

Specification for Approval

Date: 2021/12/21

Customer : 立创

TAI-TECH P/N: WCM2012F2SF-900T04-TC

CUSTOMER P/N: _____

DESCRIPTION: _____

QUANTITY: _____

REMARK:	
Customer Approval Feedback	

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TAI-TECH Advanced Electronics Co., Ltd

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R&D Center

APPROVED	CHECKED	DRAWN
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Wire Wound Type Common Mode Filter

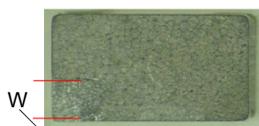
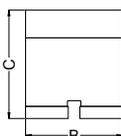
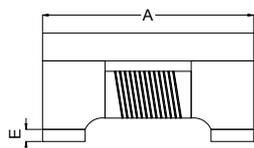
WCM2012F2SF-900T04

1.Features

1. High common mode impedance at high frequency effects excellent noise suppression performance.
2. WCM2012F2SF series realizes small size and low profile. 2.0x1.2x1.2 mm.
3. 100% Lead(Pb) & Halogen-Free and RoHS compliant.

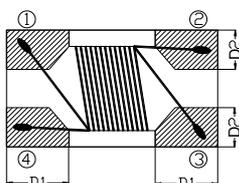


2.Dimension



當破損面積 < 0.3mm², 產品列入允收品範圍

產品破損寬度



Series	A(mm)	B(mm)	C(mm)	D1(mm)	D2(mm)	E(mm)
2012F2SF	2.0±0.2	1.2±0.2	1.2±0.2	0.55±0.1	0.46±0.1	0.15±0.1

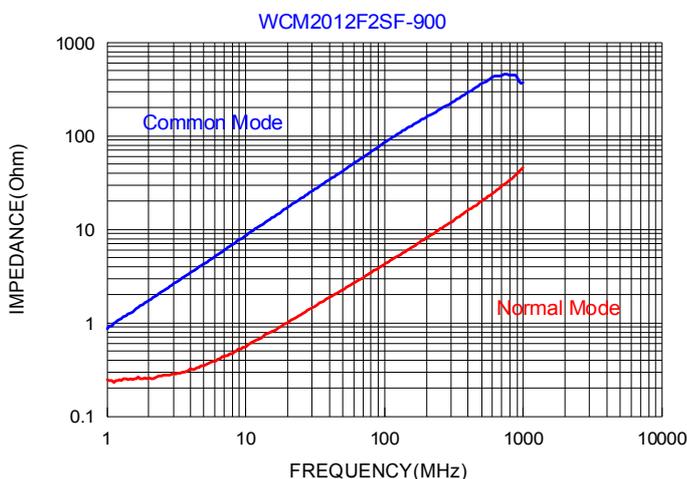
3.Part Numbering



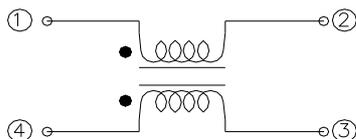
- A: Series
- B: Dimension
- C: Material Ferrite
- D: Number of Lines 2=2 lines
- E: Type S=One Circuit Type , N=Unshielded
- F: Lead free
- G: Impedance 900=90Ω
- H: Packaging T=Taping and Reel, B=Bulk
- I: Rated Current 04=400mA

4.Specification

TAI-TECH Part Number	Common mode Impedance (Ω)	Test Frequency (MHz)	DC Resistance (Ω) max.	Rated Current (mA)	Rated Volt. (Vdc)	Withstand Volt. (Vdc)	IR (Ω) min.
WCM2012F2SF-900T04	90±25%	100	0.30	400	50	125	10M



5.Schematic Diagram



6.Reliability and Test Condition

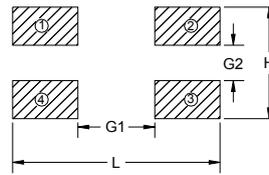
Item	Performance	Test Condition										
Electrical Characteristics Test												
Z(common mode)	Refer to standard electrical characteristics list.	HP-4291A+HP-16092A										
DCR		HP-4338B										
I.R.		Zentech 702A(Ultra High Resistance Meter)										
Rated Current		Applied the DC current to coils the impedance change should be less than ±25% to initial value and temperature rise should not be more than 30°C.										
Operating Temperature	-40°C~+125°C											
Storage Temperature	-40°C~+125°C,50~60%RH (Product without taping)											
Temperature Rise Test	30°C max.(Δt)	1.Applied the allowed DC current. 2.Temperature measured by digital surface thermometer										
Mechanical Performance Test												
Solderability Test ANSI /J-STD-002C Method B	More than 90% of terminal electrode should be covered with solder.	<p>After fluxing,component shall be dipped in a melted solder bath at 235±5°C for 4±1seconds.</p>										
Solder Heat Resistance MIL-STD-202 Method210F Condition B	1.Components should have not evidence of electrical and mechanical damage. 2. Impedance:within ±25% of initial value.	<p>Preheat:150°C 60secs. Solder:Sn-Cu0.5 Solder temperature: 260±5°C Flux:rosin. Dip time:10±0.5 secs.</p>										
Component Adhesion (Push test)	<table border="1"> <thead> <tr> <th>Series No.</th> <th>F(Kg)</th> </tr> </thead> <tbody> <tr> <td>WCM3216F2S</td> <td>0.8(min.)</td> </tr> <tr> <td>WCM2012F2S</td> <td>0.5(min.)</td> </tr> <tr> <td>WCM3216F2N</td> <td>0.8(min.)</td> </tr> <tr> <td>WCM2012F2N</td> <td>0.5(min.)</td> </tr> </tbody> </table>	Series No.	F(Kg)	WCM3216F2S	0.8(min.)	WCM2012F2S	0.5(min.)	WCM3216F2N	0.8(min.)	WCM2012F2N	0.5(min.)	<p>The device should be reflow soldered(255±5°C for 10sec.)to a finned copper substrate.A dynamometer force gauge should be applied the side of the component.The device must with-ST-F Kg without ailure of the termination attached to component.</p>
Series No.	F(Kg)											
WCM3216F2S	0.8(min.)											
WCM2012F2S	0.5(min.)											
WCM3216F2N	0.8(min.)											
WCM2012F2N	0.5(min.)											
Component Adhesion (Pull test)	<table border="1"> <thead> <tr> <th>Series No.</th> <th>F(Kg)</th> </tr> </thead> <tbody> <tr> <td>WCM3216F2S</td> <td>0.8(min.)</td> </tr> <tr> <td>WCM2012F2S</td> <td>0.5(min.)</td> </tr> <tr> <td>WCM3216F2N</td> <td>0.8(min.)</td> </tr> <tr> <td>WCM2012F2N</td> <td>0.5(min.)</td> </tr> </tbody> </table>	Series No.	F(Kg)	WCM3216F2S	0.8(min.)	WCM2012F2S	0.5(min.)	WCM3216F2N	0.8(min.)	WCM2012F2N	0.5(min.)	<p>1.Insert 10cm wire into the remaining open eye bend, the ends of even wire lengths upward and wind together. 2.Terminal shall not be remarkably damaged.</p>
Series No.	F(Kg)											
WCM3216F2S	0.8(min.)											
WCM2012F2S	0.5(min.)											
WCM3216F2N	0.8(min.)											
WCM2012F2N	0.5(min.)											

Item	Performance	Test Condition															
Reliability Test																	
High Temperature Life Test (Unload Test) MIL-PRF-27	1. Appearance: No damage. 2. Impedance: within $\pm 25\%$ of initial value. No disconnection or short circuit.	Temperature: $125 \pm 2^\circ\text{C}$. Duration: 1000 ± 12 hrs. Measured at room temperature after placing for 2 to 3 hrs.															
Low Temperature Life Test (Unload Test)		Temperature: $-40 \pm 2^\circ\text{C}$ Time: 500 ± 12 hr. Recovery: 4 to 24 hrs of recovery under the standard condition after the removal from test chamber.															
Thermal shock (Unload Test) MIL-STD-202G METHOD 107G Test condition A-3		<table border="1" data-bbox="1098 472 1437 696"> <thead> <tr> <th>Step</th> <th>Temperature($^\circ\text{C}$)</th> <th>Times(min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>$-55 + 0 / - 2^\circ\text{C}$</td> <td>15$\pm$1</td> </tr> <tr> <td>2</td> <td>Room Temp.</td> <td>5</td> </tr> <tr> <td>3</td> <td>$+85 + 2 / - 0^\circ\text{C}$</td> <td>15$\pm$1</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>5</td> </tr> </tbody> </table> Condition for 1 cycle Step1: $-55 + 0 / - 2^\circ\text{C}$ 15 \pm 1 min. Step2: Room temperature 5 min. Step3: $+85 + 2 / - 0^\circ\text{C}$ 15 \pm 1 min. Step4: Room temperature 5 min. Number of cycles: 100	Step	Temperature($^\circ\text{C}$)	Times(min.)	1	$-55 + 0 / - 2^\circ\text{C}$	15 \pm 1	2	Room Temp.	5	3	$+85 + 2 / - 0^\circ\text{C}$	15 \pm 1	4	Room Temp.	5
Step		Temperature($^\circ\text{C}$)	Times(min.)														
1	$-55 + 0 / - 2^\circ\text{C}$	15 \pm 1															
2	Room Temp.	5															
3	$+85 + 2 / - 0^\circ\text{C}$	15 \pm 1															
4	Room Temp.	5															
Humidity Resistance Test (Unload Test) MIL-STD-202G METHOD 103B Test condition C	Temperature: $40 \pm 2^\circ\text{C}$ Humidity: 90~ 95% Time: 500 ± 12 hr. Recovery: 4 to 24 hrs of recovery under the standard condition after the removal from test chamber.																
Humidity Resistance Test (Unload Test) MIL-STD-202G METHOD 103B Test condition C	Appearance: Cracking, shipping and any other defects harmful to the characteristics should not be allowed. Impedance: within $\pm 30\%$	Frequency: 10-55-10Hz for 15 min. Amplitude: 1.52mm Directions and times: X, Y, Z directions for 15 min. This cycle shall be performed 12 times in each of three mutually perpendicular directions (Total 9 hours).															

7.Soldering and Mounting

7-1. Recommended PC Board Pattern

	WCM2012F2S/F2N	WCM3216F2S/F2N
L	2.60	3.70
H	1.25	1.60
G1	1.10	1.90
G2	0.45	0.40



PC board should be designed so that products are not sufficient under mechanical stress as warping the board.

Products shall be positioned in the sideways direction against the mechanical stress to prevent failure.

7-2. Soldering

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. TAI-TECH 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.

7-2.1 Lead Free Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

7-2.2 Soldering Iron(Figure 3):

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.

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 355°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5 sec.

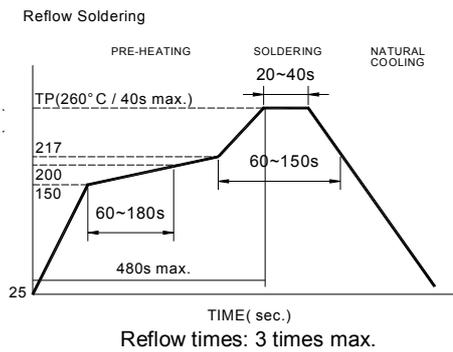


Fig.1

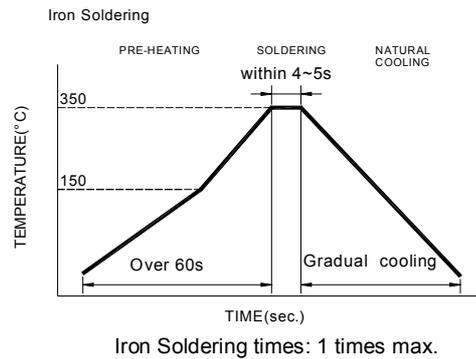
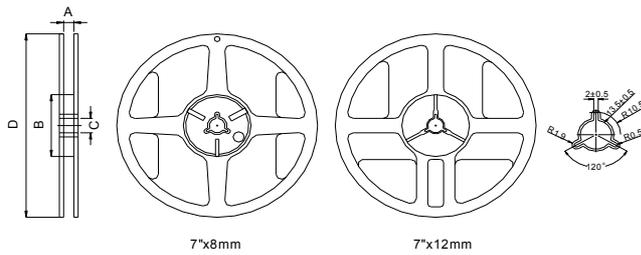


Fig.2

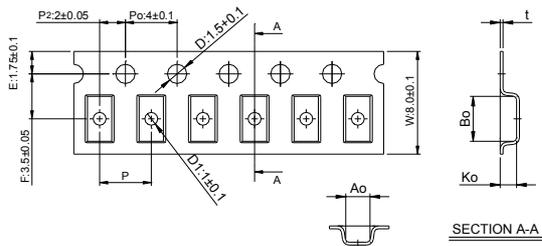
8.Packaging Information

8-1. Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	9.0±0.5	60±2	13.5±0.5	178±2

8-2. Tape Dimension / 8mm

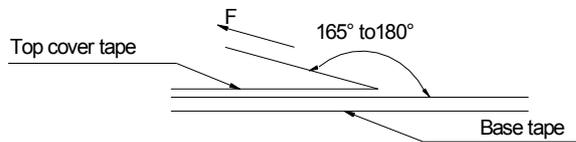


Series	Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
WCM2012F2S	201212	2.35±0.1	1.50±0.1	1.45±0.1	4.0±0.1	0.22±0.05
WCM3216F2S	321620	3.50±0.1	1.88±0.1	2.10±0.1	4.0±0.1	0.22±0.05
WCM2012F2N	201209	2.50±0.1	1.60±0.1	1.25±0.1	4.0±0.1	0.22±0.05
WCM3216F2N	321615	3.50±0.1	1.88±0.1	1.80±0.1	4.0±0.1	0.22±0.05

8-3. Packaging Quantity

Chip size	Chip/Reel	Inner Box	Middle Box	Carton
WCM2012F2S/F2N	2000/3000	10000/15000	50000/75000	100000/150000
WCM3216F2S/F2N	2000	10000	50000	100000

8-4. 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. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

Application Notice

- Storage Conditions
 - To maintain the solderability 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°C and 70% RH.
 3. Recommended products should be used within 6 months form 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.