

Customer: TD8Z0

SPECIFICATION FOR APPROVAL

Customer P/N			
Description	coil Wireless Charging		
Drawing No.			
3L P/N	WPT4202-8R4K-PWM-PT		
Date	20240130	Rev.	XD
Customer	Approved For Customer		
Seller	Drawn	Checked	Approved
	CAIKAIZHU	BAKER	HE HONG

Please Return After Approving



Headquarters : 3L ELECTRONIC (ZHONG SHAN) CORP.

URL : <http://www.3lcoil.com>

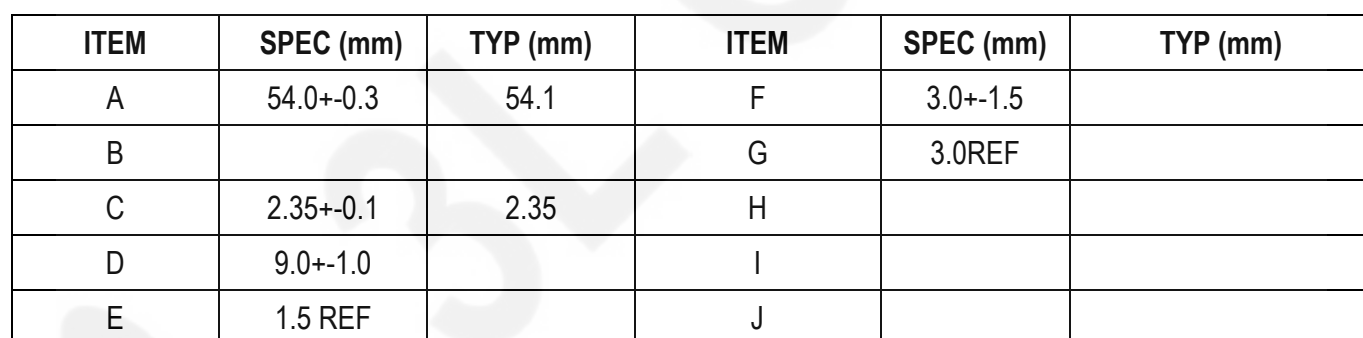
ADD : No 6 Industrial Park Nanlang Town Zhong Shan Guangdong,P.R.China

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Revision	Date	Revision description	Design	Approved
XA	2023/10/17	Initial release.	BAKER	HE HONG
XB	2023/11/29	The magnet changes from N52 material to N48H material. Change the DCR value	BAKER	HE HONG
XC	2023/12/28	Add Magnet gasket & Adjust structure size	BAKER	HE HONG
XD	2024/01/30	Add material temperature description, change packaging quantity	BAKER	HE HONG

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1. Mechanical Dimension(mm):



1. Core peeling & breakage: Breakage is acceptable when it meets: length $\leq 5\text{mm}$, width $\leq 1\text{mm}$, depth $\leq 0.5\text{mm}$. Every two breakages within 1mm interval would be regarded as one breakage and three breakages under this standard shall be acceptable on each product.
2. Crack on core: No more than two unobvious cracks which is less than 5mm long and 0.5mm wide are allowable to be on the core. Any crack or coating detachment affecting electromagnetic performance of core or mechanical strength is not acceptable.
3. Core fatness of product surface: The acceptable height difference of uneven surface shall be $\leq 0.03\text{mm}$.
4. When coil size upper limit core size lower limit, allow coil overstep core edge.
5. C size does not include release paper.
6. The surface of the magnet needs to be higher than the surface of the coil. This size does not include double-sided tape at the et

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2. Electrical Characteristics (at 25°C / RH 65% unless otherwise specified) :

Test Item	Specification	Test Condition	Test Instrument
L	8.4uH±10%	100KHz 1.0V @25°C	HP4284A PRECISION LCR METER
DCR	55m Ω MAX	@25°C	CHENHWA 502 OHM METER
TURNS	11TS Ø0.08X85P		
Ope. voltage	DC 100V MAX		
Ope. Current	2.1A MAX		
Ope.Temp	-40 TO 105°C		HC-D3M TEMP. & HUMIDITY CHAMBER
Weight			

Note:

The operating temperature is only for the electrical and structural performance of the inductive product.
The magnet section operates at a maximum of 120°C. The reliability report notes page does not contain magnets.
GAP temperature is greater than 120°C

3. Material list:

No.	Material	Description	Manufacturer	UL No.& Rating
1	CORE	POT42.5X0.8 KPC40/BP40	JINCI/BOCI	N/A
2	WIRE	2UEW-F/E UDTC/155°C Ø. 08X85P	HUAYE/WEIHAN/HEHNGHUI	E345710 155°C
3	GLUE	S133-4C/8045	SIL-MORE INDUSTRIAL., LTD.	N/A
4	SOLDER	100 Sn99.9	TONGFANG	N/A
5	TAPE	H 201A	TAIHU JINZHANG TECHNOLOGY CO LTD	E229667 180°C
6	TAPE	4972	TESA	N/A
7	MAGNET	N48H	YUYANG	N/A
8	GAP	LCP4008	Sumitomo	E54705 120°C

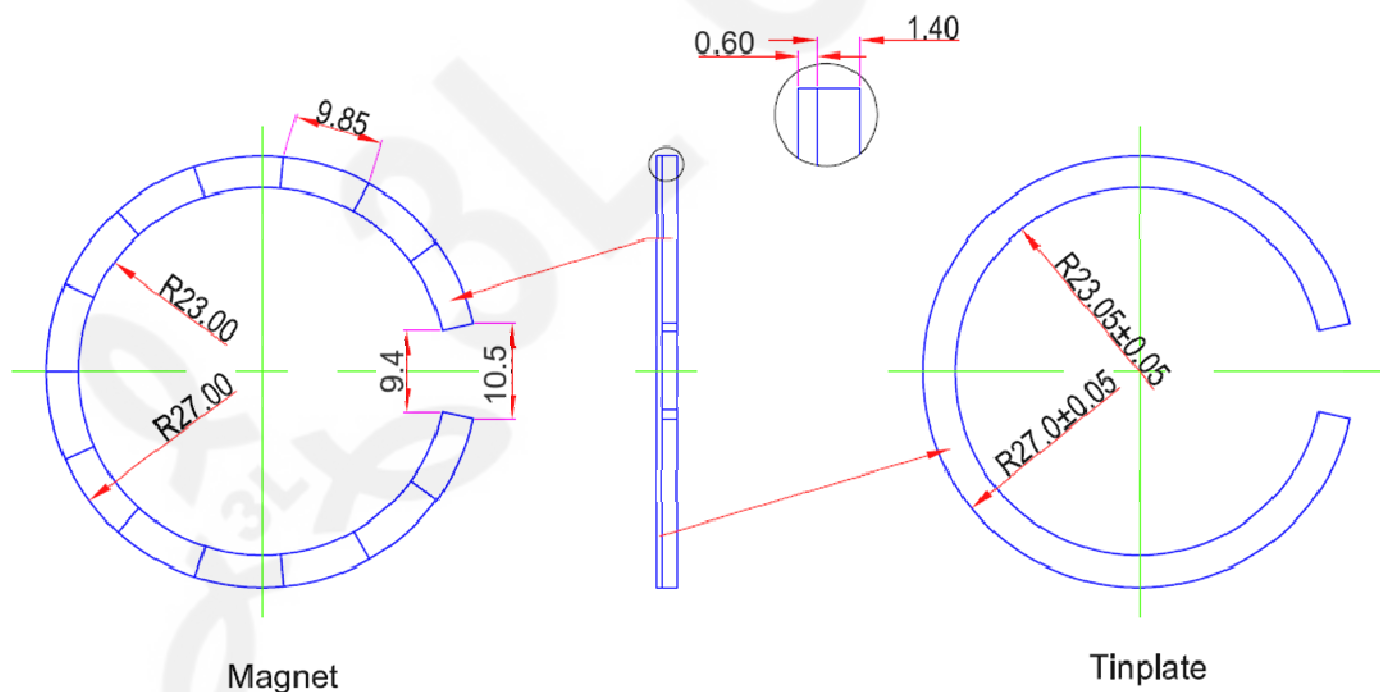
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4. Magnet information

	Specification
Material	Permanent magnet rare earth Ndfcb
No.	N48H
Br	$\geq 13.6(\text{Kgs})$
HcJ	$\geq 17.0 (\text{Koe})$
HcB	$\geq 11.2 (\text{Koe})$
(BH) Max	46~49
Max Gauss	.3500GS
Total thickness dimension	2.0+0.1mm
Attraction (iPhone14)	9.5N MIN (13N TYP)

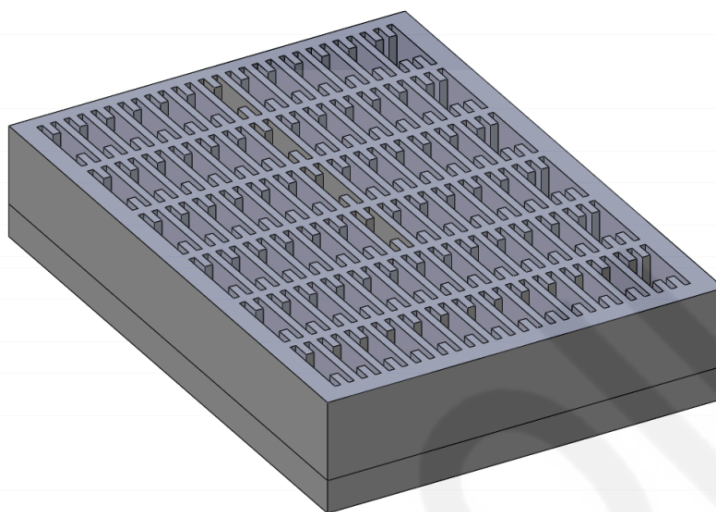
4. Magnet Size



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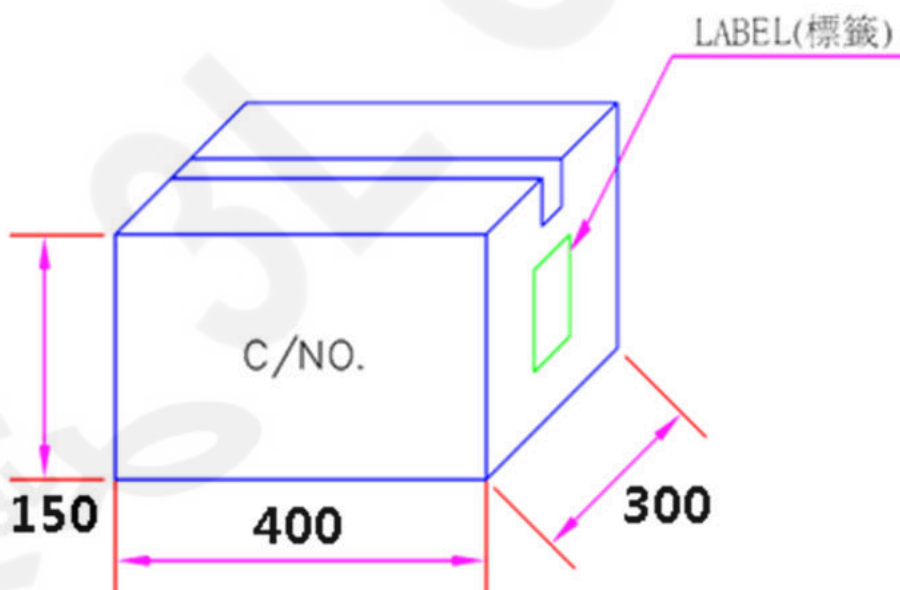
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5.1 INSIDE PACKAGING:



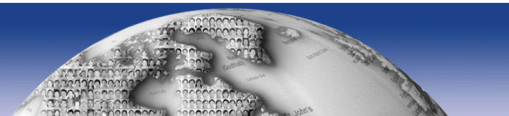
Each box: 100pcs

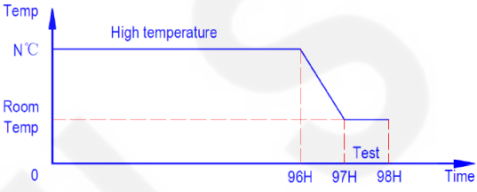
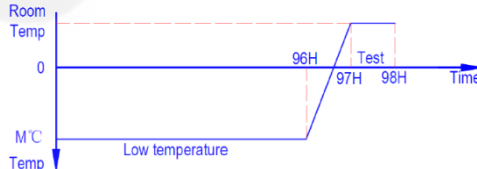
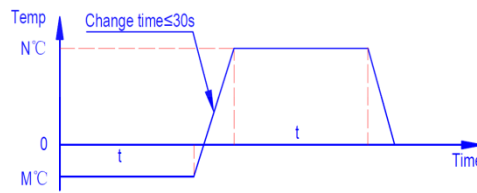
5.2 OUTSIDE PACKAGING

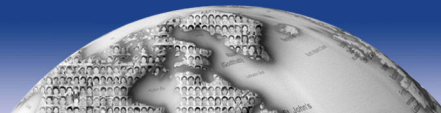


Outer carton: 200 pcs

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For WPT Types			
Environmental tests (環境試驗)	Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
	High temperature Storage test Reference documents: GB/T 2423.2-2008 Method Bb 高溫儲存試驗	1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$ 1. 無明顯的外觀缺陷 2. 感值變化不超過10% 3. 直流電阻變化不超過10%	Temperature: $105 \pm 2^\circ\text{C}$ (N: Follow the product specification for the setting.) Time: 96 ± 2 hours  溫度: $105 \pm 2^\circ\text{C}$ 時間: 96 ± 2 小時 樣品在室溫下放置 1H 后測試.
	Low temperature Storage test Reference documents: GB/T 2423.1-2008 Method Ab 低溫儲存試驗	1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$ 1. 無明顯的外觀缺陷 2. 感值變化不超過10% 3. 直流電阻變化不超過 10%	Temperature: $-40 \pm 2^\circ\text{C}$ (M: Follow the product specification for the setting) Time: 96 ± 2 hours  溫度: $-40 \pm 2^\circ\text{C}$ 時間: 96 ± 2 小時 樣品在室溫下放置 1H 后測試.
	Humidity test Reference documents: GB/T 2423.50-2012 高溫高濕試驗	1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$ 1. 無明顯的外觀缺陷 2. 感值變化不超過10% 3. 直流電阻變化不超過 10%	Temperature: $40 \pm 2^\circ\text{C}$, Humidity: $93 \pm 3\% \text{RH}$ Time: 96 ± 2 hours 溫度: $85 \pm 2^\circ\text{C}$, 溼度: $85 \pm 3\% \text{RH}$ 時間 : 96 ± 2 hours 樣品在室溫下放置 1H 后測試.
	Thermal shock test Reference documents: GB/T 2423.22-2012 Method Na 冷熱衝擊測試	1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$ 1. 無明顯的外觀缺陷 2. 感值變化不超過10% 3. 直流電阻變化不超過 10%	Start at -40°C for 30 min, rush to 105°C for 30 min as one cycle, go through 20 cycles.  從 -40°C 作用30分鐘,然後溫度衝擊到 105°C 作用30分鐘,作為一個循環,转换时间小于3分钟,共20个循环.



For WPT Types

Environmental tests (環境試験)	Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
	Solderability test Reference documents: J-STD-002D 可焊性測試	Terminals must have 95% minimum solder coverage. 端子必須有 95% 以上著錫	1. Dip pads in flux then dip in solder pot at $245 \pm 5^\circ\text{C}$ for 5 second. 2. Solder: lead free 3. Flux: rosin flux 1. 端子浸入助焊劑, 再浸入 $245 \pm 5^\circ\text{C}$ 錫爐中 5 秒 2. 焊料: 無鉛焊料 3. 助焊劑: 松香助焊劑
	Heat endurance of flow soldering Reference documents: GJB 360B-2009 Method 210 耐焊錫熱測試 DIP Type*	1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$ 1. 無明顯的外觀缺陷 2. 感值變化不超過 10% 3. 直流電阻變化不超過 10%	1. Dip in solder pot at $260 + 0/-5^\circ\text{C}$ for 10 second. 2. Solder: lead free 1. 端子浸入 $260 + 0/-5^\circ\text{C}$ 錫爐中 10 秒 2. 焊料: 無鉛焊料

Scope of 3L products:

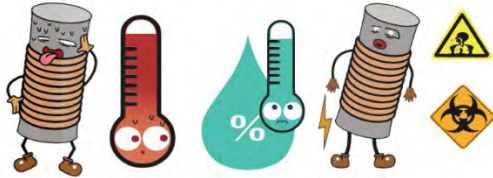
1. 3L components are manufactured and promoted for applying in general electronics devices such as audio-video equipment, home electric appliance, office automation equipment, communication equipment, power module, LED lighting, measurement hardware, machine accessory, etc.
2. If 3L product will be applied in area like automotive product, medical equipment, military and aerospace except general electronic device, please keep 3L sales informed in advance. 3L shall not be held liable for any malfunction or breakdown caused by using product in the condition which is inconsistent with that recommended by 3L.
3. If there is problem occurring when using product or information on 3L's catalogue, which may affect industrial property or any other rights of 3L Group (or a third party), 3L Group shall not be held liable in such situation, nor grant any license to the offending party.
4. Some parts of this publication contain statements about the suitability of our products for certain areas of application. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application.
5. Generally, 3L might not be familiar with either customer's specific application or actual requests as customer does. As a result, customer shall be responsible for checking and confirming whether 3L product with the performance described in the product specification is suitable for using in customer's particular application or not.
6. We also have to point out that in individual cases, any trouble or failure of electronic components happens during their long span cannot not be completely cleared even if someone operates according to instruction with existing technology.
7. Please pay attention to the storage conditions that temperature: below 35°C and humidity: 35-65% RH. If product is preserved for more than 1 year, the solderability of their terminals may be deteriorated.
8. 3L recommend reflow soldering for SMT product and wave soldering for DIP product while for specific DIP product, iron soldering might be preferred. Please confirm with 3L if other soldering method is applied to prevent issue such as short, open, fracture, deformation and etc., otherwise 3L will not take any responsibility for above issue.
9. The aforementioned items do not apply to individual agreements and the foregoing customer-specific products.

Please read cautions and warnings, important notes at the end of this document.

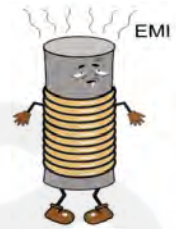
If you have any question, please contact 3L.

General instruction for parts usage:

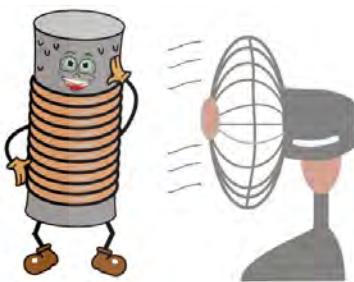
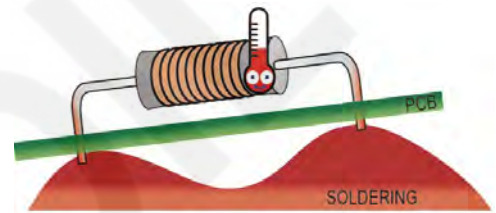
1. Please pay more attention to the installation position of the non-magnetic shield type coil when you design the printed circuit board to prevent malfunction caused by magnetic interference.



2. Product should not be exposed to environment with high temperature, high humidity, dust, corrosive gas and etc.



3. The soldering conditions should also be observed. Temperature mentioned refers to the temperature of wave soldering for PIN or terminals but not the temperature of product itself.



4. Please take the thermal design into consideration when choosing appropriate product, because the coil generates heat when electric current is applied.

5. Please don't use products in a place with dewing. Please be careful when products is applied in a sealed condition since dewing would happen due to temperature change.

6. Please always handle products carefully to prevent any damage caused by dropping down or inappropriate removing.



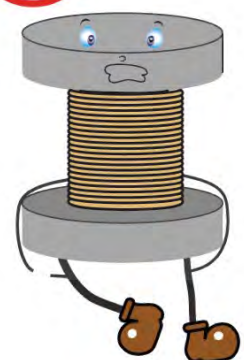
7. Don't touch electrodes directly with bare hands since oil secretions may do harm to solderability.

8. Don't bend the terminals with excessive stress in case of any wire fracture.



9. Please ensure that all terminals and case lugs are completely fixed onto PCB by soldering, and avoid placing coils near the edge of the PCB.

10. Don't rinse coils by yourself and please contact 3L if necessary.



Please read cautions and warnings, important notes at the end of this document.

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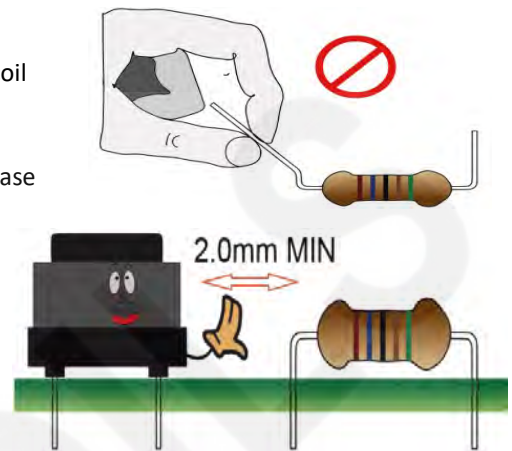


11. Since our SMD coils are designed for automatic mounting, please be careful when soldering manually. Please don't touch any exposed winding part and coil should not be used guiding by electrode in automatic mounting.

12. Our specification specifies the quality of the component as a single unit. Please ensure the component is thoroughly evaluated in your application circuit.

13. When using our high voltage inverter transformers, please place it 2mm away from other electric conductors.

14. The following points must be paid attention to if the components are potted or glued to stick in customer applications:



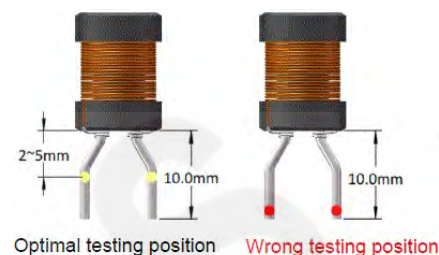
- Many potting materials shrink as they harden. Therefore, they exert a pressure on the plastic housing or core, which may have a deleterious effect on electrical performance. In extreme cases, it would damage the mechanical performance of core or plastic housing.
- It is necessary to check whether the potting material used would lead to undesirable performance or break down of insulating layer of enameled wire, plastic bobbin or glue.
- The potting material can affect the high-frequency behavior of components.
- Ferrites are sensitive to direct shock, which might hurt or even break the core.
- For non-Alloy or non-coated molded inductors, its surface might become rusted if it was left in the humid environment. However, its electrical performance would not be affected.
- Even for customer-specific products, conclusive validation of the component in the circuit can only be carried out by customer.

Please read cautions and warnings, important notes at the end of this document.

If you have any question, please contact 3L.

Note 1. The general testing condition is Temperature: 25 +/- 5°C (Room temperature) and humidity: 35-65% RH, which is applied to all products except specific product.

Note 2. For DIP type products, when the pin length is more than 5mm, the test position should be at 2-5mm away from the bottom of the product; For SMT type products, it is suggested to ensure better contact between the products and the tooling, shown as the right picture:



1. Inductance Test

There could be measurement deviations with different instruments due to different test principles / internal resistance. Open and Short compensation should be performed before testing. Select the measurement fixture or testing wire that goes with the original instrument.

2. Leakage Inductance Test

There could be measurement deviations with different instruments due to different test principles / internal resistance. Open and Short compensation should be performed before testing. Select the measurement fixture or testing wire that goes with the original instrument.

3. DCR Test

Shorten the testing wire as much as possible to ensure better contact between the products and the tooling; there would be deviations for the DCR if the testing tooling contact surface is worn out or if the testing method is not correct, especially for low DCR products.

4. Rated Current, Saturation Current, Temperature Rise Current

The saturation current is decided according to the initial inductance drop amount; the rated current is generally taken by the smaller value between the saturation current and temperature rise current.

5. Q Factor / SRF / Z Test

Shorten the pin length as much as possible to ensure better contact between the products and the tooling ;there can be deviation if the testing tooling contact surface is worn out or if the testing method is not correct.

6. Turns Ratio and Phase Test

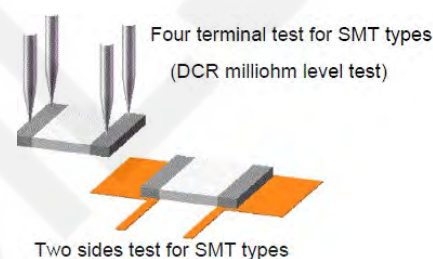
There would be deviations for turn counts ratio when there is magnetic leakage or air gap in the core center, please pay attention to the differences during testing. If the air gap is too large, then use the planar cores for confirmation; be careful to choose the foot position when testing the polarity.

7. Hi-Pot Test

Choose AC or DC accordingly during Hi-pot testing since they are different. If the humidity is too high or there is pollution on the surface, the Hi-pot test might fail. Please avoid testing in high humidity condition and keep the tooling and products clean. The Hi-pot test is destructive test and repeat testing should be avoided.

8. IWT Test

Carefully choose the voltage and standard sample for the testing, IWT test is destructive testing and repeat testing should be avoided.



Please read cautions and warnings, important notes at the end of this document.

If you have any question, please contact 3L.