

# BOURNS SRF0703-221M alternative



Part No. **CODRHS74-221M:221M**  
Dual-Winding Shielded Power Inductors



Dual, 220  $\mu$ H, 1.48 ohm, 520 mA,  
7.6mm x 7.6mm x 3.4mm

## Specification for Approval 产品承认书

Customer Name :  
客户名称 : \_\_\_\_\_

Customer Code : **CDC5728**  
客户编码 : \_\_\_\_\_

Customer P/N :  
客户型号 : \_\_\_\_\_

PART NO. : **CODRHS74-221M:221M**  
科达嘉型号 : \_\_\_\_\_

Product Series : **CODRH74**  
产品系列 : \_\_\_\_\_

Spec No. : **S2211181366**  
承认书编号 : \_\_\_\_\_

Prod Spec No. :  
生产规格书编号 : \_\_\_\_\_

Version No. : **A0**  
版本号 : \_\_\_\_\_

Prepared 拟制	Checked 审核	Approved 批准
Date 日期	2022-11-18	

Approved by Customer 客户承认	
Date 日期	



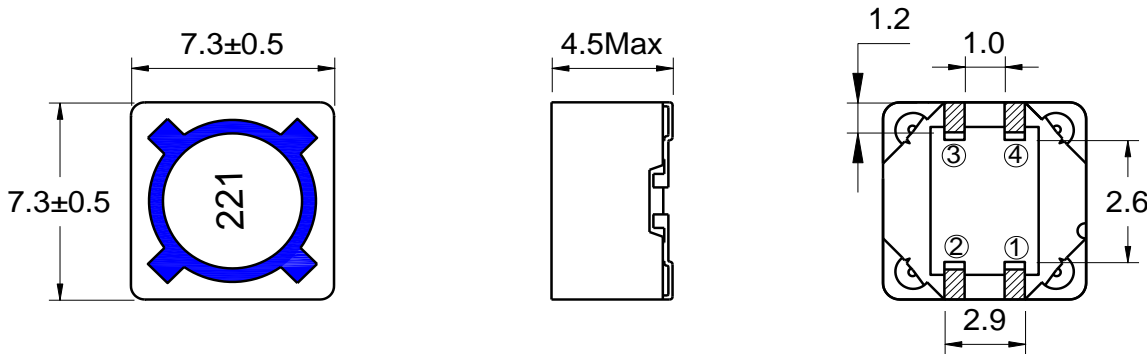
## 1 Part No. 产品型号



CODRH   74   -   221   M   :   221   M  
 ①            ②                            ③    ④                            ③    ④

- ① Product Type: CODRH Series  
产品类型
- ② Dimensions: 7.3×7.3×4.5mm  
外形尺寸
- ③ Inductance: 221:221= 220μH :220μH  
电感值
- ④ Inductance Tolerance: M =±20%  
电感值公差
- ※ Operating temperature: -40°C ~ +125°C (Including coil's temperature rise)  
工作温度(包含线圈发热)

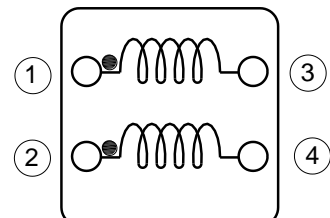
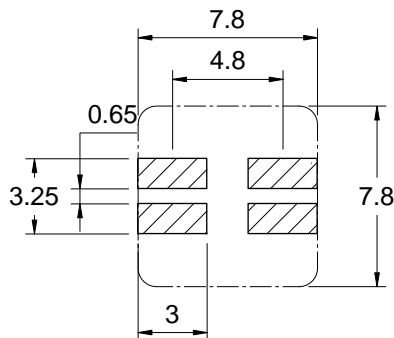
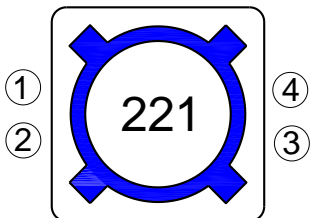
## 2 Appearance and dimensions (mm) 外形尺寸



## 3 Marking 印字标识

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

## 5 Schematic 原理图



## 6 Electrical characteristics

### 电气特性

Part No. 型号	Pin	Inductance( $\mu$ H) 电感值 ※1	D.C.R. ( $\Omega$ ) 直流电阻		Saturation current (A) 饱和电流 ※2	Temperature rise current (A) 温升电流 ※3
		$\pm 20\%$	Typical	Max	Typical	Typical
CODRH74-221M:221M	1-3	220	1.44	1.85	0.60	0.32
	2-4	220	1.44	1.85	0.60	

■ 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  $\Delta T 40^{\circ}\text{C}$  ( $T_a=25^{\circ}\text{C}$ ).

温升电流: 使产品温度上升到  $\Delta T 40^{\circ}\text{C}$ 时所加载的实际直流电流值( $T_a=25^{\circ}\text{C}$ )。

※ Special remind: Circuit design, component placement, PCB size and thickness, cooling system and etc.

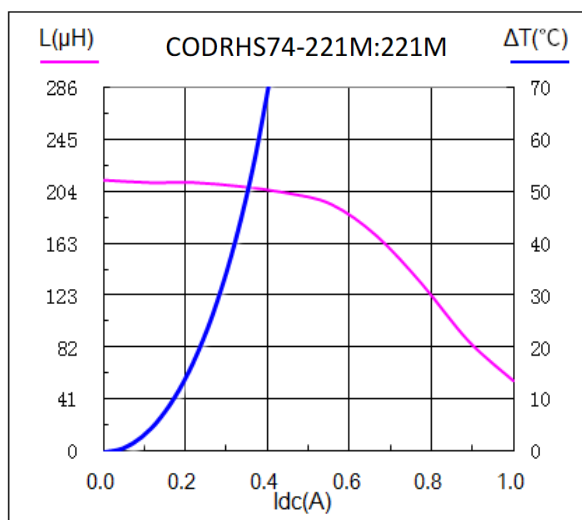
all will affect the product temperature. Please verify the product temperature in the final application.

特别提醒: 线路设计, 组件布局, 印刷线路板(PCB)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。

## 7 Saturation current VS temperature rise current curve

### 饱和电流 VS 温升电流曲线

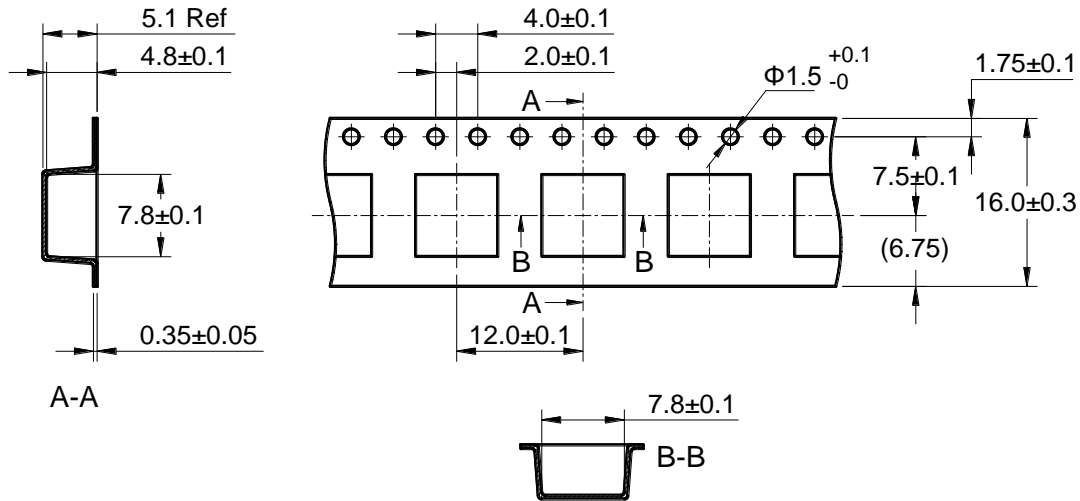


**8 Packing specification**

**包装规格**

8.1 Carrier tape dimensions (mm)

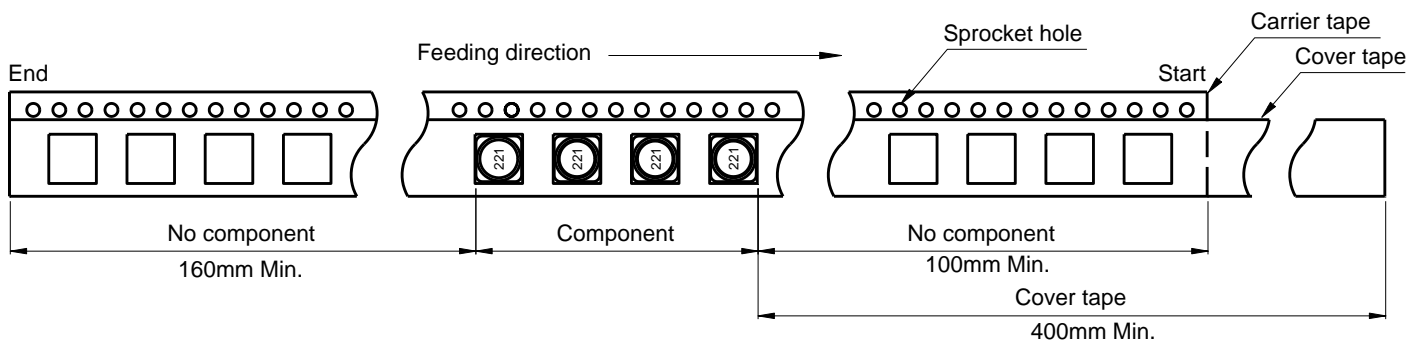
载带尺寸



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

8.2 Tape direction

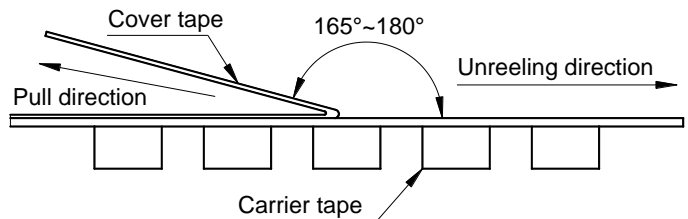
捆包方向



8.3 Cover tape peel off condition

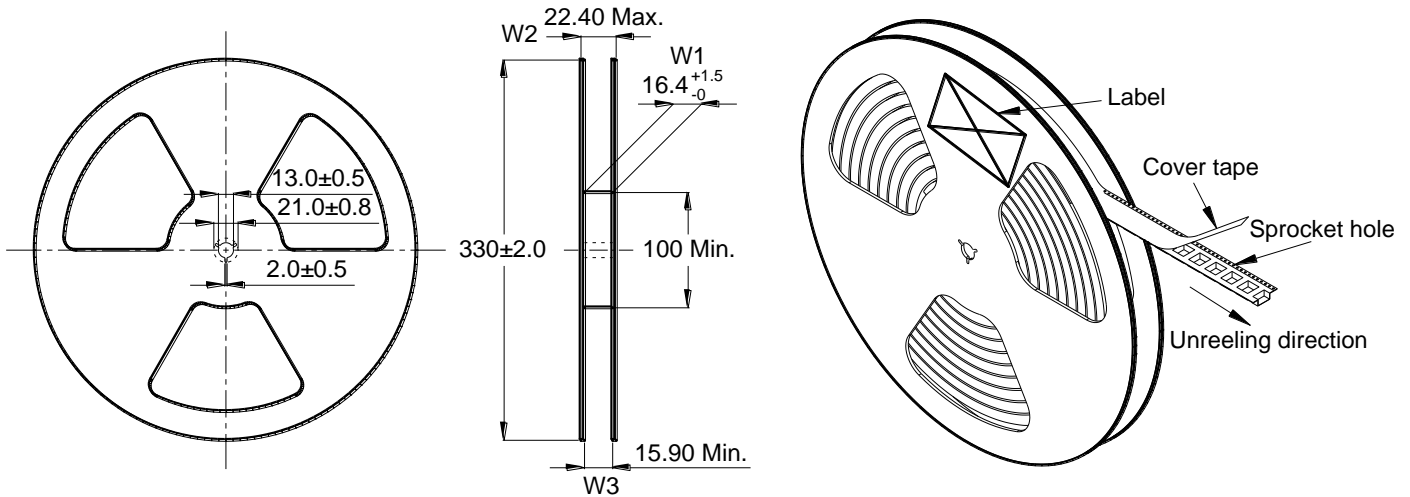
盖带剥离条件

- 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。



## 8.4 Reel dimensions (mm)

卷盘尺寸



## 8.5 Carton dimensions and packing quantity

包装箱尺寸和包装数量

■ Inner Carton:  $365 \times 345 \times 105$ mm  
内包装箱

■ Out Carton :  $385 \times 365 \times 245$ mm  
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
CODRH74	1000pcs	$(1000 \times 4) = 4000$ pcs	$(4000 \times 2) = 8000$ pcs

## 8.6 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

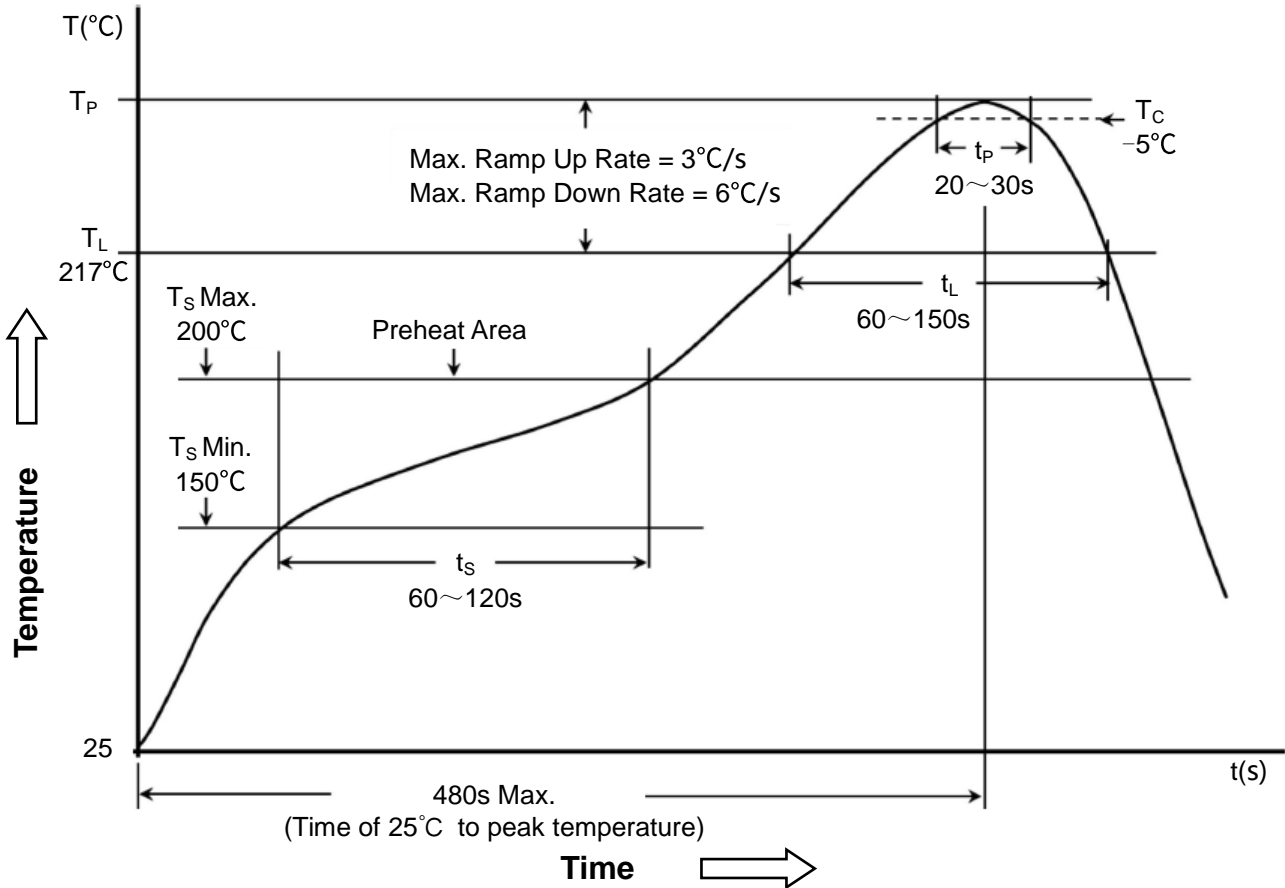
Shipping Label 运输标签
■ Customer Name 客户名称
■ Customer Part No. 客户型号
■ Supplier Part No. 供应商型号
■ Supplier Name 供应商名称
■ Country of origin 产品产地

**9 Soldering specification**

**焊接规格**

9.1 Reflow profile for SMT components

SMT 回流焊温度曲线



9.2 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

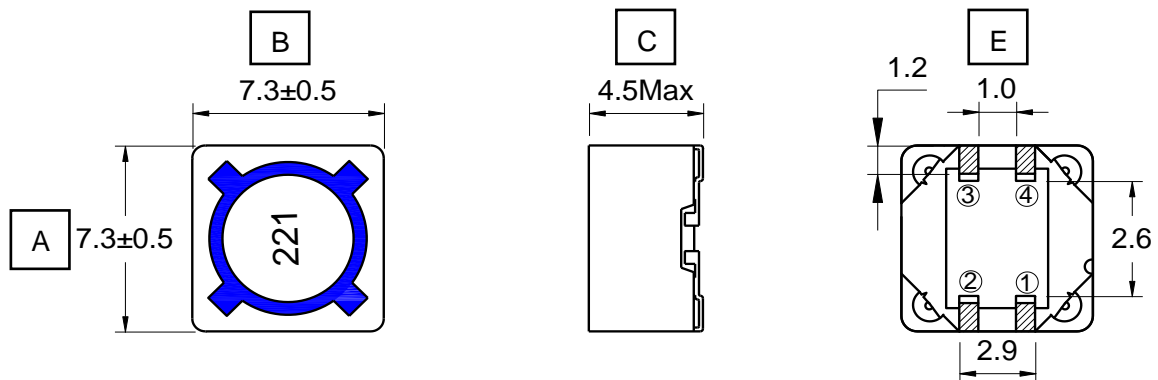
※ Reflow is referred to standard IPC/JEDEC J-STD-020D.  
回流焊参照标准 IPC/JEDEC J-STD-020D。

**10 Electrical and dimensions test report**

**电气特性和外形尺寸测试报告**

Customer P/N 客户型号		PART NUMBER 科达嘉型号				CODRH74-221M:221M		Date 日期	2022-11-18	
		Electrical 电气特性					Dimensions 外形尺寸			
Item 项目	L(1-3) (0A)	L(1-3) (0.60A)	L(2-4) (0A)	L(2-4) (0.60A)	DCR (1-3)	DCR (2-4)	A	B	C	E
Spec 规格	220.00		220.00		1.85	1.85	7.30	7.30	4.50	1.00
Tolerance 公差	±20%	Typical	±20%	Typical	Max	Max	±0.50	±0.50	Max	Ref
Unit No.	μH	μH	μH	μH	Ω	Ω	mm	mm	mm	mm
01	207.00	176.00	205.00	176.00	1.48	1.50	7.28	7.27	4.23	0.98
02	208.00	178.00	207.00	177.00	1.47	1.50	7.31	7.30	4.29	0.99
03	212.00	174.00	211.00	175.00	1.48	1.51	7.26	7.26	4.28	1.00
04	214.00	171.00	213.00	172.00	1.49	1.50	7.27	7.26	4.23	0.98
05	211.00	179.00	207.00	177.00	1.47	1.60	7.27	7.29	4.18	0.99
06	211.00	177.00	210.00	178.00	1.49	1.50	7.30	7.31	4.20	1.00
07	209.00	177.00	210.00	177.00	1.48	1.49	7.32	7.31	4.25	1.00
08	208.00	178.00	207.00	178.00	1.46	1.49	7.30	7.30	4.29	0.98
09	215.00	168.00	215.00	169.00	1.47	1.48	7.27	7.26	4.28	0.99
10	206.00	169.00	207.00	170.00	1.48	1.46	7.28	7.29	4.28	0.98
Average 平均值	210.10	174.70	209.20	174.90	1.48	1.50	7.29	7.29	4.25	0.99
Max 最大值	215.00	179.00	215.00	178.00	1.49	1.60	7.32	7.31	4.29	1.00
Min 最小值	206.00	168.00	205.00	169.00	1.46	1.46	7.26	7.26	4.18	0.98
R 最大差值	9.00	11.00	10.00	9.00	0.03	0.14	0.06	0.05	0.11	0.02

Remark: Inductance(L) measure condition at 100kHz, 0.1V.





## 11 General characteristics

### 产品一般特性

11.1 Storage temperature range :  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$

保存温度范围

11.2 Operating temperature range :  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$  (Including coil's temperature rise)

工作温度范围

11.3 Temperature characteristics

温度特性

Inductance coefficient :  $(0 \sim 2000) \times 10^{-6} / ^{\circ}\text{C}$

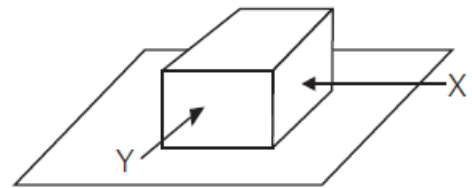
电感温度系数

11.4 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。



11.5 Vibration test

振动试验

Inductance deviation within  $\pm 5\%$  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  $\pm 5\%$  以内。

11.6 Shock test

冲击试验

Inductance deviation within  $\pm 5\%$  after being dropped once with  $981\text{m/s}^2$  (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  $981\text{m/s}^2$  (100G)，落下后对比电感值的变化率在初始值的  $\pm 5\%$  以内。

11.7 Humidity test

耐湿试验

Inductance deviation within  $\pm 5\%$ , after 96 hours in 90~95% relative humidity at  $40 \pm 2^{\circ}\text{C}$  and 1 hour drying under normal condition.

在温度  $40 \pm 2^{\circ}\text{C}$  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  $\pm 5\%$  以内。

11.8 High temperature operating life test

高温通电试验

Being stored in a chamber of temperature  $85 \pm 2^{\circ}\text{C}$  for  $96 \pm 4$  hours with DC0.32A.

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  $\pm 5\%$

放置在环境温度  $85 \pm 2^{\circ}\text{C}$  的恒温箱中，加载 0.32A 直流电流， $96 \pm 4$  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  $\pm 5\%$  以内。

11.9 Thermal shock test

冷热冲击试验

Being subjected to  $-40 \pm 2^{\circ}\text{C}$  for 30 minutes, then to  $125 \pm 2^{\circ}\text{C}$  for 30 minutes (Transition time is 1 minute Max). This constitutes one cycle. After 100 cycles, inductance deviation within  $\pm 5\%$ .

在  $-40 \pm 2^{\circ}\text{C}$  环境中放置 30 分钟，之后再转移到  $125 \pm 2^{\circ}\text{C}$  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  $\pm 5\%$  以内。

## 12 Notice of use

### 使用注意事项

- 12.1 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。
- 12.2 A storage of our products for longer than 12 months is not recommended, Within other effects, the terminals may suffer degradation, resulting in bad solderability. Therefore, all products shall be used within the period of 12 months based on the day of shipment.  
科达嘉电子产品储存期不建议超过 12 个月，在其他影响下，端子可能会退化，导致焊接性差。因此，所有产品应使用在 12 个月内以出货日为基础。
- 12.3 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。
- 12.4 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。
- 12.5 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。
- 12.6 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。
- 12.7 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。
- 12.8 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材料造成损伤，并缩短产品寿命。
- 12.9 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。
- 12.10 Refrain from rinsing product. 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。
- \* 12.1 These products without "V" prefix are qualified for industrial product requirement , and with "V" prefix are qualified for AEC-Q200, but it doesn't mean that our products can absolutely meet specific industry norms and quality test standards in automotive electronics or more strict application fields . BEC Distribution will be exempted from being responsible for the consequences of using our products in automotive electronic or higher application field related to safety when without being aware of it.  
科达嘉电子不带“V 字头”的产品可满足工业品需求，带“V 字头”的产品可满足 AEC-Q200，但并不代表在汽车电子或更高要求应用领域时，科达嘉电子产品能绝对满足特定的行业规范和严格的质量测试标准。凡将科达嘉的产品应用于汽车电子安全或动力系统等相关的汽车电子或更高要求应用领域时，科达嘉电子在不知情的情况下将免于对其所产生的后果负责。