



May. 2021 Ver.2.0
TDK Corporation

Multilayer Diplexer

For LTE//n77

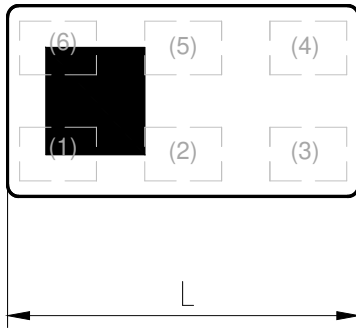
DPX Series 1.6x0.8mm [EIA 0603] TYPE

P/N: **DPX164200DT-8202B1**

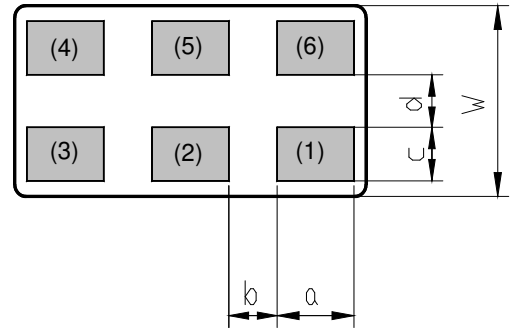
DPX164200DT-8202B1

■ SHAPES AND DIMENSIONS

[Top View]



[Bottom View]



Dimensions (mm)

L	W	T	a	b	c	d
1.60	0.80	0.65	0.35	0.22	0.225	0.22
+/-0.10	+/-0.10	Max	+/-0.05	+/-0.05	+/-0.05	+/-0.05

Terminal functions

(1)	GND
(2)	Common Port
(3)	GND

(4)	High-Band Port
(5)	GND
(6)	Low-Band Port

■ TERMINATION FINISH

Material
Ag

DPX164200DT-8202B1

■ ELECTRICAL CHARACTERISTICS

(Measurement)

Low-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	617 to 960	-	0.11	0.50
	1166 to 1606	-	0.26	0.50
	1710 to 1785	-	0.31	0.50
	1805 to 1885	-	0.34	0.50
	1930 to 1990	-	0.37	0.50
	2300 to 2496	-	0.54	0.90
	2496 to 2690	-	0.68	1.10
Insertion Loss (dB) (-40 to +85 °C)	617 to 960	-	-	0.70
	1166 to 1606	-	-	0.70
	1710 to 1785	-	-	0.70
	1805 to 1885	-	-	0.70
	1930 to 1990	-	-	0.70
	2300 to 2496	-	-	1.10
	2496 to 2690	-	-	1.30
Return Loss@Low-Band (dB)	617 to 2690	10	15	-
Attenuation (dB)	3300 to 3700	15	20	-
	3700 to 3800	15	22	-
	3800 to 4200	20	23	-
	4400 to 5000	25	30	-
	5150 to 5925	20	25	-
	5925 to 12750	10	21	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

DPX164200DT-8202B1

■ ELECTRICAL CHARACTERISTICS

(Measurement)

High-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	3300 to 4200	-	0.91	1.24
Insertion Loss (dB) (-40 to +85 °C)	3300 to 4200	-	-	1.50
Return Loss@High-Band (dB)	3300 to 4200	10	18	-
Attenuation (dB)	500 to 1606	13	15	-
	1606 to 2400	13	14	-
	2400 to 2500	14	17	-
	2500 to 2690	15	18	-
	2700 to 3150	0.5	2.2	-
	4400 to 4900	0.5	1.1	-
	4900 to 5150	5	8.5	-
	5150 to 5925	10	13	-
	6250 to 6550	10	12	-
	6600 to 8400	10	12	-
	8400 to 9000	15	22	-
9900 to 12660	10	12	-	
13200 to 16800	3	7	-	
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

Common

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Return Loss (dB) (Common Port)	617 to 2690	10	17.0	-
	3300 to 4200	10	17.0	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

DPX164200DT-8202B1

■ ELECTRICAL CHARACTERISTICS

(Measurement)

Isolation

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Isolation (dB)	617 to 2690	13	15	-
	3300 to 4200	18	23	-

 $T_a = +25 \pm 5^\circ\text{C}$

■ MAXIMUM RATINGS

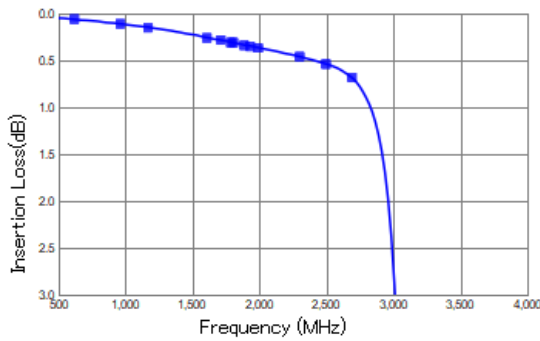
Parameter		TDK Spec	Conditions
Operating temperature (°C)		-40 to +85 °C	
Storage temperature (°C)		-40 to +85 °C	
Power Handling (W) *1	Frequency (MHz)		
	Low-Band	698 to 960	4 GSM signal Duty 50%
		1427 to 2690	1 CW
High-Band	3300 to 4200	1 CW	
Human Body Model : HBM	@Each Port (V)	+/-1000	100pF / 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

DPX164200DT-8202B1

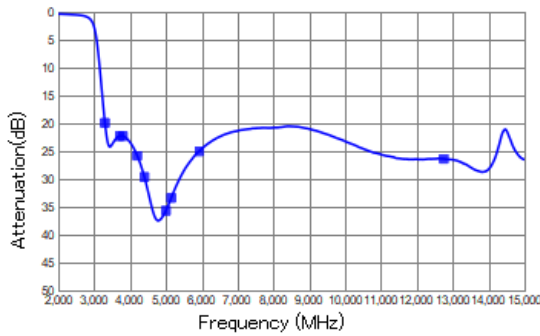
FREQUENCY CHARACTERISTICS

Insertion Loss (Low-Band)



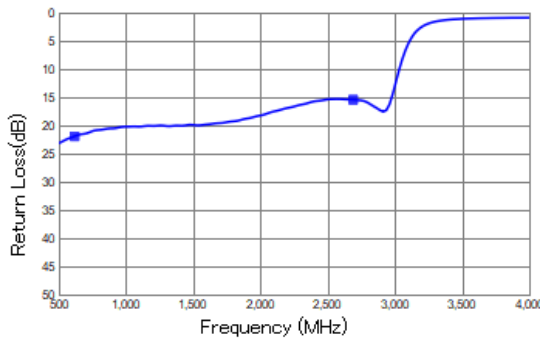
Freq	dB	Freq	dB
617	0.06	1885	0.34
960	0.11	1930	0.35
1166	0.15	1990	0.37
1606	0.26	2300	0.46
1710	0.28	2496	0.54
1785	0.31	2690	0.68
1805	0.31		

Attenuation (Low-Band)



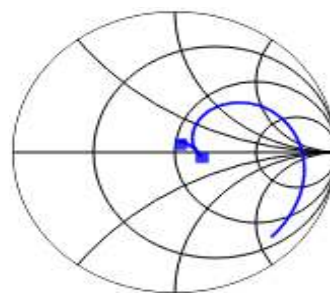
Freq	dB
3300	19.9
3700	22.3
3800	22.3
4200	25.8
4400	29.6
5000	35.7
5150	33.4
5925	25.0
12750	26.4

Return Loss (Low-Band)



Freq	dB
617	21.9
2690	15.5

Smith Chart (Low-Band)

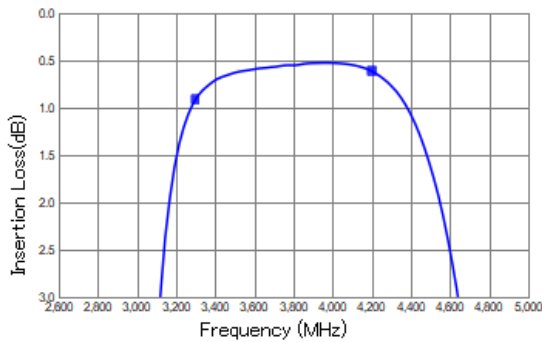


Freq	r/x
617	52.68/7.8
2690	69.78/-4.32

DPX164200DT-8202B1

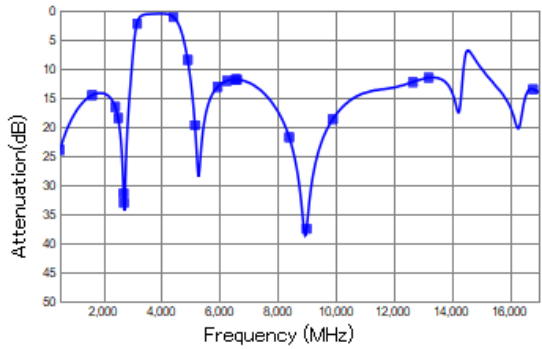
FREQUENCY CHARACTERISTICS

Insertion Loss (High-Band)



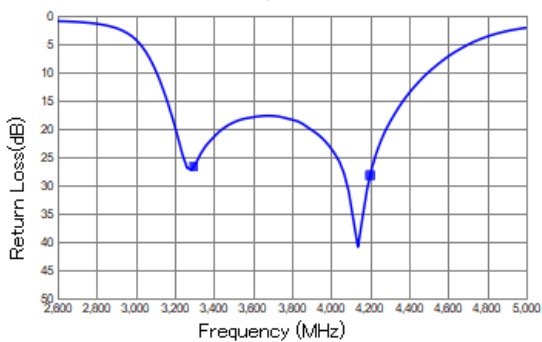
Freq	dB
3300	0.91
4200	0.61

Attenuation (High-Band)



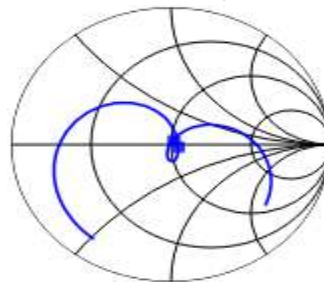
Freq	dB	Freq	dB	Freq	dB
500	24.0	4400	1.07	8400	21.8
1606	14.6	4900	8.47	9000	37.5
2400	16.6	5150	19.7	9900	18.7
2500	18.5	5925	13.2	12660	12.3
2690	31.4	6250	12.1	13200	11.5
2700	33.1	6550	11.9	16800	13.5
3150	2.24	6600	11.9		

Return Loss (High-Band)



Freq	dB
3300	26.6
4200	28.2

Smith Chart (High-Band)

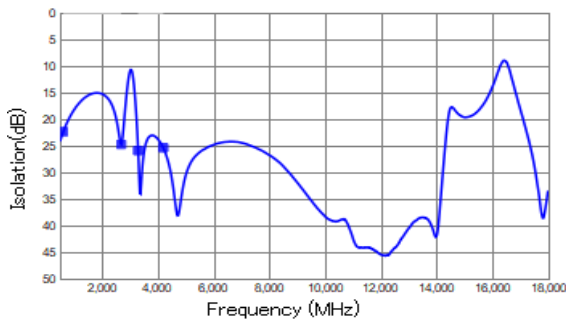


Freq	r/x
3300	54.65/-1.53
4200	51.12/3.76

DPX164200DT-8202B1

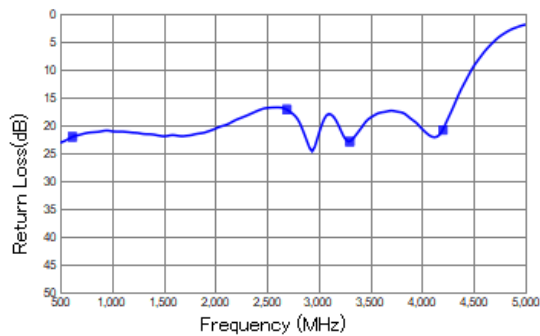
■ FREQUENCY CHARACTERISTICS

Isolation



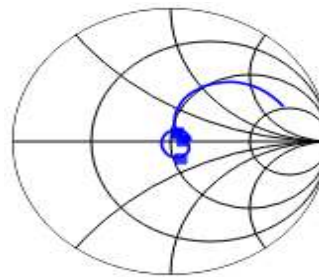
Freq	dB
617	22.4
2690	24.8
3300	25.9
4200	25.4

Return Loss (Common)



Freq	dB
617	22.1
2690	17.2
3300	22.9
4200	20.8

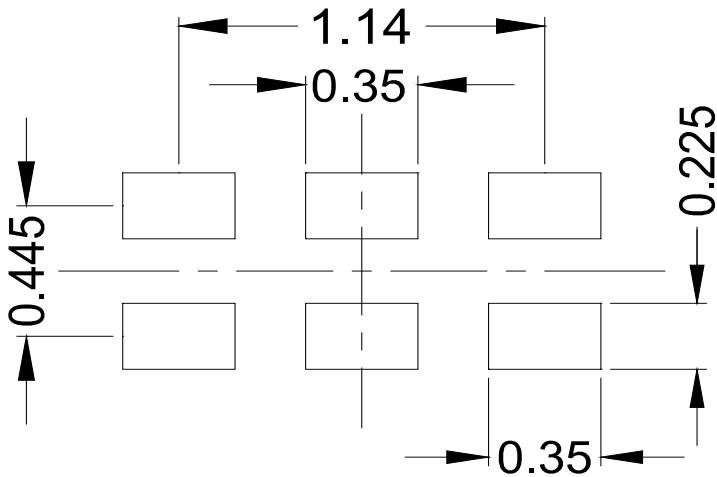
Smith Chart (Common)



Freq	r/x
617	53.07/7.53
2690	54.41/-13.94
3300	57.57/1.3
4200	53.63/8.74

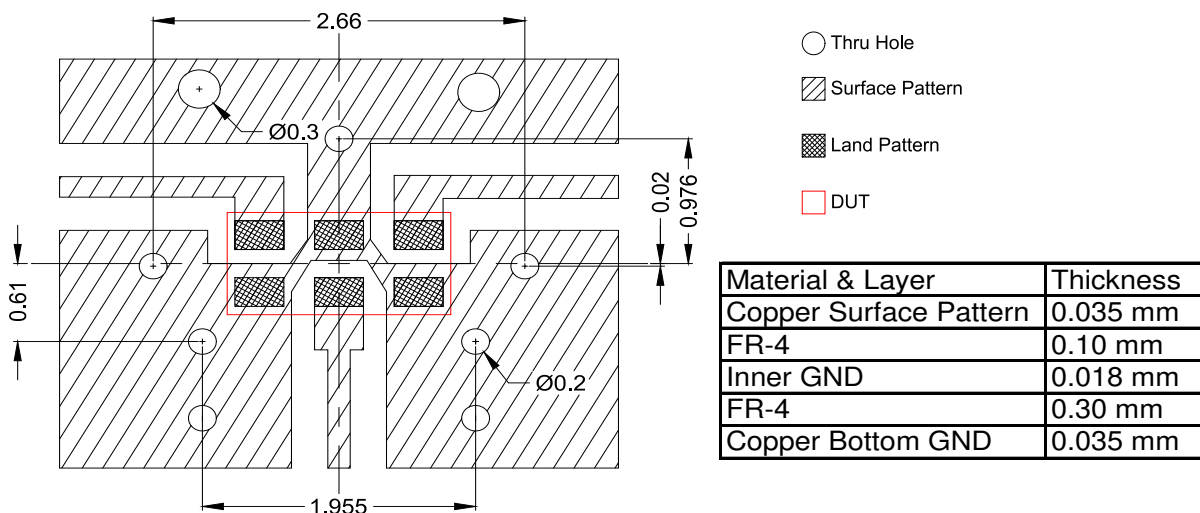
DPX164200DT-8202B1

RECOMMENDED LAND PATTERN



unit : mm

EVALUATION BOARD



* Line width should be designed to match 50 ohm characteristic impedance depending on PCB material and thickness.

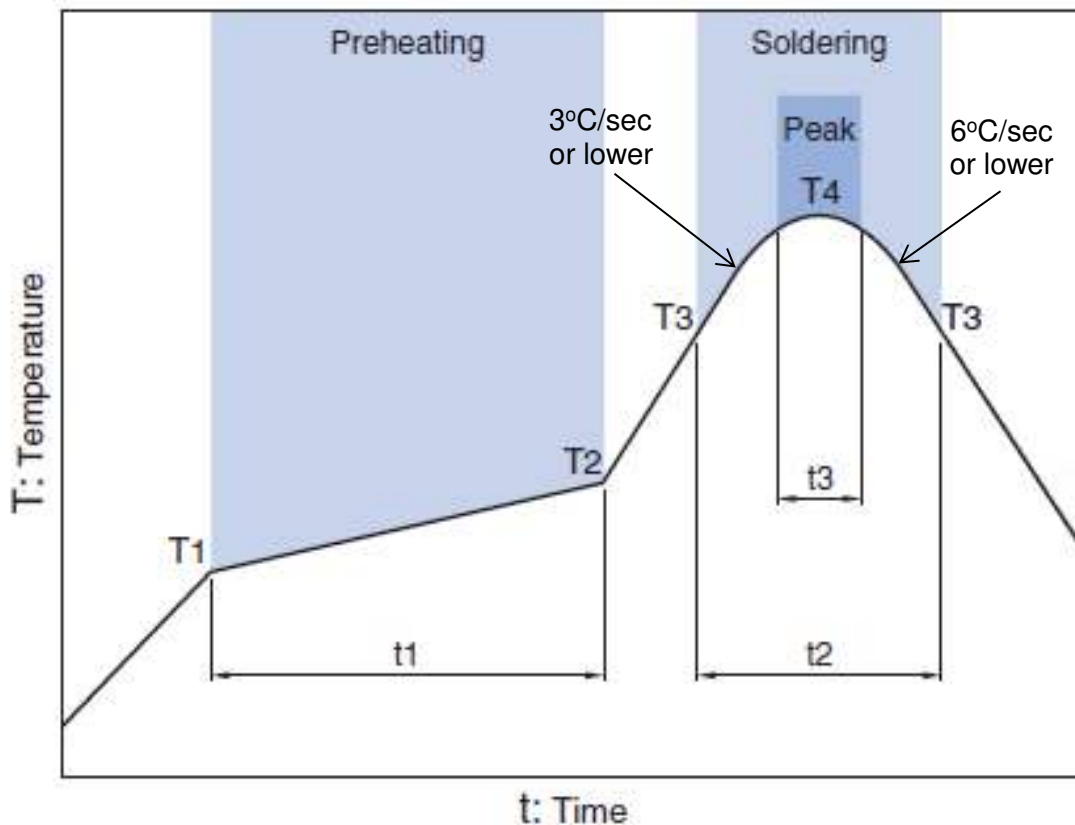
** The position of the thru hole which have possibility of influence to the performance are indicated by dimension line.

ENVIRONMENT INFORMATION

RoHS Statement
RoHS Compliance

DPX164200DT-8202B1

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

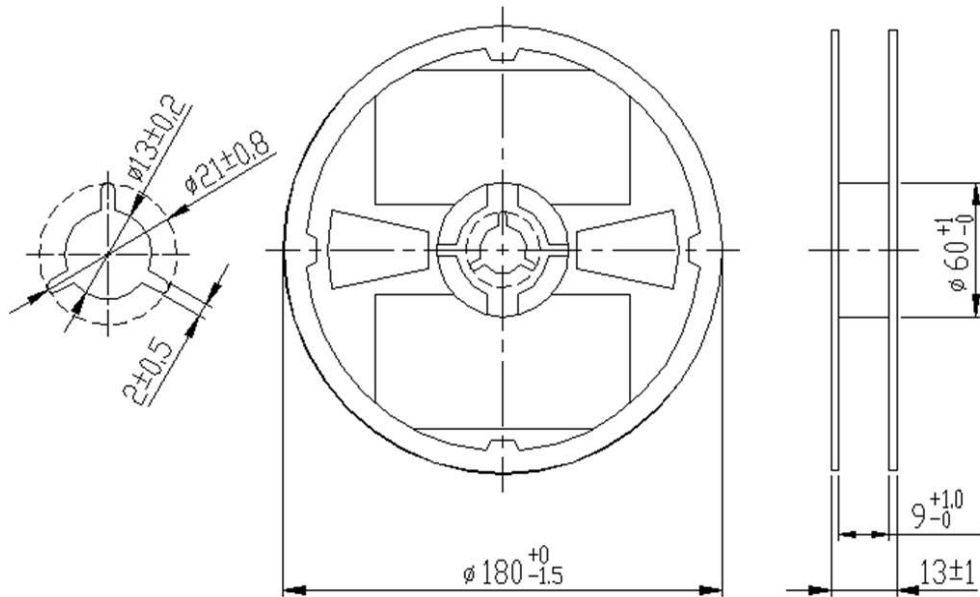
* t3 : Time within 5°C of actual peak temperature

The maximum number of reflow is 3.

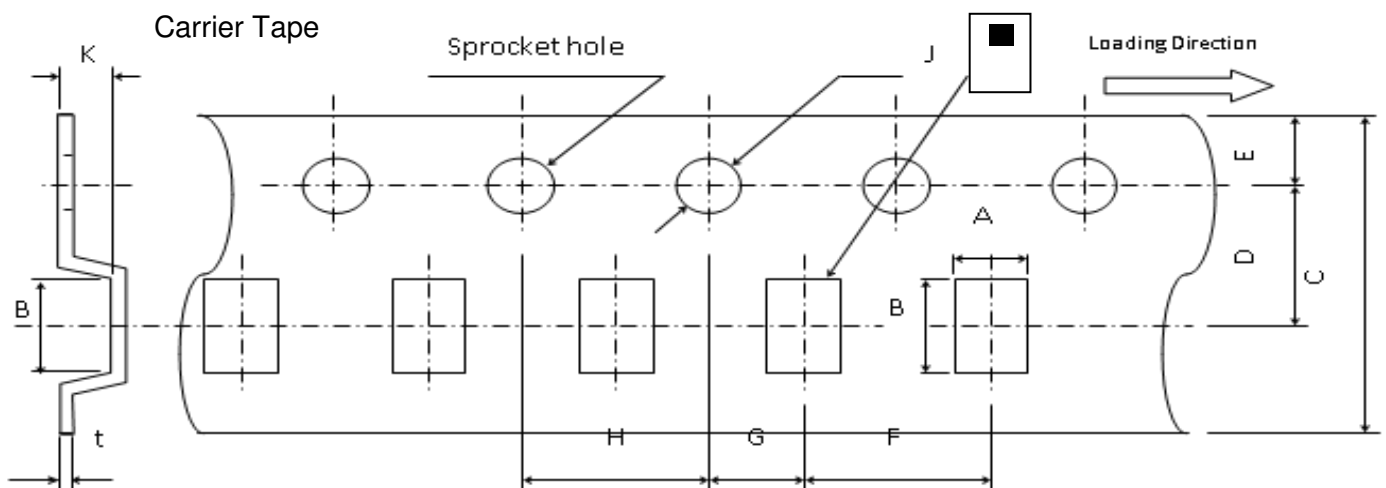
Note: Lead free solder is recommended.
Recommended solder is Sn-3.0Ag-0.5Cu. (M705 by Senju Metal Industry)

DPX164200DT-8202B1**PACKAGING STYLE**

Reel Dimensions



Dimensions in mm



Dimensions (mm)

A	B	C	D	E	F	G	H	J	K	t
0.97	1.8	8.0	3.5	1.75	4.0	2.0	4.0	1.5	0.8	0.25
+/-0.05	+/-0.05	+/-0.2	+/-0.05	+/-0.1	+/-0.1	+/-0.05	+/-0.1	+0.1/-0	MAX	+/-0.05

STANDARD PACKAGE QUANTITY
(pieces/reel)

4,000

All specifications are subject to change without notice.

TDK Technology - Proprietary and Confidential Information of TDK Group Companies

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 specification sheet 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 specification sheet.

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.