

Customer: LC0001

LOT NO:

New Released, Revised]

SPECIFICATIONS

Product

Name: SM Power Inductors

SXN

Part Number: SMRH4D28-3R3NT

Customer

Part Number: SMRH4D28-3R3NT

【For Customer approval Only】

Date: _____

Approved By	Verified By	Re-checked By	Checked By

SHENZHEN SHUNXIANGNUO ELECTRONICS CO.,LTD.

Approved By	Checked By	Issued By

SXN ELECTRONIC CORP.

SPECIFICATION FOR APPROVAL

CUSTOMER: LC0001	PAGE: 2 OF 8
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SXN P/N: SMRH4D28-2R2NT	LOT NO :
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<p>1.MECHANICAL DIMENSIONS DRAW NO:SMRH4D28</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Item</th> <th>Spec(mm)</th> <th>Ref.</th> </tr> </thead> <tbody> <tr><td>A</td><td>4.7±0.3</td><td></td></tr> <tr><td>B</td><td>3.0MAX</td><td></td></tr> <tr><td>C</td><td>6.9MAX</td><td></td></tr> <tr><td>D</td><td></td><td></td></tr> <tr><td>E</td><td></td><td></td></tr> <tr><td>F</td><td></td><td></td></tr> <tr><td>G</td><td></td><td></td></tr> <tr><td>H</td><td></td><td></td></tr> <tr><td>I</td><td></td><td></td></tr> </tbody> </table>	Item	Spec(mm)	Ref.	A	4.7±0.3		B	3.0MAX		C	6.9MAX		D			E			F			G			H			I		
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A	4.7±0.3																														
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G																															
H																															
I																															
Marking: 黑色字体 “2R2”																															

2.ELECTRICAL CHARACTERISTICS:

Item	Spec	Ref.	Test Equipments
L	3.3uH ±30%	3.34uH	VR1153 LCR+DCR
Test Freq	L@100KHz/0.1V		
L load	L+1.57A:L DROP30%	3.01uH	VR1153 & VR7210
Test Freq	L@100KHz/0.1V		
DCR	0.060oHM Max	46.67mΩ	VR1153 LCR+DCR
Turn	12.5T (REF)		
Ope.Temp	-20 TO 80℃		

CUSTOMER APPROVED	APPROVED	CHECKED	DRAWN

ISSUE DATE:	PRINT DATE: 0/Jan/00	REV:1.0
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FRM-ZFENG-007

As soon as this specification approved by your company,products will be provided as this specification. A written notice is needed immediately,whenever there is a changing to product specification.We won't answer for any consequences unless the written notice is received by our company before production.

SXN ELECTRONIC CORP.

SPECIFICATION FOR APPROVAL

CUSTOMER: LC0001		PAGE: 3 OF 8	
SXN P/N: SMRH4D28-2R2NT		LOT NO :	
Item	Suppter	SGS No	
1-RI4.7*2.5*3.9-UN	UNITED ELECTRONICS CO.,LTD		
1-DR4.7*2.7*1.6-UN			
2-2UEWH-0.15mm*2P	ELEKTRISOLSA(MALAYSIA)SDN.BHD		
3-SOLDERWIRE-SnCu	SHEN ZHEN QIAN TIAN SOLDER CO.,LTD		
4.PACKAGING MATERIALS & SUPPLIERS:			
5-REEL-13"xW12MM	CHI SHING(H.K) INDUSTRIAL CO.,LTD		
5-CARRIER-SMRH4D28	CHI SHING(H.K) INDUSTRIAL CO.,LTD		
5-COVER-9.3MM	CHI SHING(H.K) INDUSTRIAL CO.,LTD		
5.NOTES:			
	APPROVED	CHECKED	DRAWN
ISSUE DATE: 0/Jan/00	PRINT DATE: 0/Jan/00	REV:1.0	

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SXN ELECTRONIC CORP.

SPECIFICATION FOR APPROVAL

CUSTOMER : LC0001	PAGE: 4 OF 8
SXN P / N : SMRH4D28-3R3NT	DATE :
LOT NO :	SHAPE :
QUANTITY : 10	
TEST FREQ.: L@100KHz/0.1V	
COIL DESCRIPTION :	
WIRE : 0.15*2 mm TURN : 12.5 Ts	
TEMP: 24 °C HUMI: 37 %	

ELECTRICAL CHARACTERISTICS AND MECHANICAL DIMENSIONS (m/m) :

ITEM	L	L +1.57A	DCR	A	B	C	D	E	F	G	H
SPEC	3.3uH	3.3uH	60.0	4.7	3.0	6.9					
TOL.	±30%	±30%	mΩ	±0.3	MAX	MAX					
1	3.32	3.02	48.00	4.97	2.84	6.19					
2	3.34	3.01	49.00	4.91	2.83	6.10					
3	3.36	3.02	46.00	4.98	2.80	6.26					
4	3.40	2.98	48.00	4.98	2.83	6.17					
5	3.20	3.08	49.00	4.96	2.84	6.19					
6	3.20	3.05	48.00	4.97	2.83	6.19					
7	3.50	2.96	47.00	4.97	2.83	6.20					
8	3.40	2.96	48.00	4.96	2.80	6.24					
9	3.35	3.01	48.00	4.98	2.84	6.22					
10	3.32	3.03	46.00	4.98	2.80	6.21					
Max	3.50	3.08	49.00	4.98	2.84	6.26					
Min	3.20	2.96	46.00	4.91	2.80	6.10					
\bar{X}	3.34	3.01	47.67	4.97	2.82	6.20					
JUDGE	OK	OK	OK	OK	OK	OK					

APPROVED	INSPECTED
楊杰	张玲琴

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SXN ELECTRONIC CORP.

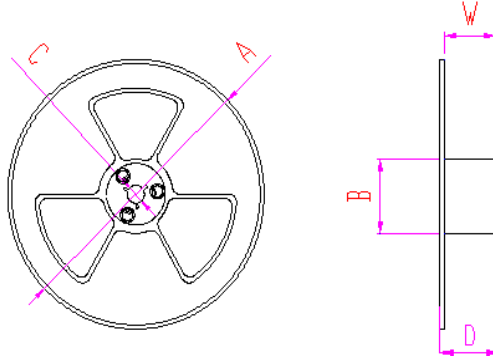
PACKAGING

CUSTOMER : LC0001

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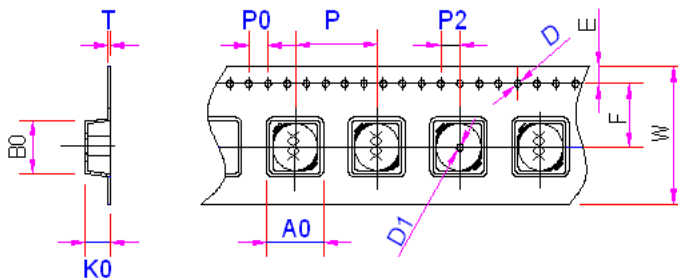
DATE :

1. 每卷轴包装数量:2000PCS/R (开始与结尾留空30~40cm不装COIL), 贴上正确的标签,卷轴及载带尺寸.如图(一)



卷轮尺寸 (REEL DIMENSIONS) 一般公差±0.5mm

A	B	C	W	D
Φ330	Φ100	Φ13.5	12.5	18.5

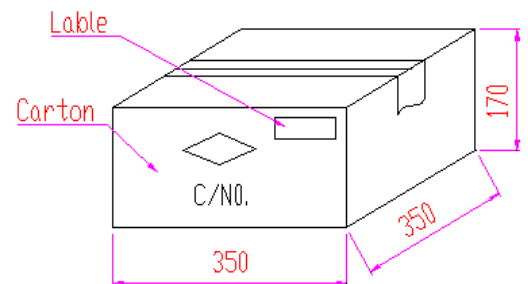


载带尺寸(TAPE DIMENSIONS):

W	A0	B0	K0	P	F	E	D	D1	P0	P2	t
12±0.3	5.1±0.1	5.1±0.1	3.1±0.1	8±0.1	5.5±0.1	1.75±0.1	1.5±0.1	1.5±0.1	4±0.1	2±0.1	0.3±0.1

2. 每啤盒包装数量可依照客户要求。

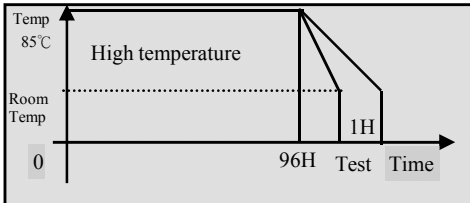
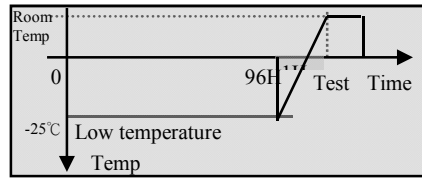
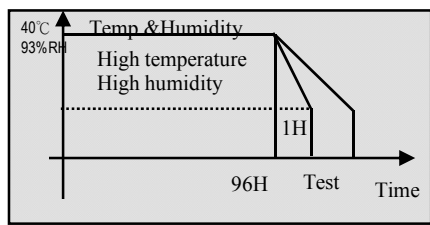
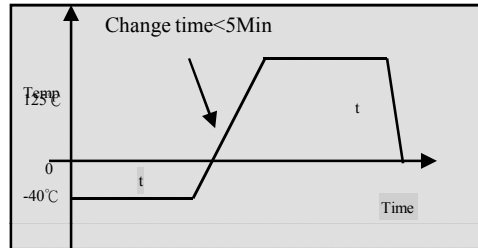
3. 每箱包装数量可依照客户要求。



FRM-ENGRD-007

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RELIABILITY TEST CONDITIONS

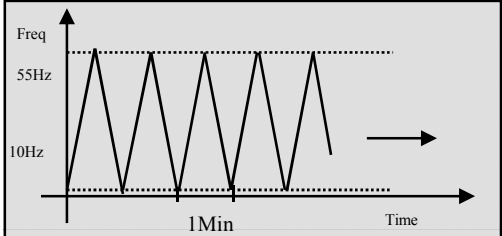
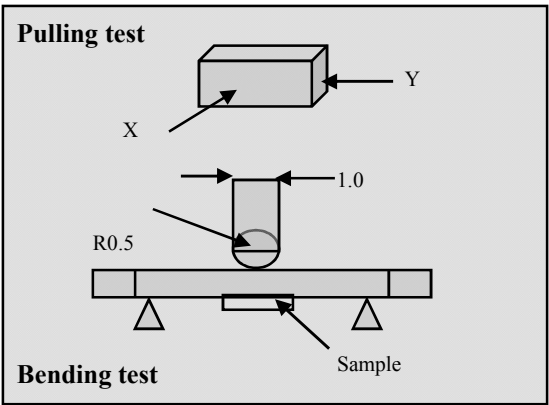
Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
High temperature Storage test Reference documents: MIL-STD-202G Method 108A 高溫儲存試驗	1.No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 1.無明顯的外觀缺陷 2.感值變化不超過10%	Temperature: $85 \pm 2^\circ\text{C}$ Time : 96 ± 2 hours Tested not less than 1 hour, nor more than 2 hours at room temperature  溫度: $85 \pm 2^\circ\text{C}$ 時間: 96 ± 2 小時 樣品在室溫下放置1小時,不超2小時必須測試.
Low temperature Storage test Reference documents: IEC 68-2-1A 6.1 6.2 低溫儲存試驗	1.No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 1.無明顯的外觀缺陷 2.感值變化不超過10% 3.品質因數變化不超過30%	Temperature: $-25 \pm 2^\circ\text{C}$ Time : 96 ± 2 hours Tested not less than 1 hour, nor more than 2 hours at room temperature.  溫度: $-25 \pm 2^\circ\text{C}$ 時間: 96 ± 2 小時 樣品在室溫下放置1小時,不超2小時必須測試.
Humidity test Reference documents: MIL-STD-202G Method 103B 濕度測試	1.No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 1.無明顯的外觀缺陷 2.感值變化不超過10% 3.品質因數變化不超過30%	1. Dry oven at a temperature of $40^\circ \pm 5^\circ\text{C}$ for 24 hours. 2. Measurements At the end of this period 3. Exposure: Temperature: $40 \pm 2^\circ\text{C}$  1. 樣品必須先在 $40^\circ \pm 5^\circ$ 條件下乾燥24小時 2. 乾燥後測試 3. 暴露: 溫度: $40 \pm 2^\circ\text{C}$, 溼度: $93 \pm 3\% \text{RH}$
Thermal shock test Reference documents: MIL-STD-202G Method 107G 熱衝擊測試	1.No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ For T: weight $\leq 28\text{g}$: 15Min; $28\text{g} \leq \text{weight} \leq 136\text{g}$: 30Min 1.無明顯的外觀缺陷 2.感值變化小於10% 3.品質因數變化小於30%	First -40°C for T time, last 125°C T time as 1 cycle. Go through 20 cycles.  從 -40°C 作用T分鐘,然後溫度衝擊到 125°C 作用T分鐘,作為一個循環,共作用20次.

Environmental tests (環境試驗)

RELIABILITY TEST CONDITIONS

FOR SMT/SMD PRODUCTS

PAGE:

Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
Solderability test Reference documents: MIL-STD-202G Method 208H IPC J-STD-002B 可焊性測試	Terminals area must have 95% min. solder coverage 端子必須有95%以上著錫	1. Dip pads in flux then dip in solder pot at 245±5°C for 5 seconds. 2. Solder: Sn(63)/Pb(37) 3. Flux: ros 1. 端子浸入助焊劑, 然後浸入245±5°C 錫爐中5秒 2. 焊料 :Sn(63)/Pb(37) 3. 助焊劑: 松香助焊劑
Heat endurance of Reflow soldering Reference documents: IPC .I-STD-020R 過再流焊測試	1. No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$ 1. 無明顯的外觀缺陷 2. 感值變化不超過10% 3. 品質因數變化不超過30%	1. Refer to the next page reflow curve Go through 3 times 2. The peak temperature : 245±5°C 1. 參照下頁回流焊曲線過三次 2. 峰值溫度為: 245±5°C
Vibration test Reference documents: MIL-STD-202G Method 201A 振動測試	1. No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$ 1. 無明顯的外觀缺陷 2. 感值變化不超過10% 3. 品質因數變化不超過30%	Apply frequency 10~55Hz. 0.75mm amplitude in each of perpendicular direction for 2 hours. (total 6 hours)  用10~55Hz 振動頻率0.75mm振幅沿X,Y,Z方向各振動2小時.(共6小時)
Drop test Reference documents: MIL-STD-202G Method 203C 落下試驗	1. No case deformation or change in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 10\%$ 1. 無明顯的外觀缺陷 2. 感值變化不超過10% 3. 品質因數變化不超過30%	Packaged & Drop down from 1m with 981m/s ² (100G) attitude In 1 angle 1 ridges & 2 surfaces orientations. 將產品包裝後從1米高度自然落下至試驗板上 1角1稜2面
Terminal strength push test Reference documents: JIS C 5321 :1997 端子強度試驗	Pulling test: Define: A: sectional area of terminal $A \leq 8\text{mm}^2$ force $\geq 5\text{N}$ time: 30sec Bending test: Soldering the products on PCB,after the pulling test and bending test ,terminal should not pull off 推力測試: 定義: A: 焊接端子截面積 $A \leq 8\text{mm}^2$ 推力 ≥ 5 牛頓 時間: 30秒 $8\text{mm}^2 < A \leq 20\text{mm}^2$ 推力 ≥ 10 牛頓 時間: 10秒	Bend the testing PCB at middle point,the deflection shall be 2mm  將PCB對中彎折,到達撓度2mm.
Resistance to solvent test Reference documents: IEC 68-2-45:1993 耐溶劑性試驗	No case deformation or change in appearance,or obliteration of marking 無外觀破壞及標記破損	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. 在IPA溶劑中浸泡 5±0.5分鐘,室溫下乾燥5分鐘,然後擦拭10次.

Physical characteristic tests (物理特性試驗)

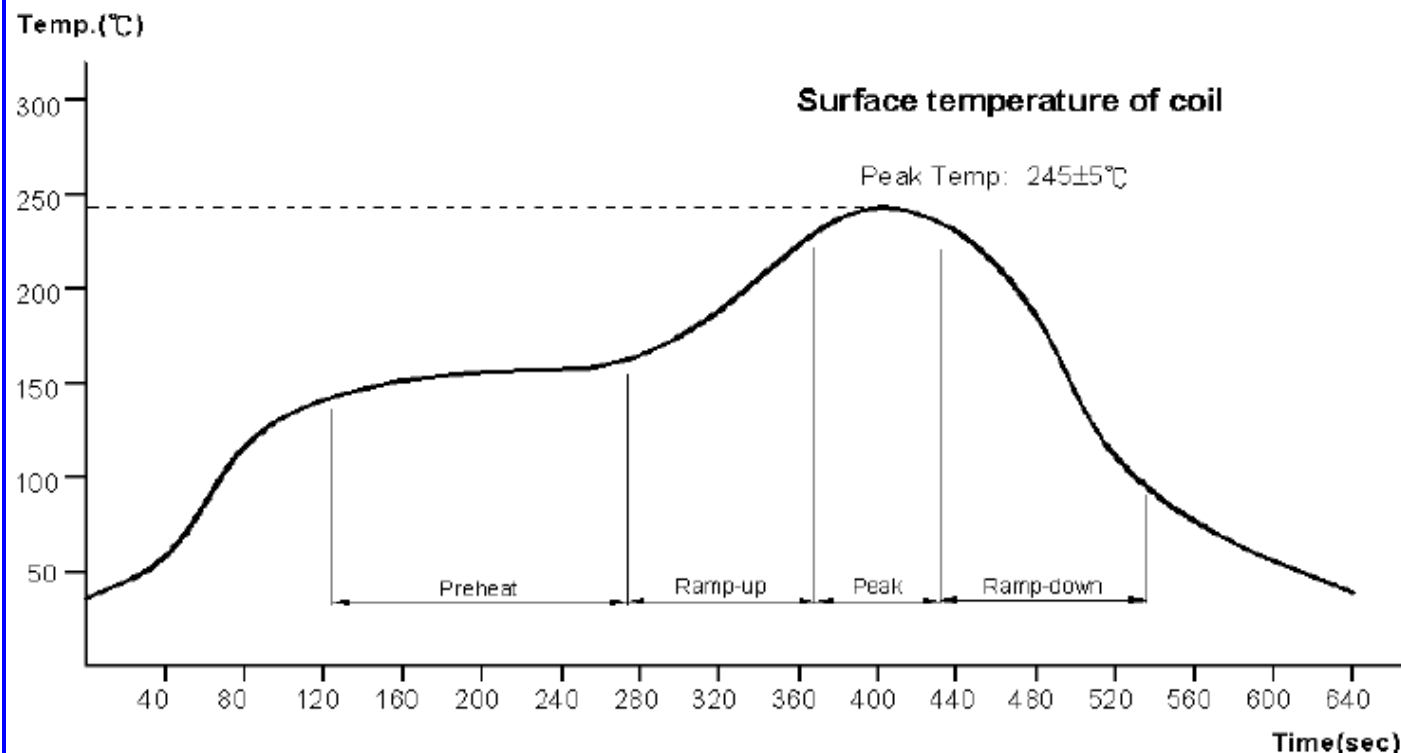
RELIABILITY TEST CONDITIONS

FOR SMT/SMD PRODUCTS

PAGE: 8

	Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
Electrical Characteristic tests (電特性試驗)	Electronic characteristic test of major products 主要產品電特性測試	Refer to catalogue of specific products 參照具體產品目錄頁	Refer to catalogue of specific products 參照具體產品目錄頁書
	Overload test Reference documents: JIS C5311-6.13 過負荷試驗	1. During the test no smoke, no peculiar, smell, no fire 2. The characteristic is normal after test 1. 試驗過程中無冒煙, 異味, 著火等, 2. 試驗後產品特性正常.	Apply twice as rated current for 5 minutes. 通兩倍額定電流 5 分鐘
	voltage resistance test Reference documents: MIL-STD-202G Mthod 301 絕緣耐壓測試	1. During the test no breakdown 2. The characteristic is normal after test 1. 試驗過程中無擊穿 2. 試驗後產品特性正常	1. For parts with two coils 2. DC1000V, Current: 1mA, Time: 1Min. 1. 只針對SMT二繞組以上 2. 電壓DC1000V, 電流1mA, 時間1分鐘.

Curve of Heat endurance of Reflow soldering test



A test is made under the conditions mentioned above. And it is left 1 hour in the normal temperature and humidity. After that, no mechanical and electrical defeat should be found out. The reflow condition is according to the machine used by .