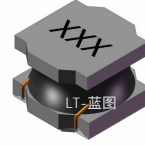


**SNR5040 Series, an automatic assembly constructed power inductor, is shielded with magnetic resin**



### ◆特征:

- 磁性胶水涂敷结构极大减少了蜂鸣声
- 大电流低直流阻抗
- 直接在磁芯上金属化电极,抗跌落冲击强 经久耐用
- 闭合磁路结构设计,漏磁少,抗 EMI 能力强
- 省空间,更省电
- 符合 RoHS,无卤和 REACH

### Features:

- Magnetic-resin shielded construction reduces buzz Noise to ultra-low levels
- Large Current and Low DCR
- Metallization on Ferrite Core results in excellent shock Resistance and damage-free durability
- Closed magnetic circuit design reduces leakage Flux and Electro Magnetic Interference (EMI)
- Takes up less PCB real estate and save more power Small parasitic capacitance
- RoHS, Halogen Free and REACH Compliance

### ◆用途:

- 广泛应用于 LED 背光板、平板电视、蓝光 DVD 机顶盒、笔记本电脑、台式电脑、服务器、显卡、便携式游戏机、个人导航系统、多媒体、汽车产品、通信设备、直流转换。

### Applications:

- LED backlight、Flat-screen TVs, blue-ray disc Set top box、Notebooks, desktop computers, servers, Graphic cards、Portable gaming devices, personal Navigation systems, personal multimedia devices, Automotive systems Telecomm base station、DC-DC Converter

### ◆环境:

- 工作温度: -40℃ 至+125℃ (包括线圈自身温升)

### Environmental Data:

- Operating Temperature: -40℃ to +125℃ (Including coils self-temperature rise)

### ◆试验设备:

- 电感值:HP4284A, HP4285A 或同等仪器
- 电流:HP4284+42841A 或同等仪器
- 直流电阻: Chroma 16502 或同等仪器

### Test Equipment:

- L:HP4284A or HP4285A LCR meter or equivalent
- Isat & Irms: HP4284+42841A or equivalent
- DCR:Chroma 16502 or equivalent

### ◆产品型号:

### Product Identification:

<b>SNR</b> ①	<b>5040</b> ②	<b>470</b> ③	<b>M</b> ④	<b>I</b> ⑤
①	②		③	
类型 Type	外形尺寸(L×W×H) (mm) External Dimensions (L×W×H) (mm)		Inductance	
SNR 闭磁路贴片电感 Shielded SMD Power Inductors	5040      5.0×4.0×4.0		47 uH	

④

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

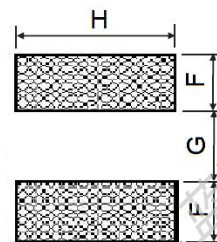
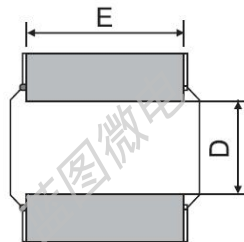
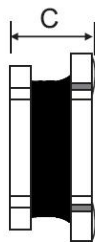
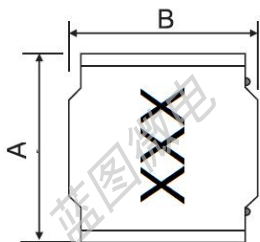
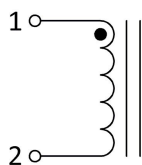
⑤

包装 Packing	
B	散装 Bulk Package
T	编带 Tape & Reel

◆外观尺寸:

Shape and Dimensions (dimensions are in mm):

SCHEMATIC



Recommended Land Pattern

Part No	ITEM							
	A	B	C	D	E	F	G	H
SNR5040	5.0±0.3	5.0±0.3	4.0 Max	2.5±0.2	4.0±0.2	1.4 Typ	2.3 Typ	4.2 Typ

◆规格特性:

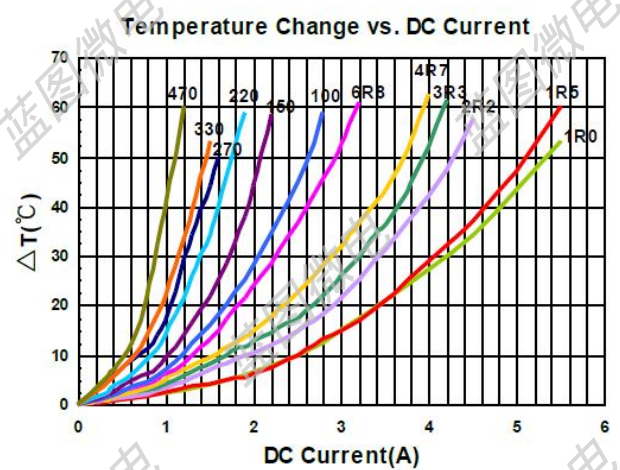
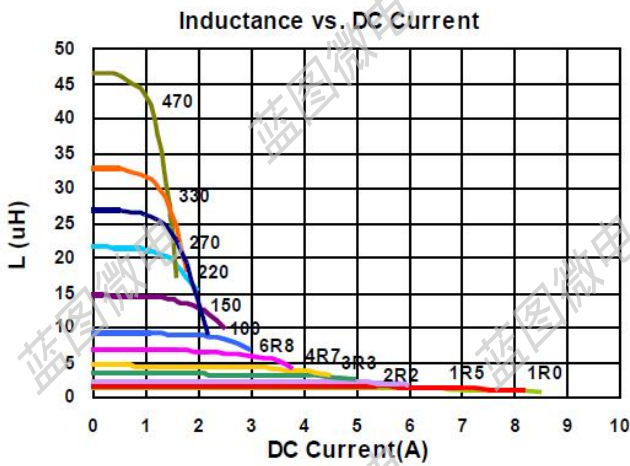
Specifications:

● SNR5040 Series Electrical Characteristics (Electrical specifications at 25°C)

Part No	Inductance 100KHz 1.0V		DCR (Ω)		Saturation Current	Temperature Rise Current
	L(μH)	Tol	Typical	Max	(A)	(A)
	@0A				Max	Max
SNR5040-1R0M	1.0	±20%	0.012	0.018	7.35	4.90
SNR5040-1R2M	1.2	±20%	0.016	0.021	6.50	4.30
SNR5040-1R5M	1.5	±20%	0.015	0.020	6.30	4.30
SNR5040-2R2M	2.2	±20%	0.019	0.025	4.90	3.80
SNR5040-3R3M	3.3	±20%	0.024	0.031	3.95	3.40
SNR5040-4R7M	4.7	±20%	0.030	0.039	3.50	3.00
SNR5040-6R8M	6.8	±20%	0.043	0.056	2.90	2.50
SNR5040-8R2M	8.2	±20%	0.050	0.070	2.70	2.30
SNR5040-100M	10	±20%	0.064	0.082	2.35	2.10
SNR5040-120M	12	±20%	0.077	0.102	2.20	2.00
SNR5040-150M	15	±20%	0.086	0.115	2.00	2.00
SNR5040-220M	22	±20%	0.129	0.167	1.60	1.50
SNR5040-330M	33	±20%	0.188	0.244	1.30	1.20
SNR5040-470M	47	±20%	0.272	0.353	1.10	1.00
SNR5040-680M	68	±20%	0.400	0.520	0.90	0.80

Part No	Inductance 100KHz 1.0V		DCR ( $\Omega$ )		Saturation Current	Temperature Rise Current
	L( $\mu$ H) '@0A	Tol	Typical	Max	(A) Max	(A) Max
SNR5040-820M	82	$\pm 20\%$	0.560	0.660	0.80	0.75
SNR5040-101M	100	$\pm 20\%$	0.509	0.728	0.75	0.70
SNR5040-121M	120	$\pm 20\%$	0.665	0.864	0.70	0.65
SNR5040-151M	150	$\pm 20\%$	0.750	0.975	0.65	0.60
SNR5040-221M	220	$\pm 20\%$	1.400	1.820	0.48	0.40
SNR5040-331M	330	$\pm 20\%$	2.000	2.730	0.42	0.40
SNR5040-471M	470	$\pm 20\%$	3.000	3.900	0.37	0.35
SNR5040-681M	680	$\pm 20\%$	3.900	5.070	0.30	0.25
SNR5040-102M	1000	$\pm 20\%$	6.000	7.800	0.21	0.23

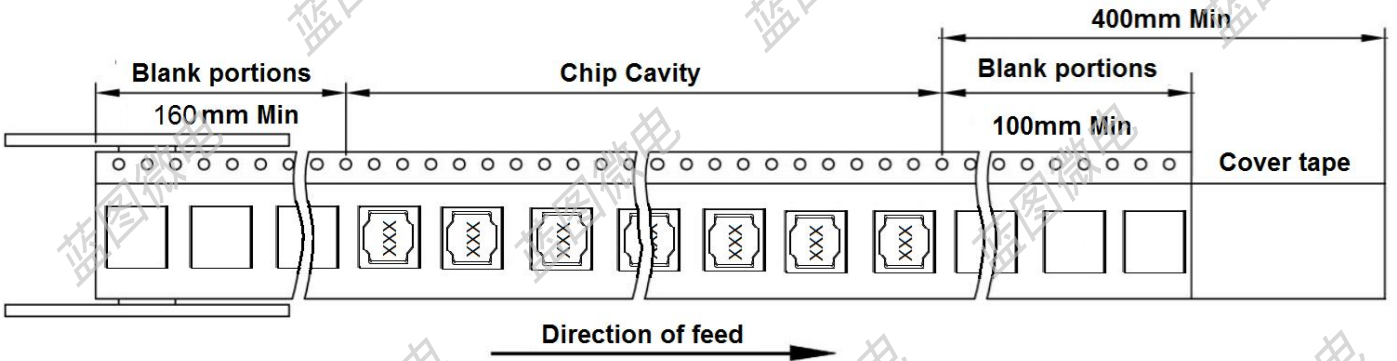
- Saturation Current: DC current at which inductance drops 30% from its value without current.
- Temperature Rise Current: the actual value of DC current when the temperature rise is  $\Delta T 40^{\circ}\text{C}$  ( $T_a=25^{\circ}\text{C}$ ).
- Rated DC Current: The less value which is  $I_{\text{sat}}$  or  $I_{\text{rms}}$ .
- 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



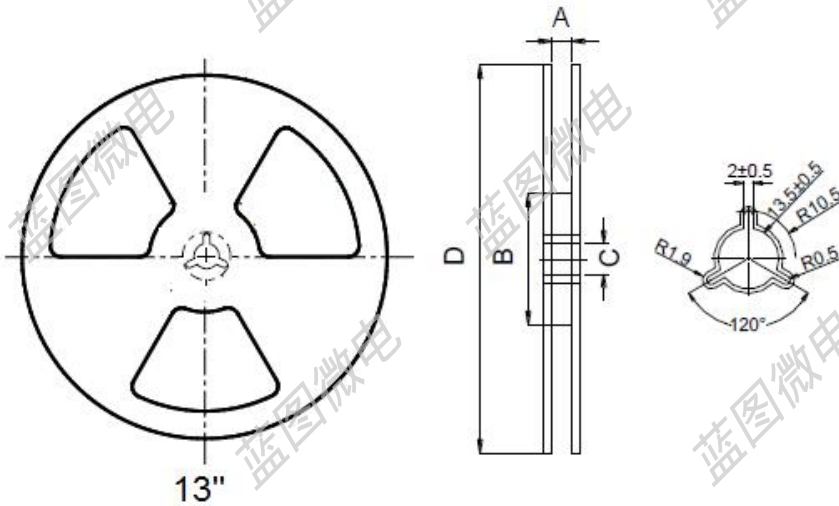
◆ 产品包装:

Packaging:

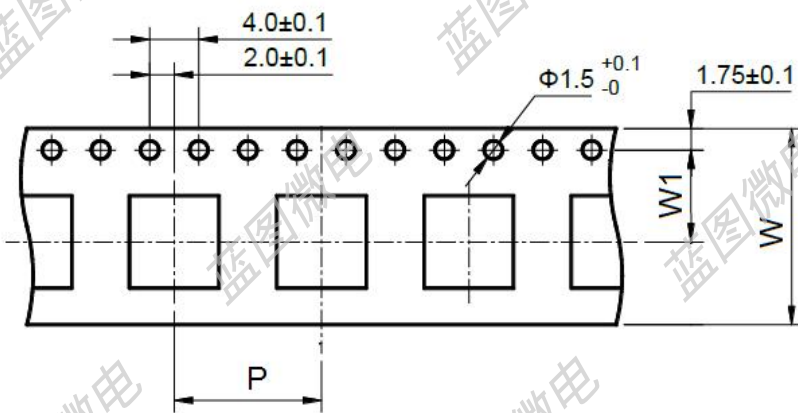
● Tape and Reel Specifications: (Dimensions are in mm)



● Reel Dimensions (mm)

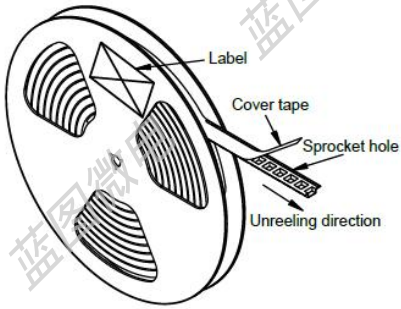


● Tape Dimension (mm)



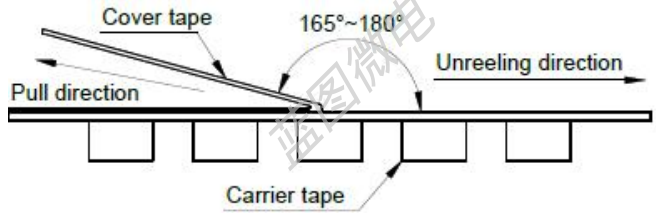
Part No.	Tape Dimension			Reel Dimensions				REEL (PCS)	Inside Box(PCS)	Outside Carton(PCS)
	W	P	W1	A	B	C	D			
SNR5040	12	8	5.5	12.4	100	13	330	1500	6000	24,000

## • Cover tape peel off condition

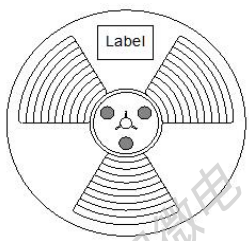


a) Cover tape peel force shall be 10 to 120g

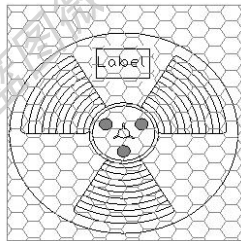
b) Noodle strip peeling angle  $165^{\circ}$  to  $180^{\circ}$



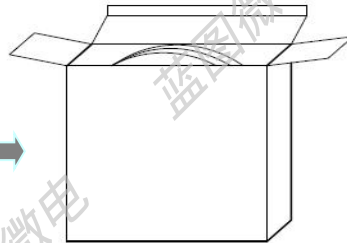
## • Packing quantity



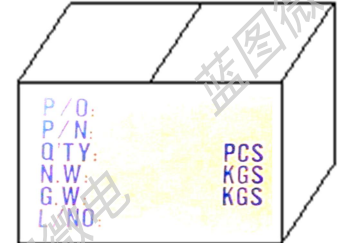
REEL



PE 袋



Inside Box

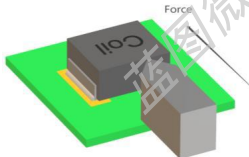

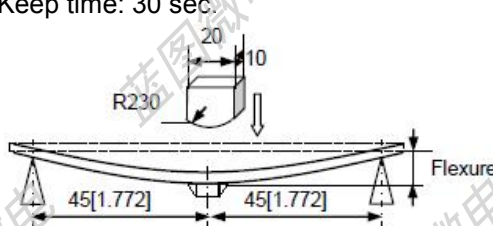


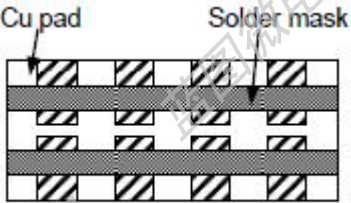
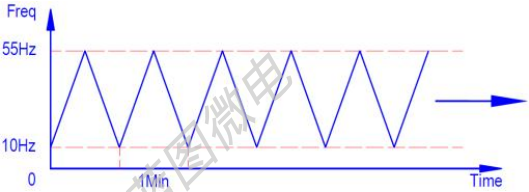
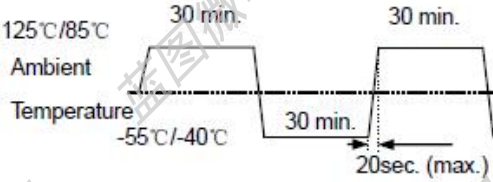
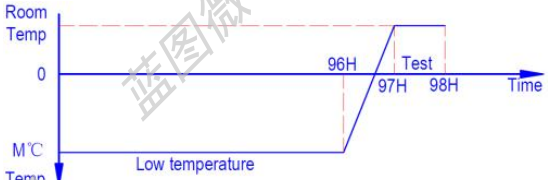
Outside Carton

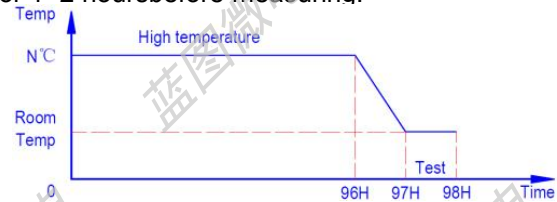
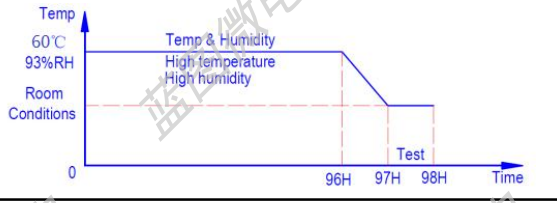
不足整箱用内盒或填充物装满

◆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)	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 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: $10 \pm 1\text{s}$ Speed: 1.0mm/s. 
Terminal Strength Reference documents: GB/T 2423.60-2008 端子强度(DIP)	1. Terminal diameter(d) mm $0.35 < d \leq 0.50$ Applied force: 5N Duration: 10sec 2. Terminal diameter(d) mm $0.50 < d \leq 0.80$ Applied force: 10N Duration: 10sec 3. Terminal diameter(d) mm $0.80 < d \leq 1.25$ Applied force: 20N Duration: 10sec 4. Terminal diameter(d) mm $D > 1.25$ Applied force: 40N Duration: 10sec 5. Meet the above requirements without any loose terminal.	Pull Force: the force shall be applied gradually to the terminal and then maintained 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 落下试验	1. No case deformation or change in appearance. 2. No short and no open.	1. Drop the packaged products from 1m high in 1 angle, 3 ridges and 6 surfaces, 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 temperature: $240 \pm 2^\circ\text{C}$ 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
<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 <math>\pm 10\%</math>.</p> <p>3.Q factor change: Within <math>\pm 20\%</math>.</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 <math>\pm 10\%</math>. (Mn-Zn: Within <math>\cong 30\%</math> )</p> <p>3.Q factor change: Within <math>\pm 20\%</math>.</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 <math>\pm 10\%</math>. (Mn-Zn: Within <math>\cong 30\%</math> )</p> <p>3.Q factor change: Within <math>\pm 20\%</math>.</p>	<p>1.Temperature: M(-55~-40<math>\pm 2</math>℃)</p> <p>2.Duration: 96<math>\pm 2</math> 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 $\pm 2$ 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 $\pm 2$ 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 $5\pm 0.5$ 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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