

# Specification for Approval

Date: 2021/12/21

Customer : 立创

TAI-TECH P/N: WCM7060-301-S-M

CUSTOMER P/N: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

QUANTITY: \_\_\_\_\_

REMARK:	
Customer Approval Feedback	

西北臺慶科技股份有限公司  
**TAI-TECH Advanced Electronics Co., Ltd**

- 代理商:
- 深圳市天诚科技有限公司  
 Shenzhen TsaSun Technology Co., Ltd.  
 Room 209, 2/F, Block A, Tengfei Industrial Building, No.6,  
 Taohua Road, Futian District, Shenzhen  
 TEL: 0755-8335 8885 / 0755-8335 9885  
 E-mail: sales@tsasun.com  
 www.tsacoil.com

Sales Dep.

APPROVED	CHECKED
夏晓曼	夏晓曼

- 西北臺慶科技股份有限公司  
 TAI-TECH Advanced Electronics Co., Ltd  
Headquarter:  
 NO.1 YOU 4TH ROAD, YOUTH INDUSTRIAL DISTRICT, YANG-MEI,  
 TAO-YUAN HSIEN, TAIWAN, R.O.C.  
 TEL: +886-3-4641148 FAX: +886-3-4643565  
 http://www.tai-tech.com.tw  
 E-mail: sales@tai-tech.com.tw
- 臺慶精密電子(昆山)有限公司  
 TAI-TECH ADVANCED ELECTRONICS(KUNSHAN) CO., LTD  
 SHINWHA ROAD, KUNJIA HI-TECH INDUSTRIAL PARK, KUN-SHAN,  
 JIANG-SU, CHINA  
 TEL: +86-512-57619396 FAX: +86-512-57619688  
 E-mail: hui@tai-tech.com.tw

R&D Center

APPROVED	CHECKED	DRAWN
羅宜春	梁周虎	卜文娟

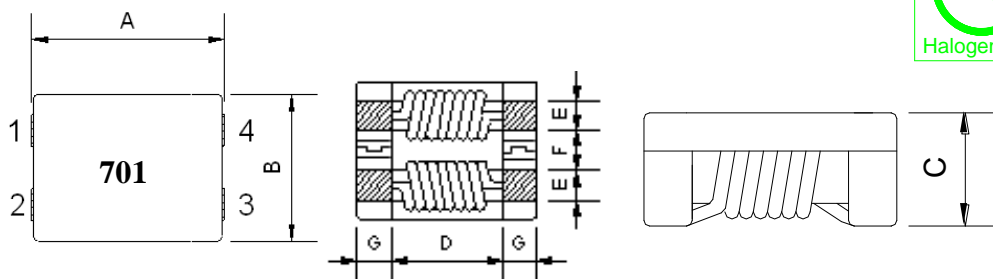
**Wire Wound Power Common Mode Filter** WCM7060FASF-SERIES-M

<b>ECN HISTORY LIST</b>					
REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN
1.0	18/11/08	新發行	楊祥忠	羅敏汎	張展耀
備 註					

# Wire Wound Power Common Mode Filter

WCM7060FASF-SERIES-M

## 1. Dimension



Series	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)
WCM7060	7.0±0.5	6.0±0.5	3.8 max.	3.5 typ.	1.5±0.5	1.5±0.5	1.7±0.5

Unit:mm

## 2. Part Numbering

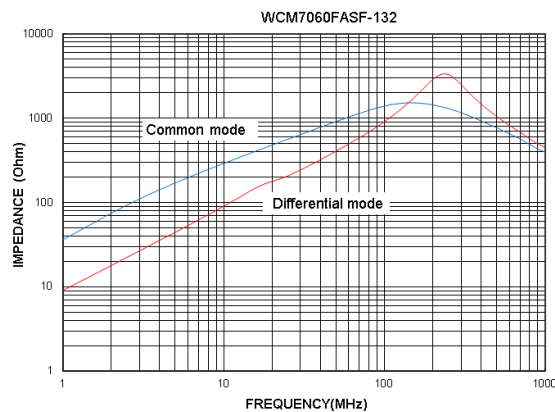
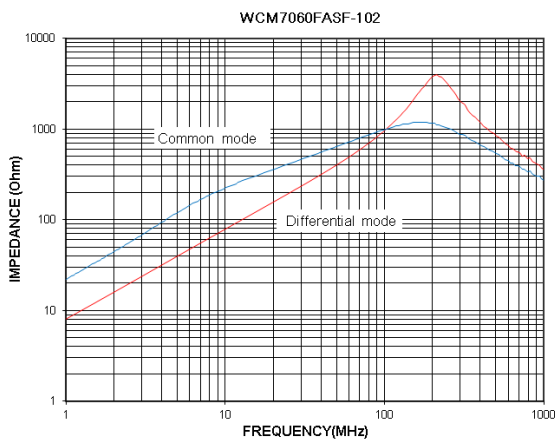
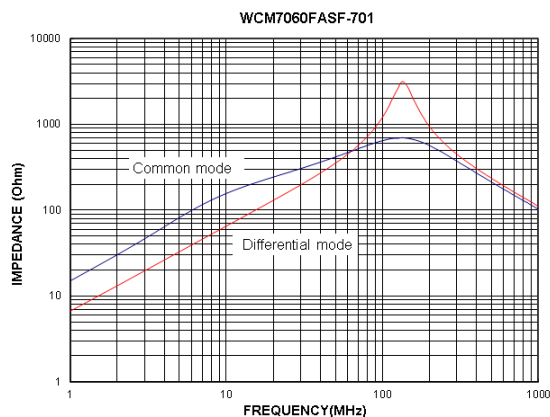
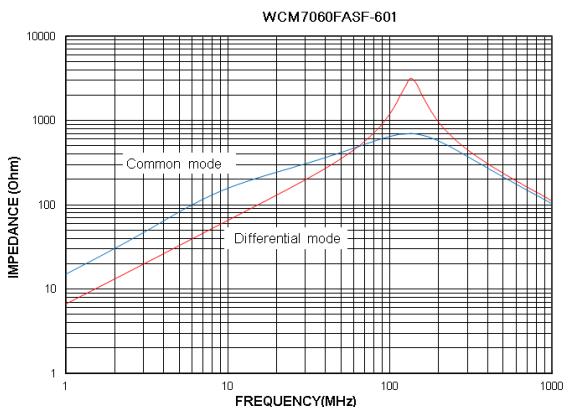
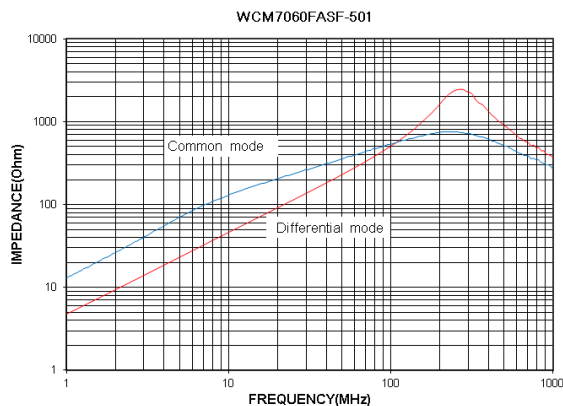
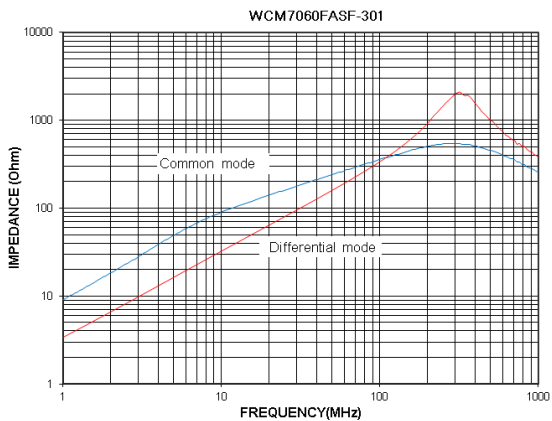
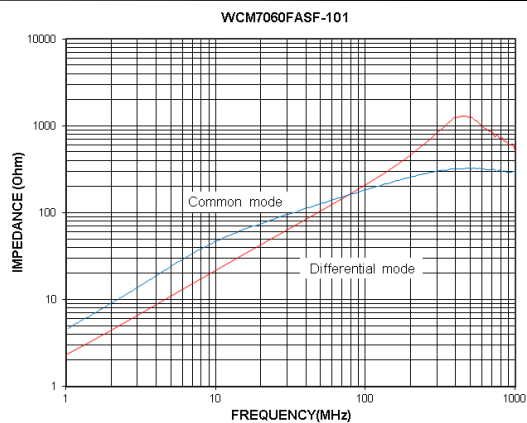
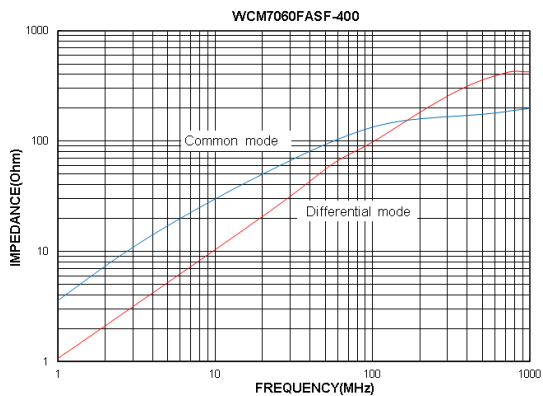


- A: Series
- B: Dimension
- C: Material                      Ferrite Core
- D: Process                        Assembled
- E: Type                            S=Shielded , N=Unshielded
- F: Lead free
- G: Impedance                    701=700Ω
- H: Marking                        印字:黑色 單向印字

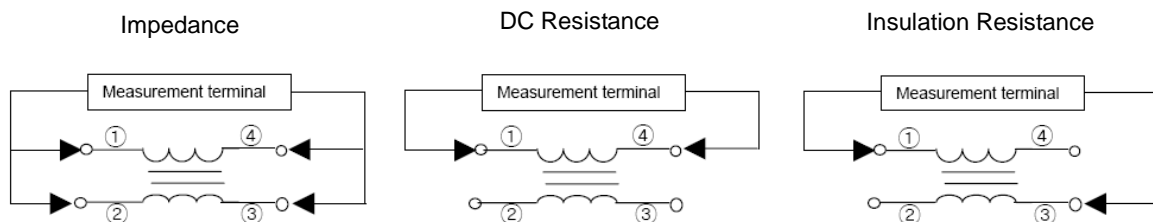
## 3. Specification

TAI-TECH Part Number	Impedance (Ω)		Test Frequency (MHz)	DC Resistance (mΩ) max. (1 line)	Rated Current (A) max.	Rated Volt. (Vdc) max.	Insulation Resistance (MΩ) min.
	min.	typ.					
WCM7060FASF-400-M	40	70	100	5	15	80	10
WCM7060FASF-101-M	100	140	100	10	9	80	10
WCM7060FASF-301-M	225	300	100	10	5	80	10
WCM7060FASF-501-M	400	500	100	10	5	80	10
WCM7060FASF-601-M	500	700	100	15	4	80	10
WCM7060FASF-701-M	500	700	100	15	4	80	10
WCM7060FASF-102-M	800	1020	100	17	3	80	10
WCM7060FASF-132-M	910	1300	100	20	3	80	10

Note:  
 Operating temperature -40~+125°C (Including self - temperature rise)  
 Measurement board data  
 Material : FR4  
 Board dimensions : 100 X 50 X 1.6t mm  
 Pattern dimensions: 45 X 30 mm (Double side board)  
 Pattern thickness : 50 μm

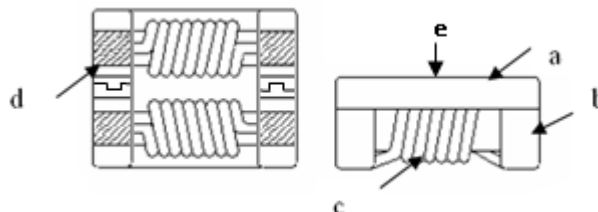


### 4. Schematic Diagram



### 5. Materials

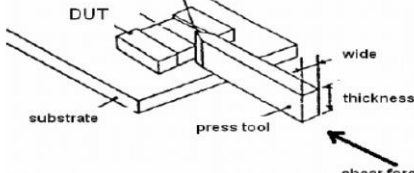
No.	Description	Specification
a.	Upper Plate	Ferrite core or same type
b.	Core	Ferrite Core
c.	Wire	Enameled Copper
d.	Termination	Tin (Pb Free)
e.	INK	BLACK



### 6. Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125°C (Including self - temperature rise)	
Storage temperature	-40~+125°C (on board)	
<b>Electrical Performance Test</b>		
Z(common mode)	Refer to standard electrical characteristics list.	Agilent-4291A+ Agilent -16197A
DCR		Agilent-4338B
I.R.		Agilent4339
Temperature Rise Test	Rated Current $\geq$ 1A $\Delta$ T 40°C Max	1.Applied the allowed DC current. 2.Temperature measured by digital surface thermometer

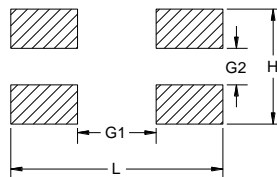
Reliability Test		
Life Test		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles) Temperature : 125±2℃ Applied current : rated current Duration : 1000±12hrs Measured at room temperature after placing for 24±2 hrs
Load Humidity		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles Humidity : 85±2%R.H, Temperature : 85℃±2℃ Duration : 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24±2 hrs
Moisture Resistance	Appearance : No damage. Inductance : within±10% of initial value Impedance : within±15% of initial value Q : Shall not exceed the specification value RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles 1. Baked at50℃ for 25hrs, measured at room temperature after placing for 4 hrs. 2. Raise temperature to 65±2℃ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25℃ in 2.5hrs. 3. Raise temperature to 65±2℃ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25℃ in 2.5hrs,keep at 25℃ for 2 hrs then keep at -10℃ for 3 hrs 4. Keep at 25℃ 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs.
Thermal shock		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles Condition for 1 cycle Step1 : -40±2℃ 30±5min Step2 : 25±2℃ ≤0.5min Step3 : 125±2℃ 30±5min Number of cycles : 500 Measured at room temperature after placing for 24±2 hrs
Vibration		Oscillation Frequency: 10 ~ 2K ~ 10Hz for 20 minutes Equipment : Vibration checker Total Amplitude:1.52mm±10% Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations)。

Item	Performance	Test Condition															
Bending	Appearance : No damage.	Shall be mounted on a FR4 substrate of the following dimensions: $\geq 0.805$ inch(2012mm):40x100x1.2mm $< 0.805$ inch(2012mm):40x100x0.8mm Bending depth: $\geq 0.805$ inch(2012mm):1.2mm $< 0.805$ inch(2012mm):0.8mm duration of 10 sec.															
Shock	Impedance : within $\pm 15\%$ of initial value Inductance : within $\pm 10\%$ of initial value Q : Shall not exceed the specification value. RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value	<table border="1"> <thead> <tr> <th>Type</th> <th>Peak value (g's)</th> <th>Normal duration (D) (ms)</th> <th>Wave form</th> <th>Velocity change (V)ft/sec</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> <tr> <td>Lead</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> </tbody> </table>	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (V)ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (V)ft/sec													
SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
Solder ability	More than 95% of the terminal electrode should be covered with solder.	Preheat: 150°C,60sec. Solder: Sn96.5% Ag3% Cu0.5% Temperature: 245 $\pm$ 5°C Flux for lead free: Rosin, 9.5% Dip time: 4 $\pm$ 1sec Depth: completely cover the termination															
Resistance to Soldering Heat		Depth: completely cover the termination <table border="1"> <thead> <tr> <th>Temperature(°C)</th> <th>Time(s)</th> <th>Temperature ramp/immersion and emersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>260 <math>\pm</math>5 (solder temp)</td> <td>10 <math>\pm</math>1</td> <td>25mm/s <math>\pm</math>6 mm/s</td> <td>1</td> </tr> </tbody> </table>	Temperature(°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	260 $\pm$ 5 (solder temp)	10 $\pm$ 1	25mm/s $\pm$ 6 mm/s	1							
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260 $\pm$ 5 (solder temp)	10 $\pm$ 1	25mm/s $\pm$ 6 mm/s	1														
Terminal Strength	Appearance : No damage. Impedance : within $\pm 15\%$ of initial value Inductance : within $\pm 10\%$ of initial value Q : Shall not exceed the specification value. RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value e	Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020D Classification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a force( $>0.805:1$ kg , $\leq 0.805:0.5$ kg)to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested. 															

## 7. Soldering and Mounting

### 7-1. Recommended PC Board Pattern

WCM7060	
L(mm)	8.0
H(mm)	4.5
G1(mm)	3.5
G2(mm)	1.5



### 7-2. Soldering

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

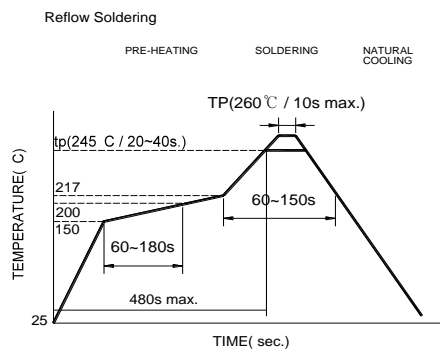
#### 7-2.1 Lead Free Solder re-flow:

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

#### 7-2.2 Soldering Iron(Figure 3):

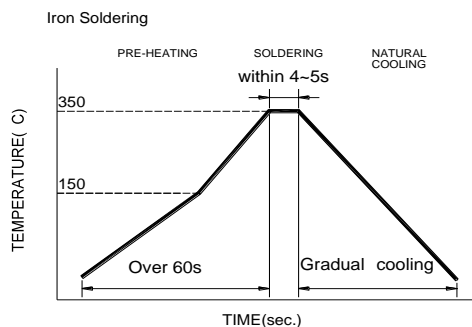
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- 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
- 350°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4-5 sec.



Reflow times: 3 times max.

Fig.1



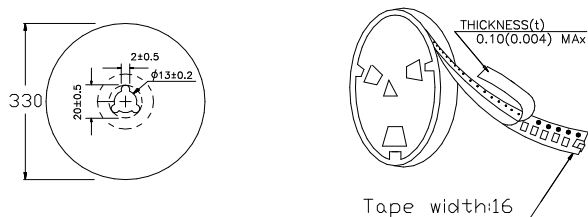
Iron Soldering times: 1 times max.

Fig.2

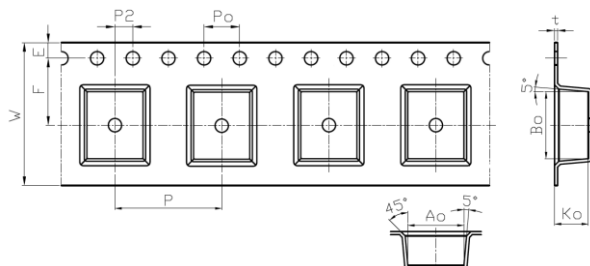


## 8. Packaging Information

### 8-1. Reel Dimension



### 8-2. Tape Dimension

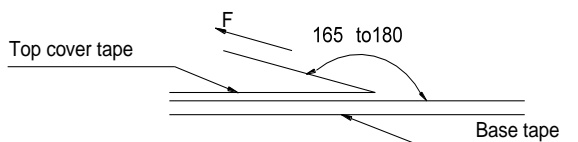


Series	W(mm)	Bo(mm)	Ao(mm)	Ko(mm)	P0(mm)	P2(mm)	F(mm)	E(mm)	P(mm)	t(mm)
WCM7060	16.00±0.3/-0.1	7.50±0.1	6.3±0.1	3.8±0.1	4.0±0.1	2.0±0.1	7.5±0.1	1.75±0.1	12.0±0.1	0.35±0.05

### 8-3. Packaging Quantity

Size	Reel
WCM7060	1500

### 8-4. Tearing Off Force



The force for tearing off cover tape is 15 to 80 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(component level)  
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 60% RH.
  3. Recommended products should be used within 12 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.