SMTC1510A Wire Wound Molded SMD Power Inductors

◆特征:

- 大电流、低DCR、高效率
- 磁屏蔽型抗电磁干扰强适用于高密度安装
- 高可靠性,通过采用T-core成型结构享有卓越的抗震动性能
- 极低的直流电阻和超低的交流损耗，适用于高开关频率
- 符合 RoHS,无卤和 REACH
- 符合 AEC-Q200

Features:

- High current，low DCR，high efficiency
- Magnetic shielding type, strong anti- electromagnetic Interference, suitable for high- density installation
- High reliability, excellent vibration resistance through the use of T-core molding structure
- Extremely low DCR and ultra low AC losses for high switching frequencies
- RoHS, Halogen Free and REACH Compliance
- AEC-Q200 Compliant

◆用途:

- PDA,笔记本,台式机,服务器应用程序
- 大电流 POL 转换器
- 电池供电设备、基站
- 分布式电源系统中的 DC/DC 转换器

Applications:

- PDA , notebook ,desktop ,server applications
- High current POL converters
- Battery powered devices、Base station
- DC/DC converters in distributed power systems

◆环境:

- 工作温度：-55℃ 至+155℃

（包括线圈自身温升）

Environmental Data:

- Operating Temperature: -55℃ to +155℃

(Including coils self-temperature rise)

◆试验设备:

- 电感值: WK3260B 或同等仪器
- 电流: WK3260B+WK3265B 或同等仪器
- 直流电阻: Chroma 16502 或同等仪器

Test Equipment:

- L: WK3260B LCR meter or equivalent
- Isat & Irms: WK3260B+WK3265B or equivalent
- DCR:Chroma 16502 or equivalent

◆产品型号:

Product Identification:

SMTC	**1510**	**A**	**100**	**M**	**T**
①	②	③	④	⑤	⑥

①

类型 Type	
SMTC	T-CORE 结构成型贴片功率电感 T-core molding Structure Power Inductors

②

外形尺寸(L×W×H) (mm) External Dimensions (L×W×H) (mm)	
1510	16.5×15.5×9.7

③

A
Automotive

④

Inductance
10 uH

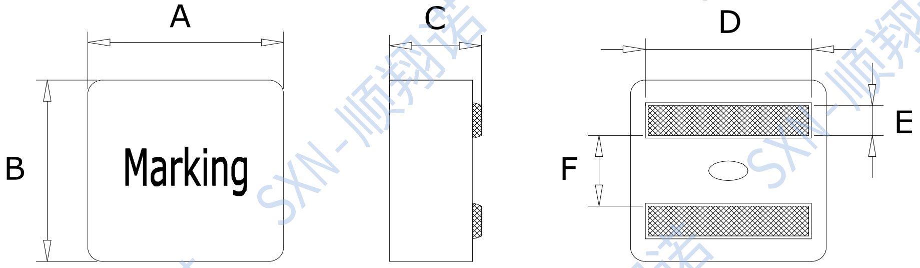
⑤

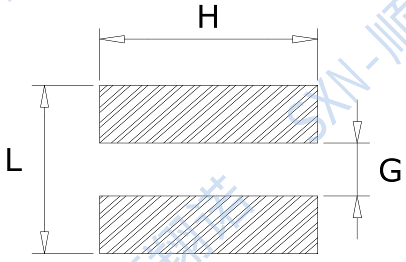
公差 Inductance Tolerance
J:±5%,K: ±10%, L: ±15% M: ±20%,P: ±25%, N: ±30%

⑥

包装 Packing	
B	散装Bulk Package
T	编带Tape & Reel

◆外观尺寸： **Shape and Dimensions(dimensions are in mm):**





Recommended

Land Pattern

Part No	ITEM								Unit:mm
	A	B	C	D	E	F	L	H	G
SMTC1510A	16.5±0.3	15.5±0.3	9.7±0.3	13.2±0.5	3.2±0.3	7.0±0.3	15.0Ref	15.0Ref	6.0Ref

◆规格特性： **Specifications:**

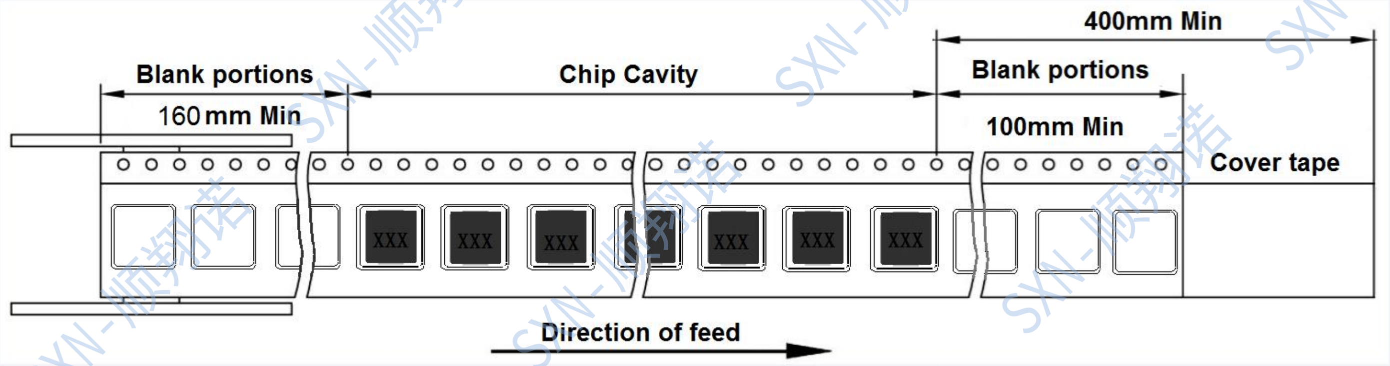
- SMTC1510A Series Electrical Characteristics (Electrical specifications at 25℃)

Part No	Inductance 100KHz /0.1V		DCR (mΩ) Max	Saturation Current(A)		Temperature Rise Current(A)	
	L(μH) '@0A	Tol		Max	Typical	20℃ Rise	40℃ Rise
SMTC1510A-1R0M	1.0	±20%	1.12	80.0	85.0	54.0	63.0
SMTC1510A-4R7M	4.7	±20%	3.8	39.0	43.0	22.0	30.0
SMTC1510A-5R6M	5.6	±20%	4.2	34.0	38	21.0	28.0
SMTC1510A-6R8M	6.8	±20%	4.6	31.0	36.0	20.0	26.0
SMTC1510A-8R2M	8.2	±20%	7.2	28.0	32.0	19.0	25.0
SMTC1510A-100M	10	±20%	8.6	26.0	29.0	18.0	24.0
SMTC1510A-150M	15	±20%	11.5	18.0	20.0	14.0	18.0
SMTC1510A-220M	22	±20%	15.8	16.0	18.0	10.5	14.2
SMTC1510A-330M	33	±20%	20	14.0	16.7	8.6	12.3

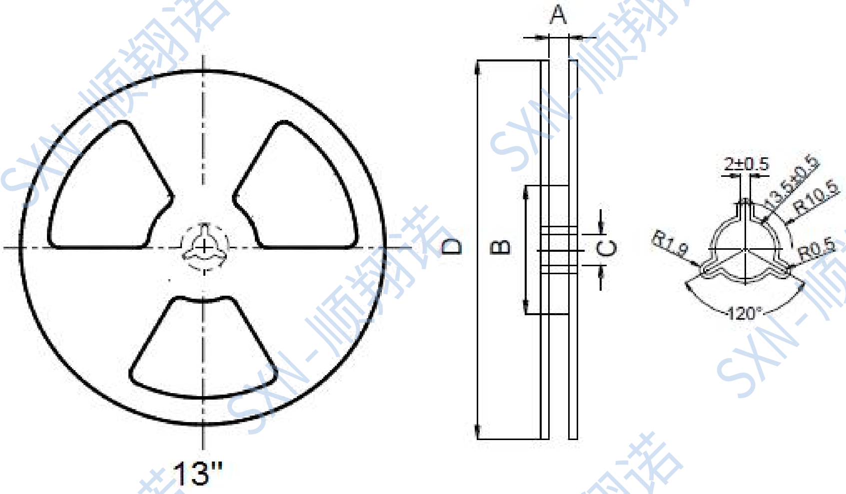
- Heating Rating Current (Irms) will cause the coil temperature rise of 40℃ approximately (Δt).
- Saturation Current (Isat) will cause L0 to drop 30% approximately.
- Special inquiries besides the above common used types can be met on your requirement.
- The part temperature (ambient + temp rise) should not exceed 125℃ under the worst case operating condition. Circuit design, component, PCB trace size and thickness airflow and other cooling provisions all could affect the part temperature. Part temperature should be verified in the end application.

◆产品包装： **Packaging:**

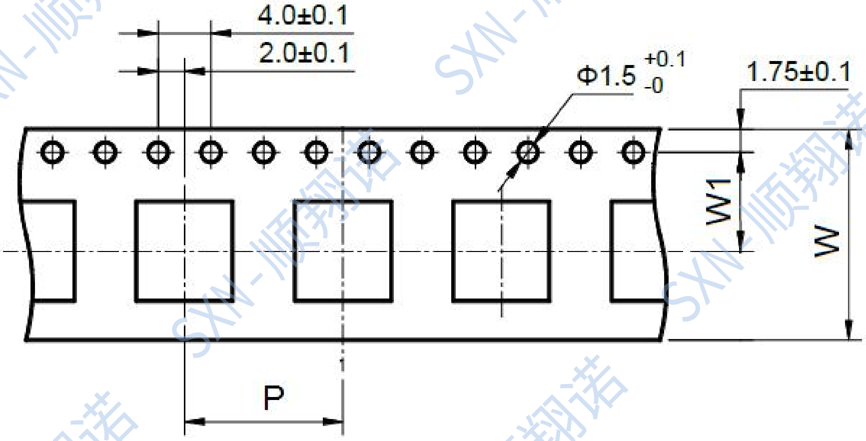
- **Tape and Reel Specifications: (Dimensions are in mm)**



- **Reel dimensions (mm):**

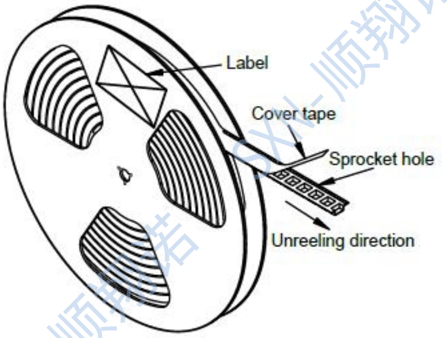


- **Tape Dimension (mm):**



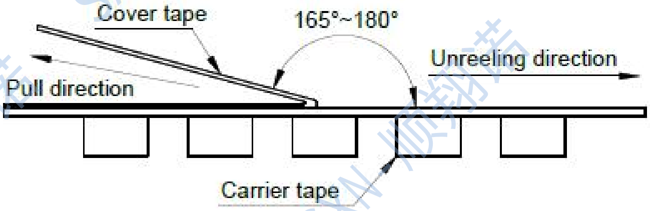
Part No.	Tape Dimension			Reel Dimensions				REEL	Inside	Outside
	W	P	W1	A	B	C	D	(PCS)	Box(PCS)	Carton(PCS)
SMTC1510A	32 ±0.3	24 ±0.1	14.2 ±0.1	32.0±0.5	97±0.5	13.0±0.2	330±2.0	150	300	1200

● Cover tape peel off condition

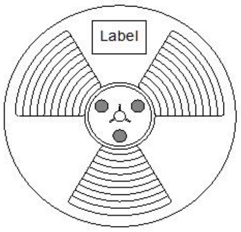


a) Cover tape peel force shall be 10 to 120g

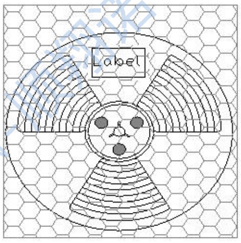
b) Noodle strip peeling angle165°to 180°



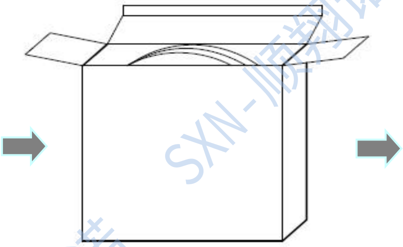
● Packing quantity：



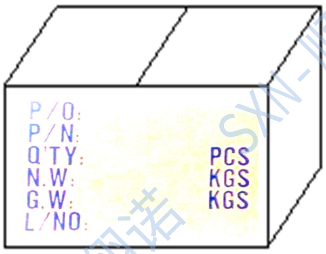
REEL13



PE 袋

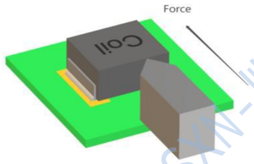
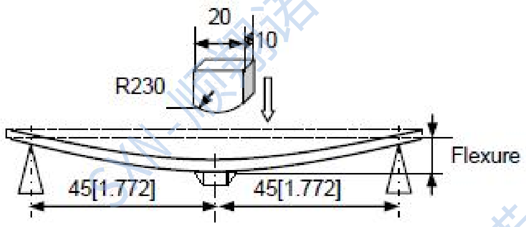


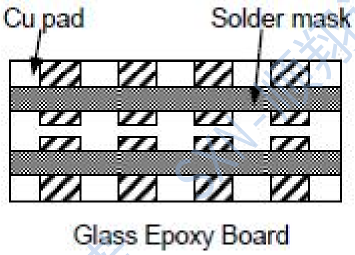
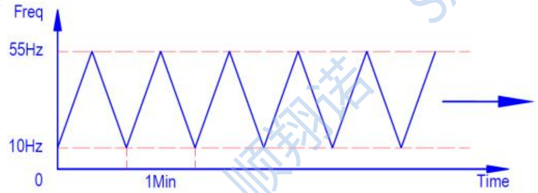
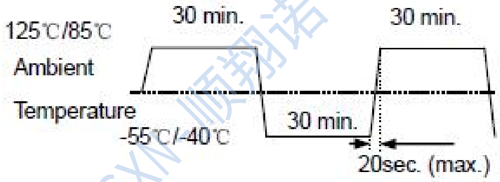
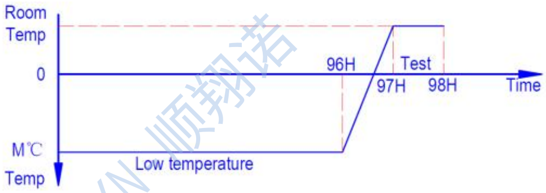
Inside Box

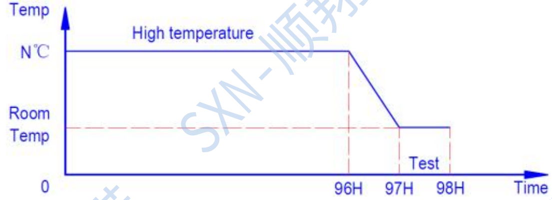
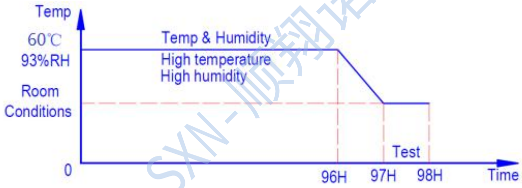


Outside Carton，
不足整箱用内盒或填充物装满

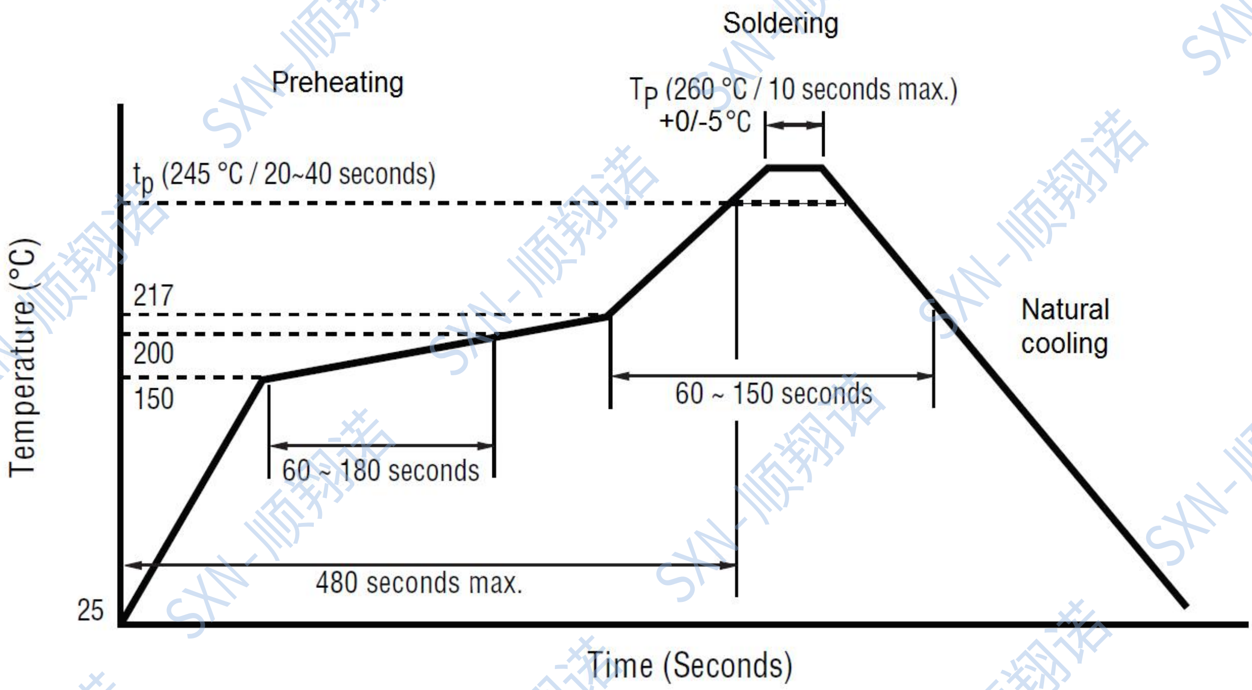
◆可靠性测试： Reliability Testing：

Items	Requirements	Test Methods and Remarks
Terminal Strength Reference docu ments: GB/T 2423.60-2008 端子强度(SMT)	1. Pulling test: Define: A: sectional area of terminal A≦8mm2 force≧5N time:30sec 8mm2<A≦20mm2 force ≧10N time: 10sec 20mm2<A force ≧20N time: 10sec 2.Solder paste thickness:0.12mm 3.Meet the above requirements without any loose terminal	Solder the inductor to the testing jig using leadfree solder. Then apply a force in the Keep time: 10±1s Speed: 1.0mm/s. 
erminal Strength Reference docu ments: GB/T 2423.60-2008 端子強度(DIP)	1.Terminal diameter(d) mm 0.35＜d≤ 0.50Applied force:5N Duration: 10sec2.Terminal diameter(d) mm0.50＜d≤ 0.80Applied force:10N Duration: 10sec3.Terminal diameter(d) mm0.80＜d≤ 1.25Applied force:20N Duration: 10sec4.Terminal diameter(d) mmD＞ 1.25Applied force:40N Duration: 10sec5.Meet the above requirements without any loose terminal.	Pull Force:the force shall be applied gradually to the terminal and thenmaintained for 10 seconds. 
Resistance to Flexure JIS C 5321:1997 抗弯曲性试验	1.No visible mechanical damage.	1.Solder the inductor to the test jig (glass epoxy board 2.shown in Using a leadfree solder. Then apply a force in the direction shown 3.Flexure: 2mm. 4.Pressurizing Speed: 0.5mm/sec. 5.Keep time: 30 sec. 
Dropping Reference documents: GB/T 2423.7-2018 落下試驗	1.No case deformation or change inappearance. 2.No short and no open.	1.Drop the packaged products from 1m high in 1 angle, 3 ridges and 6surfaces, twice in each direction.
Solderability Reference documents: GB/T 2423.28-2005 可焊性试验	1.No visible mechanical damage. 2.Wetting shall exceed 75% coverage for 3.Terminals must have 95% minimum solder coverage	1.Solder temperture:240±2℃ 2.Duration: 3 sec. 3. Solder: Sn/3.0Ag/0.5Cu. 4.Flux: 25% Resin and 75% ethanol in weight

Items	Requirements	Test Methods and Remarks
Vibration Reference documents: GB/T 2423.10-2019 振動試验	1.No visible mechanical damage. 2. Inductance change: Within ±10%. 3.Q factor change: Within ±20%. 	1.Solder the inductor to the testing jig (glass epoxy boardshown in) using leadfree solder. 2.The inductor shall be subjected to a simple harmonic motion having total amplitude of 1.5mm, the frequency being varieduniformly between the approximate limits of 10 and 55 Hz. 3.The frequency range from 10 to 55 Hz and return to 10 Hz shallbe traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each 3mutually perpendicular directions(total of 6 hours). 
Thermal Shock Reference documents: GB/T 2423.22-2012 Method Na 冷热冲击试验	1.No visible mechanical damage. 2. Inductance change: Within ±10%.(Mn-Zn: Within ≦30%) 3.Q factor change: Within ±20%.	1.Start at (85~125℃) for T time, rush to (-55~40℃) for T time as one cycle, go through100 cycles. 2.Transforming interval: Max. 20 sec. 3.Tested cycle: 100 cycles. 4.The chip shall be stabilized at normal condition for 1~2 hours 
Low temperature Storage Reference documents: GB/T 2423.1-2008 Method Ab 低温储存试验	1.No visible mechanical damage. 2. Inductance change: Within ±10%.(Mn-Zn: Within ≦30%) 3.Q factor change: Within ±20%.	1.Temperature:M(-55~-40±2℃) 2.Duration: 96±2 hours 3.The chip shall be stabilized at normal condition for 1~2 hoursbefore measuring. 

Items	Requirements	Test Methods and Remarks
High temperature Storage Reference documents: GB/T 2423.2-2008 Method Bb 高温储存试验	1.No visible mechanical damage. 2. Inductance change: Within ±10%.(Mn-Zn: Within ≦30%) 3.Q factor change: Within ±20%.	1.Temperature:N(125~85±2℃). 2.Duration: 96±2 hours 3.The chip shall be stabilized at normal condition for 1~2 hoursbefore measuring. 
Damp Heat (Steady States) Reference documents: GB/T 2423.3-2016 恒定湿热试验	1.No visible mechanical damage. 2. Inductance change: Within ±10%.(Mn-Zn: Within ≦30%) 3.Q factor change: Within ±20%.	1.Temperature: 60±2℃ 2.Humidity: 90% to 95% RH. 3.Duration: 96±2 hours. 4.The chip shall be stabilized at normal condition for 1~2 hoursbefore measuring. 
Heat endurance of Reflow soldering Reference documents: GJB 360B-2009 回流焊耐热性试验	1.No significant defects in appearance. 2.∆L/L≦10% (Mn-Zn: ∆L/L≦30%) 3.∆Q/Q≦30% （SMD series only） 4.∆DCR/DCR≦10%	1.Refer to the above reflow curve and go through the reflow for twice. 2.The peak temperature : 260+0/-5℃
Resistance to solvent test Reference documents: IEC 68-2-45:1993 耐溶剂性试验	No case deformation or change in appearance or obliteration of marking	To dip parts into IPA solvent for 5±0.5Min,then drying them at room temp for 5Min,at last ,to brushing making 10 times.
Overload test Reference documents: JIS C5311-6.13 过负荷试验	1.During the test no smoke, no peculiar, smell, no fire 2.The characteristic is normal after test	Apply twice as rated current for 5 minutes.
voltage resistance test Reference documents: MIL-STD-202G Method 301 绝缘耐压测试	1.During the test no breakdown 2.The characteristic is normal after test	1. For parts with two coils 2. DC1000V, Current: 1mA, Time: 1Min. 3. Refer to catalogue of specific products

◆推荐回流焊温度曲线 **Recommended reflow soldering curve:**



The recommended reflow conditions as above graph, is set according to our soldering equipment. DUE to various manufactures may have different reflow soldering equipment, products, process conditions, set methods. And so on, when setting the reflow conditions, Please adjust and confirm according to users' environment/equipment.

使用注意事项

REMINDERS FOR USING THESE PRODUCTS ⚠

- 保存时间为12 个月以内，保存条件（温度5~40°C以下、湿度35 ～ 66%RH 以下），需充分注意。若超过保存时间，端子电极的可焊性将可能老化。
  The storage period is within 12 months. Be sure to follow the storage conditions (temperature: 5~40°C, humidity: 35 to 65% RH or less). If the storage period elapses, the soldering of the terminal electrodes may deteriorate。
- 请勿在气体腐蚀环境（盐、酸、碱等）下使用和保存。
  Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
- 手上的油脂会导致可焊性降低，应避免用手直接接触端子。
  Don't touch electrodes directly with bare hands as oil secretions may inhibit soldering Always ensure optimum conditions for soldering。
- 请小心轻拿轻放,避免由于产品的跌落或取出不当而导致的损坏。
  Please always handle products carefully to prevent any damage caused bydropping down or inappropriate removing。
- 端子过度弯曲会导致断线,请不要过度弯曲端子。
  Don't bend the terminals with excessive stress in case of any wire fracture。
- 不要清洗产品，如需要清洗时请联系我司。
  Don’t rinse coils by yourself and please contact SXN if necessary。
- 请勿将本产品靠近磁铁或带有磁力的物体
  Don’t expose the products to magnets or magnetic fields
- 在实施焊接前，请务必进行预热。预热温度与焊接温度及芯片温度的温度差要在150°C 以内。
  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.
- 安装后的焊接修正应在规格书规定的条件范围内。若加热过度可能导致短路、性能降低、寿命减少。
  Soldering corrections after mounting should be within the range of the conditions determined in the specifications. If overheated, a short circuit, performance deterioration, or lifespan shortening may occur.
- 装置会因通电而自我发热（温度上升），因此在热设计方面需留有充分余地。
  Self heating (temperature increase) occurs when the power is turned ON, so the tolerance should be sufficient for the set thermal design.
- 非磁屏蔽型在基板设计时需注意配置线圈，受到电磁干扰可能会导致误动作。
  Carefully lay out the coil for the circuit board design of the non-magnetic shield type. A malfunction may occur due to magnetic interference.