

# TF2010A4X900MT

## COMMON MODE FILTER



### 1. Generals

1. This specification covers the engineering requirements for the TF2010A4X900MT

### 2. Features

1. Miniature footprint: 2.00 X 1.25 X 1.00 mm
2. Multilayer LTCC (Low Temperature Ceramic Cofired) Technology
3. Reflow solderable SMD Devices
4. High Attenuation for common mode noise
5. Special 3D layout design to minimize phase shifting

### 3. Applications

1. EMI suppression on HDMI/ (mini)LVDS/ DVI/ SATA/ PCI-E/ Display Port high speed data transmission
2. PC related, LCD TV, PDP TV, Projector, STB, Blue-ray DVD, panel.

### 4. Part Number Code

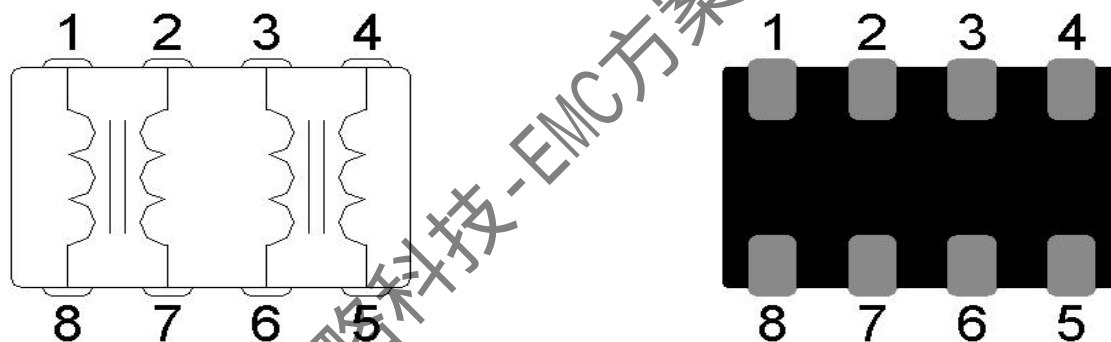
**T** **F** **2010A** **4X** **900** **M** **T**  
① ② ③ ④ ⑤ ⑥ ⑦

- ① Company Name: TOP-EMC
- ② Product Function: Common Mode Filter
- ③ Dimensions, 2.0mm (L)×1.2mm (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

## 5.1. Electrical Characteristics

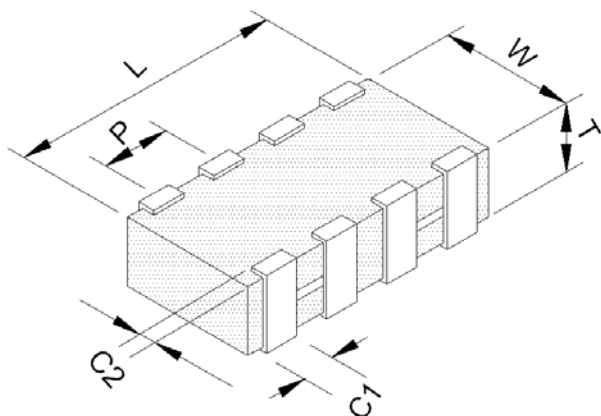
TF2010A4X900MT	Specification
Common Mode Impedance	90Ω ± 20% @ 100MHz
DC Resistance	Max 0.6Ω
Rated Current	400mA
Withstand Voltage	25V
Insulation Resistance	Min 200MΩ
Operating Temperature	- 40 °C ~ +85 °C

## 5.2. Construction and Schematic



PIN NUMBER	DESCRIPTION
1~8	DATA LINE

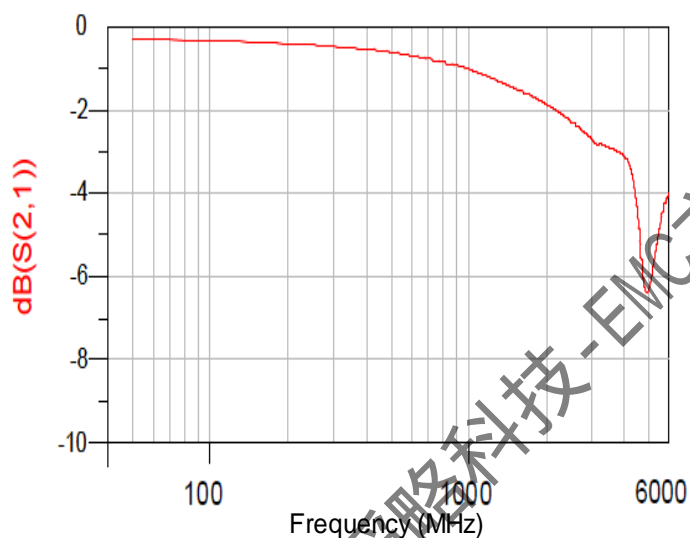
## 6. Dimensions



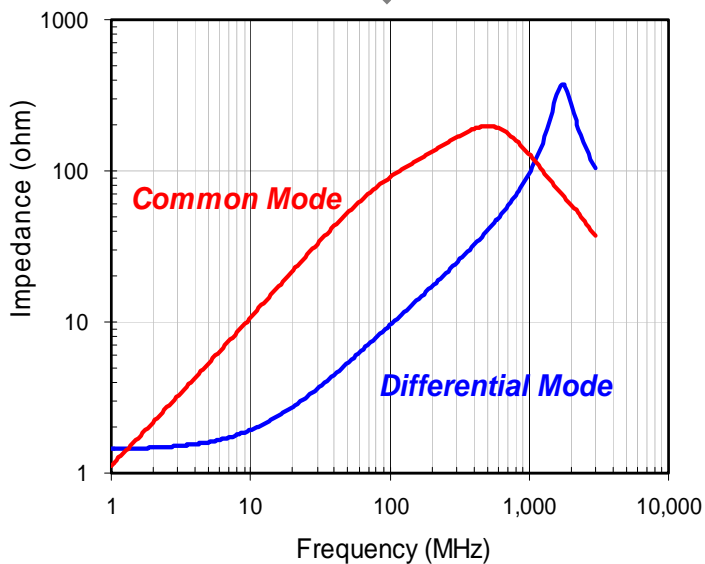
<b>L</b>	2.00±0.20
<b>W</b>	1.25±0.20
<b>T</b>	1.00±0.10
<b>P</b>	0.50±0.20
<b>C1</b>	0.25±0.20
<b>C2</b>	0.25±0.20
Unit: mm	

## 7. Typical Electrical Characteristics

### Insertion Loss vs Frequency Characteristic



### Impedance vs Frequency Characteristic

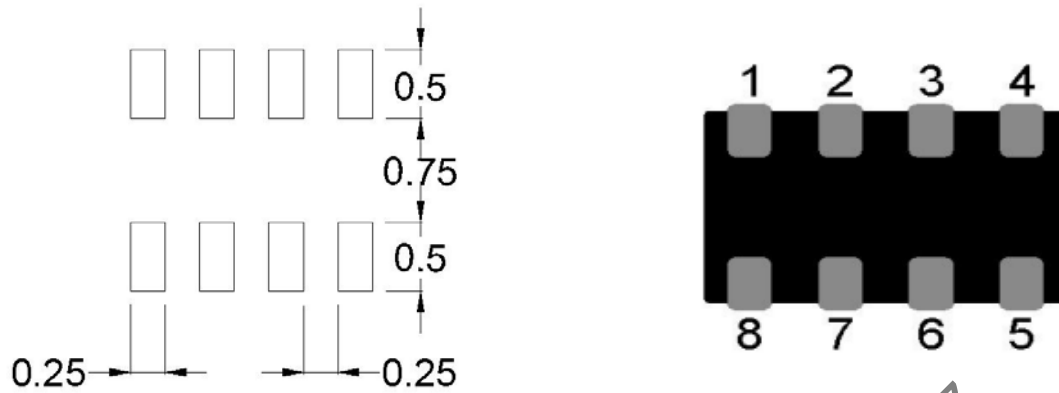


## 8. Reliability Test

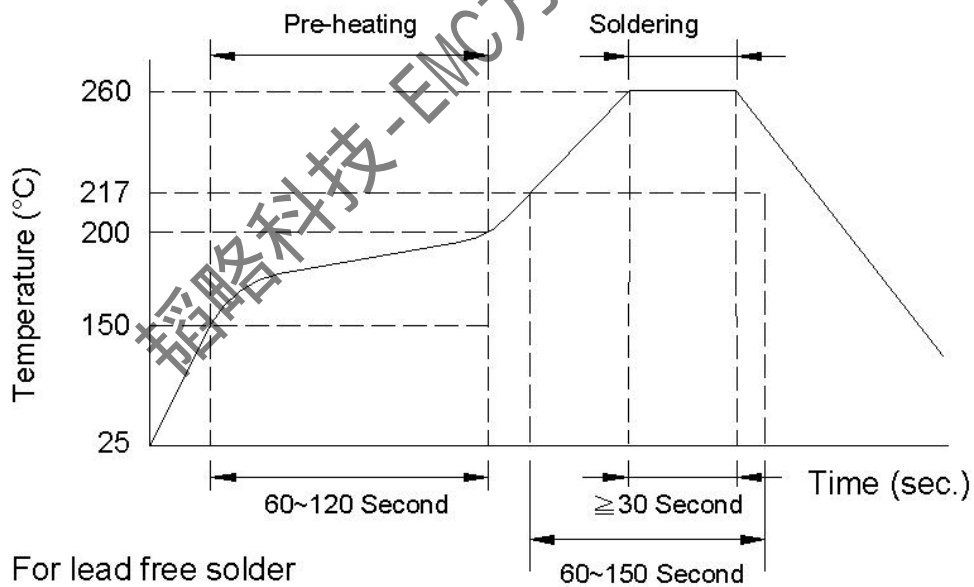
Test item	Test condition / Test method	Specification
Solderability JIS C 0050-4.6 JESD22-B102D	*Solder bath temperature : $235 \pm 5^{\circ}\text{C}$ *Immersion time : $2 \pm 0.5$ sec *Solder : Sn3Ag0.5Cu for lead-free	At least 95% of a surface of each terminal electrode must be covered by fresh solder.
Leaching (Resistance to dissolution of metallization) IEC 60068-2-58	*Solder bath temperature : $260 \pm 5^{\circ}\text{C}$ *Leaching immersion time : $30 \pm 0.5$ sec *Solder : SN63A	Loss of metallization on the edges of each electrode shall not exceed 25%.
Resistance to soldering heat JIS C 0050-5.4	*Preheating temperature : $120\sim 150^{\circ}\text{C}$ , 1 minute. *Solder temperature : $270 \pm 5^{\circ}\text{C}$ *Immersion time : $10 \pm 1$ sec *Solder : Sn3Ag0.5Cu for lead-free Measurement to be made after keeping at room temperature for $24 \pm 2$ hrs	No mechanical damage. Samples shall satisfy electrical specification after test. Loss of metallization on the edges of each electrode shall not exceed 25%.
Drop Test JIS C 0044	*Height : 75 cm *Test Surface : Rigid surface of concrete or steel. *Times : 6 surfaces for each units ; 2 times for each side.	No mechanical damage. Samples shall satisfy electrical specification after test.
Adhesive Strength of Termination JIS C 0051- 7.4.3	*Pressurizing force : $5\text{N}(\leq 0603)$ ; $10\text{N}(>0603)$ *Test time : $10 \pm 1$ sec	No remarkable damage or removal of the termination.
Bending test JIS C 0051- 7.4.1	The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1 mm/s per second until the deflection becomes 1mm/s and then pressure shall be maintained for $5 \pm 1$ sec. Measurement to be made after keeping at room temperature for $24 \pm 2$ hours	No mechanical damage. Samples shall satisfy electrical specification after test.

<p>Temperature cycle JIS C 0025</p>	<ol style="list-style-type: none"> <li>1. 30±3 minutes at -40°C±3°C,</li> <li>2. 10~15 minutes at room temperature,</li> <li>3. 30±3 minutes at +85°C±3°C,</li> <li>4. 10~15 minutes at room temperature,</li> </ol> <p>Total 100 continuous cycles</p> <p>Measurement to be made after keeping at room temperature for 24±2 hrs</p>	<p>No mechanical damage.</p> <p>Samples shall satisfy electrical specification after test.</p>
<p>Vibration JIS C 0040</p>	<p>*Frequency : 10Hz~55Hz~10Hz(1min)</p> <p>*Total amplitude : 1.5mm</p> <p>*Test times : 6hrs.(Two hrs each in three mutually perpendicular directions)</p>	<p>No mechanical damage.</p> <p>Samples shall satisfy electrical specification after test.</p>
<p>High temperature JIS C 0021</p>	<p>*Temperature : 85°C±2°C</p> <p>*Test duration : 1000+24/-0 hours</p> <p>Measurement to be made after keeping at room temperature for 24±2 hrs</p>	<p>No mechanical damage.</p> <p>Samples shall satisfy electrical specification after test.</p>
<p>Humidity (steady conditions) JIS C 0022</p>	<p>*Humidity : 90% to 95% R.H.</p> <p>*Temperature : 40±2°C</p> <p>*Time : 1000+24/-0 hrs.</p> <p>Measurement to be made after keeping at room temperature for 24±2 hrs</p> <p>※ 500hrs measuring the first data then 1000hrs data</p>	<p>No mechanical damage.</p> <p>Samples shall satisfy electrical specification after test.</p>
<p>Low temperature JIS C 0020</p>	<p>*Temperature : -40°C±2°C</p> <p>*Test duration : 1000+24/-0 hours</p> <p>Measurement to be made after keeping at room temperature for 24±2 hrs</p>	<p>No mechanical damage.</p> <p>Samples shall satisfy electrical specification after test.</p>

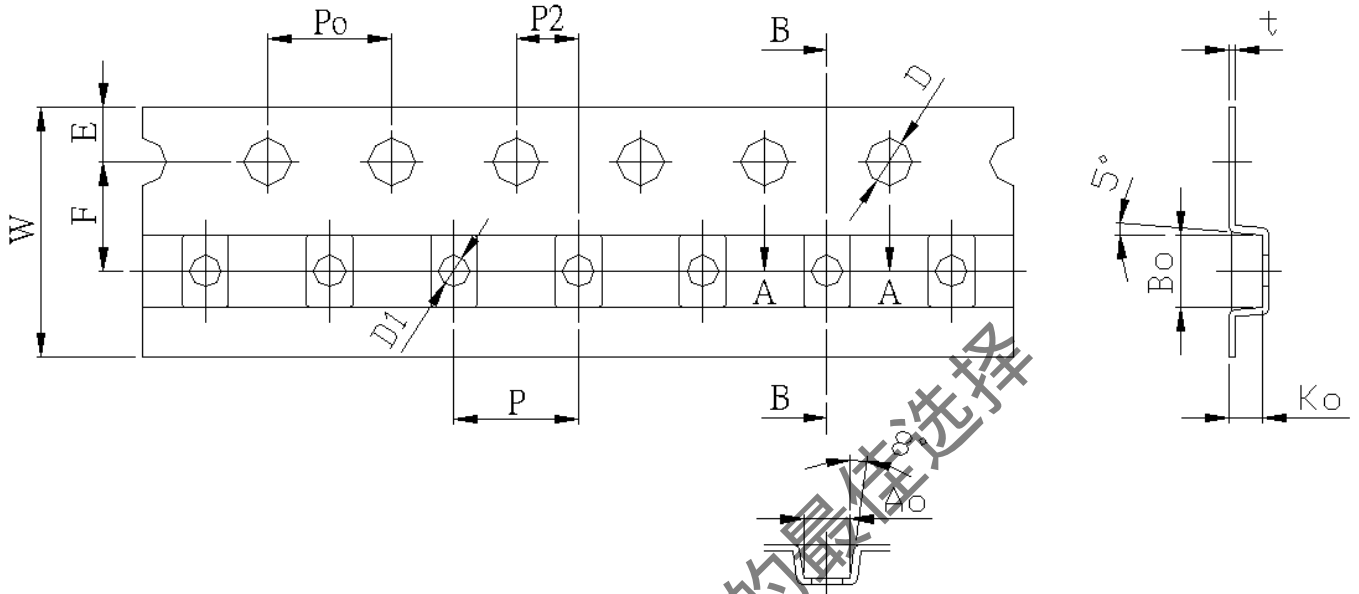
## 10. Recommended solder pad layout (Unit:mm)



## 11. Typical examples of soldering processes that provide reliable joints without any damage are given in the figure



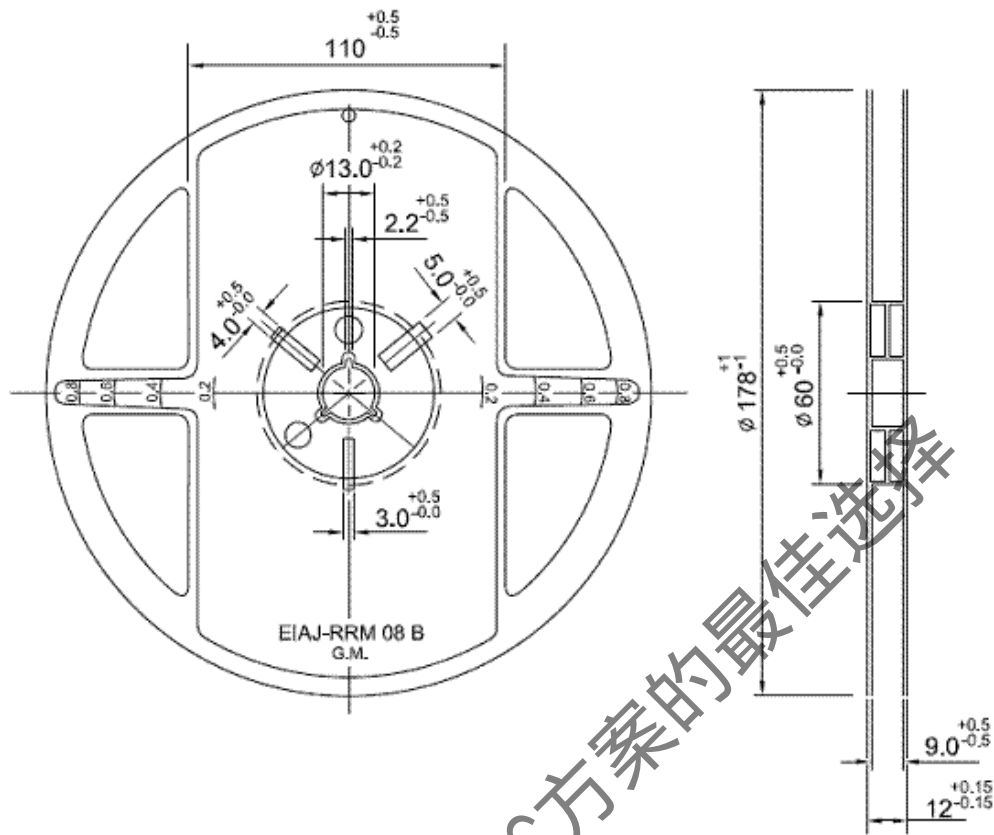
## 12.Packaging and Reel Specification



Unit : mm

Symbol	Size	Symbol	Size
W	8.00±0.10	D1	1.00±0.10
P	4.00±0.10	Po	4.00±0.10
E	1.75±0.10	Ao	1.40±0.10
F	3.50±0.05	Bo	2.30±0.10
P2	2.00±0.05	Ko	1.13±0.10
D	1.50 <sup>+0.10</sup> <sub>-0.00</sub>	t	0.22±0.05

## 13. REEL DIMENSIONS



Unit: mm

## 14. Contact Information

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