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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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## Common Mode Filters

For ultra high-speed differential signal line  
(HDMI, DVI, DisplayPort, USB3.0, etc.)

### TCE series

Type:	TCE1210	[0504 inch]*
	TCE1210U	[0504 inch]
	TCE1608	[0603 inch]
		* Dimensions Code [EIA]

Issue date: September 2011

- All specifications are subject to change without notice.
  - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
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# Common Mode Filters

## For Ultra High-speed Differential Signal Line (HDMI, DVI, DisplayPort, USB3.0, etc.)

Conformity to RoHS Directive

### TCE Series TCE1210

#### FEATURES

- Common mode filter for improving EMC with an ESD protection element (ESD suppressor) using thin-film processing and material technology acquired from HDD head manufacturing.
- One component can be used for suppressing common mode noise and ESD.
- Greatly reduces the number of components and installation area.
- By providing wide bandwidth (cutoff frequency: 3GHz min.) for differential mode, this product has almost no effect for high-speed differential signals and can suppress the radiated emission.
- This product contains no lead and supports lead-free soldering.

#### APPLICATIONS

Suppressing noise and ESD for high-speed differential signal interfaces such as USB 2.0, USB3.0 and HDMI for mobile devices such as mobile phones, smartphones, digital cameras, and portable music players, and general consumer products.

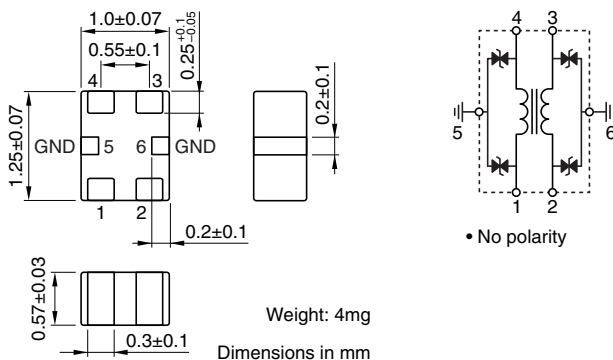
#### TEMPERATURE RANGES

Operating	-25 to +85°C
Storage(After mount)	-25 to +85°C

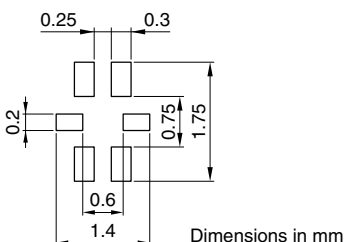
#### PACKAGING STYLE AND QUANTITIES

Packaging style	Quantity
Taping	4000 pieces/reel

#### SHAPES AND DIMENSIONS/CIRCUIT DIAGRAMS



#### RECOMMENDED PC BOARD PATTERNS



- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

- All specifications are subject to change without notice.

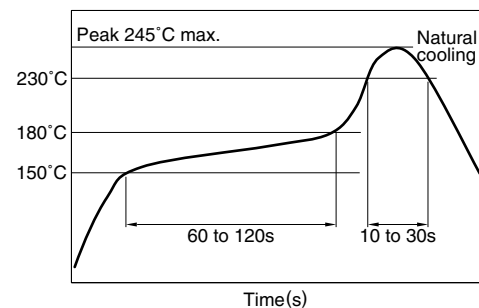
#### PRODUCT IDENTIFICATION

TCE	1210	-	900	-	2P	-	T
(1)	(2)		(3)		(4)		(5)

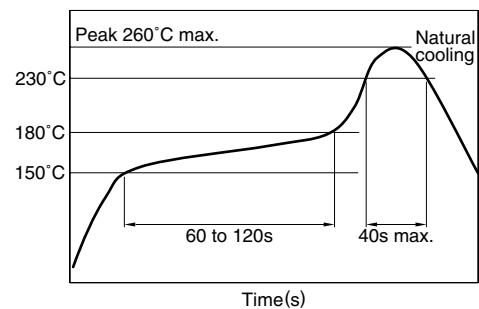
- (1) Series name
- (2) Dimensions L×W
- (3) Impedance[at 100MHz]  
900: 90Ω
- (4) Number of line  
2P: 2-line
- (5) Packaging style  
T: ø180mm reel taping

#### RECOMMENDED SOLDERING CONDITIONS

#### RECOMMENDED TEMPERATURE PROFILE FOR LEAD-FREE SOLDER



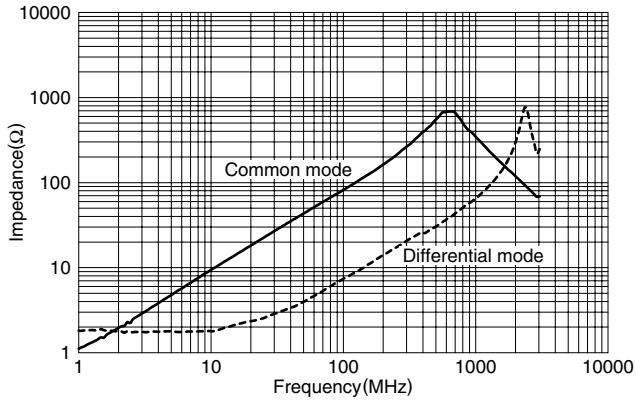
#### REFLOW PROFILE FOR SOLDER HEAT RESISTANCE



### ELECTRICAL CHARACTERISTICS

Part No.	Common mode impedance ( $\Omega$ ) [100MHz]		DC resistance ( $\Omega$ )max. [1 line]	Cutoff frequency (GHz)typ.	Clamp voltage (V)max.	Rated current Idc (A)max.	Rated voltage Edc (V)max.	Insulation resistance (M $\Omega$ )min.
	min.	typ.						
TCE1210-900-2P	60	90	1.75	5.0	100	0.1	10	1

### TYPICAL ELECTRICAL CHARACTERISTICS IMPEDANCE vs. FREQUENCY CHARACTERISTICS



• All specifications are subject to change without notice.

# Common Mode Filters For Ultra High-speed Differential Signal Line (HDMI, DVI, DisplayPort, USB3.0, etc.)

Conformity to RoHS Directive

## TCE Series TCE1210U

### FEATURES

- Common mode filter for improving EMC with an ESD protection element (ESD suppressor) using thin-film processing and material technology acquired from HDD head manufacturing.
- One component can be used for suppressing common mode noise and ESD.
- Greatly reduces the number of components and installation area.
- By providing wide bandwidth (cutoff frequency: 3GHz min.) for differential mode, this product has almost no effect for high-speed differential signals and can suppress the radiated emission.
- This product contains no lead and supports lead-free soldering.

### APPLICATIONS

Suppressing noise and ESD for high-speed differential signal interfaces such as USB 3.0, HDMI, and Serial ATA for mobile devices such as mobile phones, smartphones, digital cameras, and portable music players, and general consumer products.

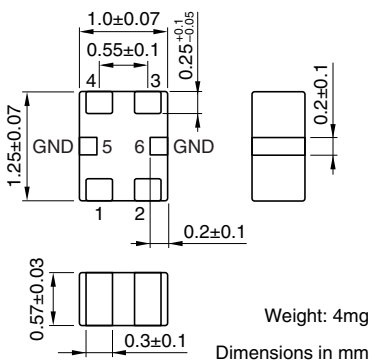
### TEMPERATURE RANGES

Operating	-25 to +85°C
Storage(After mount)	-25 to +85°C

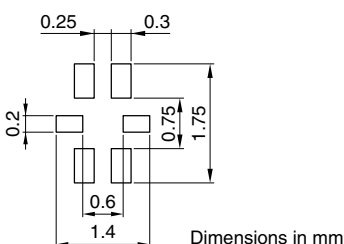
### PACKAGING STYLE AND QUANTITIES

Packaging style	Quantity
Taping	4000 pieces/reel

### SHAPES AND DIMENSIONS/CIRCUIT DIAGRAMS



### RECOMMENDED PC BOARD PATTERNS



- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

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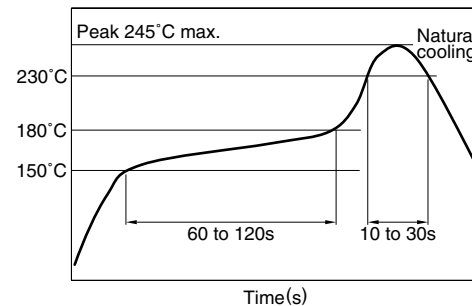
### PRODUCT IDENTIFICATION

TCE	1210	□	-	500	-	2P	-	T
(1)	(2)	(3)	(4)	(5)	(6)			

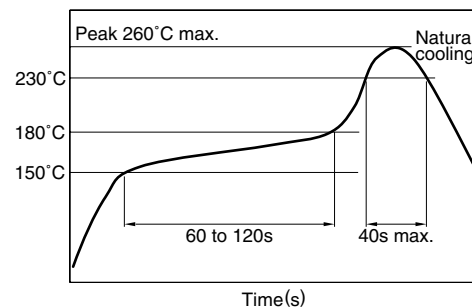
- (1) Series name
- (2) Dimensions L×W
- (3) Product identification number
- (4) Impedance[at 100MHz]  
500: 50Ω
- (5) Number of line  
2P: 2-line
- (6) Packaging style  
T: ø180mm reel taping

### RECOMMENDED SOLDERING CONDITIONS

#### RECOMMENDED TEMPERATURE PROFILE FOR LEAD-FREE SOLDER



#### REFLOW PROFILE FOR SOLDER HEAT RESISTANCE

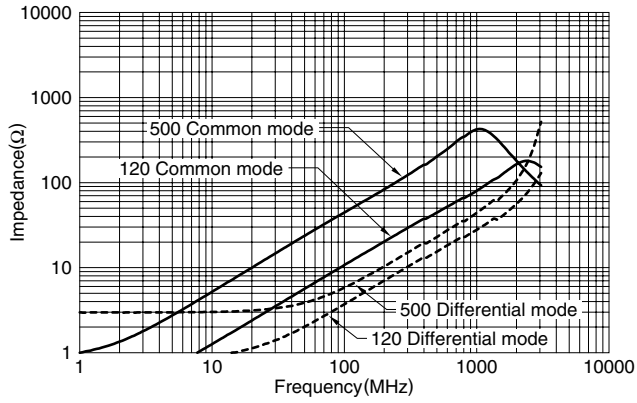


## ELECTRICAL CHARACTERISTICS

Part No.	Common mode impedance ( $\Omega$ ) [100MHz]	DC resistance ( $\Omega$ )max. [1 line]	Cutoff frequency (GHz)typ.	Clamp voltage (V)max.	Rated current Idc (A)max.	Rated voltage Edc (V)max.	Insulation resistance (M $\Omega$ )min.
TCE1210U-500-2P	50 $\pm$ 20	1.7	6.5	100	0.1	10	1
TCE1210U-120-2P	12 $\pm$ 5	0.7	8.0	120	0.1	10	1

## TYPICAL ELECTRICAL CHARACTERISTICS

### IMPEDANCE vs. FREQUENCY CHARACTERISTICS



# Common Mode Filters For Ultra High-speed Differential Signal Line (HDMI, DVI, DisplayPort, USB3.0, etc.)

Conformity to RoHS Directive

## TCE Series TCE1608

### FEATURES

- Common mode filter for improving EMC with an ESD protection element (ESD Suppressor) using thin-film processing and material technology acquired from HDD head manufacturing.
- One component can be used for suppressing common mode noise and ESD.
- Greatly reduces the number of components and installation area.
- By providing wide bandwidth (cutoff frequency: 3GHz min.) for differential mode, this product has almost no effect for high-speed differential signals and can suppress the radiated emission.
- This product contains no lead and supports lead-free soldering.

### APPLICATIONS

Suppressing noise and ESD for high-speed differential signal interfaces such as USB 3.0, HDMI, and Serial ATA for mobile devices such as mobile phones, smartphones, digital cameras, and portable music players, and general consumer products.

### TEMPERATURE RANGES

Operating	-25 to +85°C
Storage(After mount)	-25 to +85°C

### PACKAGING STYLE AND QUANTITIES

Packaging style	Quantity
Taping	4000 pieces/reel

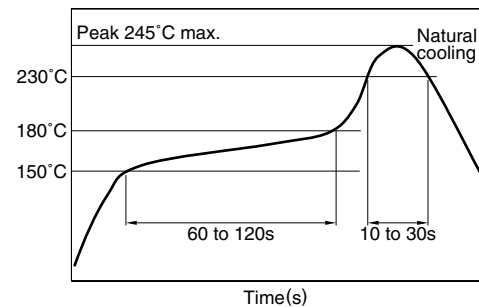
### PRODUCT IDENTIFICATION

TCE 1608 - 900 - 4P - T  
(1) (2) (3) (4) (5)

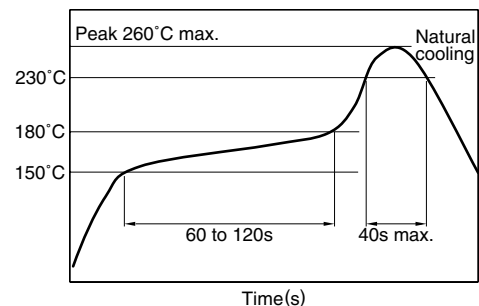
- (1) Series name
- (2) Dimensions L×W
- (3) Impedance[at 100MHz]  
900: 90Ω
- (4) Number of line  
4P: 4-line
- (5) Packaging style  
T: ø180mm reel taping

### RECOMMENDED SOLDERING CONDITIONS

#### RECOMMENDED TEMPERATURE PROFILE FOR LEAD-FREE SOLDER



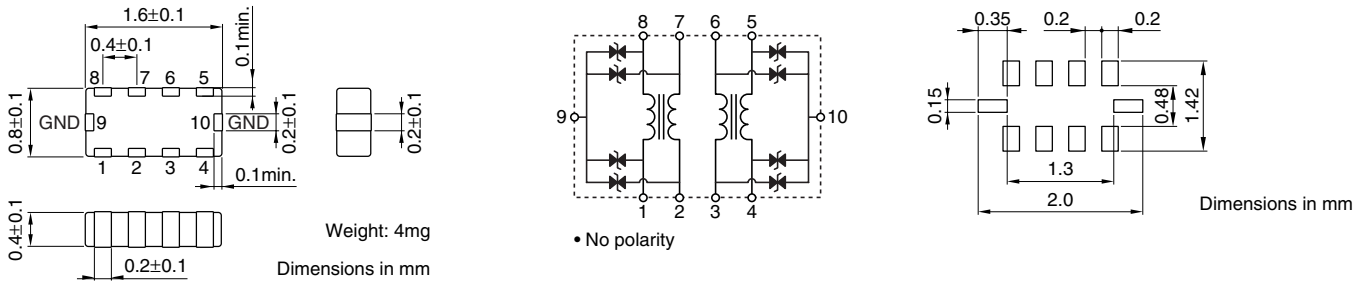
#### REFLOW PROFILE FOR SOLDER HEAT RESISTANCE



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• All specifications are subject to change without notice.

## SHAPES AND DIMENSIONS/CIRCUIT DIAGRAMS/RECOMMENDED PC BOARD PATTERNS



## ELECTRICAL CHARACTERISTICS

Part No.	Common mode impedance ( $\Omega$ ) [100MHz]		DC resistance ( $\Omega$ )max. [1 line]	Cutoff frequency (GHz)typ.	Clamp voltage (V)max.	Rated current $I_{dc}$ (A)max.	Rated voltage $E_{dc}$ (V)max.	Insulation resistance ( $M\Omega$ )min.
	min.	typ.						
TCE1608-900-4P	60	90	1.95	5.0	100	0.1	10	1

## TYPICAL ELECTRICAL CHARACTERISTICS

### IMPEDANCE vs. FREQUENCY CHARACTERISTICS

