

Products Specification For Approval

Customer Name:

Product Description: Cmmon Mode Chokes

Customer Part Name:

TNK Part Name: WFCM4532L-510

Specification No.: PS- WFCM4532L-510-TNK-A0

Issue Date: 2023-09-07

Customer's Approval This specification is received (Signature)	Approved by	Checked by	Created by
	Zou Bin 2023/09/07	Zhou Jun 2023/09/07	Li Luo Hui 2023/09/07

1. Scope & Outline

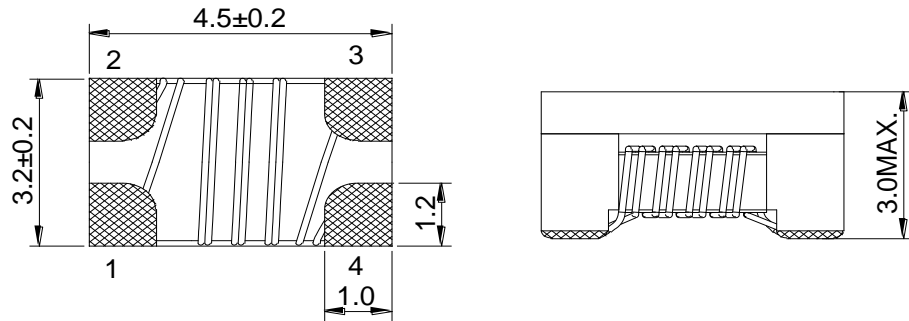
RoHs compliance product.

2. Safety Specification

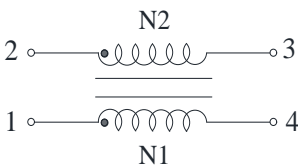
Common Mode Chokes

3. Appearance

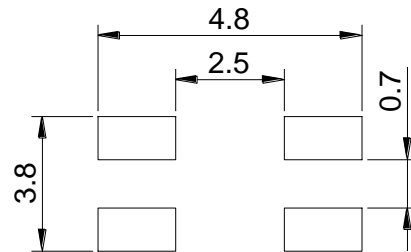
3-1. Dimensions(Unit: mm)



3-2.Pin Connection



3-3.Recommended Land Patterns(Unit: mm)



4. Electrical Specifications (at 25°C)

Item	Specification	Measuring condition
Inductance	51uH+50%-30%	100kHz/0.1V
Impedance	1000Ω Min.(2800Ω Typ.)	10MHz
D.C.R	1000mΩ Max.	At 25°C
Temperature Rise Current※1	200mA Max.	
Rated Voltage※2	50Vdc Max.	
Insulation Resistance※3	10MΩ Min.	

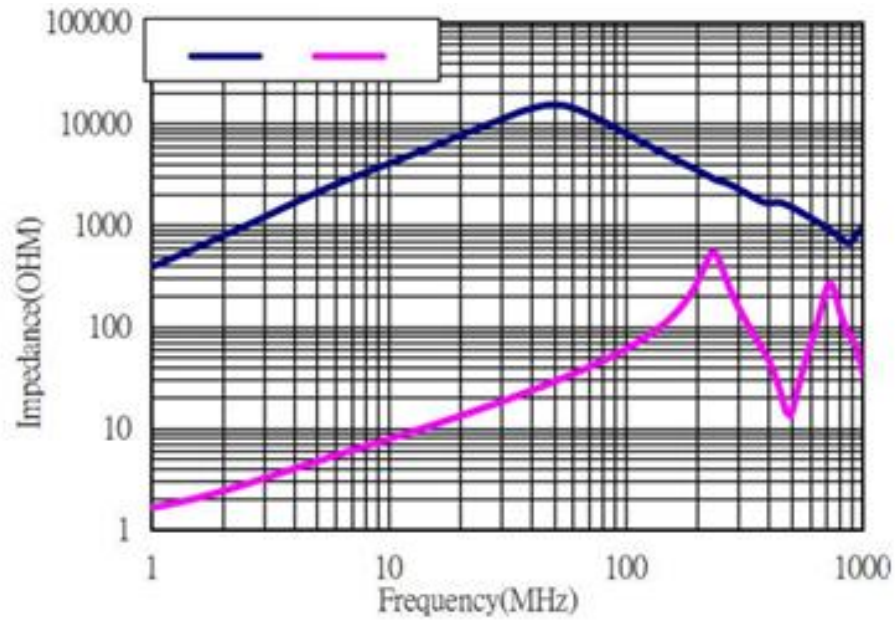
※1 Temperature Rise Current: The DC current at which temperature rise is $\Delta T=40^{\circ}\text{C}$ ($T_a=25^{\circ}\text{C}$).

PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceeded 125°C under worst case operating conditions verified in the end application.

※ Rated current: I_{sat} and I_{rms} whichever is lower.

Note: The rated current is subject to change depending on the cooling.

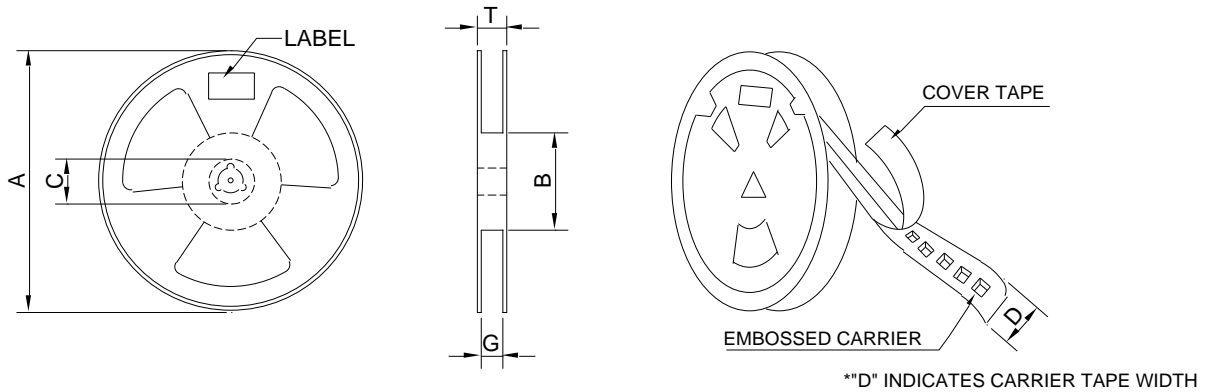
5. Impedance plot



6.Package Specification:

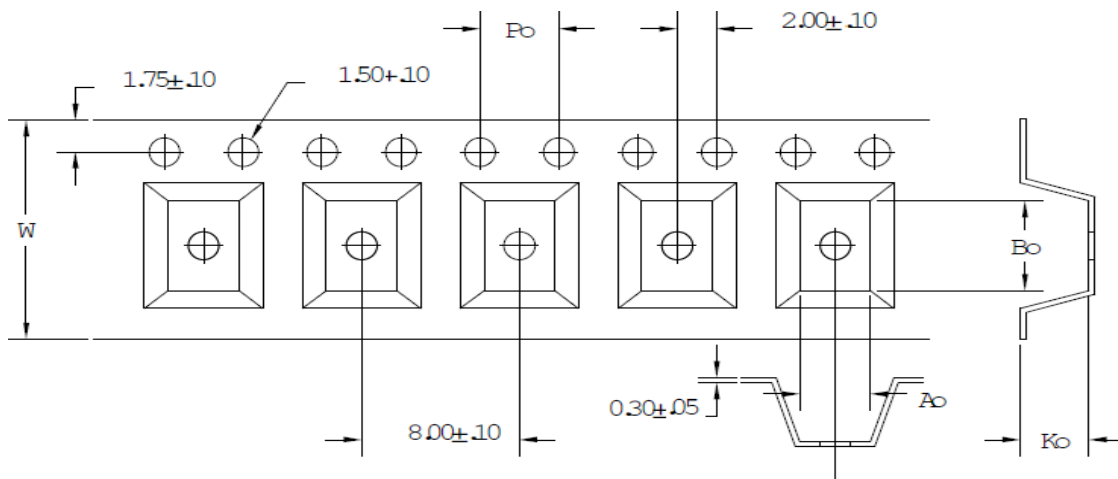
6-1. Taping Specification:

6-1-1. Reel Dimensions (Unit: mm)



Reel size	QTY	A	B	C	D	G	T
13"	(pcs/reel)	mm	mm	mm	mm	mm	mm
	500	178±2	57±2	12.5±0.5	12.0±0.5	12.0 ±0.5	12.4±2.0

6-1-2. Taping Dimensions (Unit: mm)



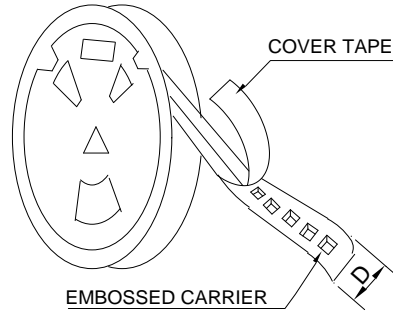
A0	B0	W	K0	PO
mm	mm	mm	mm	mm
4.50±0.5	5.50±0.5	12.0±0.3	4.0±0.5	4.0±0.1

6-1-3. Packaging style of box.

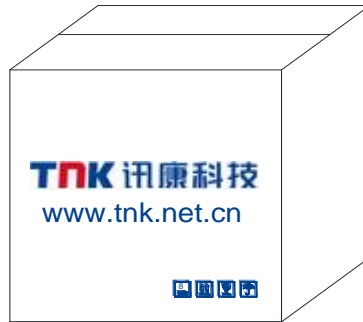
6-1-3-1. Packing box is composed of the inner box and outer box.

6-1-3-2. One inner box consisting of 2 reels is packed in an outer box, thus 1000 products put in an outer box.

6-1-3-3. Paper cushions are placed on the top and bottom side of the outer box.



500 pcs in 1 reel (500pcs/reel) ,2 reels in an inner box (1000pcs/inner box)



5 inner box in an outer box (5000pcs/Carton)

6-1-4.Label:

6-1-4-1. Use TNK standard label when the customer has no specified label.

6-1-4-2. When the customer has a designated label, use the customer specific label.

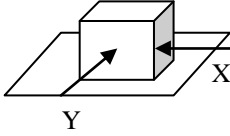
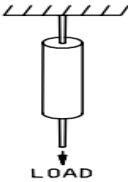
6-1-5.Notes:

6-1-5-1. This specification defines the standard packaging style and is subject to change depending on quantity or fractions.

6-1-5-2. Inside of cases shall be filled with cushions to keep the products stable.

6-1-5-3. Inspection Certificate: Attach size data and the electric characteristic result for each shipping lot as "Inspection Certificate".

7. Reliability Test

Item	Specified Value	Test Method and Remarks														
1. Operating temperature range	-40°C~+125°C	Including self-generated heat.														
2. Storage temperature range	-40°C~+125°C															
3. External appearance	The coil has no external defects	On visual inspection.														
4. Temperature characteristics	Inductance coefficient is (0~2000ppm/°C) under -40~+125°C	Measurement of inductance shall be taken at room temperature and Max. Min. operating temperature.														
5. Terminal strength test	No mechanical damage such as pin pull out, come off PCB board.	<p>Terminal (electrode) Strength (For SMD) The test samples shall be soldered to the test board by the reflow. Applied force: 10N to X and Y directions. Duration: 5s.</p>  <p>Terminal Strength (For SMD) A static load 10.0N shall be applied to each terminal for 5S. no mechanical damage such as pin pull out, wire open, etc.</p> 														
6. Vibration test	The electrical parameters should meet the specification requirements. No significant abnormality in appearance.	<p>The test samples shall be soldered to the test board by the reflow. Then it shall be submitted to below test conditions.</p> <table border="1" data-bbox="756 1285 1404 1572"> <tr> <td>Frequency Range</td> <td colspan="2">10~55Hz</td> </tr> <tr> <td>Total Amplitude</td> <td colspan="2">1.5mm(May not exceed acceleration 196 m/s²)</td> </tr> <tr> <td>Sweeping Method</td> <td colspan="2">10Hz to 5 Hz to 10Hz for 1 min.</td> </tr> <tr> <td rowspan="3">Duration</td> <td>X</td> <td rowspan="3">1 hour in each of 3 mutually perpendicular directions (total 3hours).</td> </tr> <tr> <td>Y</td> </tr> <tr> <td>Z</td> </tr> </table> <p>Recovery: At least 2hrs of recovery under the standard condition after the test, after which measurement shall be made and compared with the initial values.</p>	Frequency Range	10~55Hz		Total Amplitude	1.5mm(May not exceed acceleration 196 m/s ²)		Sweeping Method	10Hz to 5 Hz to 10Hz for 1 min.		Duration	X	1 hour in each of 3 mutually perpendicular directions (total 3hours).	Y	Z
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	Y															
	Z															
7. Solderability	At least a 90% continuous smooth new solder coating	The terminals shall be immersed in flux for about 5 sec then dipped in melting solder at 245±5°C for 5±0.5sec.														

<p>8. Resistance to soldering heat</p>	<p>The electrical parameters should meet the specification requirements. No significant abnormality in appearance.</p>	<p>Resistance to soldering heat(For SMD) The test samples shall be exposed to the solder reflow device as following fig(Peak temperature 260°C)for 2times with a cooldown in between.</p> <p>Recovery: At least 2hrs of recovery under the standard condition after the test, after which measurement shall be made and compared with the initial values.</p> <p>See Figure 1 below</p> <p>Resistance to soldering heat(For SMD) Terminals shall be immersed in solder of 260±5°C to the depth within 1.5mm of the coil body for 10±1 sec. Recovery: At least 2hrs of recovery under the standard condition after the test, after which measurement shall be made and compared with the initial values.</p>						
<p>9. Humidity test</p>	<p>The electrical parameters should meet the specification requirements. No significant abnormality in appearance.</p>	<p>The test samples shall be stored in a thermostatic chamber set at specified temperature and humidity as shown in below table.</p> <table border="1" data-bbox="756 947 1238 1077"> <tr> <td>Temperature</td> <td>30±2°C</td> </tr> <tr> <td>Humidity</td> <td>90~95%RH</td> </tr> <tr> <td>Time</td> <td>96±4hours</td> </tr> </table> <p>Recovery: At least 2hrs of recovery under the standard condition after the test, after which measurement shall be made and compared with the initial values.</p>	Temperature	30±2°C	Humidity	90~95%RH	Time	96±4hours
Temperature	30±2°C							
Humidity	90~95%RH							
Time	96±4hours							
<p>10. High temperature expose test</p>	<p>The electrical parameters should meet the specification requirements. No significant abnormality in appearance.</p>	<p>The test samples shall be stored in a thermostatic chamber set at specified temperature as shown in below table.</p> <table border="1" data-bbox="756 1285 1238 1375"> <tr> <td>Temperature</td> <td>125±2°C</td> </tr> <tr> <td>Time</td> <td>96±4hours</td> </tr> </table> <p>Recovery: At least 2hrs of recovery under the standard condition after the test, after which measurement shall be made and compared with the initial values.</p>	Temperature	125±2°C	Time	96±4hours		
Temperature	125±2°C							
Time	96±4hours							
<p>11. Low temperature expose test</p>	<p>The electrical parameters should meet the specification requirements. No significant abnormality in appearance.</p>	<p>The test samples shall be stored in a thermostatic chamber set at specified temperature and humidity as shown in below table.</p> <table border="1" data-bbox="756 1626 1238 1715"> <tr> <td>Temperature</td> <td>-40±2°C</td> </tr> <tr> <td>Time</td> <td>96±4hours</td> </tr> </table> <p>Recovery: At least 2hrs of recovery under the standard condition after the test, after which measurement shall be made and compared with the initial values.</p>	Temperature	-40±2°C	Time	96±4hours		
Temperature	-40±2°C							
Time	96±4hours							

8.Recommended reflow curve:

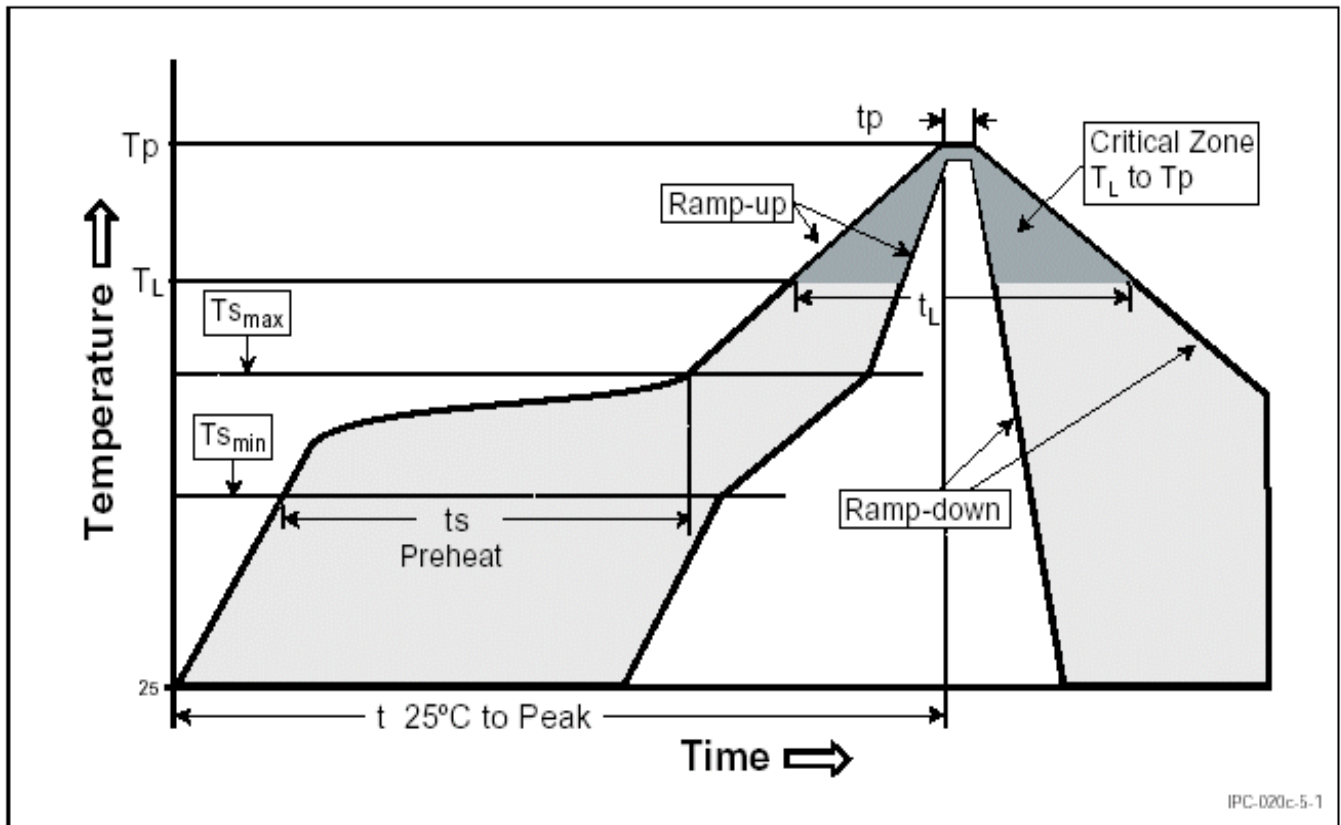


Figure 1

TL = 217°C

Tp = 260±5°C

ts=60-180s Ts max=200°C Ts min=150°C

tL=60-150s tp=tp=20-40s T25°C to peak=8min max

Ramp up rate=3°C/s max

Ramp down rate=6°C/s max

***ROHS Compliant**

***Solder wire Sn 99/Ag0.3/Cu 0.7**

9. Others:

- 9-1. The contents of this document only assures the characteristics and quality of the sole components. Regarding its use, please evaluate and check that they work correctly when fixed to your equipment.
- 9-2. We will not take any responsibility for any troubles caused by usage beyond the range that this document specifies.
- 9-3. The products in this specification are targeted for use in general electrical equipment. Please do not apply on equipment that need. Especially high reliability and/or the defects caused by the product will have direct influence on a person's life or property.
- 9-4. Period of quality assurance shall be 1 year from the date of shipment. The products must be controlled normal conditions, thus in cases where the products are put under abnormally high temperature and humidity or contamination and damage by natural disasters or other reasons, the above quality assurance period will not be valid.
- 9-5. Both parties are under confidentiality obligation regarding the information contained in this document.

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