

Wirewound Type Common Mode Filter (RoHS Compliant)

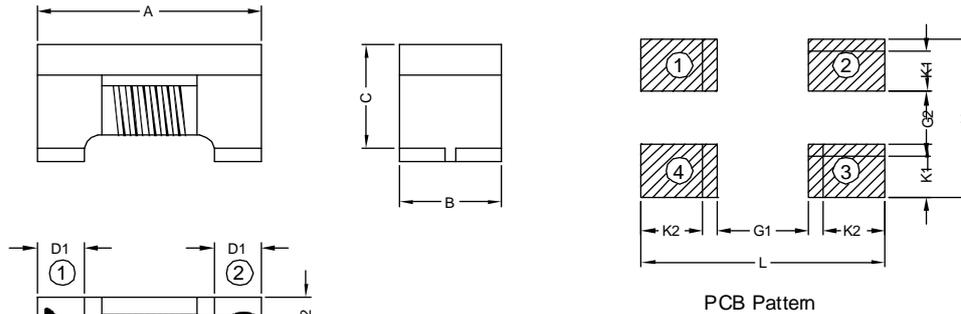
WAQ7F SERIES

1. PART NO. EXPRESSION :

WAQ 7 F 5 1 0 - R B - 1 0
 (a) (b)(c) (d) (e)(f) (g)

- (a) Series code
- (b) Dimension code
- (c) Material code
- (d) Inductance code : 510 = 51 uH
- (e) R : Tape & Reel
- (f) Rated Current : B = 200mA
- (g) 10 : Internal Control Number

2. CONFIGURATION & DIMENSIONS :

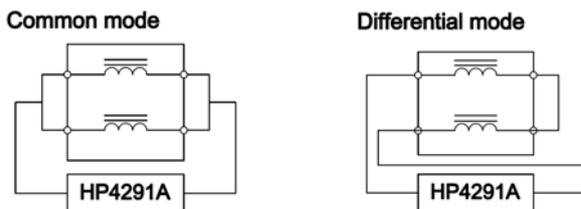


PC board should be designed so that products are not sufficient under mechanical stress as warping the board.
 Products shall be positioned in the sideways direction against the mechanical stress to prevent failure.

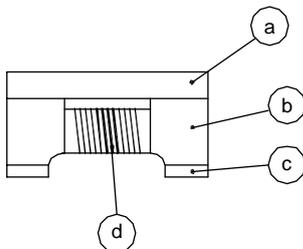
Unit:m/m

A	B	C	D1	D2	L	H	K1	K2	G1	G2
4.5±0.2	3.2±0.2	2.8±0.2	1.0±0.1	1.2±0.1	5.2	3.6	0.85	0.7	3	0.9

3. SCHEMATIC :



4. MATERIALS :



- (a) Upper Plate:Ferrite
- (b) Core:Ferrite Core
- (c) Termination : Tin (Pb Free)
- (d) Wire : Enameled Copper Wire

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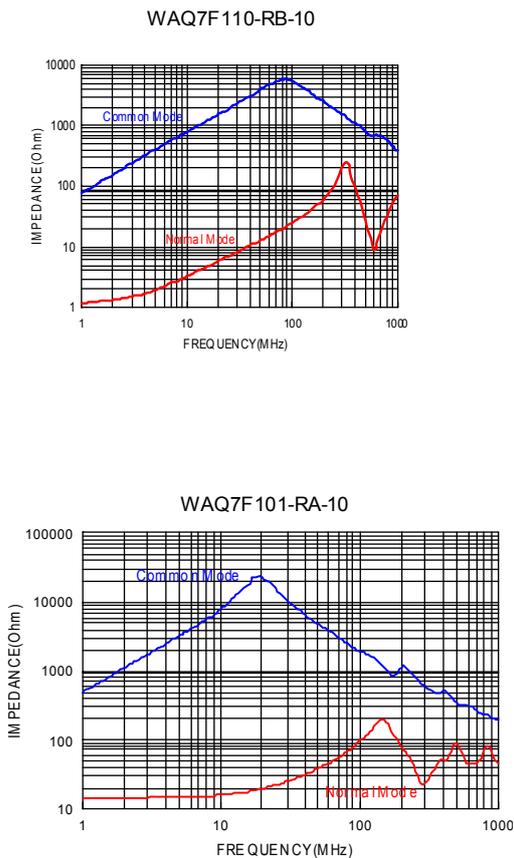
5. GENERAL SPECIFICATION :

- a) Test Frequency: Inductance:100KHz/0.1V; Impedance:10MHz/0.1V
- b) Operating temperature: -40°C ~ +125°C
- c) Storage Temperature: -40°C ~ +125°C
- d) All test data is referenced to 25°C ambient.
- e) Indicate Compliant to AEC-Q200 and PPAP level4 eligibility

6. ELECTRICAL CHARACTERISTICS :

Part No.	Common mode Inductance (μ H)	DCR (Ω) Max.	Rated Current (mA)	Rated Voltage (Vdc)	IR (Ω) Min.
WAQ7F110-RB-10	11+50/-30%	0.8	200	50	10M
WAQ7F510-RB-10	51+50/-30%	1.0	200	50	10M
WAQ7F101-RA-10	100+50/-30%	2.0	100	50	10M

7. CHARACTERISTICS CURVES :



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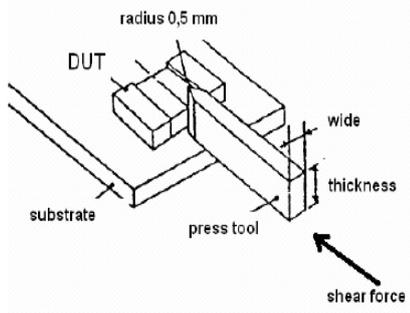


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8. RELIABILITY & TEST CONDITION :

ITEM	PERFORMANCE	TEST CONDITION
Electrical Characteristics Test		
Z (common mode)	Refer to standard electrical characteristics list	Agilent-4291A+ Agilent -16197A
DCR		Agilent-4338B
I.R.		Agilent4339
Temperature Rise Test	Rated Current < 1A ΔT 20°CMax Rated Current \cong 1A ΔT 40°CMax	1. Applied the allowed DC current. 2. Temperature measured by digital surface thermometer.
Mechanical Performance Test		
Solderability Test	More than 90% of terminal electrode should be covered with solder.	Preheat: 150°C ,60sec. Solder: Sn99.5%-Cu0.5%. Temperature: 245 \pm 5°C. Flux for lead free: Rosin.9.5%. Dip time: 4 \pm 1sec. Depth: completely cover the termination
Solder Heat Resistance	Appearance: No damage. Inductance: within \pm 10% of initial value	Solder temperature: 260 \pm 5° C Temperature ramp/immersion and immersion rate: 25 \pm 6 mm/s Dip time: 10 \pm 1sec. Number of heat cycles:1 Depth: completely cover the termination.
Terminal Strength	RDC: within \pm 15% of initial value and shall not exceed the specification value	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 (>0805:1kg , <=0805:0.5kg)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. 

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WAQ7F SERIES

8. RELIABILITY & TEST CONDITION :

ITEM	PERFORMANCE	TEST CONDITION												
Reliability Test														
Life Test	Appearance: No damage. Inductance: within±10% of initial 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-020D Classification Reflow Profiles) Temperature : 85±2° C Applied Current : rated current Duration : 1000± 12hrs Measured at room temperature after placing for 24± 2 hrs.												
Thermal Shock		Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles) <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (° C)</th> <th>Times (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±2</td> <td>30±5</td> </tr> <tr> <td>2</td> <td>25±2</td> <td>≅ 0.5</td> </tr> <tr> <td>3</td> <td>105±2</td> <td>30±5</td> </tr> </tbody> </table> Number of cycles: 500 Measured at room temperature after placing for 24± 2 hrs	Step	Temperature (° C)	Times (min.)	1	-40±2	30±5	2	25±2	≅ 0.5	3	105±2	30±5
Step		Temperature (° C)	Times (min.)											
1		-40±2	30±5											
2		25±2	≅ 0.5											
3	105±2	30±5												
Humidity Resistance Test	Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles) Temperature : 85±2° C Humidity : 85±2% R.H Duration: 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24± 2 hrs													
Vibration Test	Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles) 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).													

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9. SOLDERING AND MOUNTING :

9-1. Soldering

Mildly activated rosin fluxes are preferred. Our 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.

9-1.1 Solder Re-flow :

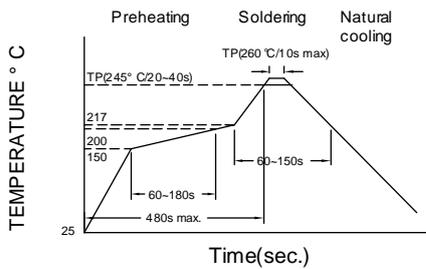
Recommended temperature profiles for re-flow soldering in Figure 1.

9-1.2 Soldering Iron (Figure 2) :

Products attachment with 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.

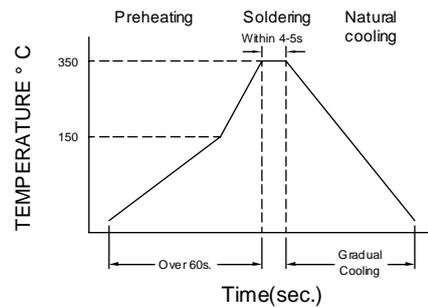
- Note : a) Preheat circuit and products to 150° C.
- b) 355° C tip temperature (max)
- c) Never contact the ceramic with the iron tip

- d) 1.0mm tip diameter (max)
- e) Use a 20 watt soldering iron with tip diameter of 1.0mm
- f) Limit soldering time to 4-5 secs.



Reflow times: 3 times max.

Fig.1



Iron Soldering times: 1 times max.

Fig.2

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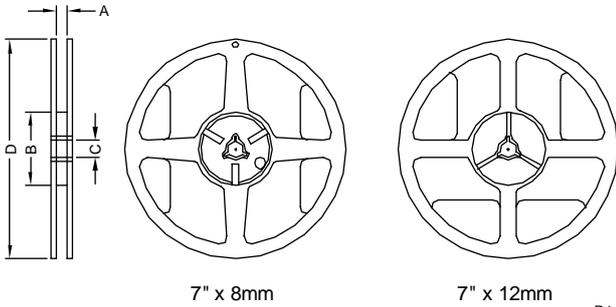
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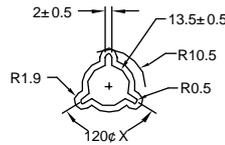
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10. PACKAGING INFORMATION :

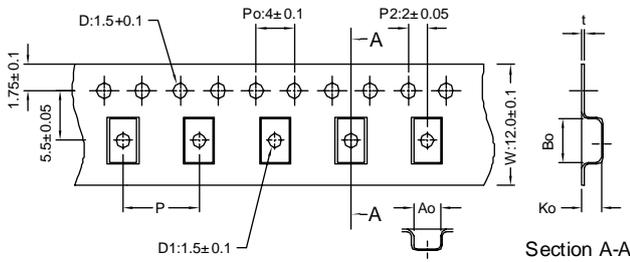
10-1. Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
7" x 12mm	13.5±0.5	60.0±2.0	13.5±0.5	178.0±2.0



10-2 Tape Dimension / 12mm



Series	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
WAQ7F	4.90±0.1	3.60±0.1	3.00±0.1	8.0±0.1	0.26±0.05

10-3. Packing Quantity

Series	WAQ7F
Chip / Reel	500
Inner Box	2500
Middle Box	12500
Carton	25000

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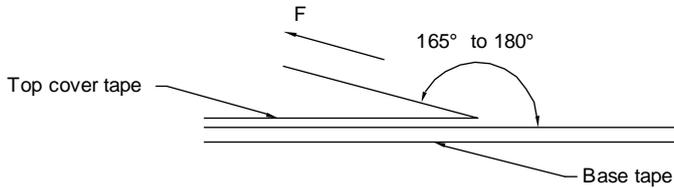
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10-4. Tearing Off Force



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

1. Storage Conditions :

To maintain the solderability of terminal electrodes :

- a) Temperature and humidity conditions : Less than 40° C and 60% RH.
- b) Recommended products should be used within 12 months from the time of delivery.
- c) The packaging material should be kept where no chlorine or sulfur exists in the air.

2. Transportation :

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

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