Sep. 2024 Ver.5.0
TDK Corporation

Multilayer Diplexer

For 699-2170MHz / 2300-2690MHz

DPX Series 2.5x2.0mm [EIA 1008] TYPE

P/N: **DPX252690DT-5225A1**

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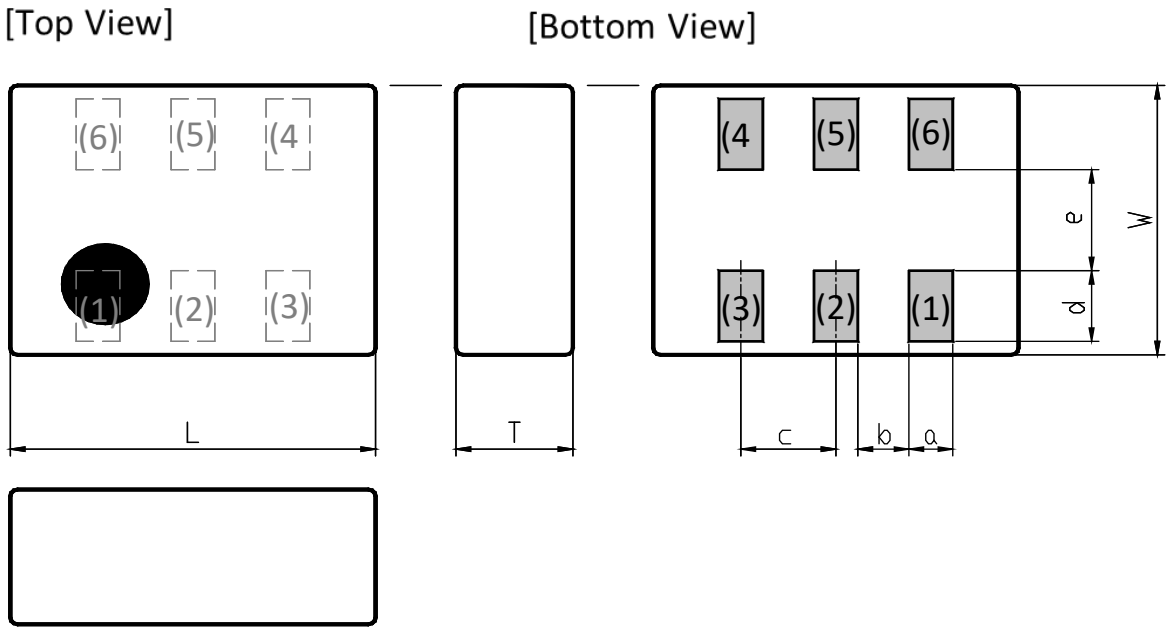
SHAPES AND DIMENSIONS



Dimensions (mm)

L	W	T	a	b	c	d	e
2.50 +/-0.10	2.00 +/-0.10	0.80 +/-0.10	0.40 +/-0.10	0.25 +/-0.10	0.65 +/-0.10	0.525 +/-0.10	0.75 +/-0.10

Terminal functions

(1)	High-Band Port
(2)	GND
(3)	Low-Band Port

(4)	GND
(5)	Common Port
(6)	GND

TERMINATION FINISH

Material
Au plate

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ELECTRICAL CHARACTERISTICS

(Measurement)

Low-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	699 to 960	-	0.44	0.60
	960 to 1427	-	0.54	0.75
	1427 to 1710	-	0.62	0.85
	1710 to 1990	-	0.79	1.00
	1990 to 2110	-	0.91	1.50
	2110 to 2170	-	1.62	2.50
Return Loss@Common (dB)	699 to 960	10	12	-
	960 to 1710	8	11	-
	1710 to 2170	10	13	-
Return Loss@Low-Band (dB)	699 to 960	10	12	-
	960 to 1710	8	11	-
	1710 to 2170	10	15	-
Attenuation (dB)	2300 to 2350	5	12	-
	2350 to 2500	10	16	-
	2500 to 2690	10	14	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

High-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	2300 to 2350	-	1.54	2.15
	2350 to 2500	-	0.87	1.50
	2500 to 2690	-	0.48	0.65
Return Loss@Common (dB)	2300 to 2690	10	17	-
Return Loss@High-Band (dB)	2300 to 2690	10	16	-
Attenuation (dB)	699 to 960	15	18	-
	960 to 1427	15	19	-
	1427 to 1710	12	14	-
	1710 to 1990	8	11	-
	1990 to 2110	8	11	-
	2110 to 2170	5	11	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

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ELECTRICAL CHARACTERISTICS

(Measurement)

Isolation

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Isolation (dB)	699 to 960	15	17	-
	960 to 1427	15	18	-
	1427 to 1710	12	13	-
	1710 to 1990	8	11	-
	1990 to 2110	8	12	-
	2110 to 2170	5	15	-
	2300 to 2350	5	13	-
	2350 to 2500	10	17	-
	2500 to 2690	10	15	-

Ta = +25+/-5°C

MAXIMUM RATINGS

Parameter			TDK Spec	Conditions
Operating temperature (°C)			–40 to +85 °C	
Storage temperature (°C)			–40 to +85 °C	
Power Handling (W) *1		Frequency (MHz)		
	Low-Band	699 to 960	3	CW
		960 to 1710	2	CW
		1710 to 2170	2.5	CW Duty 50%
	High-Band	2300 to 2690	1	CW
Human Body Model : HBM		@Each Port (V)	+/-1000	100pF / 1500ohm
Machine Model : MM		@Each Port (V)	+/-150	200pF / 0ohm
Charged Device Model : CDM		@Each Port (V)	+/-500	Humidity : 60%RH max

*1 : Refer to 3GPP TS 38.101-1 V15.2.0

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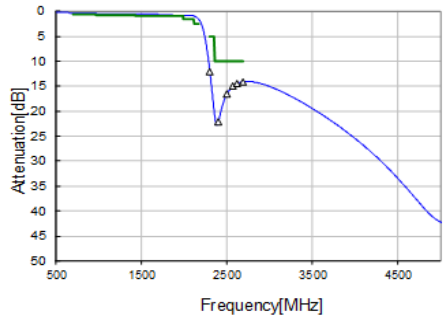
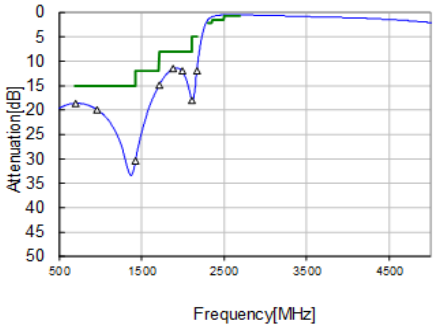
FREQUENCY CHARACTERISTICS

Low band-Port



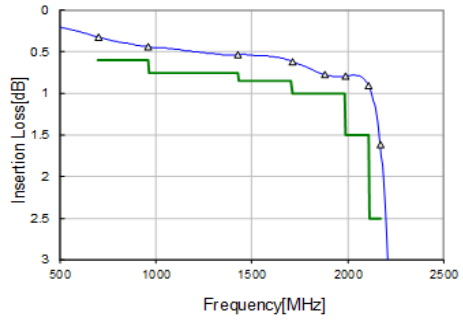
Attenuation		
2300	MHz	12.10 dB
2400	MHz	22.17 dB
2500	MHz	16.56 dB
2570	MHz	15.01 dB
2620	MHz	14.45 dB
2690	MHz	14.09 dB

High band-Port



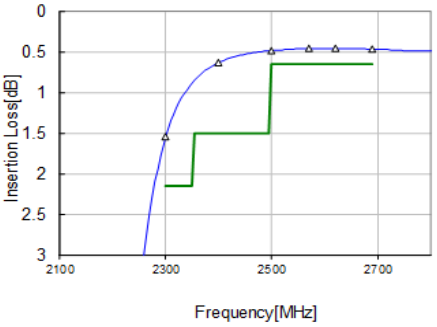
Attenuation		
699	MHz	18.62 dB
960	MHz	19.88 dB
1427	MHz	30.41 dB
1710	MHz	14.94 dB
1880	MHz	11.50 dB
1990	MHz	11.97 dB
2110	MHz	17.98 dB
2170	MHz	11.89 dB

Low band-Port



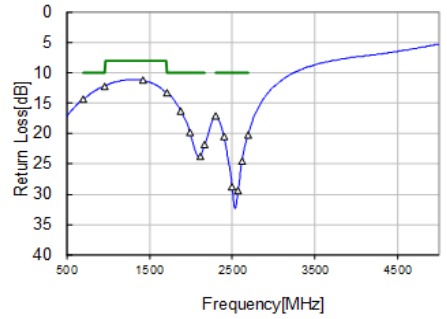
Insertion Loss		
699	MHz	0.32 dB
960	MHz	0.44 dB
1427	MHz	0.54 dB
1710	MHz	0.62 dB
1880	MHz	0.77 dB
1990	MHz	0.79 dB
2110	MHz	0.91 dB
2170	MHz	1.62 dB

High band-Port



Insertion Loss		
2300	MHz	1.54 dB
2400	MHz	0.63 dB
2500	MHz	0.48 dB
2570	MHz	0.46 dB
2620	MHz	0.45 dB
2690	MHz	0.46 dB

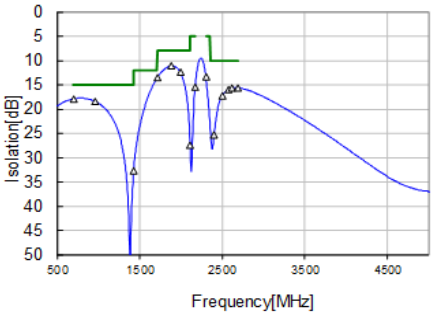
Common Port Return Loss



699	MHz	14.34 dB
960	MHz	12.25 dB
1427	MHz	11.22 dB
1710	MHz	13.31 dB
1880	MHz	16.25 dB
1990	MHz	19.80 dB
2110	MHz	23.79 dB
2170	MHz	21.78 dB

2300	MHz	17.11 dB
2400	MHz	20.49 dB
2500	MHz	28.77 dB
2570	MHz	29.36 dB
2620	MHz	24.58 dB
2690	MHz	20.18 dB

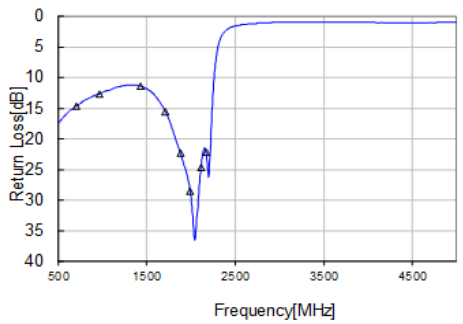
Isolation



699	MHz	17.9 dB
960	MHz	18.4 dB
1427	MHz	32.7 dB
1710	MHz	13.6 dB
1880	MHz	11.1 dB
1990	MHz	12.4 dB
2110	MHz	27.5 dB
2170	MHz	15.5 dB

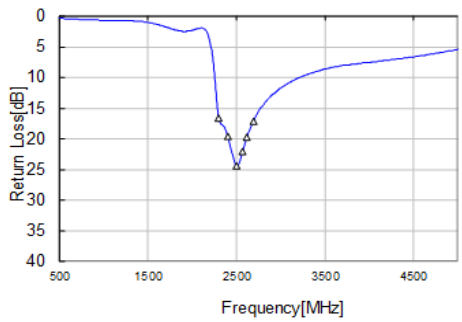
2300	MHz	13.4 dB
2400	MHz	25.2 dB
2500	MHz	17.2 dB
2570	MHz	15.9 dB
2620	MHz	15.6 dB
2690	MHz	15.6 dB

Low band-Port Return Loss



699	MHz	14.70 dB
960	MHz	12.69 dB
1427	MHz	11.39 dB
1710	MHz	15.61 dB
1880	MHz	22.36 dB
1990	MHz	28.52 dB
2110	MHz	24.63 dB
2170	MHz	22.15 dB

High band-Port Return Loss



2300	MHz	16.67 dB
2400	MHz	19.59 dB
2500	MHz	24.36 dB
2570	MHz	22.05 dB
2620	MHz	19.70 dB
2690	MHz	17.19 dB

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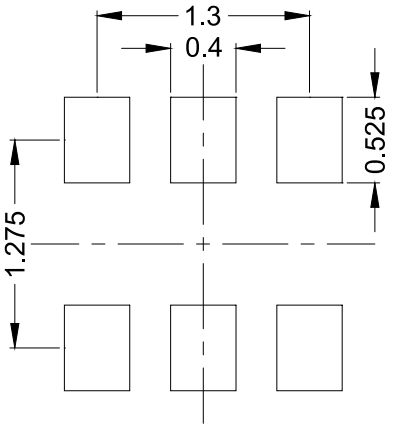
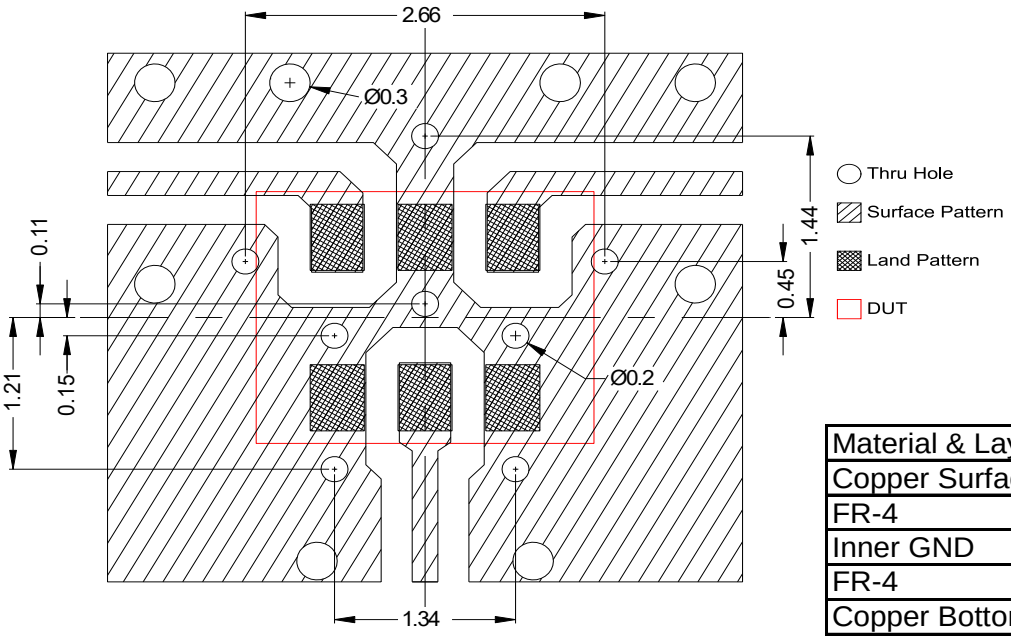
RECOMMENDED LAND PATTERN



unit : mm

EVALUATION BOARD



Material & Layer	Thickness
Copper Surface Pattern	0.035 mm
FR-4	0.10 mm
Inner GND	0.018 mm
FR-4	0.30 mm
Copper Bottom GND	0.035 mm

unit : mm

* Line width should be designed to match 50 ohm characteristic impedance depending on PCB material and thickness.
** The position of the throuh hole which have possibility of influence to the prerformance are indicated by dimension line.

ENVIRONMENT INFORMATION

RoHS Statement
RoHS Compliance

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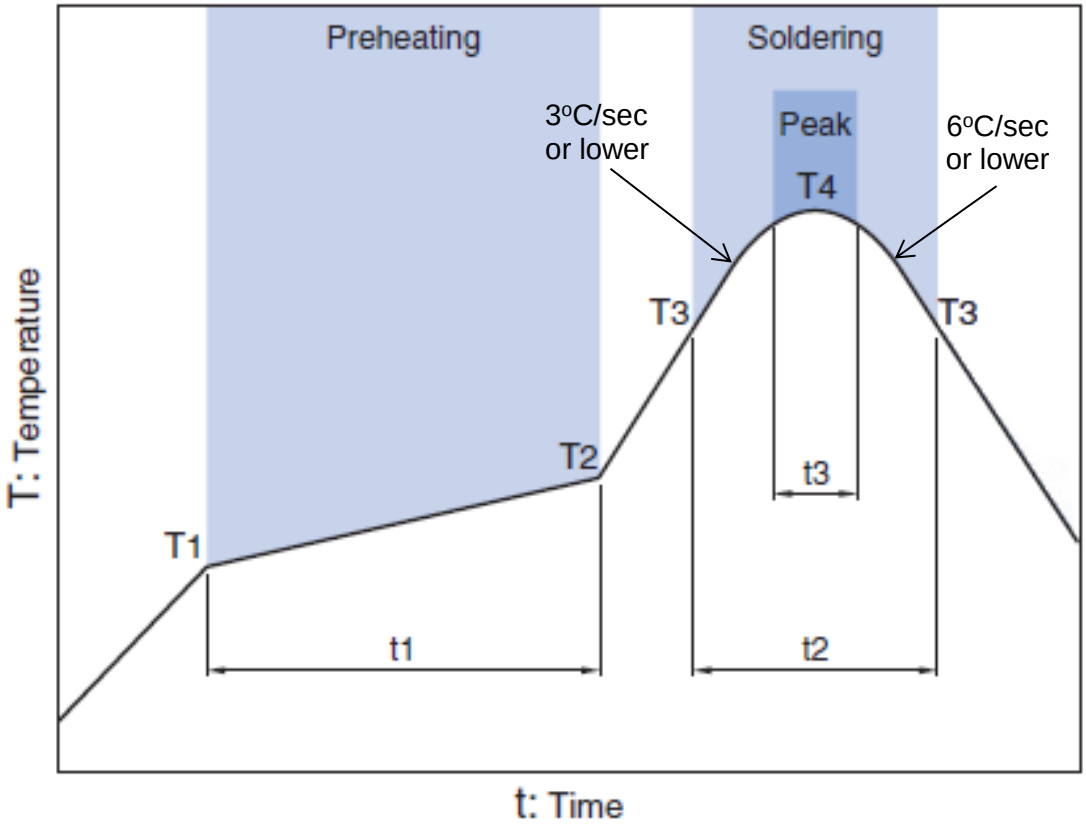
RECOMMENDED REFLOW PROFILE



Preheating			Soldering			
			Critical zone (T3 to T4)		Peak	
Temp.		Time	Temp.	Time	Temp.	Time
T1	T2	t1	T3	t2	T4	t3 *
150°C	200°C	60 to 120sec	217°C	60 to 120sec	240 to 260°C	30 sec Max

* t3 : Time within 5°C of actual peak temperature

The maximum number of reflow is 3.

Note: Lead free solder is recommended.
Recommended solder is Sn-3.0Ag-0.5Cu. (M705 by Senju Metal Industry)

GENERAL TECHNICAL INFORMATION

https://product.tdk.com/en/system/files?file=dam/doc/product/rf/rf/diplexer/general_tech_info/rf_general-technical-info_02_en.pdf

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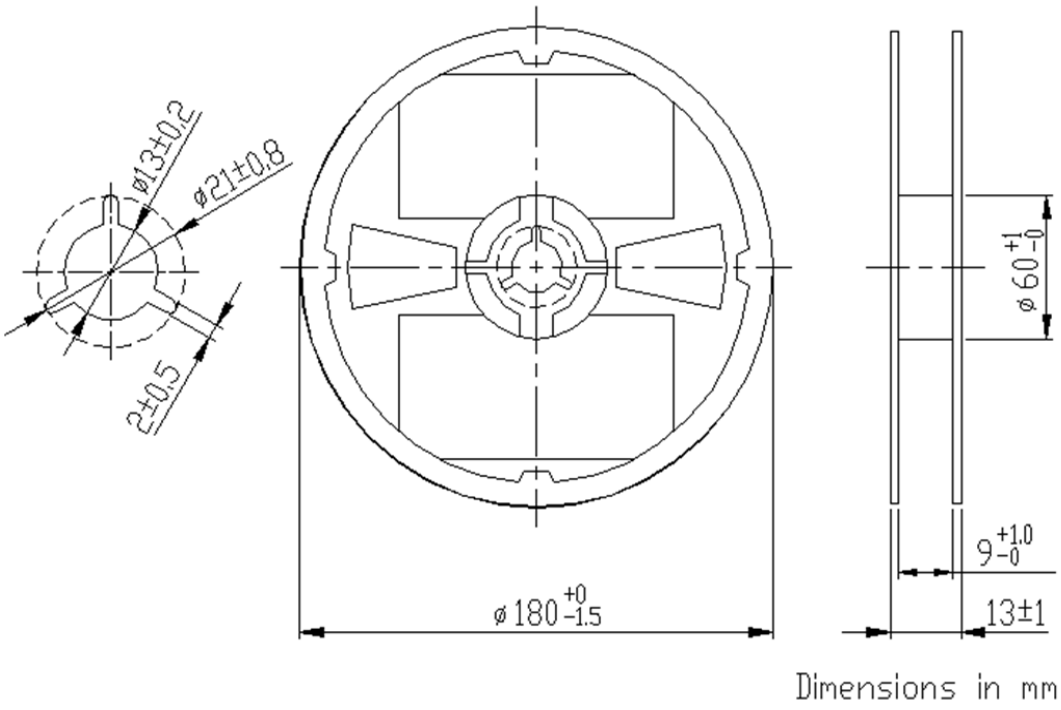
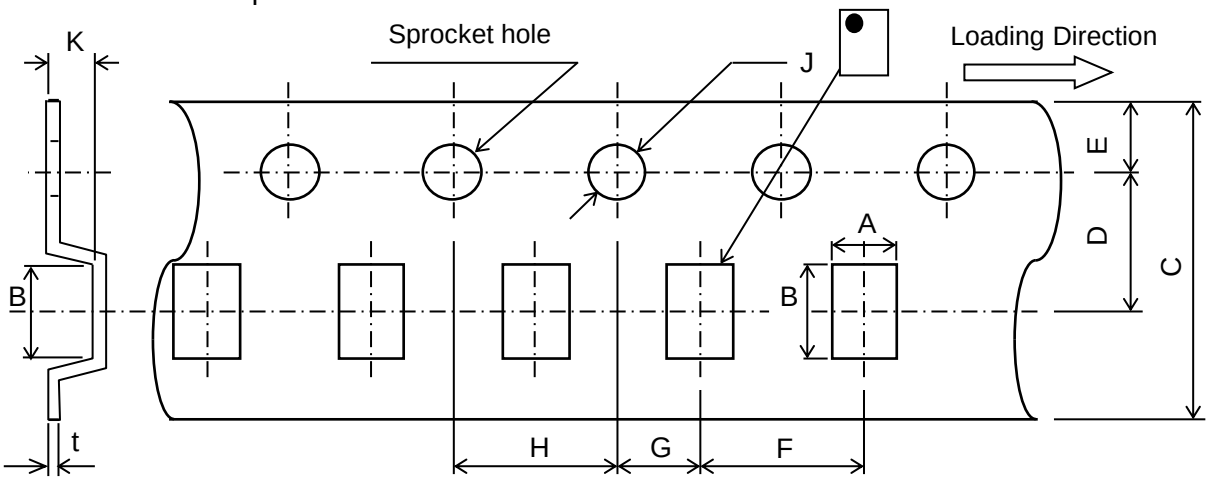
■ PACKAGING STYLE

Reel Dimensions



Carrier Tape



Dimensions (mm)

A	B	C	D	E	F	G	H	J	K	t
2.2 +/-0.05	2.7 +/-0.05	8.0 +0.3/-0.1	3.5 +/-0.05	1.75 +/-0.1	4.0 +/-0.1	2.0 +/-0.05	4.0 +/-0.1	1.5 +0.1/-0	1.15 MAX	0.25 +/-0.05

STANDARD PACKAGE QUANTITY (pieces/reel)
2,000

REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using these products.

⚠ REMINDERS

The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.
The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.
Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this catalog.

(1) Aerospace/Aviation equipment
(2) Transportation equipment (cars, electric trains, ships, etc.)
(3) Medical equipment
(4) Power-generation control equipment
(5) Atomic energy-related equipment
(6) Seabed equipment
(7) Transportation control equipment
(8) Public information-processing equipment
(9) Military equipment
(10) Electric heating apparatus, burning equipment
(11) Disaster prevention/crime prevention equipment
(12) Safety equipment
(13) Other applications that are not considered general-purpose applications

When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.