

# Specification for Approval 产品承认书

Customer Name 客户名称	
Customer Code 客户编号	11200
Customer P/N 客户型号	Refer to next page
CODACA P/N 科达嘉型号	Refer to next page
Product Series 产品系列	SPM0635
Spec No. 承认书编号	S1709130544
Version No. 版本号	A0

Prepared 拟制	Checked 审核	Approved 批准
		
Date 日期	2017-09-13	

Approved by Customer 客户承认	
Date 日期	



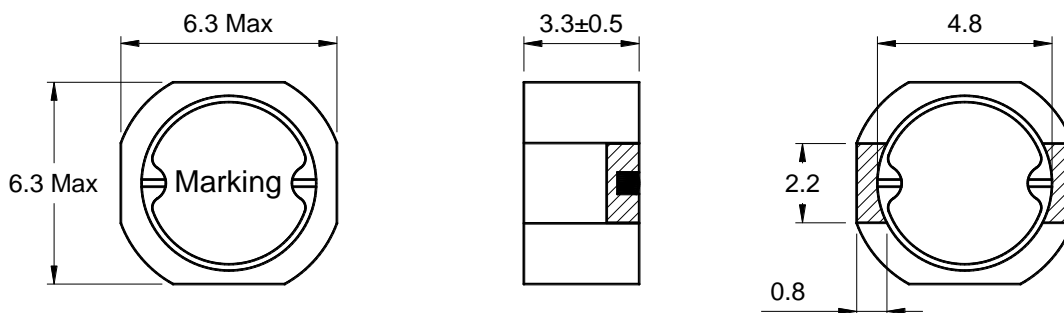




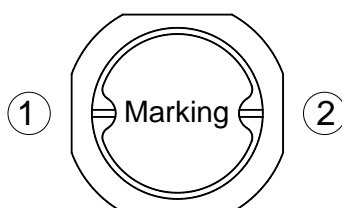
### Outline: 产品概要

- Small size, high rated current, low DCR.  
小尺寸, 耐大电流, 低直流电阻。
- Magnetic shielded structure  
磁性屏蔽结构
- Lead free product, RoHS compliant.  
无铅产品, 符合 RoHS 指令。
- Carrier tape packing, suitable for SMT process.  
载带包装, 适用于回流焊 SMT 工艺。
- Widely used in buck converter, laptop, displayer, network communication equipment, and etc.  
广泛应用于升降压转换器, 笔记本电脑, 显示器, 网络通信设备等。
- Operating temperature : -40°C ~ +125°C  
(Including coil's temperature rise)  
工作温度: -40°C ~ +125°C (包含线圈发热)

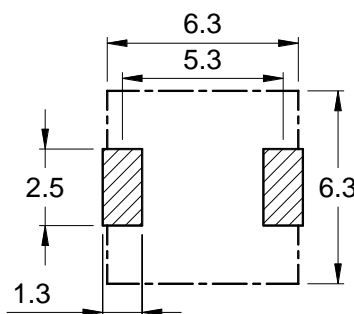
### 1 Appearance and dimensions (mm) 外形尺寸



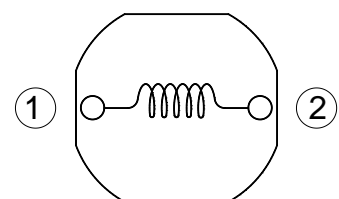
### 2 Marking 印字标识



### 3 Reference land pattern (mm) 参考基板尺寸



### 4 Schematic 原理图



**5 Electrical characteristics**

**电气特性**

Part No. 型号	Inductance (μH) 电感值 ※1 ±20%	D.C.R. (mΩ) 直流电阻		Saturation current (A) 饱和电流 ※2 Typical	Temperature rise current (A) 温升电流 ※3 Typical
		Typical	Max		
SPM0635-R82M	0.82	11.5	13.8	5.00	3.00
SPM0635-1R2M	1.20	13.0	15.6	4.50	2.90
SPM0635-2R2M	2.20	23.5	28.2	3.30	2.70
SPM0635-3R3M	3.30	24.9	29.9	2.60	2.10
SPM0635-4R7M	4.70	26.0	31.2	2.20	1.90
SPM0635-6R8M	6.80	52.4	62.9	1.80	1.50
SPM0635-100M	10.0	55.0	66.0	1.50	1.00
SPM0635-150M	15.0	82.0	98.0	1.40	1.00
SPM0635-220M	22.0	110	132	1.10	0.80
SPM0635-330M	33.0	219	263	0.90	0.60
SPM0635-470M	47.0	286	343	0.70	0.45
SPM0635-680M	68.0	330	396	0.60	0.35
SPM0635-101M	100	410	492	0.40	0.28
SPM0635-331M	330	1,850	2,220	0.25	0.15

■ All data is tested based on 25°C ambient temperature.  
所有数据基于环境温度 25°C条件下测试。

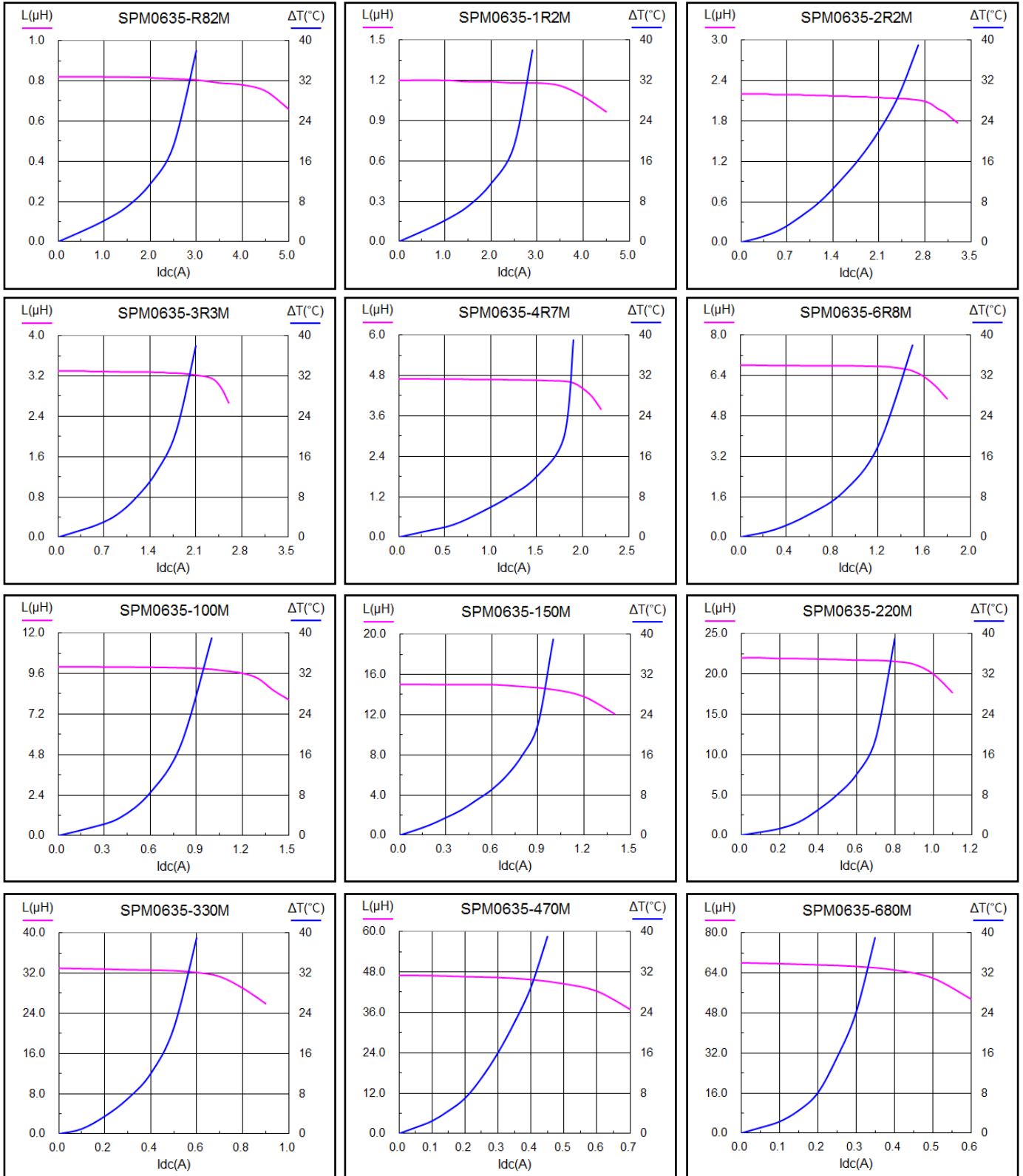
※1 Inductance measure condition at 100kHz, 0.1V.  
电感测试条件为 100kHz, 0.1V。

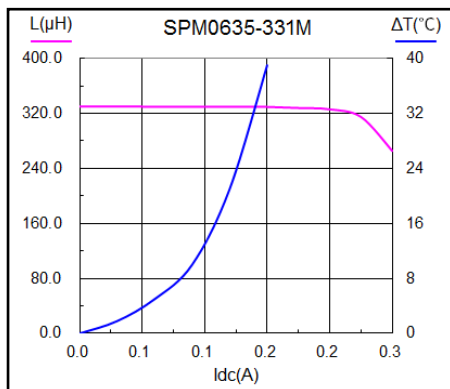
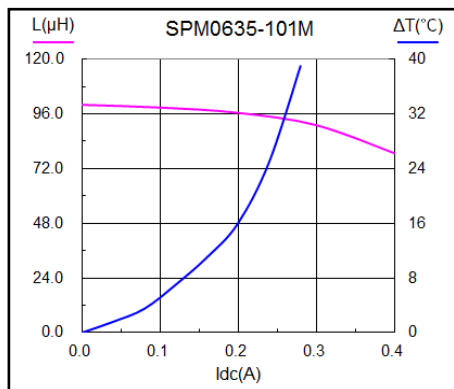
※2 Saturation current: the actual value of DC current when the inductance decrease 20% of its initial value.  
饱和电流: 电感值下降其初始值的 20%时所加载的实际直流电流值。

※3 Temperature rise current: the actual value of DC current when the temperature rise is ΔT40°C(Ta=25°C).  
温升电流: 使产品温度上升到 ΔT40°C时所加载的实际直流电流值(Ta=25°C)。

※ Special remind: Circuit design, component placement, PWB size and thickness, cooling system and etc. all will affect the product temperature. Please verify the product temperature in the final application.  
特别提醒: 线路设计, 组件布局, 印刷电路板(PWB)尺寸及厚度, 散热系统等均会影响产品温度。请务必在最终应用时, 验证产品发热状况。

**6 Saturation current VS temperature rise current curve  
饱和电流 VS 温升电流曲线**



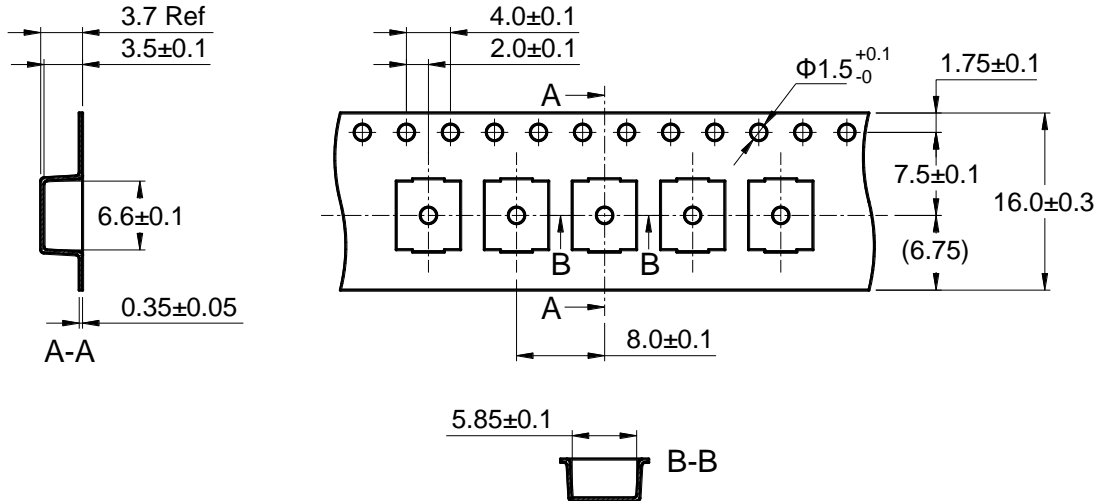


**7 Packing specification**

**包装规格**

**7.1 Carrier tape dimensions (mm)**

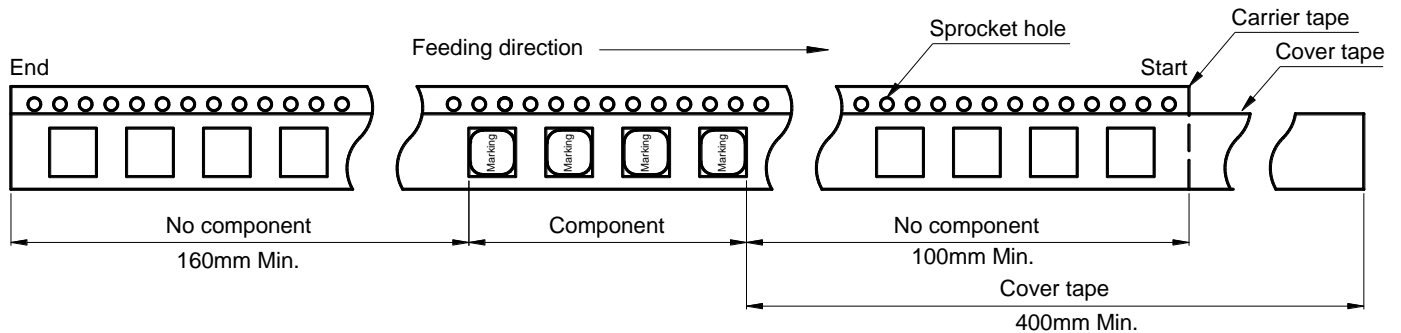
**载带尺寸**



※ Packing is referred to the international standard IEC 60286-3.  
包装参照国际标准 IEC 60286-3。

**7.2 Tape direction**

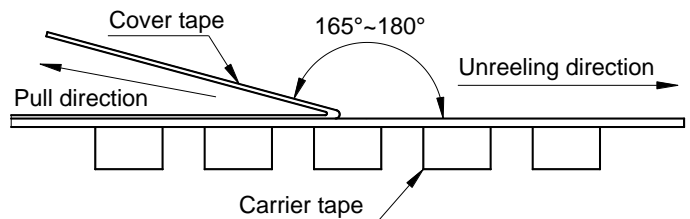
**捆包方向**



**7.3 Cover tape peel off condition**

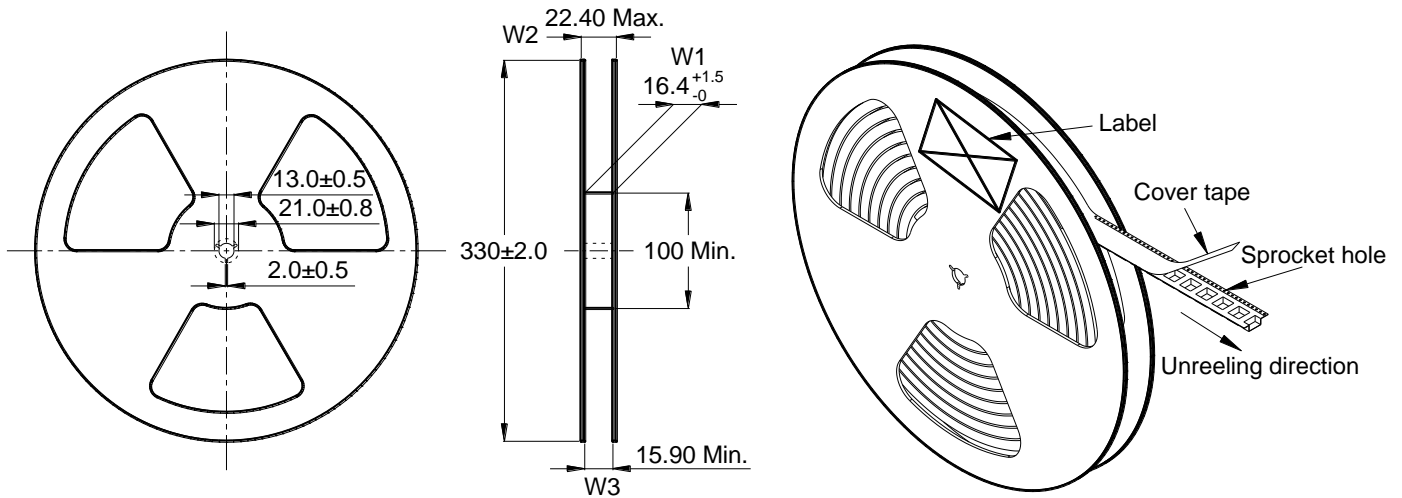
**盖带剥离条件**

- Cover tape peel force shall be 0.1 to 1.3N.  
盖带剥离力度为 0.1~1.3N。
- Reference peel speed 300±10mm/min.  
参考剥离速度 300±10mm/分钟。





7.4 Reel dimensions (mm)  
卷盘尺寸



7.5 Carton dimensions  
包装箱尺寸

- Inner Carton: 340×340×95mm  
内包装盒
- Out Carton : 370×370×210mm  
外包装箱

Product Series 产品系列	Quantity / Reel 数量 / 卷	Inner Carton Quantity 内盒 包装数量	Out Carton Quantity 外箱 总包装数量
SPM0635	2000pcs	8000pcs = (4×2000)	16000pcs = (2×8000)

7.6 Label making  
标签标识

The following items will be marked on the reel of product label and shipping label.  
以下项目将明确标识于产品卷盘标签以及运输标签上。

**Production Label  
产品标签**

- Part No.  
产品型号
- Electrical Information  
产品电性信息
- Quantity  
数量
- Packing No.  
包装流水号

**Shipping Label  
运输标签**

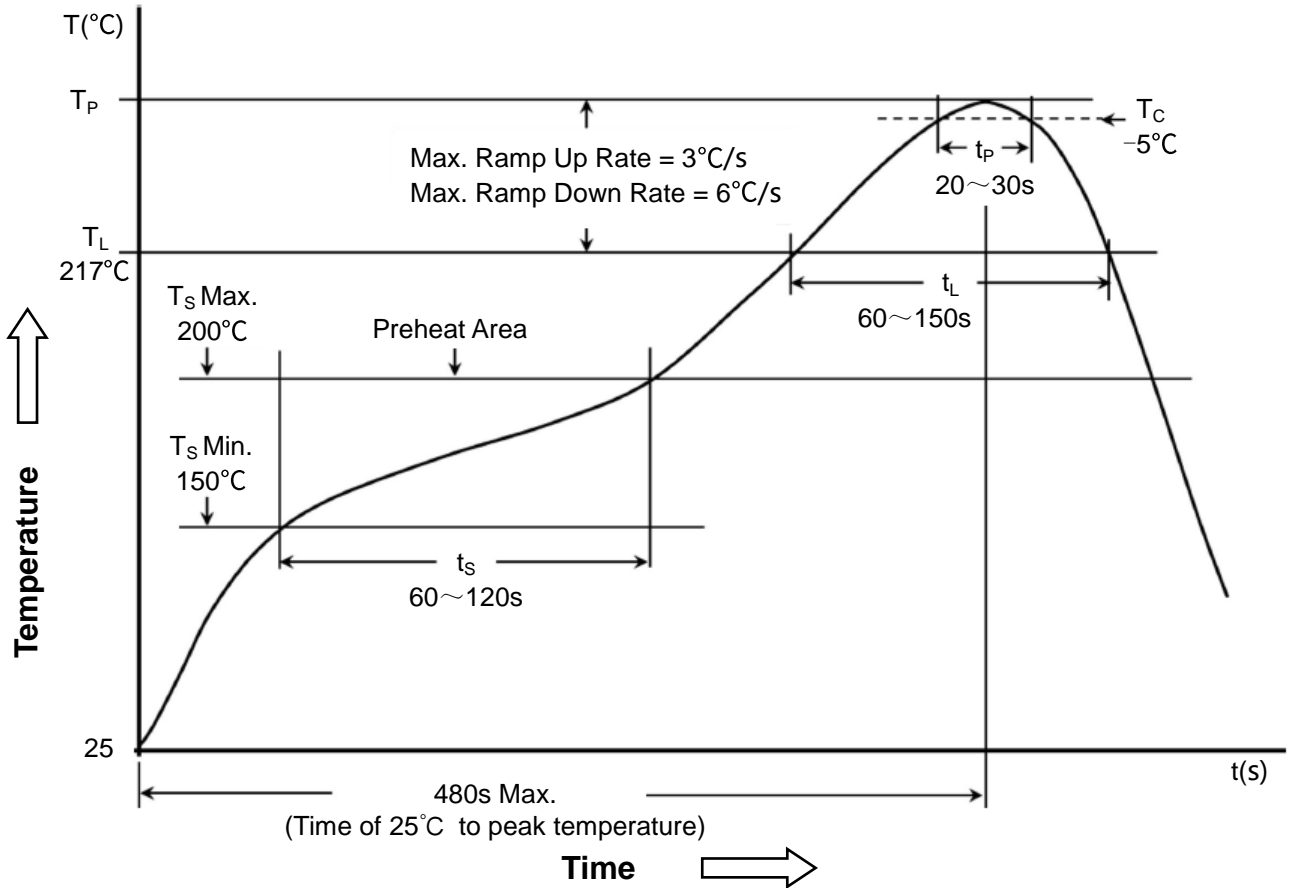
- Customer Name  
客户名称
- Customer Part No.  
客户品名
- Supplier Part No.  
供应商品名
- Supplier Name  
供应商名称
- Country of origin  
产品产地

**8 Soldering specification**

**焊接规格**

8.1 Reflow profile for SMT components

SMT 回流焊温度曲线



8.2 Classification of peak package body temperature ( $T_P$ )

封装体峰值温度( $T_P$ )分类

	Package Thickness 封装厚度	Package Volume 封装体积		
		<350 mm <sup>3</sup>	350~2000 mm <sup>3</sup>	>2000 mm <sup>3</sup>
PB-Free Assembly 无铅装配	<1.6mm	260°C	260°C	260°C
	1.6~2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

※ Reflow is referred to standard IPC/JEDEC J-STD-020D.  
回流焊参照标准 IPC/JEDEC J-STD-020D。

**9 General characteristics**

**产品一般特性**

9.1 Storage temperature range : -40°C ~ +125°C

保存温度范围

9.2 Operating temperature range : -40°C ~ +125°C (Including coil's temperature rise)

工作温度范围

9.3 Temperature characteristics

温度特性

Inductance coefficient : (0 ~ 2000) × 10<sup>-6</sup> / °C

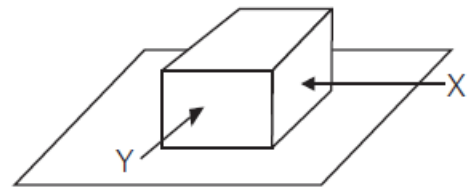
电感温度系数

9.4 Terminal strength test

端子(电极)强度试验

No electrode detachment should be found when the device is pushed in two directions of X and Y with the force of 5N for 10 seconds after soldering between copper plate and the electrodes.

将电感焊接到基板上，在 X 和 Y 方向上各加 5.0N 的推力 10 秒钟，无电极剥离现象发生。



9.5 Vibration test

振动试验

Inductance deviation within ±5% after vibration for 1 hour, in each of three orientations at sweep vibration (10~55~10Hz) with 1.5mm P-P amplitudes.

振动频率 10~55~10Hz(扫描时间 1 分钟)，全振幅 1.5mm(P-P)，在前后、左右、上下 3 个方向扫描振动，每个方向各 1 个小时后，对比电感值的变化率在初始值的±5%以内。

9.6 Shock test

冲击试验

Inductance deviation within ±5% after being dropped once with 981m/s<sup>2</sup> (100G) shock attitude upon a rubber block method shock testing machine, in three different orientations.

根据橡胶式落下冲击试验机，在互相垂直的 3 个不同方向，冲击加速度为 981m/s<sup>2</sup> (100G)，落下后对比电感值的变化率在初始值的±5%以内。

9.7 Humidity test

耐湿试验

Inductance deviation within ±5%, after 96 hours in 90~95% relative humidity at 40±2°C and 1 hour drying under normal condition.

在温度 40±2°C 和湿度 90~95% 保存 96 小时后，拿出来用干布擦去水滴，在常温常湿下放置 1 小时后，对比电感值的变化率在初始值的±5%以内。

9.8 High temperature operating life test

高温通电试验

Being stored in a chamber of temperature 85±2°C for 96±4 hours with DC A.

And then it shall be subjected to standard atmosphere conditions for 1 to 2 hours,

after which measurement shall be made and compared with the initial result, inductance deviation within ±5%

放置在环境温度 85±2°C 的恒温箱中，加载 A 直流电流，96±4 小时后，取出放置在室温 1-2 小时后，对比电感值的变化率在初始值的±5%以内。

9.9 Thermal shock test

冷热冲击试验

Being subjected to -40±2°C for 30 minutes, then to 125±2°C for 30 minutes (Transition time is 1 minute Max).

This constitutes one cycle. After 100 cycles, inductance deviation within ±5%.

在-40±2°C 环境中放置 30 分钟，之后再转移到 125±2°C 中放置 30 分钟(转移时间不超过 1 分钟)，这为一个循环。在循环 100 次以后，对比电感值的变化率在初始值的±5%以内。

**10 Notice of use****使用注意事项**

- 10.1 Product in packing storage condition : temperature 5~40°C, RH≤70%.  
产品在包装中的保存条件：温度 5~40°C，相对湿度小于等于 70%。  
If taking out for use, the remaining products should be sealed in plastic bags and preserved in accordance with the above conditions, to avoid oxidation of terminals (electrodes), affecting soldering status.  
如果取出使用，剩余的产品请用胶袋密封按照以上条件保存，避免端子(电极)氧化，影响焊接状态。
- 10.2 Product shelf life : 6 months (From manufacture date)  
产品保质期限：6 个月（从制造日期开始计算）
- 10.3 Do not keep products in unsuitable storage conditions, such as areas susceptible to high temperatures, high humidity, dust or corrosion.  
请不要将产品保存于高温、高湿、有尘埃、腐蚀性气体的不适合环境中。
- 10.4 Always handle products with care.  
请小心轻放，避免由于产品的跌落或取用不当而引致的损坏。
- 10.5 Don't touch electrodes directly with bare hands as oil secretions may inhibit soldering.  
Always ensure optimum conditions for soldering.  
手上的油脂会导致可焊性降低，应避免用手直接接触端子。
- 10.6 When this product will be used on a similar or new project to the original one, sometimes it might be unable to satisfy the specifications due to different condition of usage.  
当本产品应用于相似或新的产品上时，电性可能因使用条件的不同而与规格产生一定出入。
- 10.7 This inductor itself does not have any protective function in abnormal condition such as overload, short-circuit, open-circuit conditions, etc. Therefore, it shall be confirmed that there is no risk of smoke, fire, dielectric withstand voltage, insulation resistance, etc., or use in abnormal conditions protective devices or protection circuit in the end product.  
在过载、短路、开路等不正常条件下，本电感产品无任何自我保护功能。  
因此，请确保产品使用中不含烟、火、高压、绝缘等危险使用条件，或使用在不正常条件下的保护作用装置或电路中。
- 10.8 Hi-Pot test with higher voltage than spec value will damage insulating material and shorten its life.  
高电压绝缘测试会对本产品绝缘金属粉体造成损害，并缩短产品寿命。
- 10.9 If using in potting compound, the magnet wire coating might be damaged, please consult with us.  
如果将本产品用于埋制复合组件，有可能会对本产品的金属线表层造成腐蚀，请咨询本公司。
- 10.10 Refrain from rinsing coils. If necessary, please consult with us.  
请不要清洗产品，如果需要清洗，请咨询本公司。