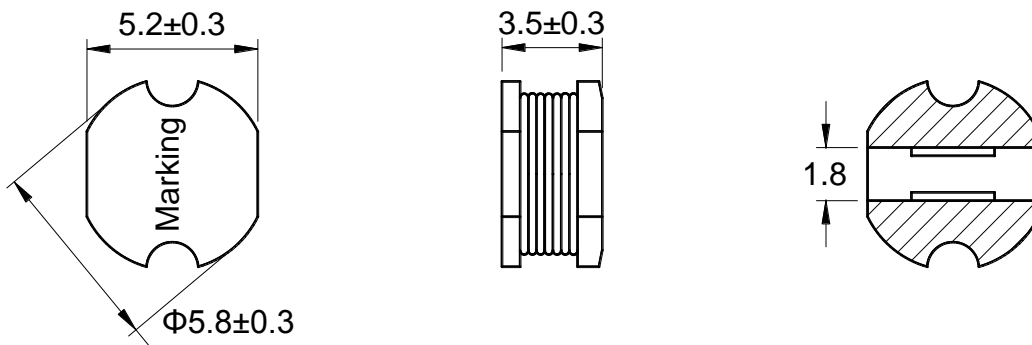




## Outline: 产品概要

- Small size, high rated current, low DCR.  
小尺寸，耐大电流，低直流电阻。
- 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, displayer, laptop, network communication equipment, and etc.  
广泛应用于升降压转换器，显示器，笔记本电脑，网络通信设备等。
- Operating temperature :  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$   
(Including coil's temperature rise)  
工作温度： $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$  (包含线圈发热)

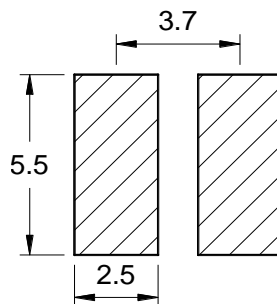
## 1 Appearance and dimensions (mm) 外形尺寸



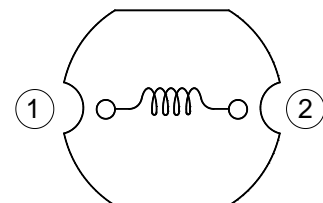
## 2 Marking 印字标识



## 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	D.C.R. (mΩ) 直流电阻		Saturation current (A) 饱和电流 ※2		Temperature rise current (A) 温升电流 ※3
		Typical	Max	Typical	Max	Typical
SP53-1R2M	1.20 ± 20%	12.2	14.6	5.51	4.41	5.63
SP53-2R2M	2.20 ± 20%	16.7	20.0	4.40	3.52	4.81
SP53-3R3M	3.30 ± 20%	21.2	25.4	3.75	3.00	4.27
SP53-4R7M	4.70 ± 20%	34.6	41.5	3.05	2.44	3.34
SP53-6R8M	6.80 ± 20%	41.0	49.2	2.65	2.12	3.07
SP53-100K	10.0 ± 10%	60.0	72.0	2.15	1.72	2.54
SP53-120K	12.0 ± 10%	78.5	94.2	2.05	1.64	2.22
SP53-150K	15.0 ± 10%	89.0	107	1.85	1.48	2.08
SP53-180K	18.0 ± 10%	111	133	1.75	1.40	1.87
SP53-220K	22.0 ± 10%	128	154	1.60	1.28	1.74
SP53-270K	27.0 ± 10%	158	190	1.41	1.13	1.56
SP53-330K	33.0 ± 10%	192	230	1.21	0.97	1.42
SP53-390K	39.0 ± 10%	225	270	1.15	0.92	1.31
SP53-470K	47.0 ± 10%	265	318	1.10	0.88	1.21
SP53-560K	56.0 ± 10%	333	400	1.01	0.81	1.08
SP53-680K	68.0 ± 10%	372	446	0.86	0.69	1.02
SP53-820K	82.0 ± 10%	464	557	0.82	0.66	0.91
SP53-101K	100 ± 10%	550	660	0.74	0.59	0.84
SP53-121K	120 ± 10%	690	828	0.68	0.54	0.75
SP53-151K	150 ± 10%	850	1,020	0.58	0.46	0.67
SP53-181K	180 ± 10%	956	1,147	0.55	0.44	0.64
SP53-221K	220 ± 10%	1,375	1,650	0.48	0.38	0.53
SP53-271K	270 ± 10%	1,570	1,884	0.44	0.35	0.50
SP53-331K	330 ± 10%	1,832	2,198	0.41	0.33	0.46
SP53-391K	390 ± 10%	2,100	2,520	0.36	0.29	0.43
SP53-471K	470 ± 10%	2,670	3,204	0.32	0.26	0.38
SP53-561K	560 ± 10%	3,060	3,672	0.30	0.24	0.36
SP53-681K	680 ± 10%	3,900	4,680	0.28	0.22	0.31
SP53-821K	820 ± 10%	4,770	5,724	0.26	0.21	0.28
SP53-102K	1,000 ± 10%	5,660	6,792	0.24	0.19	0.26

■ 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 1kHz, 0.25V.

电感测试条件为 1kHz, 0.25V。

※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).

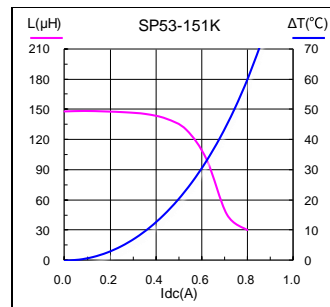
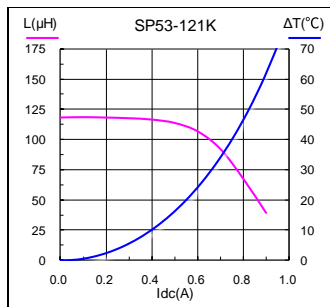
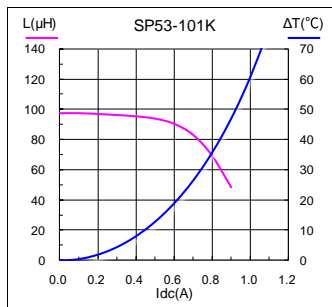
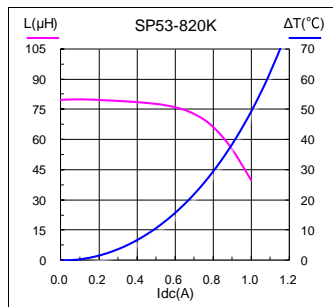
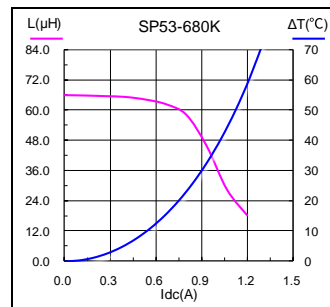
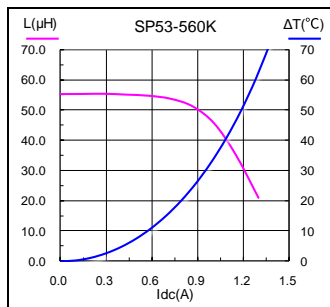
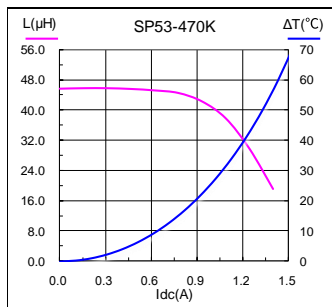
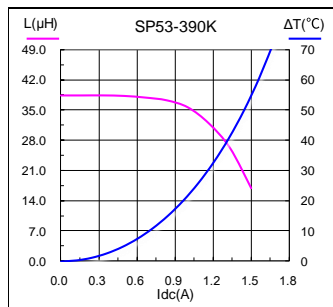
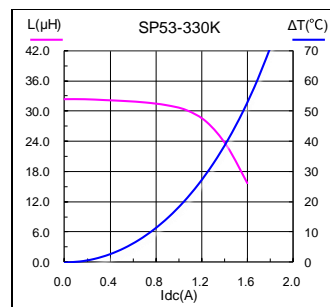
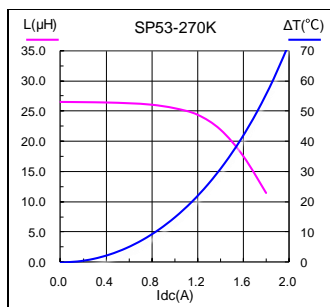
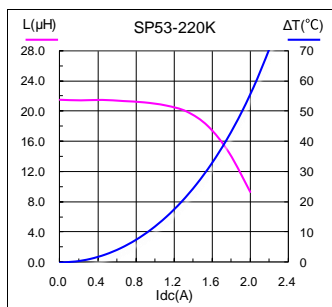
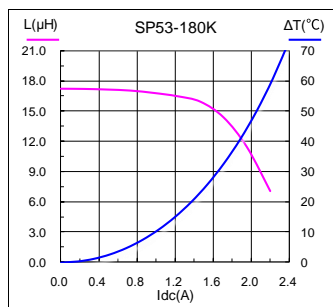
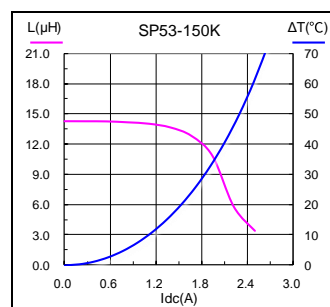
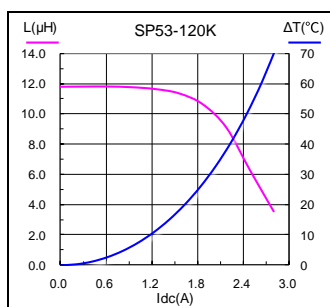
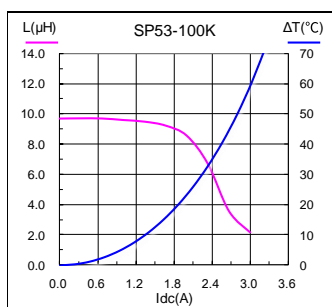
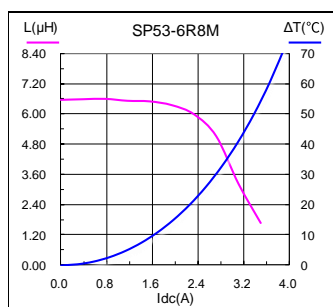
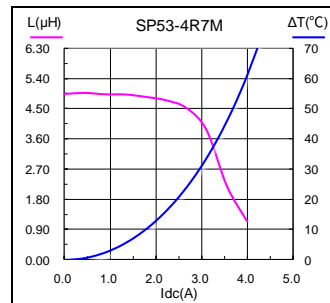
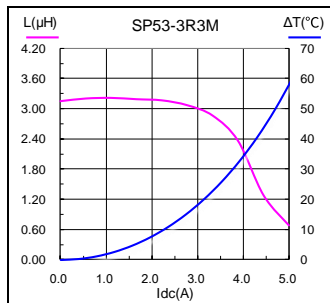
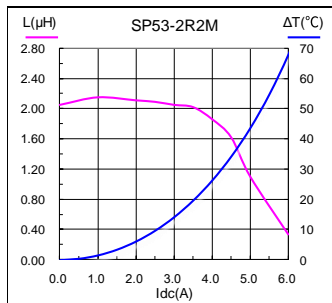
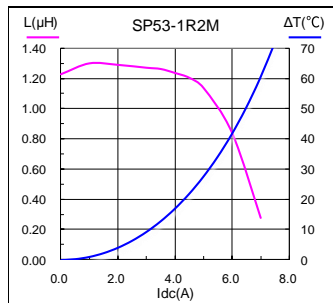
温升电流: 使产品温度上升到 ΔT40°C 时所加载的实际直流电流值 (Ta=25°C)。

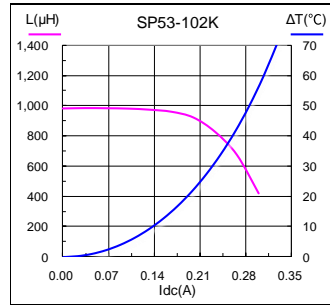
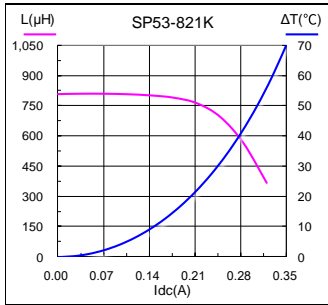
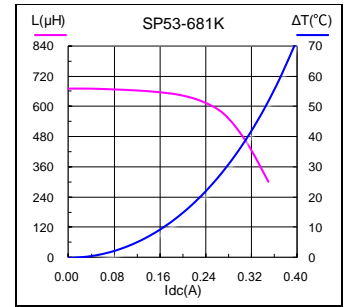
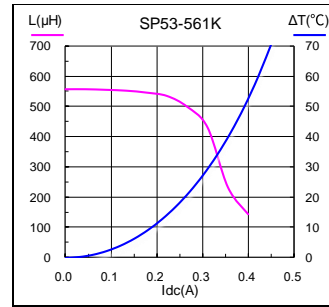
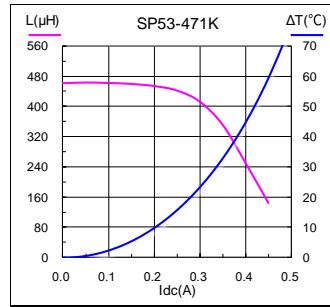
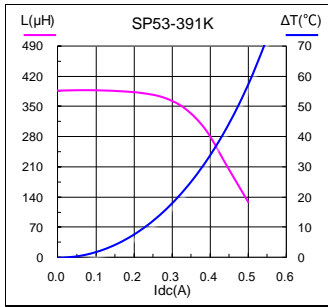
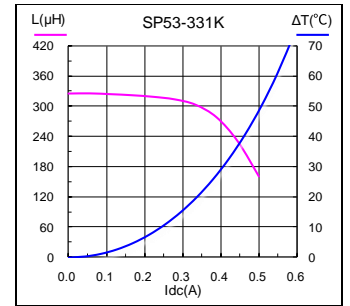
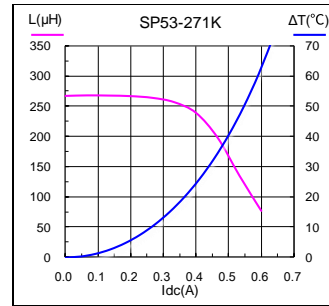
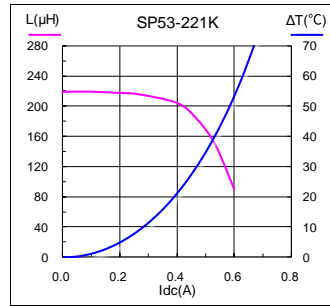
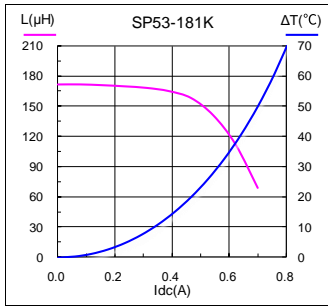
※ Special remind: Circuit design, component placement, PWB size and thickness, cooling system and etc. all will affect the product temperature. Please verify the product temperature in the final application.

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



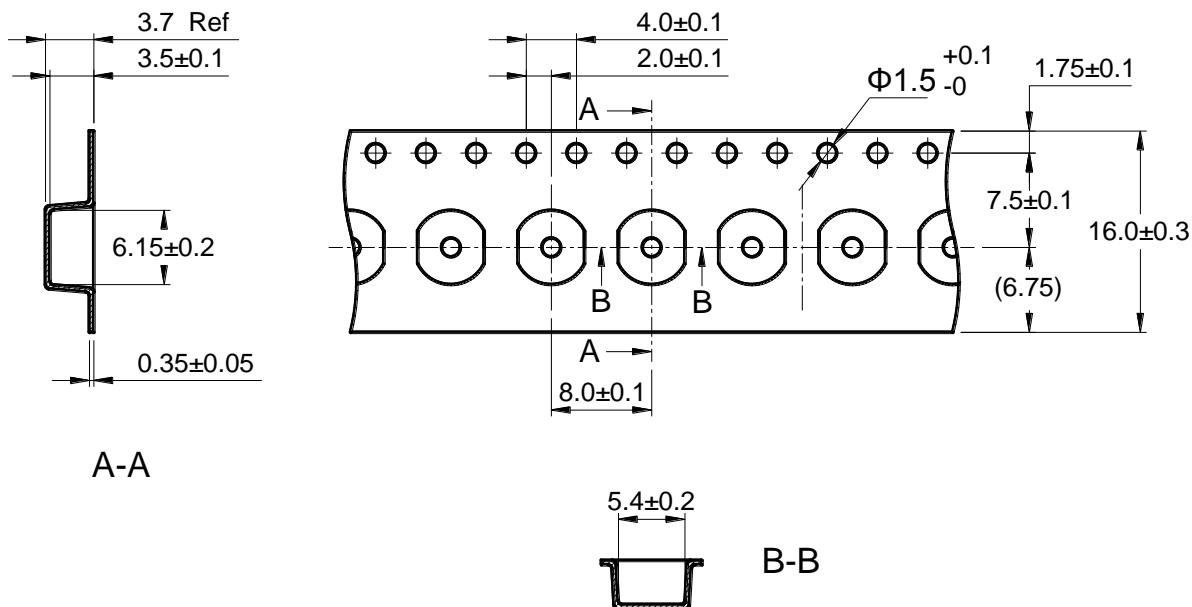


## 7 Packing specification

### 包装规格

#### 7.1 Carrier tape dimensions (mm)

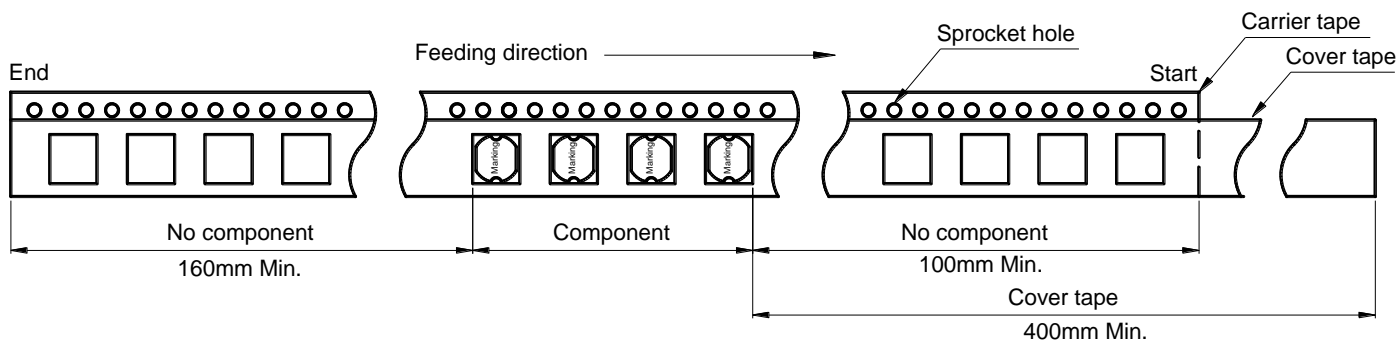
##### 载带尺寸



※ 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

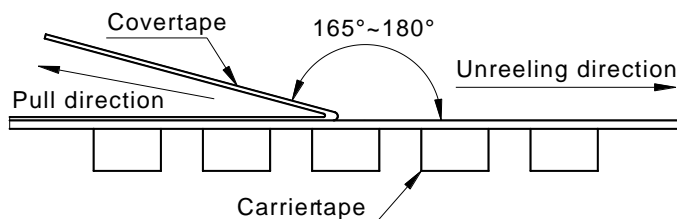
##### 捆包方向



#### 7.3 Cover tape peel off condition

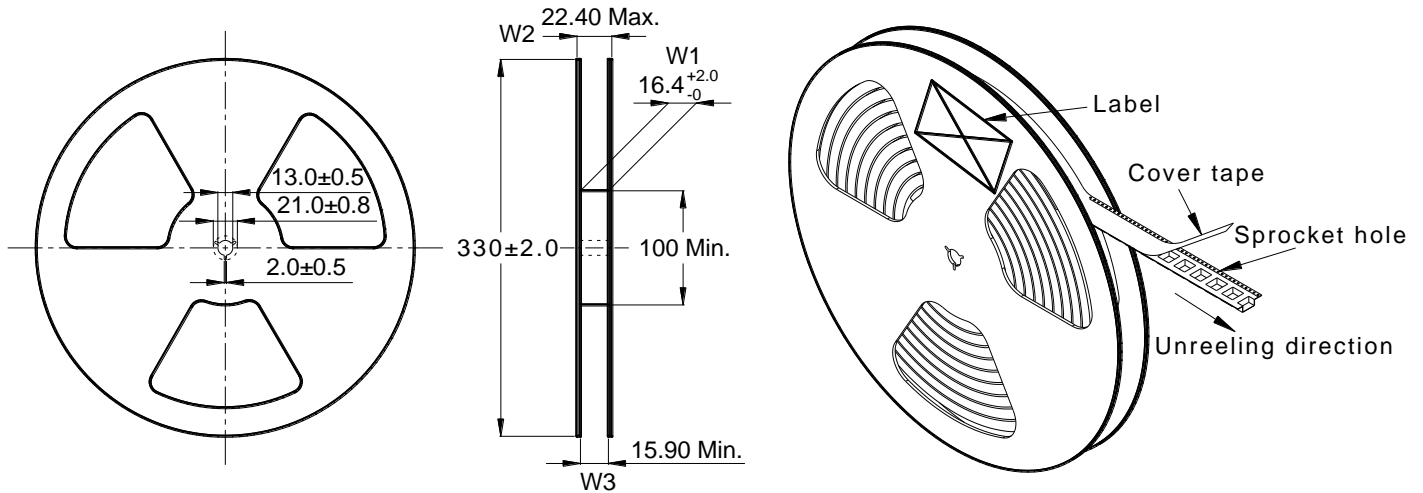
##### 盖带剥离条件

- 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 and packing quantity

包装箱尺寸和包装数量

■ Inner Carton: 365×345×105mm  
内包装盒

■ Out Carton : 385×365×245mm  
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 包装总数量
SP53	2000pcs	(2000×4) = 8000pcs	(8000×2) = 16000pcs

## 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

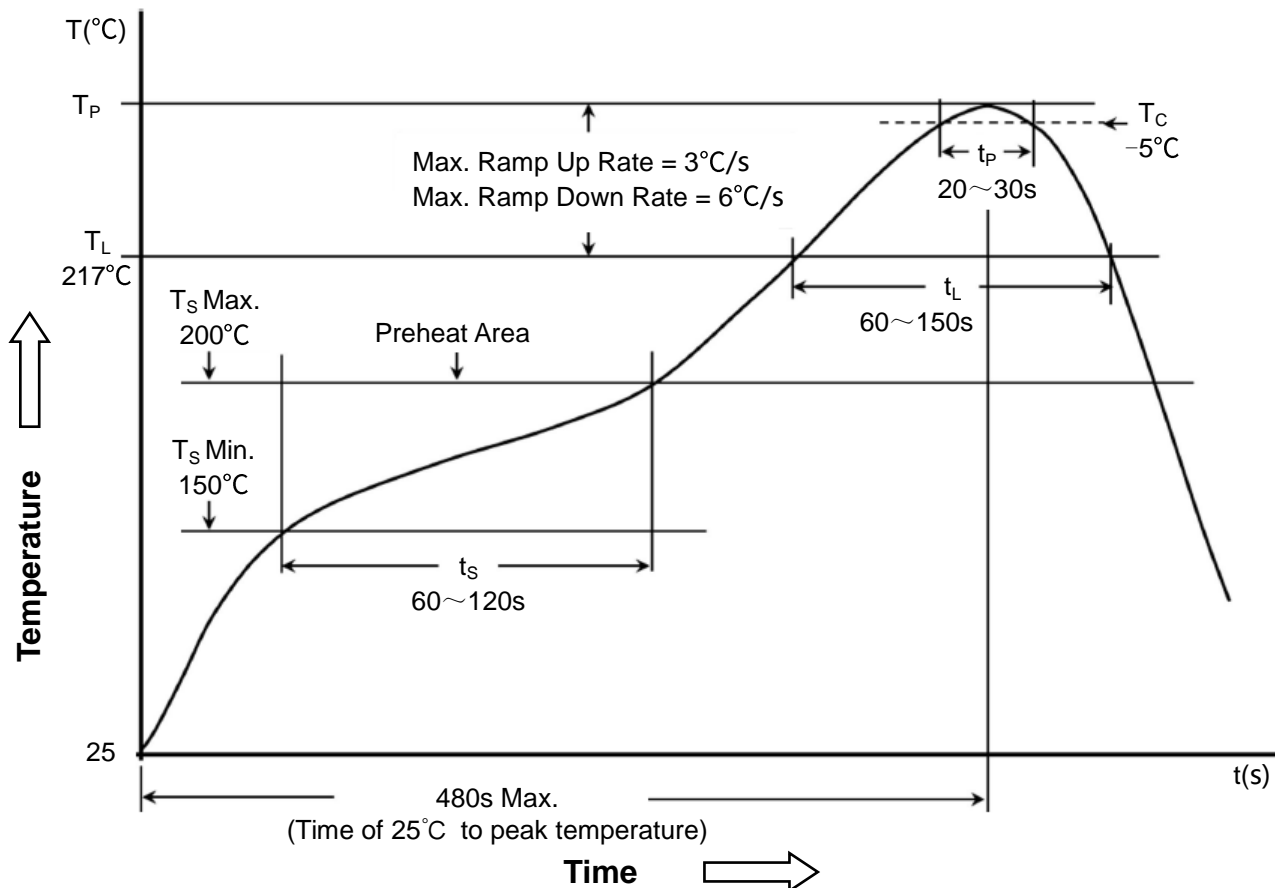
Shipping Label 运输标签
■ Customer Name 客户名称
■ Customer Part No. 客户型号
■ Supplier Part No. 供应商型号
■ Supplier Name 供应商名称
■ Country of origin 产品产地

## 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<sub>P</sub>)

封装体峰值温度(T<sub>P</sub>)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.