Form No: T0000X-1-0000-TBM01-130100870

Specification for Approval

Date: 2013/1/21

Customer : 東莞台慶

TAI-TECH P/N: MCF0806NF2-900T01

CUSTOMER P/N:

DESCRIPTION:

QUANTITY: pcs

Customer Approval Feedback

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Multilayer Common Mode Choke Coils

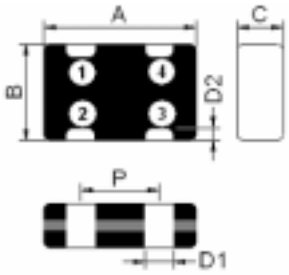
MCF0806NF2-900T01

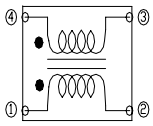
1. Scope

This specification applies to Multilayer Common Mode Choke Coil, MCF Series Its Application is limited for the High speed differential transmission line like as followings.
USB, LVDS, MIPI, MDDI, MHL, HDMI, DVI.

Halogen-free Pb-free Certificate GreenPartner

2. Dimensions





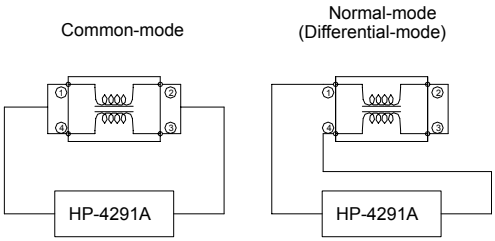
Chip Size						
Size	A	B	C	P	D1	D2
0806	0.85±0.05	0.65±0.05	0.40 ±0.05	0.50±0.10	0.27±0.10	0.20+0.05/-0.1

Units: mm

3. Part Numbering

MCF	0806	NF2	-	900	T	01
A	B	C		D	E	F

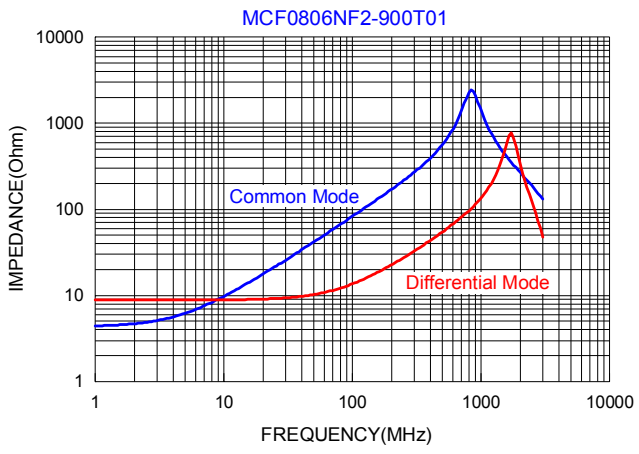
A: Series
B: Dimension A x B
C: Material Lead Free Code
D: Impedance Common Mode Impedance 900=90Ω
E: Packaging T=Taping and Reel , B=Bulk(Bags)
F: Rated Current 01=100mA



4. Specification

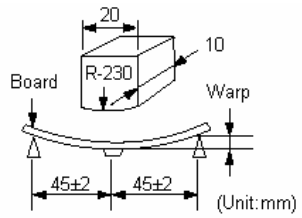
Tai-Tech Part Number	Common Mode Impedance (Ω)	Test Frequency (MHz)	Rated Voltage (Vdc) max.	Insulation Resistance (MΩ) min.	DC Resistance (Ω) max.	Rated Current (mA) max.
MCF0806NF2-900T01	90±20%	100	5	100	6.5	100

■ Impedance-Frequency Characteristics



5. Reliability and Test Condition

<table>
<tr><th>Item</th><th>Performance</th><th>Test Condition</th></tr>
<tr><td>Series No.</td><td>MCF</td><td>--</td></tr>
<tr><td>Operating Temperature</td><td>-40~+85℃
(Including self-generated heat)</td><td>--</td></tr>
<tr><td>Transportation
Storage Temperature</td><td>-40~+85℃</td><td>For long storage conditions, please see the Application Notice</td></tr>
<tr><td>Impedance (Z)</td><td rowspan="4">Within the specified tolerance</td><td>Measuring equipment:4291A or its equivalent
Measuring jig: 16192A（or its equivalent）</td></tr>
<tr><td>Insulation Resistance</td><td>Measuring points: ①to② or ③to④
Measuring voltage: Rated voltage</td></tr>
<tr><td>DC Resistance</td><td>Measuring points: ①to② or ③to④</td></tr>
<tr><td>Rated Current</td><td></td></tr>
<tr><td>Vibration</td><td>Per table 1.
<u>Table 1</u>
<table>
<tr><td>Appearance</td><td>No remarkable Defect</td></tr>
<tr><td>Commom Impedance change rate</td><td>Within±20%</td></tr>
<tr><td>Insulation resistance</td><td>100mΩ min</td></tr>
</table></td><td>Test sample shall be soldered to test board and the test shall be conducted under the conditions shown in Table 2.
<u>Table 2</u>
<table>
<tr><td>Vibraiton frequency range</td><td colspan="2">10Hz to 55Hz</td></tr>
<tr><td>Overall amplitude</td><td colspan="2">1.5mm</td></tr>
<tr><td>1 cycle</td><td colspan="2">1min.(10→55→10Hz)</td></tr>
<tr><td rowspan="3">Time</td><td>X</td><td rowspan="3">2 hours each</td></tr>
<tr><td>Y</td></tr>
<tr><td>Z</td></tr>
</table></td></tr>
<tr><td>Solderability</td><td>More than 75% of terminal electrode shall be covered with fresh solder.</td><td>Test sample shall be immersed into molten solder under the conditions shown in Table 3 after immersed into flux.
After this, test samples shall be taken out and visually checked.
The speed for immersion and taking out shall be 25 mm/s.
<u>Table 3</u>
<table>
<tr><td>Solder temperature</td><td>245℃±3℃</td></tr>
<tr><td>Immersion time</td><td>4s±1s</td></tr>
</table></td></tr>
<tr><td>Resistance to Soldering Heat</td><td>Per table 1.</td><td>Test sample shall be immersed into molten solder after immersed into flux and preheated under the conditions shown in Table 4.
After this, test samples shall be taken out and measured after kept at room temperature for 2 to 3 hours.(Note 1)
The speed for immersion and taking out shall be 25mm/s.
<u>Table 4</u>
<table>
<tr><td>Preheating</td><td>150℃, 3min.</td></tr>
<tr><td>Resistance to Soldering Heat</td><td>260℃±5℃</td></tr>
<tr><td>Immersion time</td><td>10s±0.5s</td></tr>
</table></td></tr>
<tr><td>Thermal Shock</td><td>Per table 1.</td><td>Steps 1 to 4 shown in Table 5 as one cycle shall be repeated 5 times.
After the test, keep the test sample at a normal temperature with a normal humidity for 2 to 2 hours, them measurement shall be conducted.(Note 1)
<u>Table 5</u>
<table>
<tr><th>Step</th><th>Temperature(℃)</th><th>Duration (min)</th></tr>
<tr><td>1</td><td>-40℃+0/-3℃</td><td>30±3</td></tr>
<tr><td>2</td><td>Normal temp</td><td>2~3</td></tr>
<tr><td>3</td><td>+85℃+3/-0℃</td><td>30±3</td></tr>
<tr><td>4</td><td>Normal temp</td><td>2~3</td></tr>
</table></td></tr>
<tr><td>Resistance to Humidity</td><td>Per table 1.</td><td>Test board shall be kept in a thermo hygrostat at temperature of 40℃±2℃ and relative humidity of 90% to 95% for 500+24/-0 hours.
After the test, keep the test sample at a normal temperature with a normal humidity for 2 to 3 hours, then measurement shall be conducted.(Note 1)</td></tr>
<tr><td>High Temperature Load Life Test</td><td>Per table 1.</td><td>Test board shall be kept in a thermostatic oven with temperature of 85℃±2℃ for 500+24/-0 hours while supplying ① to ② and ③-④ with rated current.
After the test, keep the test sample at a normal temperature with a normal humidity for 2 to 3 hours, them measurement shall be conducted.(Note 1)</td></tr>
</table>

Item	Performance	Test Condition
High Temperature Life Test	Per table 1.	Test board shall be kept in an atmosphere with temperature of 85℃±2℃ for 500+24/-0 hours. After the test, keep the test sample at a normal temperature with a normal humidity for 2 to 3 hours, then measurement shall be conducted.(Note 1)
Bending Strength	Appearance: No mechanical damage. 	Warp : 2mm(1210),1mm(0806) Testing board : Glass epoxy-resin substrate Thickness : 0.8mm

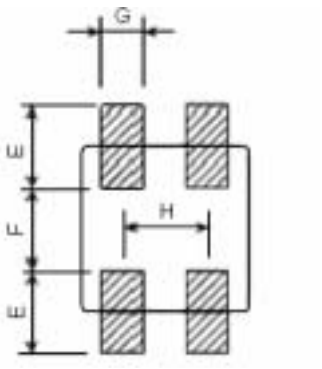
(Note 1) If question is found in the result of measurement, another measurement shall be conducted after test samples shall be kept for 48+/-2 hours.

6. Soldering and Mounting

6-1. Recommended PC Board Pattern

Chip Size						Land Patterns For Reflow Soldering			
Type	**A**	**B**	**C**	**D1**	**D2**	**E**	**F**	**G**	**H**
0806	0.85±0.05	0.65±0.05	0.40 ±0.05	0.27±0.10	0.20+0.05/-0.1	0.25~0.35	0.25~0.35	0.25~0.35	0.5
1210	1.25±0.15	1.0±0.15	0.55 ±0.10	0.30±0.10	0.25+0.15/-0.1	0.45~0.55	0.7~0.8	0.25~0.35	0.55

Units: mm



PC board should be designed so that products can prevent damage from mechanical stress when warping the board.
Products shall be positioned in the sideway direction against the mechanical stress to prevent failure.

6-2. Soldering

Mildly activated rosin fluxes are preferred. The terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.
Note.

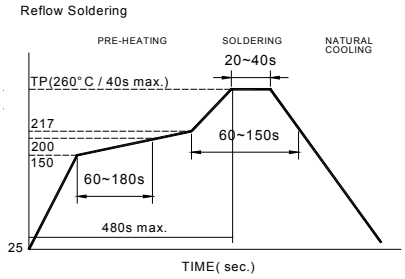
If wave soldering is used ,there will be some risk.
Re-flow soldering temperatures below 240 degrees, there will be non-wetting risk

6-2.1 Lead Free Solder re-flow:
Recommended temperature profiles for lead free re-flow soldering in Figure 1.

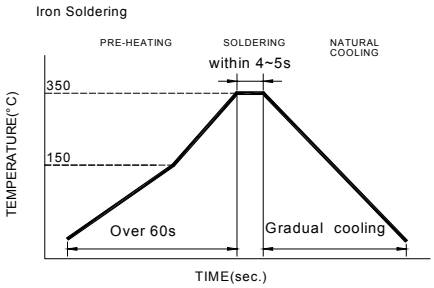
6-2.2 Soldering Iron:

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended. for Iron Soldering in Figure 2.

- Preheat circuit and products to 150℃
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 350℃ tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5sec.



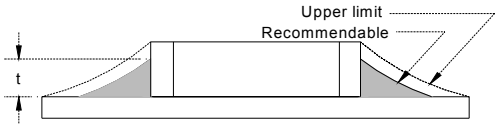
Reflow times: 3 times max
Fig.1



Iron Soldering times：1 times max
Fig.2

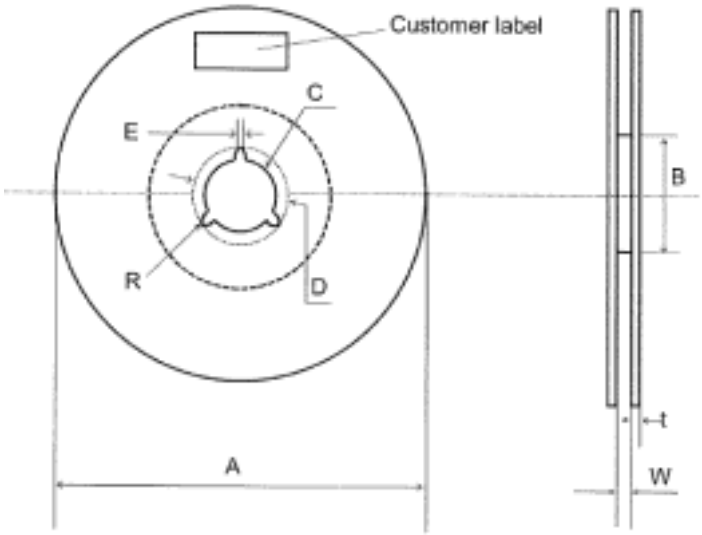
6-2.3 Solder Volume:

Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceed as shown in right side:
Minimum fillet height = soldering thickness + 25% product height



7.Packaging Information

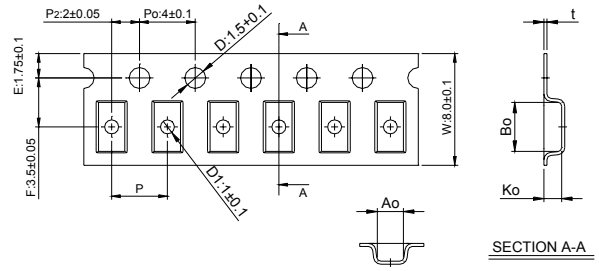
7-1. Reel Dimension



Code	ψA	ψB	ψC	ψD	E	W	t	R
Dimension	178±2.0	50 min	13±0.2	21±0.8	2.0±0.5	10±1.5	2.5 max	1.0

Units: mm

7-2. Tape Dimension (paper)



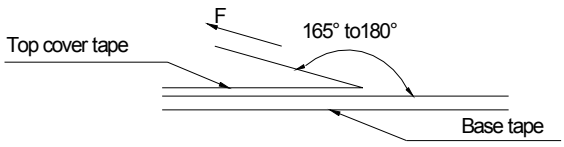
Series	Bo	Ao	Ko	P	t
0806	0.95±0.05	0.75±0.05	0.55±0.05	4.0±0.10	0.3 max
1210	1.40±0.05	1.15±0.05	0.65±0.05	4.0±0.10	0.3 max

Units: mm

7-3. Packaging Quantity

Chip size	0806	1210
Chip /Reel	10000	5000
Inner box	50000	25000
Middle box	250000	125000
Carton	500000	250000

7-4. Tearing Off Force



The force for tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions.

Room Temp. (℃)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

Application Notice

· Storage Conditions

To maintain the solder ability of terminal electrodes:

1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
2. Temperature and humidity conditions: Less than 40℃ and 60% RH.
3. Recommended products should be used within 12 months from the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.

· Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

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