



ShenZhen KRN Electronic Co.,Ltd

承 认 书
APPROVAL SHEET

客 户

CUSTOMER:

客 户 料 号

CUSTOMER P/N:

物 料 名 称

MODEL NO:

科瑞诺 料 号

KRN P/N:

文 件 编 号

FILE NO:

一体成型电感

KOP8050-220M

23-1

客户 Customer		制造 Manufacturer	
检验 Check by		拟制 Draft by	Yao Yuan Cheng
审核 Checked by		审核 Checked by	Li Gao liang
批准 Approval by		确认 Approve by	Gu Ding
签章/ SIGNATURES:		签章/ SIGNATURES:	

1. 履历表 Resume

版本	修 改 明 细	日期
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1. 型号规格表示办法 How To Order

KOP 8050 - 220 M
① ② ③ ④

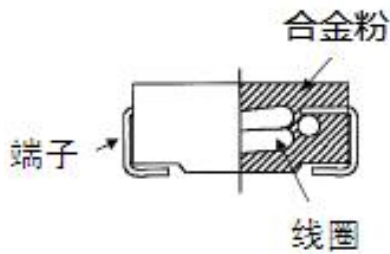
- ① 产品代号, Product symbol
- ② 尺寸规格, Dimension
- ③ 电感量标称值, Inductance
- ④ 电感量公差, Tolerance

2. 结构及尺寸 Structure And Dimensions

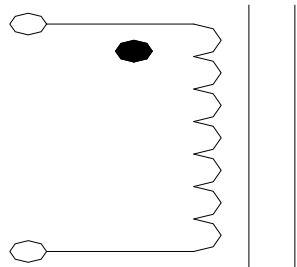
单位 Unit: mm

RECOMMENDED
LAND PATTERNS

型号 Part No.	A	B	C	D	E	F TYP	G TYP	H TYP	I TYP
8050	9.0±0.5	8.1±0.2	5.0MAX	3.0±0.2	1.8±0.3	0.15	5.0	3.5	2.4



产品结构示意图



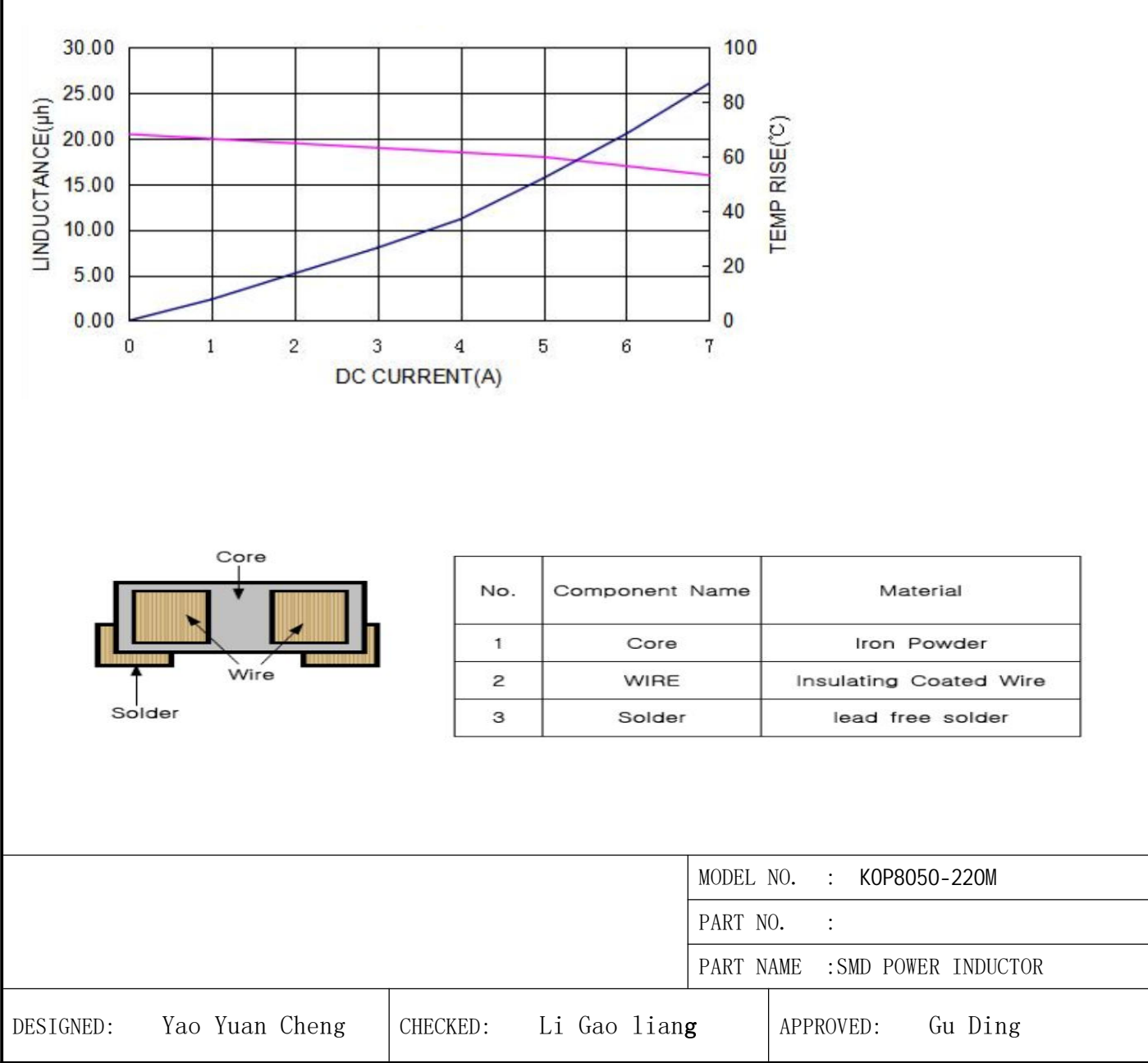
电路示意图

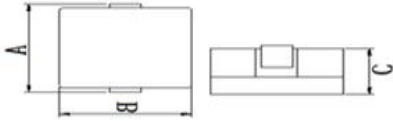
			MODEL NO. : KOP8050-220M
			PART NO. :
			PART NAME :SMD POWER INDUCTOR
DESIGNED: Yao Yuan Cheng	CHECKED: Li Gao liang	APPROVED: Gu Ding	

CUSTOMER		TYPE/DOC NO. : KOP8050-220M	2/11
3. ELECTRICAL CHARACTERISTICS / 电气特性			
ITEM / 项目	PIN NO. / 测定端子	SPEC. / 规格	CONDITION • EQUIPMENT/ 测定器 • 条件

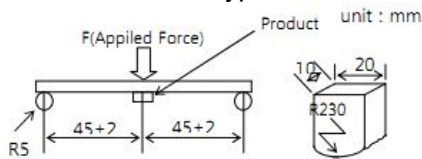
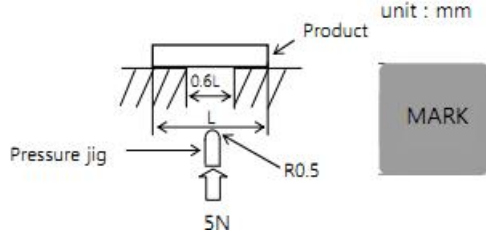
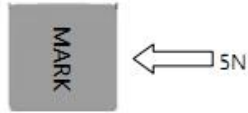
INDUCTANCE 电感	S--F	22.0 μ H \pm 20%	CH-1062A or EQUIVALENT (f=100kHz, 0.5V) TEMP25℃
DC RESISTANCE 直流电阻	S--F	82m Ω MAX	CH-502 or EQUIVALENT (TEMP25℃)
RATED CURRENT 额定电流	S--F	L6.0A \geq LOA*70%	CH-1062A AND CH-1320A or EQUIVALENT (f=100kHz, 0.5V AT=6.0A) TEMP25℃
		Δ T=40℃ MAX	H-1062A AND CH-1320A or EQUIVALENT (f=100kHz, 0.5V, AT=4A)
OPERATING TEMPERATURE RANGE 使用温度范围	————	-40℃ \sim +125℃	INCLUDING SELF-RESONANCE HEAT/ 包含自身的发热温度
STORAGE TEMPERATURE RANGE 保存温度范围	————	-40℃ \sim +125℃	————

电流曲线图 Current Curve
 INTERNAL CONSTRUCTION & MATERIAL LIST

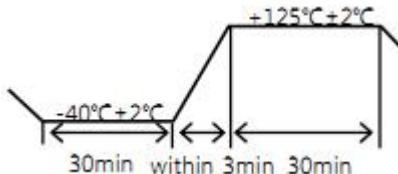


测试项目 Test project										
尺寸 Dimension (mm) 				电气特性 Electrical character						层间短路测试 Short circuit test between the layers
项目 Item	A	B	C	Ls (uH)	RDC (mΩ)	IDC	6.0	A	Irms	波形面积差
						LOA	LBIAS	△L/L		
额定值 Nominal	9.0	8.1	5.00	22	82				4A	100V/±30%
公差 Tolerance	±0.5	±0.2	Max	20%	Max			≤30%	△T≦40℃	
1	9.02	8.13	4.78	22.5	78.2	20.7	15.6	24.64%	OK	7%
2	9.03	8.15	4.76	21.3	78.1	20.6	15.4	25.24%		-6%
3	9.03	8.14	4.77	22.8	78.2	21.2	15.8	25.47%		5%
4	9.03	8.15	4.78	21.8	78.2	21.7	15.8	27.19%		-3%
5	9.03	8.12	4.77	22.1	78.2	20.8	15.6	25.00%		5%
6	9.03	8.13	4.78	21.7	78.1	19.8	15.2	23.23%		8%
7	9.03	8.13	4.76	22.3	78.1	20.3	15.2	25.12%		4%
8	9.03	8.13	4.78	22.7	78.2	21.7	15.8	27.19%		-6%
9	9.03	8.12	4.78	23.2	78.1	20.3	15.2	25.12%		6%
10	9.03	8.13	4.79	23.7	78.2	20.6	15.4	25.24%		6%
						MODEL NO. : KOP8050-220M				
						PART NO. :				
						PART NAME :SMD POWER INDUCTOR				
DESIGNED: Yao Yuan Cheng			CHECKED: Li Gao liang				APPROVED: Gu Ding			

CUSTOMER		TYPE/DOC NO. : KOP8050-220M	4/11
6. 可靠性试验项目 Reliability Testing Items			

No.	Items	Requirements	Test Methods and Remarks
1	Bending Substrate	1. There shall be no mechanical Damage. 2. $\Delta L/L_0 \leq \pm 10\%$.	<p>The product shall be soldered onto the printed circuit board in figure and the load is applied until the bending in the arrow direction is not less than 2mm (keep time 4 ± 1 seconds) The test shall be performed totally 3 times. The PCB is 0850 type standard test board.</p> 
2	Product Strength	1. There shall be no mechanical damage. 2. $\Delta L/L_0 \leq \pm 10\%$.	<p>The center of product shall be loaded with a pressure jig (5 ± 0.5N) during 10 ± 1 seconds.</p> 
3	Terminal Pull Strength	1. There shall be no mechanical Damage. 2. $\Delta L/L_0 \leq \pm 10\%$.	<p>The product shall be soldered onto the PCB and as below pictures force a product to 5 ± 0.5N in 10 ± 1 seconds.</p> 
4	Vibration Test	1. There shall be no mechanical Damage. 2. $\Delta L/L_0 \leq \pm 10\%$.	<p>Being soldered on PCB board, a product shall be had a vibration test on an amplitude of 0.7mm P-P or 5G, vibration frequency shall be 10 to 500Hz, the sweeping shall be at 1 octave/min. and these tests will be kept on each direction (X,Y,Z) for 2 hours. (Total 6 hours).</p>
5	Drop Test	1. There shall be no mechanical Damage. 2. $\Delta L/L_0 \leq \pm 10\%$.	<p>There shall be dropped on a concrete floor from 1 meter height. The test shall be performed totally 3 times. At first, drop test will be performed to measure electrical characteristics once. Then, inspection for appearance damage after 2 times of drop.</p>

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No.	Items	Requirements	Test Methods and Remarks
6	Temperature Characteristics	$\Delta L/L_0(20^\circ\text{C}) \leq \pm 10\%$	The test is performed after the product has stabilized in an ambient temperature ranging from -40°C to $+125^\circ\text{C}$ and the inductance change is calculated based on the value in normal temperature and humidity.
7	High Temperature Storage	1. There shall be no mechanical damage. 2. $\Delta L/L_0 \leq \pm 10\%$.	There shall be left in a temperature of $+125 \pm 2^\circ\text{C}$ for 96 hours. Upon completion of the test, the measurement shall be made after the product has been left in a normal temperature and humidity more than 1 hour.
8	Low Temperature Storage	1. There shall be no mechanical damage. 2. $\Delta L/L_0 \leq \pm 10\%$.	There shall be left in a temperature of $-40 \pm 2^\circ\text{C}$ for 96 hours. Upon completion of the test, the measurement shall be made after the product has been left in a normal temperature and humidity more than 1 hour.
9	Damp Heat	1. There shall be no mechanical damage. 2. $\Delta L/L_0 \leq \pm 10\%$.	There shall be left in a temperature of $40 \pm 2^\circ\text{C}$, and humidity of 90~95% for 96 hours. Upon completion of the test, the measurement shall be made after the product has been left in a normal temperature and humidity more than 1 hour.
10	Thermal Shock	1. There shall be no mechanical damage. 2. $\Delta L/L_0 \leq \pm 10\%$.	<p>This test shall be performed upon completion of 10 cycles in accordance with the condition of 1 cycle in the figure below. Upon completion of the test, the measurement shall be made after the product has been left in a normal temperature and humidity more than 1 hour.</p> 

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CUSTOMER	TYPE/DOC NO. : KOP8050-220M	6/11
可靠性试验项目 Reliability Testing Items		

No.	Items	Requirements	Test Methods and Remarks
11	Short Time Over Load	Their shall be no damage such as smoke or spark.	Applied 5 minutes to 1.2 times of DC current.
12	Insulation Resistance	1.There shall be no damage. 2.Insulation Resistance $> 1 \times 10^8 \Omega$	DC 100V voltage shall be applied for 1 min. between across top surface of the body and the terminal. The insulation resistance shall be more than $1 \times 10^8 \Omega$.
13	Dielectric Withstanding Voltage	There shall be no damage.	DC 100V voltage shall be applied for 1 min. across the top surface of the body and the terminal. Trip current : 2mA
14	Solderability Test	Over 90% of the electro sections should be covered with new solder.	Before test : temp. 80°C humidity 95% 16 hours. Test : Flux shall be coated over the whole of the product before test, the product shall then be preheated for about 2 minutes in temperature of 150~180°C and after it has been immersed to a depth 1.0mm. below for 5 ± 1 seconds fully in molten solder with a temperature $245 \pm 5^\circ \text{C}$ More than 90% of the terminal electrode sections shall be smoothly covered with new solder when the product is taken out of the solder bath. Remark solder : 96.5Sn/3.0Ag/0.5Cu.

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NO.	Items	Requirements	Test Methods and Remarks
15	Resistance to Soldering Heat (Reflow Soldering)	1. There shall be no damage. 2. $\Delta L/L \leq \pm 10\%$.	There shall be passed through the reflow oven with the condition shown in the above profile for twice. The product shall be stored at standard atmospheric conditions for 24 hours, after which the measurement shall be made. Test board : 0850type Standard Test Board Above profiles were measured at the solder paste part. Solder paste : 96.5Sn/3.0Ag/0.5Cu or equiv.

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CUSTOMER		TYPE/DOC NO. : KOP8050-220M	8/11
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7. 包装 Package

7.1 载带尺寸 Tape Dimension(单位：毫米 Unit:mm)

A	B	K0	W	P	T
9.2	8.4	5.2	24	16	0.4

TYPE	A	B	C	D	E	F
32mm	330	100	21.0±0.8	13.0±1.0	24.0±0.5	28.0 ±2.0

7.2 包装数量 Packing quantity

Series	卷盘 REEL (PCS)	纸盒 BOX (PCS)	纸箱 Carton (PCS) (Size: 35.5*35.5*21.5cm)
8050	1000	3000	9000

7.3 包装标准 package standard

7.3.1 每个卷轴开始包装前至少要包装 20 个空单元。产品包装结束后还要继续包装至少 20 个空单元。

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<div> <div>7.3.2 每个内盒装两个卷轴，每个外箱装三个内盒。</div> <div> </div> </div>		
<div> <div>8. 推荐使用的焊接曲线 Recommended soldering profile</div> <div> <div>本产品建议使用回流焊接法。</div> <div>Applicable soldering process to the products is reflow soldering.</div> </div> <div>8.1 焊接材料 Soldering Materials</div> <div> <div>1 焊料: Sn-3.0Ag-0.5Cu</div> <div>Solder: Sn-3.0Ag-0.5Cu</div> <div>②助焊剂: 使用松香基助焊剂，禁止使用卤化物含量超过 0.2wt%的强酸性助焊剂和水溶性助焊剂。</div> <div>Flux: Use rosin-based flux, but not strongly acidic flux (with chlorine exceeding 0.2 wt%). Do not use water-soluble flux.</div> </div> <div>8.2 焊接曲线 Soldering Profile</div> <div> </div> </div>		

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<p>9. 验收规则 Inspection Rules</p> <p>1 产品的验收按 GB/T2828.1-2003 规定进行,其检查水平: 外观、尺寸, II, AQL=0.4; LOA, L30DC, S-4, AQL=0.15。</p> <p>The inspection must be performed per GB/T2828.1-2003,with its examination level: Appearance and dimensions, II, AQL=0.4;LOA and L30DC, S-4, AQL: 0.15;</p> <p>2 客户在收到磁芯产品后一个月内须验收完毕,并将验收结果书面通知供货方,否则视为已验收合格。</p> <p>Inspection will be completed and inspection result will be feedback to WTRL in written within one month after cores are received fromWTRL or it will be considered approved by customer.</p> <p>10. 贮存方法 Storage Methods</p> <p>10.1 存储期限 Storage Period</p> <p>为保证端子电极的焊接特性和包装材料处于良好状态,请于本公司发货后 6 个月内使用本产品。同时,由于端子电极的焊接特性会随时间发生变化,如果贮存时间超过 6 个月,请首先确认其焊接特性后再安装使用。</p> <p>To maintain the solderability of terminal electrodes and to keep the packing material in good condition, product should be used within 6 months from the time of delivery. And the solderability of products electrodes may decrease as time passes, so in case of storage over 6 months, slderability shall be checked before actual usage.</p> <p>10.2 存储条件 Storage Conditions</p> <p>1 存放货物的仓库应满足以下条件:</p> <p>温度: -10 ~ +40℃ 相对湿度: 30~70%RH</p> <p>Store products in a warehouse in compliance with the following condition:</p> <p>Temperature: -10 to +40℃ Humidity: 30~70%RH</p> <p>②不要使产品遭受温度和湿度的快速变化。</p> <p>Do not subject products to rapid changes in temperature and humidity.</p> <p>③不要将产品存放在化学环境中,如硫酸气体或碱性气体中,否则会降低电极端子的焊接特性和使电感器腐蚀。</p> <p>Do not store the products in chemical atmosphere such as one containing sulfurous acid gas or alkaline gas, that will causes poor solderability and corrosion of inductors.</p> <p>④不要以散包装的形式存放产品以防止电感器间的相互碰撞造成磁芯破裂或断线。</p> <p>Do not store products in bulk packaging to prevent collision among inductors which causes core chipping and wire breakage.</p> <p>⑤为了避免受潮气、灰尘等物质的影响,产品应保管于货架上。</p> <p>Store products on pallets to protect from humidity, dust, etc.</p> <p>⑥产品应避免热冲击、振动以及直接光照等等。</p> <p>Avoid heat shock, vibration, direct sunlight, etc.</p>			
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CUSTOMER	TYPE/DOC NO. : KOP8050-220M	11/11
<p>11. 说明 NOTE</p> <p>11.1 本承认书的数据更改需经双方确认，任何一方单独修改无效。</p> <p>Any revision to the specification Approval must be confirmed by both the supplier and the customer, otherwise the revision is invalid.</p> <p>11.2 当本公司的产品使用在一般电子设备以外的领域时，对于此所引发的设备失效我司将不承担任何法律责任。</p> <p>In case of using the product for the purpose other than general electronics devices, we shall not be held liable for any dysfunctions in or damage to the equipment with which the product is used.</p> <p>11.3 本承认书只保证我司产品作为一个单体时的质量情况，当我司产品被安装到贵司产品上时，请贵司对使用在贵司电路上的产品情况进行了有效评价和确认。</p> <p>Our specification limits the quality of the component as a single unit. Please ensure the component is thoroughly evaluated in your application circuit.</p> <p>11.4 本承认书在客户收到 7 天之内，必须签章返回，逾期视为默认。</p> <p>The specification Approval should be sent back to the supplier with customer's chop on it within 7 days after receiving it, or we will take it as approved by customer.</p>		
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