TF2010A4X Series

COMMON MODE FILTER

TOP-EMC

1. Generals

This reference specification applies to Chip Common Mode Choke Coil Arrays TF2010A4X Series.

2. Features

- Effective for suppressing common mode noise and almost no effect for high speed differential data line
- Ultra low profile (2.0 x 1.0 x 0.82mm)
- Ceramic multilayer type SMD component
- Non-polarized product
- It is a product conforming to RoHS directive.

3. Applications

- LVDS lines in notebook computers
- USB2.0, IEEE1394, DVI, HDMI lines in PDP, LCD TV, DVD Player, PC, Audio player, DSC
- MDDI, MIPI in mobile phone

4. Product specifications

4. 1 PART NUMBER CODE

T	F	2010A	4X	900	M	T
①	②	③	④	⑤	⑥	⑦

① Company Name: TOP-EMC

② Product Function: Common Mode Filter

③ Dimensions, 2.0mm (L)x1.0mm (W)

④ Number of lines, 4X = 4 lines

⑤ Common Mode Impedance (at 100MHz), 900= 90Ω

⑥ Tolerance of common mode impedance, M = ±20%

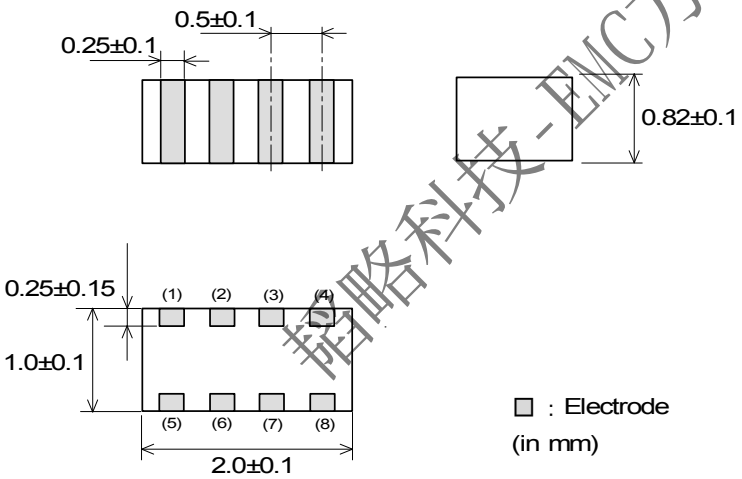
⑦ Packing :Tape & Reel

4.2.Electrical Characteristics

Part Number	Common Mode Impedance (at 100MHz, Under Standard Testing Condition)	Rated Voltage	Withstanding Voltage	Rated Current	DC Resistance	Insulation Resistance
TF2010A4X670MT	67Ω±20%	5V(DC)	12.5V(DC)	140mA	1.3Ω±25%	100MΩ
TF2010A4X900MT	90Ω±20%			130mA	1.7Ω±25%	
TF2010A4X121MT	120Ω±20%			120mA	2.0Ω±25%	
TF2010A4X161MT	160Ω±20%			100mA	2.5Ω±25%	
TF2010A4X201MT	200Ω±20%			90mA	3.2Ω±25%	
TF2010A4X241MT	240Ω±20%			80mA	3.8Ω±25%	
TF2010A4X281MT	280Ω±20%			80mA	4.6Ω±25%	

Operating Temperature : -40 to +85℃ Storage Temperature:-40 to +85℃

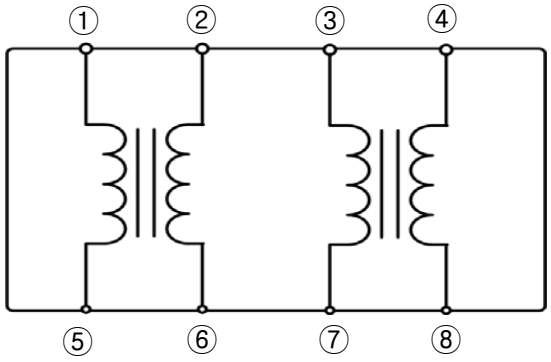
5.Style and Dimensions



□ : Electrode

(in mm)

■ Equivalent Circuits



■ Unit Mass(Typical value) No polarity.
0.009g

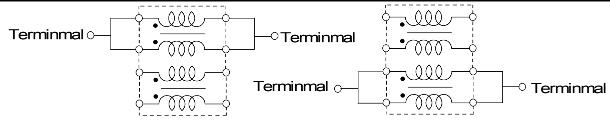
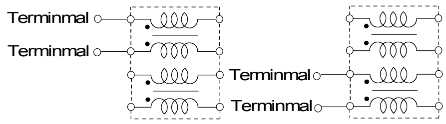
6.Standard Testing Conditions

<Unlessot herwise specified>
Temperature : Ordinary Temperature 15 to 35°C
Humidity : Ordinary Humidity 25 to 85%(RH)

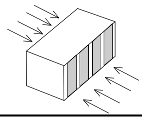
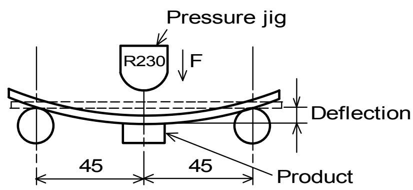
<In case o f doubt>
Temperature : 20 ± 2°C
Humidity : 60 to 70%(RH)
Atmospheric Pressure : 86 to106kPa

7 . Terminal to be Tested.

When measuring and suppling the voltage,the following terminal is applied.

<table>
<tr><th>No.</th><th>Item</th><th>Terminal to be Tested</th></tr>
<tr><td>10.1</td><td>Common Mode Impedance
(Measurement Terminal)</td><td> 
</td></tr>
<tr><td>10.2</td><td>Withstanding Voltage
(Measurement Terminal)
Insulation Resistance
(Measurement Terminal)
Heat Life
(Supply Terminal)</td><td> 
</td></tr>
<tr><td>10.3</td><td>DC Resistance
(Measurement Terminal)</td><td> 
</td></tr>
</table>

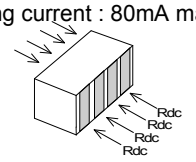
8.Mechanical Performance

<table>
<tr><th>No.</th><th>Item</th><th>Specification</th><th>Test Method</th></tr>
<tr><td>8.1</td><td>Appearance and Dimensions</td><td>Meet item 5.</td><td>Visual Inspection and measured with Slide Calipers.</td></tr>
<tr><td>8.2</td><td>Solderability</td><td>The electrodes shall be at least 95% covered with new solder coating.
  </td><td>Flux : Ethanol solution of rosin,25(wt)%
Pre-Heating : 150°C, 1minute
Solder : Sn-3.0Ag-0.5Cu
Solder Temperature : 245±3°C
Immersion Time : 3±1 seconds
Immersion and emersion rates : 25 mm / s</td></tr>
<tr><td>8.3</td><td>Resistance to Soldering Heat</td><td rowspan="2">Meet Table 1.
<u>Table 1</u><table><tr><td>Appearance</td><td>No damaged</td></tr><tr><td>Common Mode Impedance Change</td><td>within ± 20%</td></tr><tr><td>I.R.</td><td>100MΩ min.</td></tr><tr><td>DC Resistance Change</td><td>within ± 30%</td></tr></table></td><td>Flux : Ethanol solution of rosin,25(wt)%
Pre-Heating : 150°C, 1minute
Solder : Sn-3.0Ag-0.5Cu
Solder Temperature : 270±5°C
Immersion Time : 10±1 seconds
Immersion and emersion rates : 25 mm / s
Then measured arter exposure in the room condition for 4 to 48 hours.</td></tr>
<tr><td>8.4</td><td>Drop</td><td>It shall be dropped on concrete or steel board.
Method : free fall
Height : 1m
The Number of Times : 10 times</td></tr>
<tr><td>8.5</td><td>Vibration</td><td></td><td>It shall be soldered on the substrate.
Oscillation Frequency : 10 to 2000 to 10Hz for 20 minutes
Total amplitude : 1.5 mm or Acceleration amplitude 196 m/s^2 whichever is smaller.
Testing Time : A period of 2 hours in each of 3 mutually perpendicular directions.</td></tr>
<tr><td>8.6</td><td>Bending Strength</td><td>Meet Table 2.
<u>Table 2</u><table><tr><td>Appearance</td><td>No damaged</td></tr><tr><td>DC Resistance Change</td><td>within ± 30%</td></tr></table></td><td>Substrate : (t =1.0 mm).
Deflection : 2 mm
Speed of Applying Force : 0.5 mm / s
Keeping time : 30 seconds
 
</td></tr>
</table>

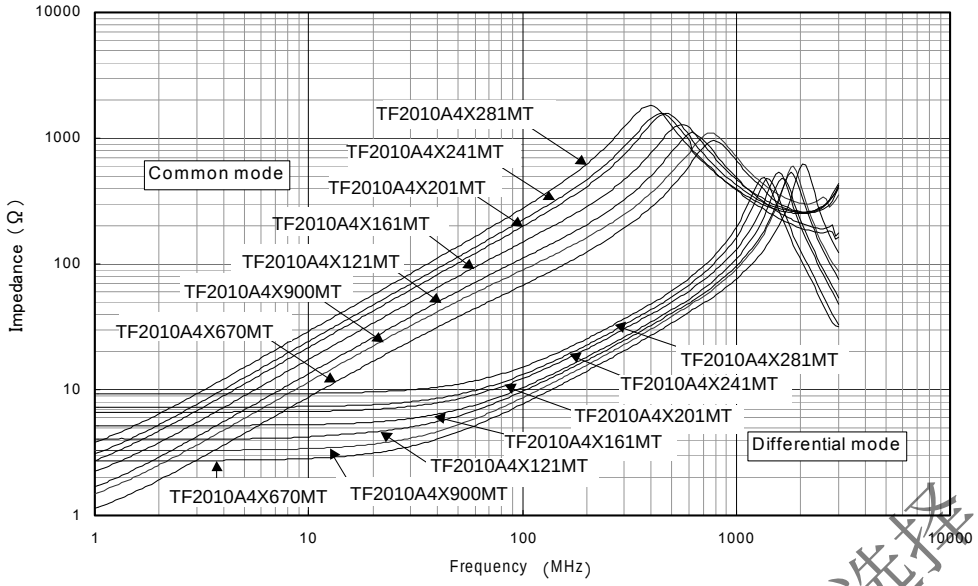
9.Envronmental Performance (Products shall be solderd on the glass-epoxy substrate)

No.	Item	Specification	Test Method
9.1	Temperature Cycle	Meet Table 1.	1 Cycle Step 1 -40°C(+0°C,-3°C) / 30(+3,-0) min Step 2 Ordinary Temp. / within 3 min Step 3 +85(+3°C,-0°C) / 30(+3,-0) min Step 4 Ordinary Temp. / within 3 min Total of 100 cycles. Then measured after exposure in the room condition for 4 to 48 hours.
9.2	Humidity		Temperature : 40±2°C Humidity : 90 to 95 % (RH) Time : 1000 hours(+48 hours,-0 hours) Then measured after exposure in the room condition for 4 to 48 hours.
9.3	Heat life		Temperature : 85±2°C Test Voltage : 2 times for Rated Voltage Time : 1000 hours(+48 hours,-0 hours) Then measured after exposure in the room condition for 4 to 48 hours. (ref. Item 10.)
9.4	Cold Resistance		Temperature : -40± 2°C Time : 1000 hours(+48 hours,-0 hours) Then measured after exposure in the room condition for 4 to 48 hours.

10. Eectrical Performance

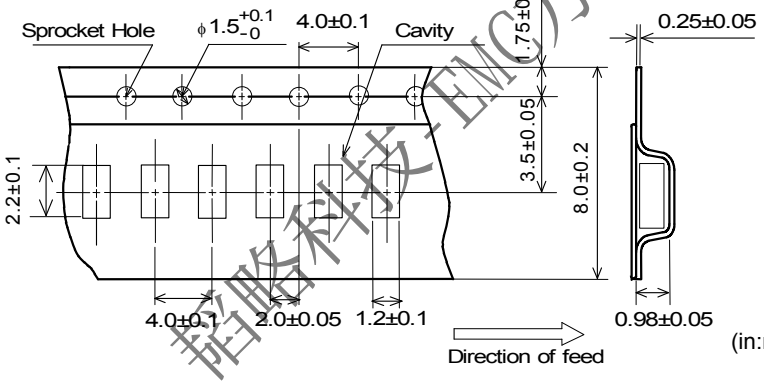
No.	Item	Specification	Test Method
7.1	Common Mode Impedance	Meet item 3.	Measuring Frequency : 100±1MHz (ref.item 10.) Measuring Equipment : HP4291A or the equivalents （In case of doubt in standard condition, the heat treatment (200°C,about 10 minutes)shall be applied.
7.2	Withstanding Voltage	Products shall not be damaged.	Test Voltage : 2.5 times for Rated Voltage Time : 1 to 5 seconds Charge Current : 1 mA max.(ref.item 10.)
7.3	DC Resistance (Rdc)	Meet item 3.	Measuring current : 80mA max.(ref.item 10.) 
7.4	Insulation Resistance (I.R.)		Measuring voltage : Rated Voltage Measuring time : 1 minute max. (ref.item 10.)

11.Impedance Frequency Characteristics(Typical)



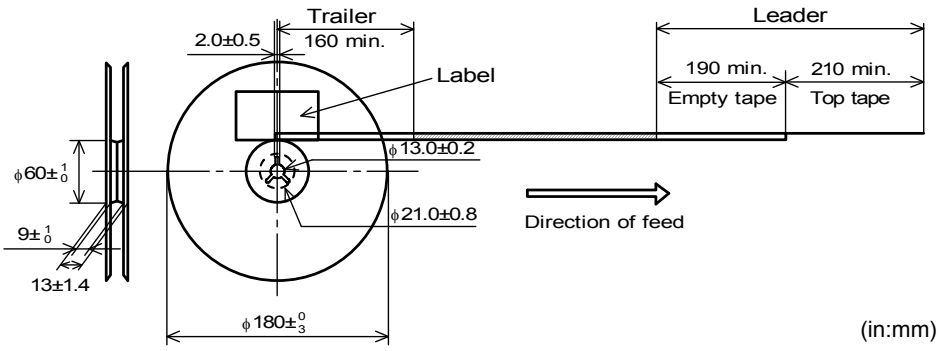
12 specification of Packaging

12.1 Appearance and Dimensions (8mm-wide,Plastic tape)



*Dime nsion of the Cavity is measured at the bottom side.

12.2 Dimensions of Leader-tape, Trailer and Reel



(in:mm)

12.3 Specification of Taping

(1)Packing quantity(Standard quantity) 3000 pcs. / reel
(2)Packing Method
Products shall be packaged in each embossed cavity of plastic tape and sealed with cover tape.
(3)Sprocket Hole
Sprockrt hole shall be located on the left hand side toward the direction of feed.
(4)Spliced point
The cover tape have no spliced point.
(5)Missing components number
Missing components number within 0.1% of the number per reel or 1 pc., whichever is greater,and are not continuous. The specified quantity per reel is kept.

13. Limitation of Applications

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life,body or property.

(1) Aircraft equipment
(2) Aerospace equipment
(3) Undersea equipment
(4) Power plant control equipment
(5) Medical equipment
(6) Transportation equipment (vehicles, trains, ships, etc.)
(7) Traffic signal equipment
(8) Disaster prevention / crime prevention equipment
(9) Data-processing equipment
(10) Applications of similar complexity and / or reliability requirements to the applications listed in the above.

14.Contact Information

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