

## TCF 0504 H 650 02 A Engineering Specification

### 1.Scope

TCF 0504 H series is a thin film common mode filter designed to suppress common mode noise for high speed differential data lines, such as USB 2.0, IEEE 1394, LVDS, DVI, **HDMI**, **Displayport** and **MIPI**.

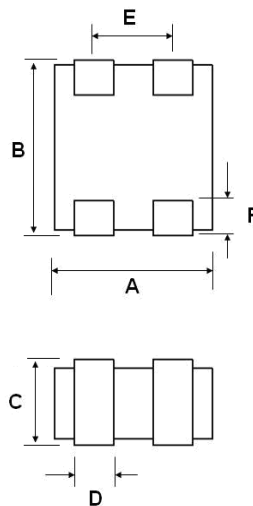
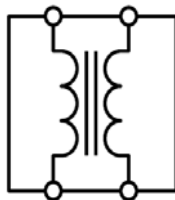
These differential interfaces can be used in personal computers, note books, LCD monitors, LCD/PDP/DLP TVs, Blu-ray/DVD players, personal handheld equipments, etc.

### 2.Explanation of Part Number

**TCF**   **0504**   **H**   **650**   **02**   **A**   □□  
 (1)   (2)   (3)   (4)   (5)   (6)   (7)

- (1) Product Type : TCF= Thin Film Common Mode Filter
- (2) EIA Dimension Code
- (3) Speed Identification Code: H= High Speed
- (4) Impedance(at 100MHz): 650= 65Ω
- (5) Line Code: 02= 2 lines
- (6) Specialized Specification Code
- (7) Control code

### 3.Circuit Diagram & Dimension



Unit: mm

Series	A	B	C	D	E	F
TCF 0504	0.95±0.1	1.25±0.2	0.6±0.15	0.25±0.15	0.5±0.1	0.2±0.15

## 4. Specifications

### 4.1. ABSOLUTE MAXIMUM RATINGS

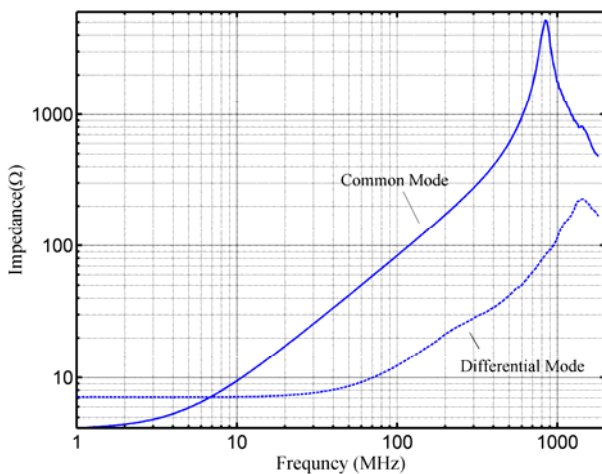
PARAMETER	PARAMETER	RATING	UNITS
Rated Voltage	$V_{DC}$	5	V
Rated Current	$I_{DC}$	100	mA
Lead Soldering Temperature	$T_{SOL}$	260 (10 sec.)	$^{\circ}C$

### 4.2. ELECTRICAL CHARACTERISTICS

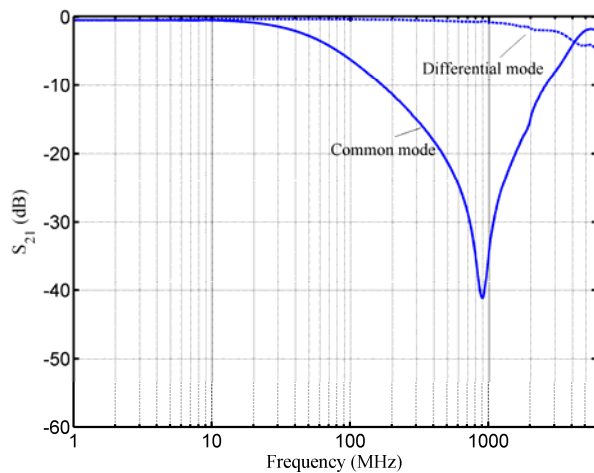
PARAMETER	MIN	TYP	MAX	UNITS
Common Mode Impedance (at 100 MHz)	52	65	78	$\Omega$
Cut-off Frequency		4		GHz
DC Resistance		3	6	$\Omega$
Insulation Resistance	10			M $\Omega$

### 4.3. TYPICAL CHARACTERISTICS

Impedance vs Frequency Characteristics\*



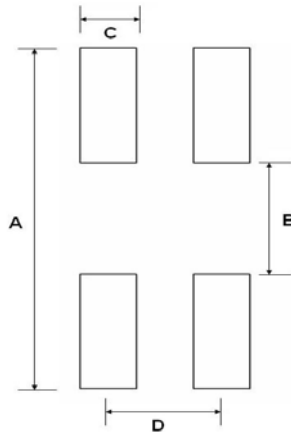
Insertion Loss vs Frequency Characteristics\*\*



\*Test Instrument: Agilent E4991A Impedance/Material Analyzer

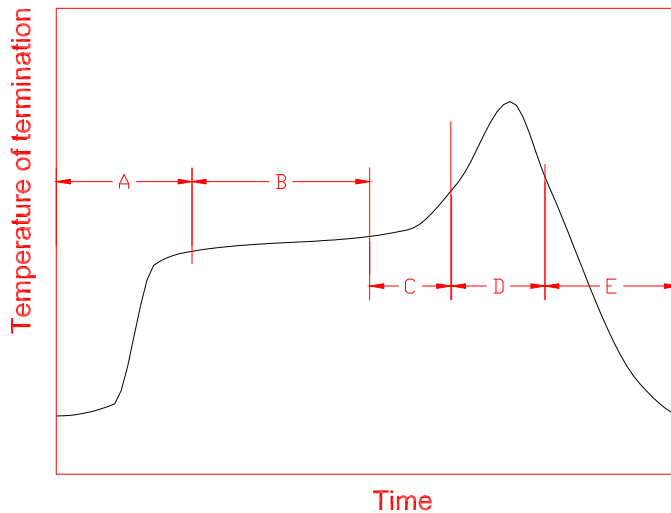
\*\*Test Instrument: Agilent E5071C ENA Series Network Analyzer

### 5.LAND LAYOUT



	mm
A	0.52
B	0.22
C	0.195
D	0.485

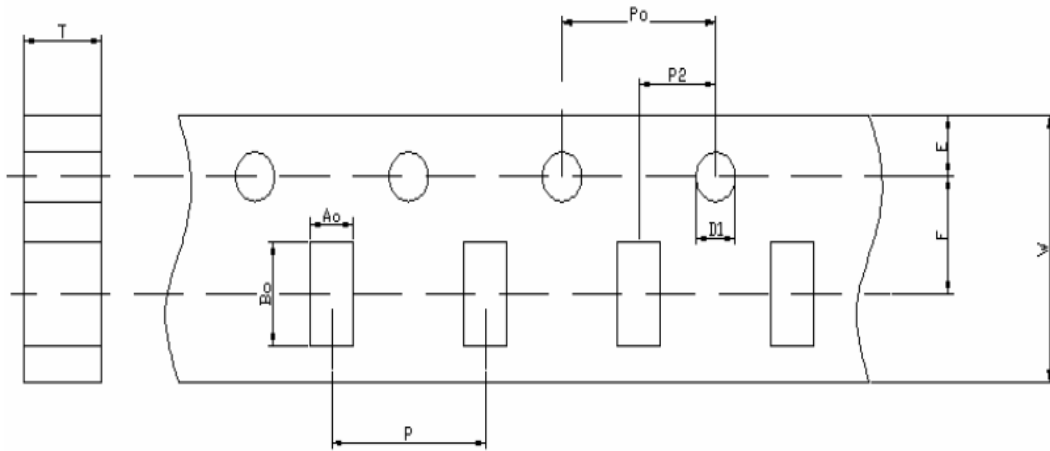
### 6.Recommendable reflow soldering



A	1 <sup>st</sup> rising temperature	The normal to Preheating temperature	30s to 60s
B	Preheating	140°C to 160°C	60s to 120s
C	2 <sup>nd</sup> rising temperature	Preheating to 200°C	20s to 40s
D	Main heating	if 220°C if 230°C if 240°C if 250°C if 260°C	50s~60s 40s~50s 30s~40s 20s~40s 20s~40s
E	Regular cooling	200°C to 100°C	1°C/s ~ 4°C/s

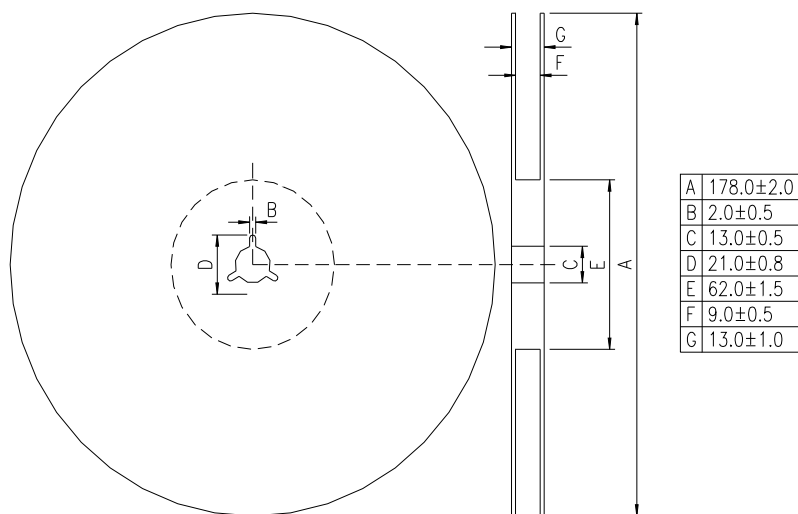
- According to J-STD-020C

### 7. Tape and reel specifications



<b>W</b>	<b>7.90-8.30</b>
<b>P</b>	<b>4.00±0.10</b>
<b>E</b>	<b>1.75±0.10</b>
<b>F</b>	<b>3.50±0.05</b>
<b>D1</b>	<b>1.55±0.05</b>
<b>Po</b>	<b>4.00±0.10</b>
<b>P2</b>	<b>2.00±0.05</b>
<b>Ao</b>	<b>1.15±0.10</b>
<b>Bo</b>	<b>1.55±0.10</b>
<b>T</b>	<b>0.75±0.10</b>

Unit: mm



A	178.0±2.0
B	2.0±0.5
C	13.0±0.5
D	21.0±0.8
E	62.0±1.5
F	9.0±0.5
G	13.0±1.0

\*Standard quantity : 5000pcs/Reel