

Common mode filter (RoHS Compliant)

CMT03 SERIES

1. PART NO. EXPRESSION :

C M T 0 3 - 9 0 0 - R A - $\overline{\text{K}}$ $\overline{\text{K}}$
 (a) (b) (c) (d)(e) (f)

(a) Series code

(b) Dimension code

(c) Impedance code : 900 = 90Ω

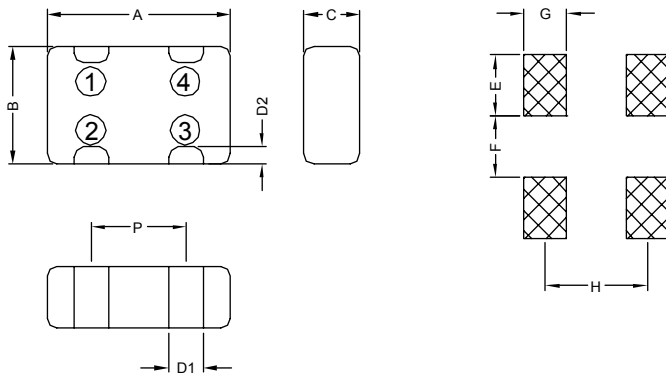
(d) R : Reel

(e) Current code

(f) 10 : RoHS Compliant

11~99 : Internal controlled number

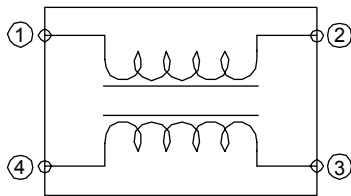
2. CONFIGURATION & DIMENSIONS :



Unit:m/m

A	B	C	P	D1	D2	E	F	G	H
0.85±0.05	0.65±0.05	0.4±0.05	0.50±0.1	0.27±0.1	0.2 ^{+0.05} _{-0.1}	0.25~0.35	0.25~0.35	0.25~0.35	0.5

3. SCHEMATIC :



4. GENERAL SPECIFICATION :

a) Storage Temp. : -40°C to +85°C

b) Operating Temp. : -40°C to +85°C (Including self-generated heat)



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5. ELECTRICAL CHARACTERISTICS :

Part Number	Impedance (Ω)	Test Frequency (MHz)	Rated Voltage (Vdc) Max.	Insulation Resistance (M Ω) Min.	DC Resistance (Ω) Max.	Rated Current (mA) Max.
CMT03-120-RA-□ □	12 \pm 5 Ω	100	5	100	2.5	130
CMT03-330-RA-□ □	33 \pm 20%	100	5	100	2.5	100
CMT03-470-RA-□ □	47 \pm 20%	100	5	100	5.0	100
CMT03-900-RA-□ □	90 \pm 20%	100	5	100	6.5	100



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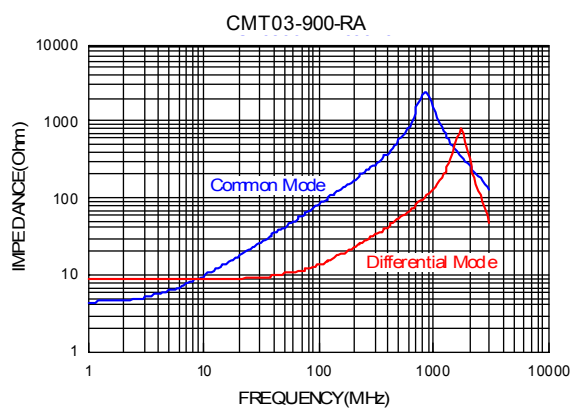
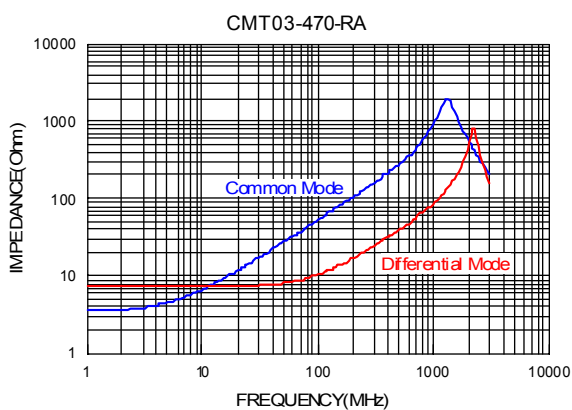
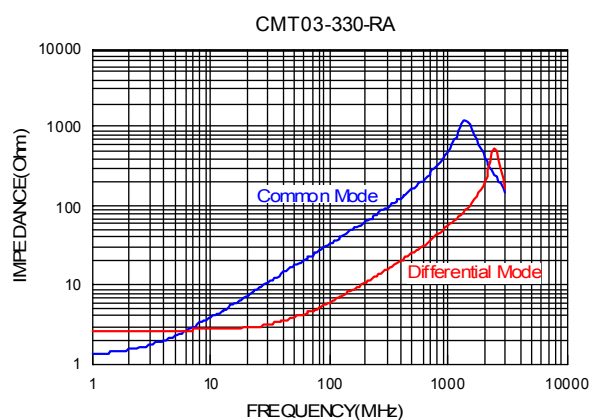
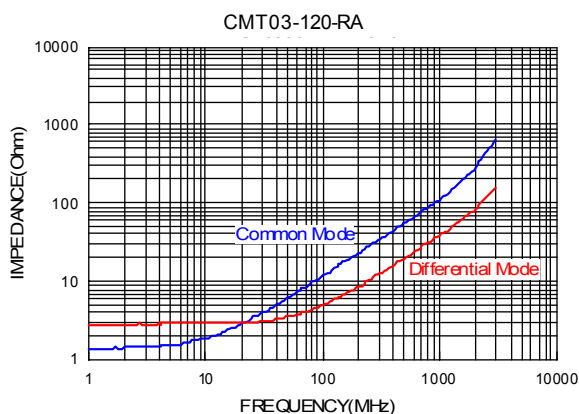
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6. CHARACTERISTICS CURVES :



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7. RELIABILITY AND TEST CONDITION

ITEM	PERFORMANCE	TEST CONDITION				
Electrical Characteristics Test						
Impedance (Z)	Within the specified tolerance	Measuring equipment:4291A or its equivalent Measuring jig: 16192A (or its equivalent)				
Insulation Resistance		Measuring points: (1) to (3) or (2) to (4) Measuring voltage: Rated voltage				
DC Resistance		Measuring points: (1) to (2) or (3) to (4)				
Rated Current		Measuring Current: DC Current Rated Current < 1A ΔT 20°C Max				
Reliability Test						
Vibration	Per table 1.	Test sample shall be soldered to test board and the test shall be conducted under the conditions shown in Table 2. Table 2				
	<table border="1"> <caption>Table 1</caption> <tr> <td>Appearance</td> <td>No remarkable Defect</td> </tr> <tr> <td>Common Impedance change rate</td> <td>Within±15%</td> </tr> <tr> <td>Insulation resistance</td> <td>100MΩ min</td> </tr> </table>		Appearance	No remarkable Defect	Common Impedance change rate	Within±15%
Appearance	No remarkable Defect					
Common Impedance change rate	Within±15%					
Insulation resistance	100MΩ min					
Solderability	More than 95% of terminal electrode shall be covered with fresh solder.	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. Table 3				
		<table border="1"> <tr> <td>Solder temperature</td> <td>245°C±3°C</td> </tr> <tr> <td>Immersion time</td> <td>4s±1s</td> </tr> </table>	Solder temperature	245°C±3°C	Immersion time	4s±1s
Solder temperature	245°C±3°C					
Immersion time	4s±1s					
Resistance to Soldering Heat	Per table 1.	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. Table 4				
		<table border="1"> <tr> <td>Preheating</td> <td>150°C, 3min.</td> </tr> <tr> <td>Resistance to Soldering Heat</td> <td>260°C±5°C</td> </tr> <tr> <td>Immersion time</td> <td>10s±0.5s</td> </tr> </table>	Preheating	150°C, 3min.	Resistance to Soldering Heat	260°C±5°C
Preheating	150°C, 3min.					
Resistance to Soldering Heat	260°C±5°C					
Immersion time	10s±0.5s					



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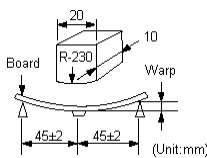
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7. RELIABILITY AND TEST CONDITION

ITEM	PERFORMANCE	TEST CONDITION															
Reliability Test																	
Thermal Shock	Per table 1.	<p>Steps 1 to 4 shown in Table 5 as one cycle shall be repeated 5 times.</p> <p>After the test, keep the test sample at a normal temperature with a normal humidity for 2 to 2 hours then measurement shall be conducted.(Note 1)</p> <p>Table 5</p> <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±3</td> </tr> <tr> <td>2</td> <td>Normal temp</td> <td>4~5</td> </tr> <tr> <td>3</td> <td>+85±2</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Normal temp</td> <td>4~5</td> </tr> </tbody> </table>	Step	Temperature (°C)	Times (min.)	1	-40±2	30±3	2	Normal temp	4~5	3	+85±2	30±3	4	Normal temp	4~5
Step	Temperature (°C)	Times (min.)															
1	-40±2	30±3															
2	Normal temp	4~5															
3	+85±2	30±3															
4	Normal temp	4~5															
Resistance to Humidity	Per table 1.	<p>Test board shall be kept in a thermo hygrostat at temperature of 40°C±2°C and relative humidity of 90% to 95% for 500+24/-0 hours.</p> <p>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)</p>															
High Temperature Load Life Test	Per table 1.	<p>Test board shall be kept in a thermostatic oven with temperature of 85°C±2°C for 500+24/-0 hours while supplying (1) to (2) and (3) - (4) with rated current. supplying (1) to (3) and (2) - (4) with rated Voltage</p> <p>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)</p>															
High Temperature Life Test	Per table 1.	<p>Test board shall be kept in an atmosphere with temperature of 85°C±2°C for 500+24/-0 hours.</p> <p>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)</p>															
Bending Strength	<p>Appearance: No mechanical damage.</p> 	<p>Warp : 1mm(03)</p> <p>Testing board : Glass epoxy-resin substrate</p> <p>Thickness : 1.6mm</p>															



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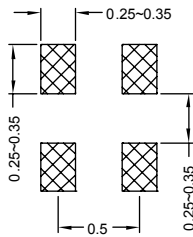
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8. SOLDERIND AND MOUNTING :

8-1. Recommended PC Board Pattern



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.

8-2. 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 Use Wave soldering is there will be some risk.

Re-flow soldering temperatures below 240 degrees, there will be unwitting risk

8-2.1 Lead Free Solder Re-flow :

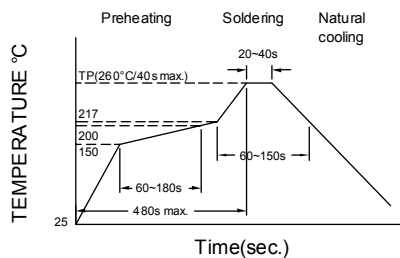
Recommended temperature profiles for re-flow soldering in Figure 1.

8-2.2 Soldering Iron :

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. for Iron Soldering in Figure 2.

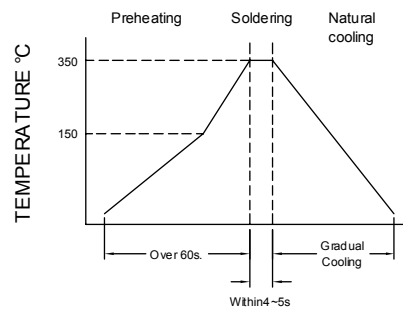
Note :

- a) Preheat circuit and products to 150°C.
- b) 350°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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8-3. 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 Fig. 4.

Minimum fillet height = soldering thickness + 25% product height

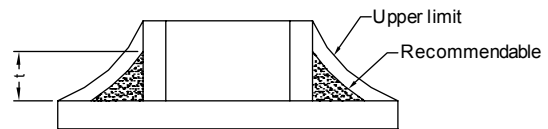


Figure 4



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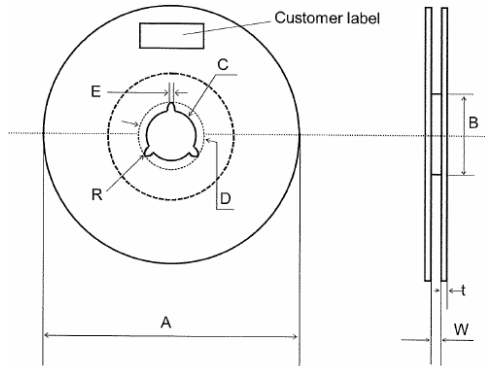
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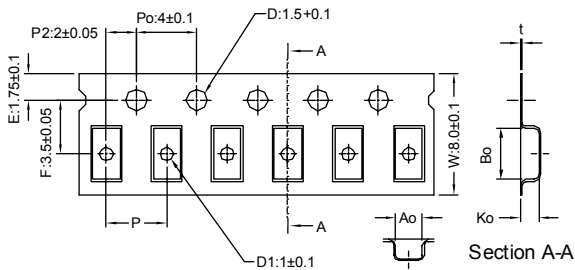
9. PACKAGING INFORMATION :

9-1. Reel Dimension



∅A(mm)	∅B(mm)	∅C(mm)	∅D(mm)	E(mm)	W(mm)	t(mm)	R(mm)
178±2.0	50 Min.	13±0.2	21±0.8	2.0±0.5	10±1.5	2.5 Max.	1.0

9-2. Tape Dimension / 8mm(black anti-static electricity carrier tape)



Series	Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
CMT	03	0.95±0.05	0.75±0.05	0.55±0.05	4.0±0.1	0.3 Max.

9-3. Packaging Quantity

Chip Size	03
Chip / Reel	10000
Inner Box	50000
Middle Box	250000
Carton	500000



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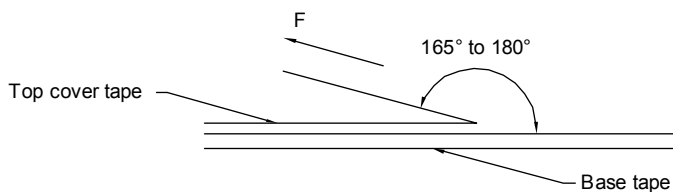
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9-4. Tearing Off Force



The force for tearing off cover tape is 15 to 85 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 :

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

2. Transportation :

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



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