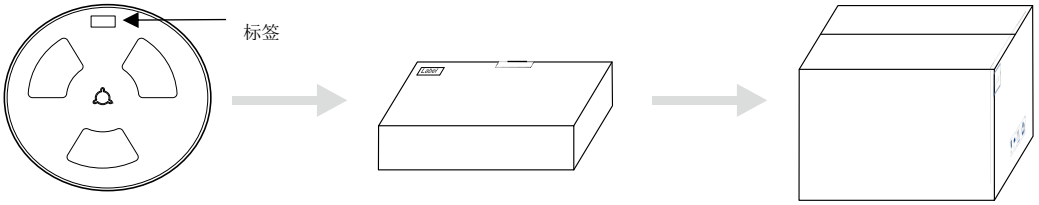
系列 Series	尺寸/Dimensions (mm)								
	A0	B0	K0	P	P1	F	E	W	T
HCMA0518	6.3±0.1	5.5±0.1	2.1±0.1	8.0±0.1	4.0±0.1	1.5±0.1	5.5±0.1	12.0±0.3	0.35±0.05

2. 卷盘尺寸/ Reel Dimensions:



系列 Type	卷盘尺寸/Tape dimensions (mm)					
	A	B	C	D	N	W
HCMA0518	330	2.2+0.5	13.0±0.2	10.75±0.25	12.4	97±0.5

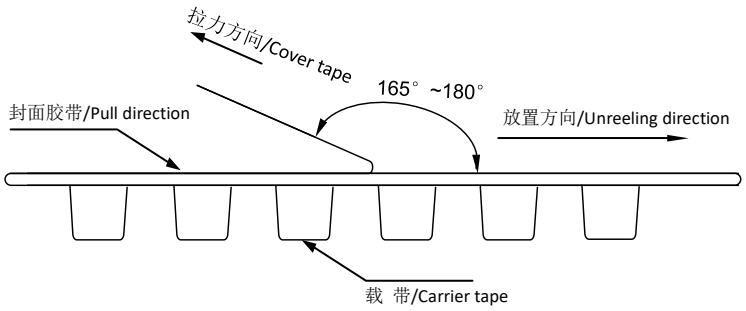
3. 包装数量/Packaging Quantity(PCS):



Type	标准数量/Standard Quantity		
	卷盘/Reel	内盒/Inner box	外箱/Carton box
HCMA0518	30500 pcs / reel	3Reel / box (9000 pcs)	4 Middle boxes, (36000 pcs)

4. 载带封面胶剥离/Peel force of top cover tape:

- 剥离速度应约为 300 毫米/分钟。
- 顶盖胶带的剥离力应在 0.1 至 1.3 扭力之间。
- The peel speed shall be about 300mm/minute.
- The peel force of top cover tape shall be between 0.1 to 1.3 N.



储存与操作事项/Cautions and Warnings

1. 存储条件/Storage Conditions:

- 保存时间为 12 个月以内，保存条件(温度-5~ 35℃、湿度 10~ 75%RH)。
- 若超过保存时间，端子电极的可焊性将可能老化。
- 产品不应暴露在高温、高湿、灰尘、腐蚀性气体的环境中等等。
- 产品应小心处理，以避免汗水和皮肤油脂造成损坏或污染。
- 请始终小心处理产品，以防止跌落或不适当的损坏。

- The storage period is within 12 months after the completion of production, Be sure to follow the storageconditions (temperature: -5 to 35°C, humidity: 10%-75% RH Max).If the storage period elapses,the soldering of theterminal electrodes may deteriorate.The warranty period is one year.
- Product should not be exposed to environment with high temperature, high humidity, dust, corrosive gas and etc.
- Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- Please always handle products carefully to prevent any damage caused by dropping down or Inappropriate removing.

2. 操作事项/Operation Instructions:

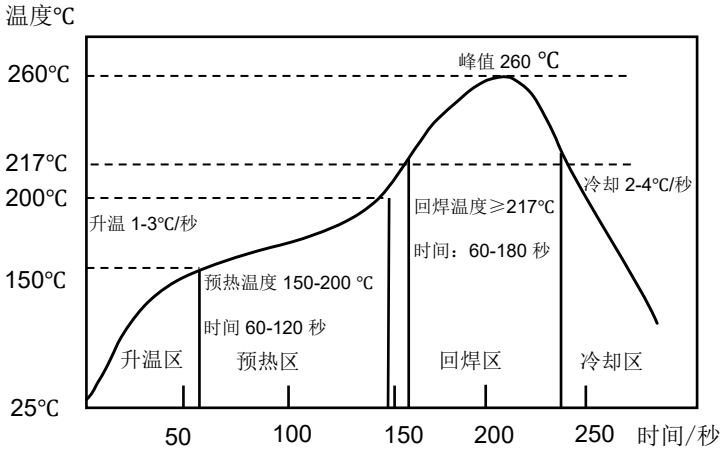
- 当电源开启时会发生自加热(温度升高)，因此公差应足以满足设定的热设计要求。在焊接之前，一定要预热元件。
- 预热温度应设定为使焊料温度与芯片温度的温差不超过 150℃。
- 安装后的焊接修正应在规格书规定的条件范围内。如果过热、短路、性能下降或寿命缩短，则可能发生

- Self heating (temperature increase) occurs when the power is turned ON, so the tolerance should be Sufficient for the set thermal design.
- Before soldering, be sure to preheat components.The preheating temperature should be set so that the temperature difference between the solder temperature and chip temperature does not exceed 150°C.
- Soldering corrections after mounting should be within the range of the conditions determined in thespecifica tions.If overheated, a short circuit, performance deterioration, or lifespan shortening may occur. Generally, Koher might not be familiar with either customer's specific application or actual request.

推荐焊接技术/Recommended Soldering Technologies

1. 回流焊温度曲线

- 预热条件：150-200℃/60-180 秒。
- 焊锡温度≥217℃：60-180 秒。
- 最高温度：260℃。
- 最高温度停留时间：10 秒。
- 焊膏：Sn/3.0Ag/0.5Cu。
- 允许的回流焊时间：最大 2 倍。



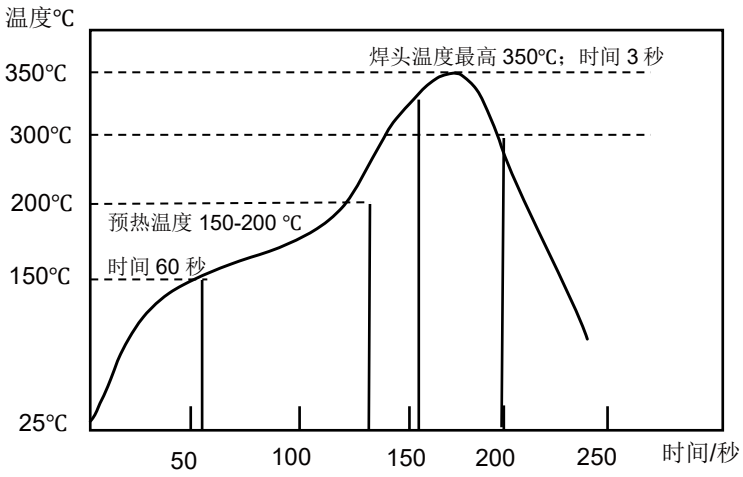
- 从 25℃-260 ℃ 升温到回焊时间不超过 8 分钟
- 对于回流焊接，建议将回流焊接次数保持在三次以下。
- 超厚的焊膏会导致焊点高度过高，应力过大，而焊点高度过低，焊膏会导致粘合强度不足。
- 建议使用卤素含量最多为 0.1%的弱酸性熔剂。
- 在 PCB 上安装电源电感器后，不要对电源电感器施加任何应力，如弯曲或扭曲电路板。

1. Reflowi Profile

- Preheat condition:150~200℃/60~180sec
- Allowed time above 217℃: 80~120sec
- Max temp: 260℃
- Max time at max temp: 10 sec
- Solder paste: Sn/3.0Ag/0.5Cu
- Allowed Reflow time: 2x max

2. 烙铁焊接要求

- 烙铁焊接功率：最大 30 瓦。
- 预热：150℃/60 秒。
- 烙铁头温度：最高 350℃。
- 焊接时间：最多 3 秒。
- 焊膏：Sn/3.0Ag/0.5Cu 。
- 烙铁焊接最多 1 次。



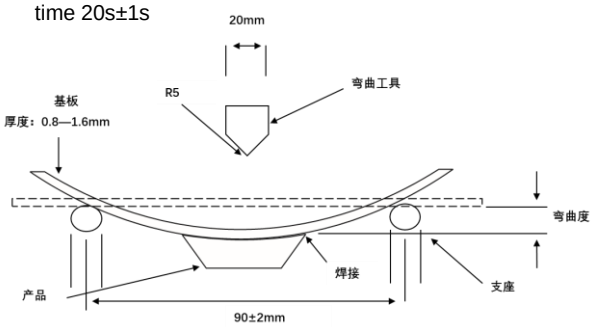
- T≤190℃(3216 型号以下)， ▲ T≤130℃(3225 以上)。)
- 推荐采用 20W 的焊枪，最大 30W，且其焊头直径为 1Φ以下。
- 请注意焊头不可直接触碰产品。确保焊枪焊接 1 次。
- 注:上述湿度要求是最大允许焊接条件一般不作为推荐湿度使用.

2. Iron Soldering Profile

- Iron soldering power: Max. 30W
- Pre-heating: 150℃/60sec
- Soldering Tip temperature: 350℃ Max
- Soldering time: 3sec. Max
- Solder paste: Sn/3.0Ag/0.5Cu
- Max.1 times for iron soldering

可靠性与测试条件/ ReliabilityandTestCondition

机械可靠性/Mechanical Reliability

项目 Item	规格和要求 Specification and Requirement	测试方法 Test Method
可焊性 Solderability	外观无变形或机械损伤焊接部位面积上锡95%以上 No case deformation or change in Apperarance New solder coverage More than 95%	◆ 预热：155℃±5℃，60S±2S ◆ 锡：无铅 ◆ 温度：240℃±5℃，浸锡到助焊剂约 3.0S±0.5S。 Preheat：155°C±5°C ，60S±2S Tin: lead-free. Temperature:240°C±5°C，flux 3.0S±0.5S.
机械冲击 Mechanical shock	样品不可有明显的机械损伤，电感量变化率小于±10%， No case deformation or change in appearance Inductance change: within ±10%	◆ 加速度：100G ◆ 脉冲时间：6ms ◆ 各相互垂直方向的正反方向各 3 次 Acceleration： 100G Pulse time:：6ms Inductance change: within ±10%
机械振动 Mechanical vibration	样品不可有明显的机械损伤，电感量变化率小于±10%， No case deformation or change in apperarance Inductance change: within ±10%	◆ 回流焊：2 次 ◆ 频率：10HZ~55HZ~10HZ，20 分钟/循环 ◆ 振幅：1.52 mm ◆ 方向：X、Y、Z ◆ 时间：12 个周期/方向 Reflow: 2times Frequency: 10HZ～55HZ～10HZ，20 Min/Cycles Amplitude: 1.52 mm Directions: X,Y,Z Time: 12 cycle / direction
抗弯强度 Bending strength	无可见机械损伤， No mechanical damage.	◆ 测试基板:玻璃环氧树脂基板 ◆ 加压速度为 0.5mm/s,弯度:2mm, 保持时间 20s±1s Testing board: glass epoxy-resin substrate For 0.5 mm/s compression speed, curvature: 2mm, hold time 20s±1s 

可靠性与测试条件/ ReliabilityandTestConditio

环境特性试验/Endurance Reliability

项目 Item	规格和要求 Specification and Requirement	测试方法 Test Method
冷热冲击 Thermal Shock	无可见机械损伤电感值变化不可超过试验前的±10% Inductance change: Within ± 10% Without distinct damage in appearance	◆ 第一次-40℃持续 30 分钟，最后 125℃持续 30 分钟，共 1 个循环。循环 1000 次。 ◆ 转换需在 3 分钟内完成 ◆ 放置 24±2 小时后在室温下测量 First -40°C for 30 minutes，last 125°C for 30 minutes as 1 cycle. Go through 1000 cycles. Max transfer time is 3 minutes. Measured at room temperature after placing for 24±2 hours
恒定湿热 Static Humidity	无可见机械损伤电感值变化不可超过试验前的±10% Inductance change: Within ± 10% Without distinct damage in appearance	◆ 回流焊 2 次， ◆ 湿度：85%，时间：1000 小时 ◆ 放置 24±2 小时后在室温下测量 Reflow 2 times, humidity: 85%RH,1000 hours Measured at room temperature after placing for 24±2 hours
低温储存 Low temperature storage	无可见机械损伤电感值变化不可超过试验前的±10% Inductance change: Within ± 10% Without distinct damage in appearance	◆ 温度：-40 ± 2℃ ◆ 时间：96 小时 ◆ 放置 24±2 小时后在室温下测量 Temperature：-40 ± 2℃ Time：96 hours Measured at room temperature after placing for 24±2 hours
高温储存 High temperature storage	无可见机械损伤电感值变化不可超过试验前的±10% Inductance change: Within ± 10% Without distinct damage in appearance	◆ 温度：+125 ± 2℃ ◆ 时间：96 小时 ◆ 放置 24±2 小时后在室温下测量 Temperature：+125 ± 2℃ Time：96 hours Measured at room temperature after placing for 24±2 hours