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.

TDK

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.

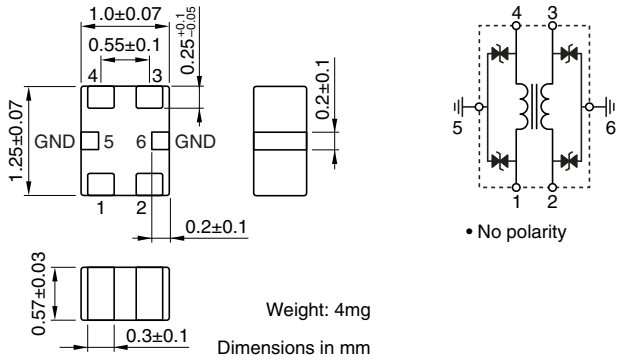
TEMPERATURE RANGES

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

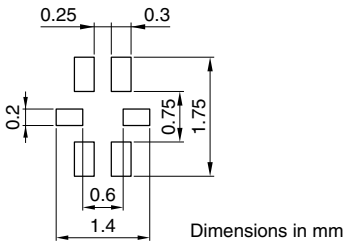
PACKAGING STYLE AND QUANTITIES

Packaging style	Quantity
Taping	4000 pieces/reel

SHAPES AND DIMENSIONS/CIRCUIT DIAGRAMS



RECOMMENDED PC BOARD PATTERNS

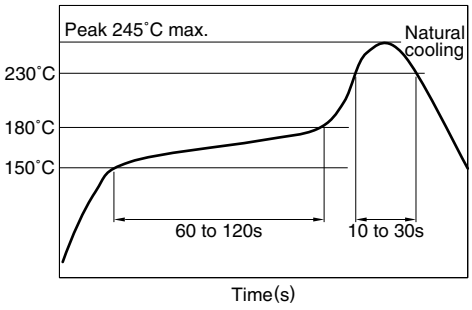


PRODUCT IDENTIFICATION

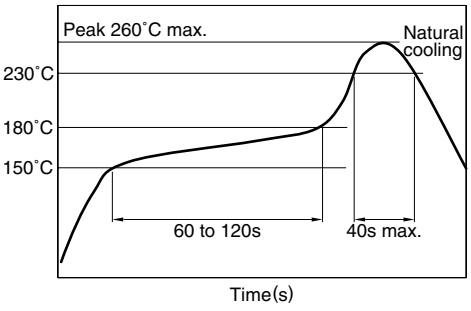
TCE	1210	-	900	-	2P	-	T
(1)	(2)		(3)		(4)		(5)

(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



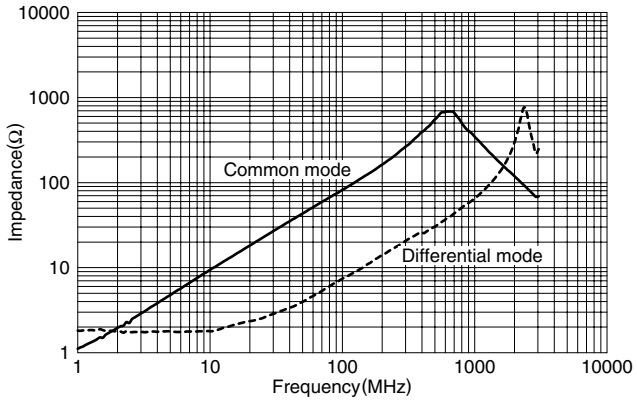
- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

ELECTRICAL CHARACTERISTICS

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

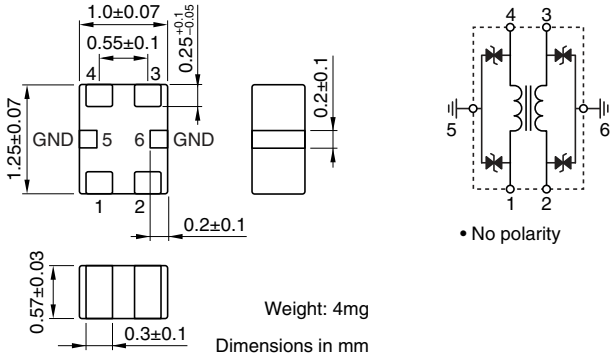
TEMPERATURE RANGES

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

PACKAGING STYLE AND QUANTITIES

Packaging style	Quantity
Taping	4000 pieces/reel

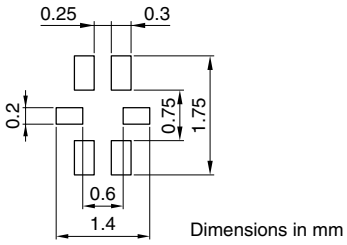
SHAPES AND DIMENSIONS/CIRCUIT DIAGRAMS



Weight: 4mg

Dimensions in mm

RECOMMENDED PC BOARD PATTERNS



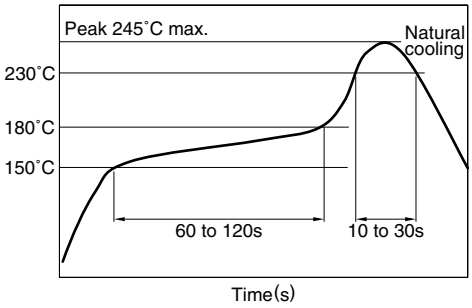
Dimensions in mm

PRODUCT IDENTIFICATION

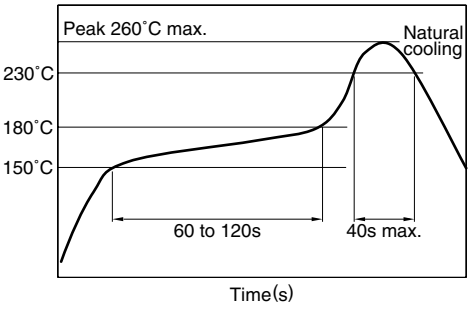
TCE	1210	□	-	500	-	2P	-	T
(1)	(2)	(3)		(4)		(5)		(6)

(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



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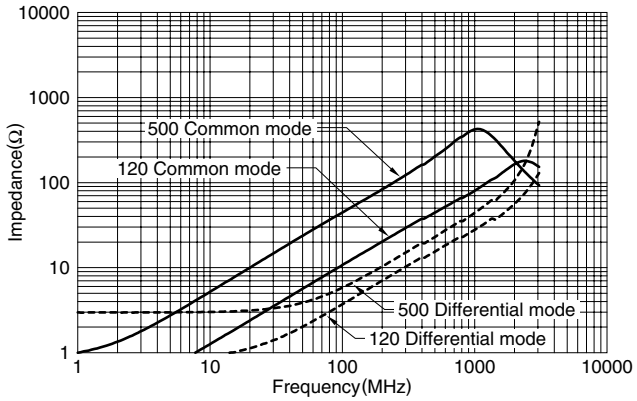
ELECTRICAL CHARACTERISTICS

Part No.	Common mode impedance (Ω) [100MHz]	DC resistance (Ω)max. [1 line]	Cutoff frequency (GHz)typ.	Clamp voltage (V)max.	Rated current Idc (A)max.	Rated voltage Edc (V)max.	Insulation resistance (MΩ)min.
TCE1210U-500-2P	50±20	1.7	6.5	100	0.1	10	1
TCE1210U-120-2P	12±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.
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APPLICATIONS

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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

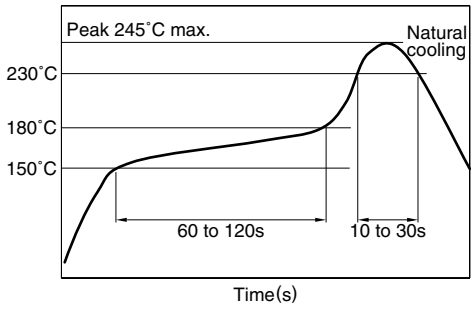
PRODUCT IDENTIFICATION

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

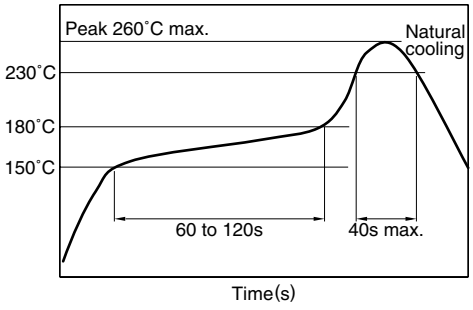
(1) Series name
(2) Dimensions L×W
(3) Impedance[at 100MHz]
900: 90Ω
(4) Number of line
4P: 4-line
(5) Packaging style
T: ø180mm reel taping

RECOMMENDED SOLDERING CONDITIONS

RECOMMENDED TEMPERATURE PROFILE FOR LEAD-FREE SOLDER



REFLOW PROFILE FOR SOLDER HEAT RESISTANCE



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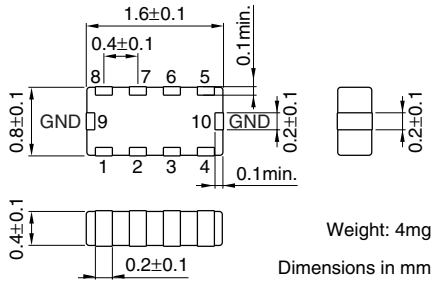
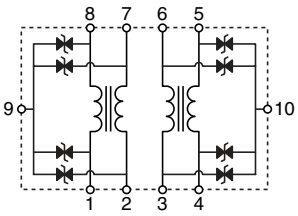
SHAPES AND DIMENSIONS/CIRCUIT DIAGRAMS/RECOMMENDED PC BOARD PATTERNS

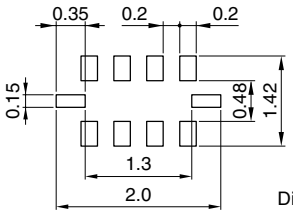


Weight: 4mg

Dimensions in mm



• No polarity



Dimensions in mm

ELECTRICAL CHARACTERISTICS

Part No.	Common mode impedance (Ω) [100MHz]		DC resistance (Ω)max. [1 line]	Cutoff frequency (GHz)typ.	Clamp voltage (V)max.	Rated current Idc (A)max.	Rated voltage Edc (V)max.	Insulation resistance (MΩ)min.
	min.	typ.						
TCE1608-900-4P	60	90	1.95	5.0	100	0.1	10	1

TYPICAL ELECTRICAL CHARACTERISTICS

IMPEDANCE vs. FREQUENCY CHARACTERISTICS