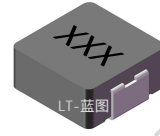


SMS1770 Series Ultra-high current SMD power inductors



◆特征:

- 低直流电阻和超大电流的薄型设计
- 磁屏蔽型抗电磁干扰强适用于高密度安装
- 高可靠性, 通过采用一体成型结构享有卓越的抗震动性
- 由于复合结构, 超低蜂鸣噪声
- 低损耗合金粉末压铸低阻抗, 小寄生电容
- 能效高, 可减少绕线的低直流电阻与磁芯的涡流损耗
- 频率高达 3MHz
- 绝缘最大电压 30VDC
- 符合 RoHS, 无卤和 REACH

◆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
- 分布式电源系统中的 DC/DC 转换器

◆环境:

- 工作温度: -55°C 至 +125°C
(包括线圈自身温升)

◆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

◆产品型号:

Features:

- Low RDC and ultra-high current thin design
- Magnetic shielding type, strong anti- electromagnetic Interference, suitable for high- density installation
- High-reliability, High vibration resistance as result of newly developed integral construction
- Ultra Low buzz noise, due to composite construction
- Die-casting by low loss alloy powder low impedance, Small parasitic capacitance
- High efficiency Low DC resistance of winding and low eddy-current loss of the core
- Frequency up to 3MHz
- Absolute maximum voltage 30VDC
- RoHS, Halogen Free and REACH Compliance

Applications:

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


Environmental Data:

- Operating Temperature: -55°C to +125°C
(Including coils self-temperature rise)

Test Equipment:

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

Product Identification:

SMS ①	1770 ②	100 ③	M ④	I ⑤
①	②	③		
类型 Type	外形尺寸(L×W×H) (mm) External Dimensions (L×W×H) (mm)		Inductance	
SMS 成型贴片功率电感 Molding SMD Power Inductor 	1770	17.50×17.15×7.5		10 uH

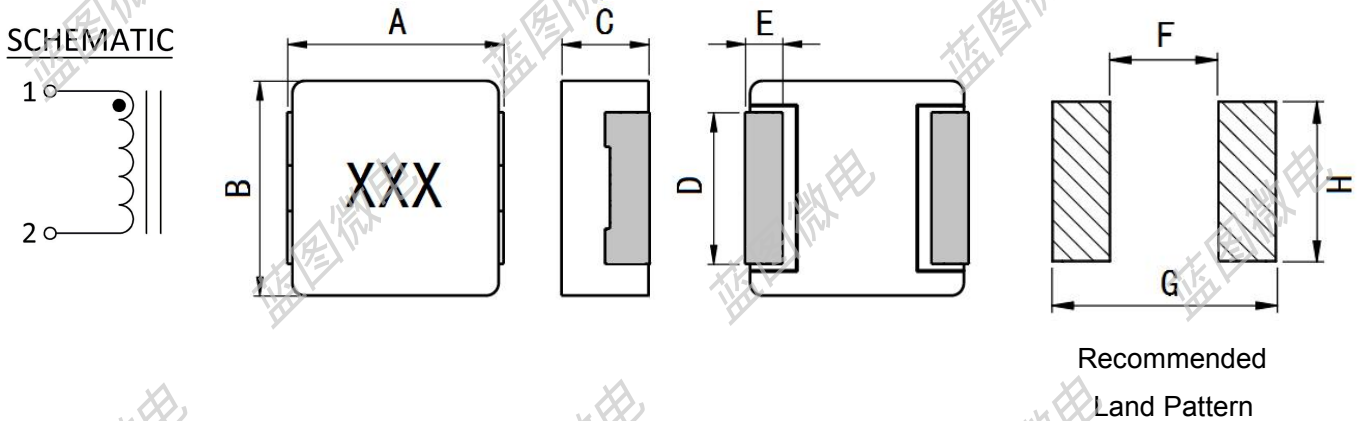


公差 Inductance Tolerance
J:±5%,K: ±10%, L: ±15%
M: ±20%,P: ±25%, N: ±30%

包装 Packing	
B	散装Bulk Package
TF	编带Tape & Reel

◆外观尺寸:

Shape and Dimensions(dimensions are in mm):



Part No	ITEM							
	A	B	C	D	E	F	G	H
SMS1770	17.5±0.50	17.15±0.30	7.50 Max	12.0 Typ	2.50 Typ	12.4	19.5	12.5

◆规格特性:

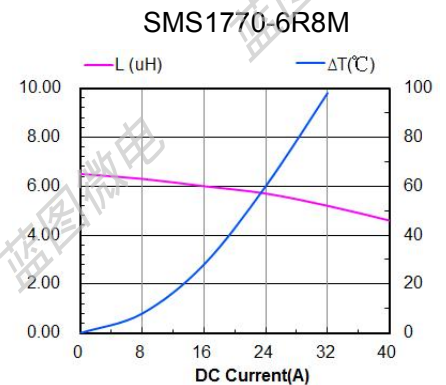
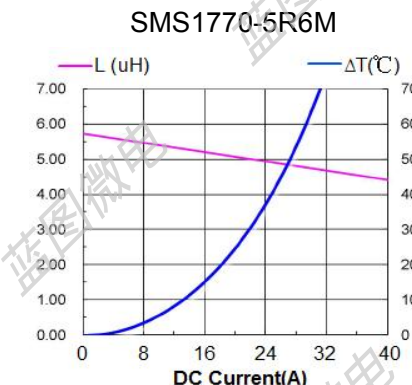
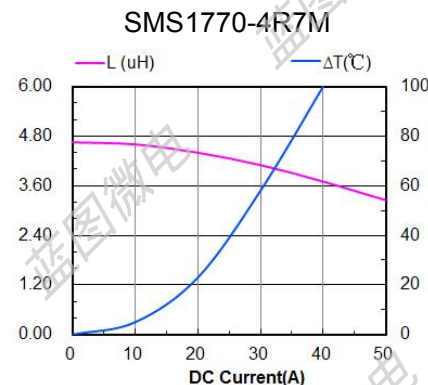
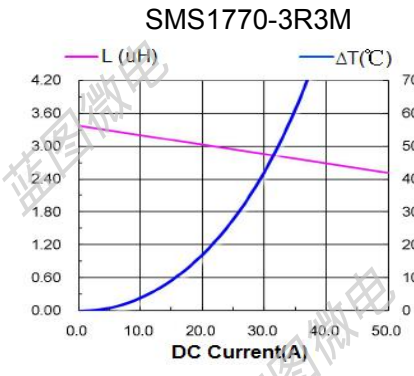
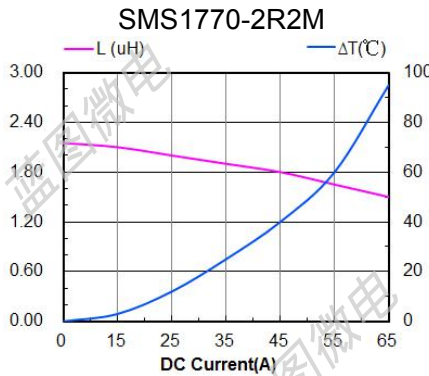
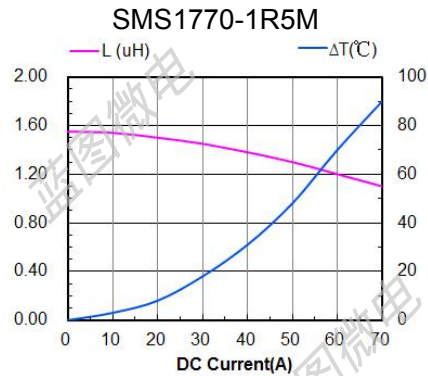
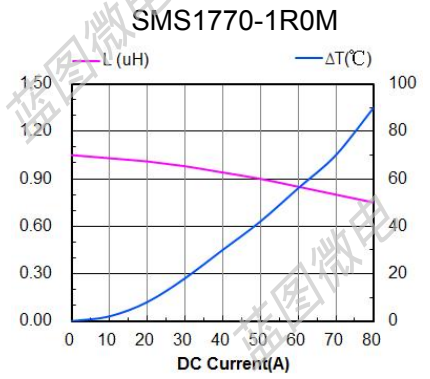
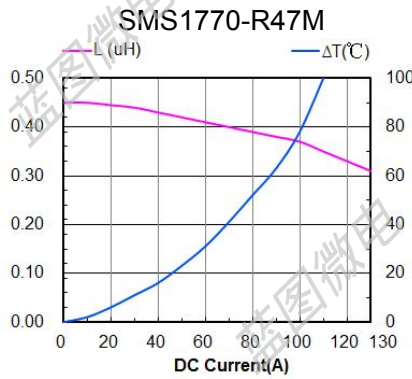
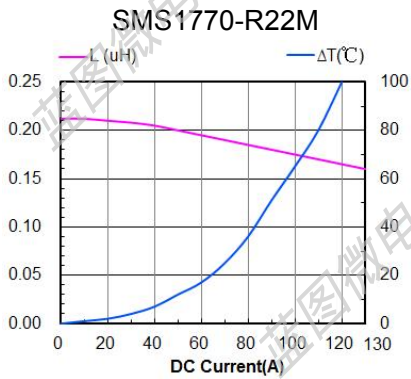
Specifications:

● SMS1770 Series Electrical Characteristics (Electrical specifications at 25°C)

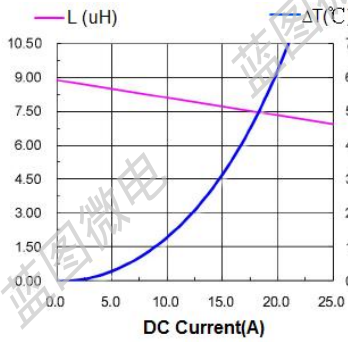
Part No	Inductance 100KHz 1.0V		DCR (mΩ)		Saturation Current (A)	Heat Rating Current
	L(μH) '@0A	Tol	Typical	Max	Typical	Typical
SMS1770-R22M	0.22	±20%	0.63	0.75	75.00	57.00
SMS1770-R47M	0.47	±20%	0.90	1.03	72.00	55.00
SMS1770-1R0M	1.0	±20%	1.60	2.30	55.00	32.00
SMS1770-1R5M	1.5	±20%	1.78	2.50	48.00	31.00
SMS1770-2R2M	2.2	±20%	2.40	2.70	34.00	29.00
SMS1770-3R3M	3.3	±20%	3.68	4.20	30.00	24.00
SMS1770-4R7M	4.7	±20%	4.84	5.50	24.00	21.00
SMS1770-5R6M	5.6	±20%	6.68	7.60	23.00	20.00
SMS1770-6R8M	6.8	±20%	8.40	9.20	22.00	17.00
SMS1770-8R2M	8.2	±20%	10.10	11.60	20.00	13.00
SMS1770-100M	10	±20%	11.60	13.00	19.00	12.00
SMS1770-150M	15	±20%	18.80	20.50	14.50	11.00
SMS1770-220M	22	±20%	25.10	26.50	11.50	8.50
SMS1770-330M	33	±20%	38.00	44.00	10.00	8.00

Part No	Inductance 100KHz 1.0V		DCR (mΩ)		Saturation Current (A)	Heat Rating Current
	L(μH) '@0A	Tol	Typical	Max	Typical	Typical
SMS1770-470M	47	±20%	48.00	55.00	7.50	6.00
SMS1770-560M	56	±20%	54.00	62.00	7.00	5.50
SMS1770-680M	68	±20%	68.00	80.00	6.50	5.20
SMS1770-101M	100	±20%	110.00	118.00	5.00	3.70

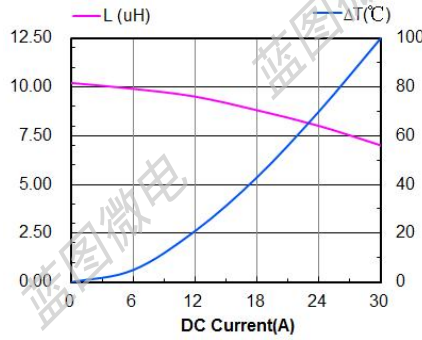
- Saturation Current: DC current at which inductance drops 30% from its value without current.
- Heat Rating Current: the actual value of DC current when the temperature rise is ΔT 40°C ($T_a=25^\circ\text{C}$).
- Rated DC Current: The less value which is Isat or Irms.
- Special remind: Circuit design, component, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
- Saturation current VS temperature rise current curve



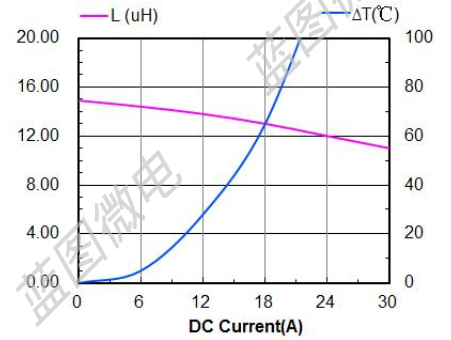
SMS1770-8R2M



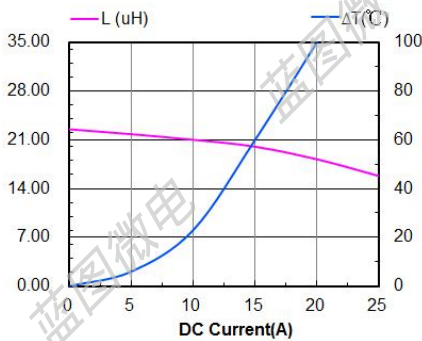
SMS1770-100M



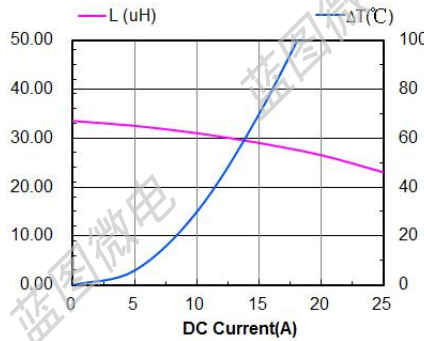
SMS1770-150M



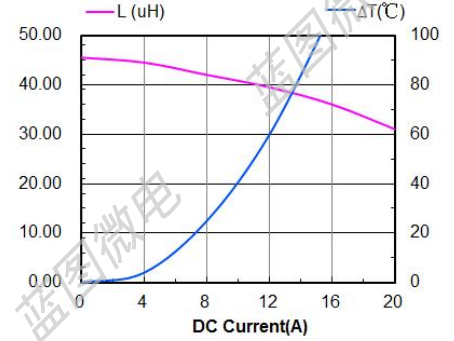
SMS1770-220M



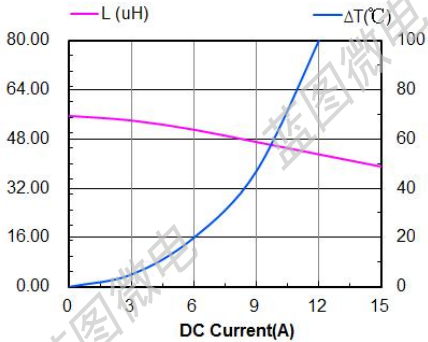
SMS1770-330M



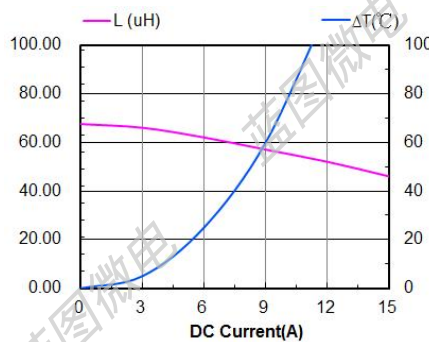
SMS1770-470M



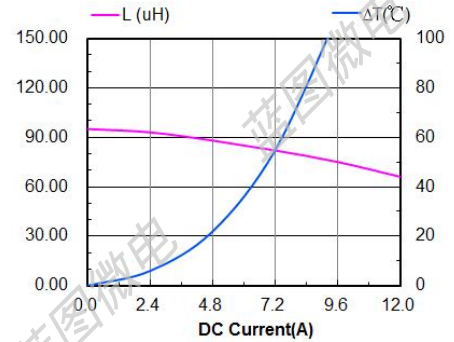
SMS1770-560M



SMS1770-680M



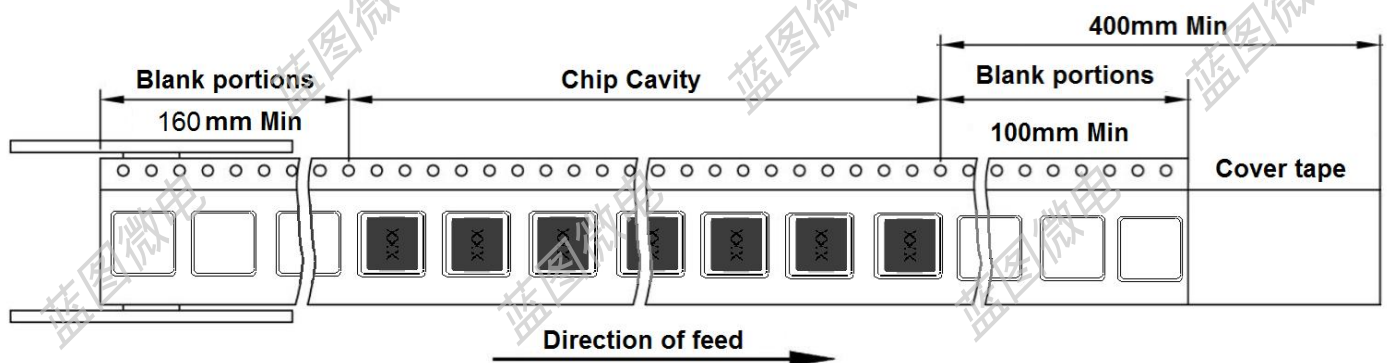
SMS1770-101M



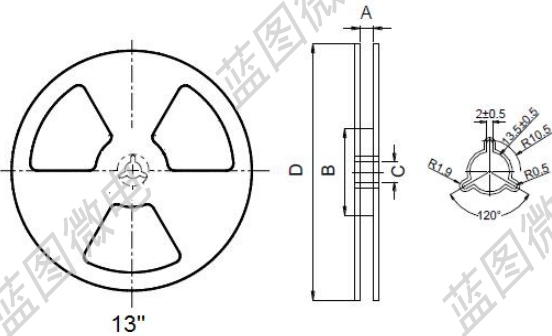
◆ 产品包装:

Packaging:

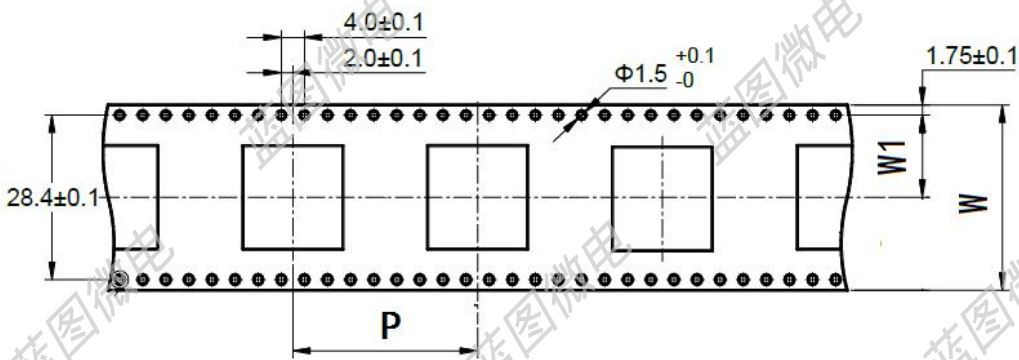
- Tape and Reel Specifications: (Dimensions are in mm)



● Reel dimensions (mm)

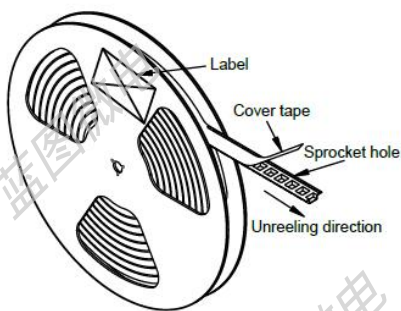


● Tape Dimension (mm)

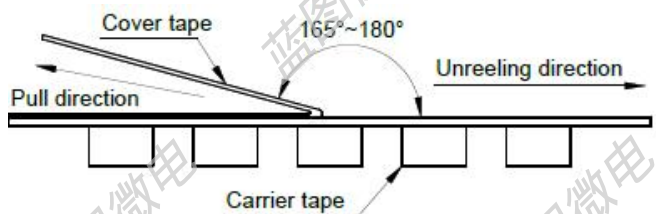


Part No.	Tape Dimension			Reel Dimensions				REEL (PCS)	Inside Box(PCS)	Outside Carton(PCS)
	W	P	W1	A	B	C	D			
SMS1770	32.0	24.0	14.2	32.4	100	13	330	300	600	2400

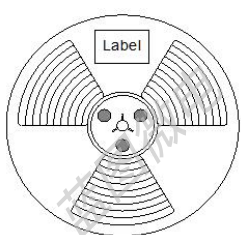
● Cover tape peel off condition



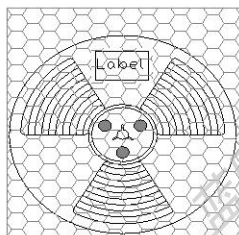
- a) Cover tape peel force shall be 10 to 120g
- b) Noodle strip peeling angle 165° to 180°



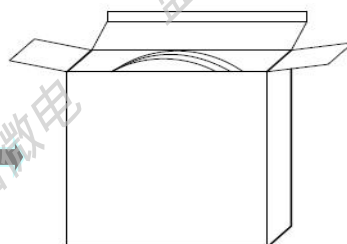
● Packing quantity



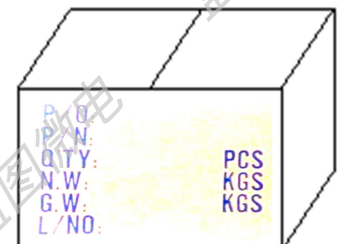
REEL13



PE 袋



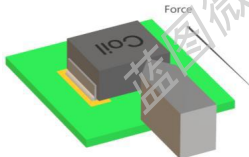

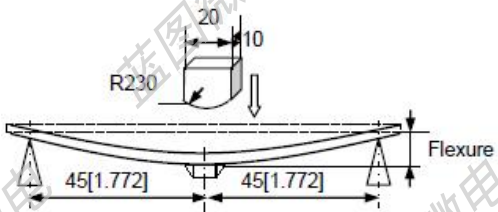
Inside Box

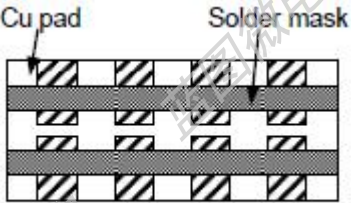
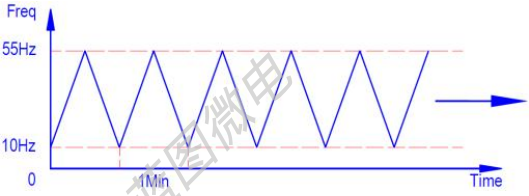
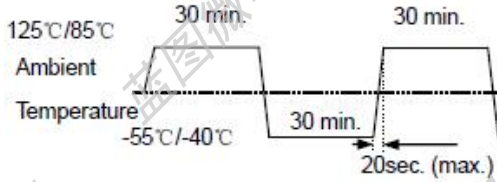
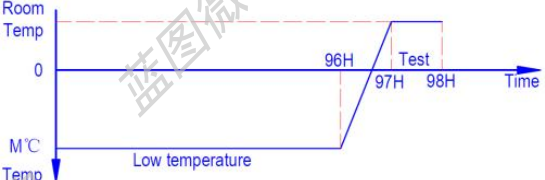


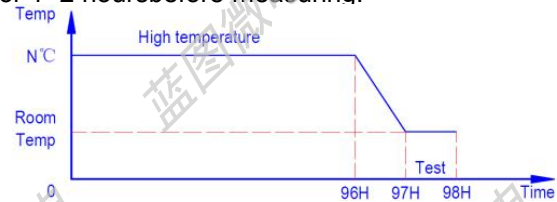
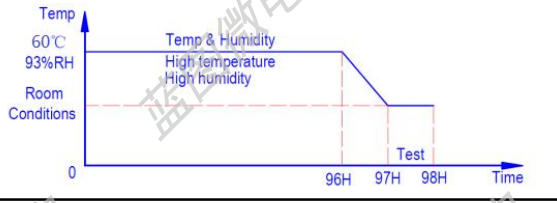
Outside Carton,
不足整箱用内盒或填充物装满

◆可靠性测试:

Reliability Testing:

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

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

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 $\pm 10\%$.(Mn-Zn: Within $\leq 30\%$) 3.Q factor change: Within $\pm 20\%$.	1.Temperature:N($125\sim 85\pm 2^{\circ}\text{C}$). 2.Duration: 96 ± 2 hours 3.The chip shall be stabilized at normal condition for 1~2 hours before 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 $\pm 10\%$.(Mn-Zn: Within $\leq 30\%$) 3.Q factor change: Within $\pm 20\%$.	1.Temperature: $60\pm 2^{\circ}\text{C}$ 2.Humidity: 90% to 95% RH. 3.Duration: 96 ± 2 hours. 4.The chip shall be stabilized at normal condition for 1~2 hours before 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. $\Delta L/L \leq 10\%$ (Mn-Zn: $\Delta L/L \leq 30\%$) 3. $\Delta Q/Q \leq 30\%$ (SMD series only) 4. $\Delta DCR/DCR \leq 10\%$	1.Refer to the above reflow curve and go through the reflow for twice. 2.The peak temperature : $260\pm 0/-5^{\circ}\text{C}$
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 ± 0.5 Min,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

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 by dropping 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.

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