



May. 2021 Ver.2.0  
TDK Corporation

## Multilayer Diplexer

For LTE

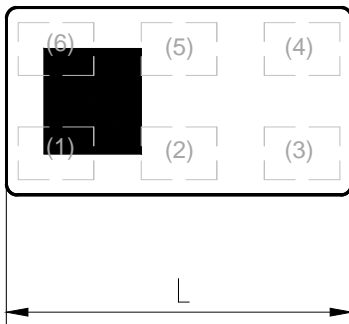
DPX Series      1.6x0.8mm [EIA 0603] TYPE

P/N: **DPX165850DT-8086A2**

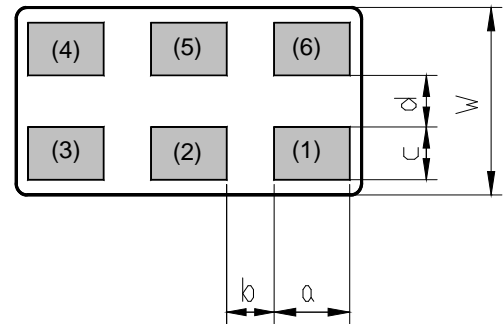
## DPX165850DT-8086A2

### ■ 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
Au plate

## DPX165850DT-8086A2

### ■ ELECTRICAL CHARACTERISTICS

( Measurement )

#### Low-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	698 to 960	-	0.19	0.28
	1427 to 1511	-	0.35	0.45
	1710 to 2170	-	0.44	0.55
	2300 to 2690	-	0.66	0.80
Insertion Loss (dB) ( -40 to +85 °C )	698 to 960	-	-	0.30
	1427 to 1511	-	-	0.48
	1710 to 2170	-	-	0.61
	2300 to 2690	-	-	0.91
VSWR (Low-Band Port)	698 to 960	-	1.10	2.00
	1427 to 1511	-	1.25	2.00
	1710 to 2170	-	1.27	2.00
	2300 to 2690	-	1.20	2.00
Attenuation (dB)	3300 to 3400	8	15.0	-
	3400 to 3800	13	16.4	-
	3800 to 4200	14	16.4	-
	4400 to 5000	16	17.9	-
	5150 to 5850	20	23.8	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

#### High-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	3300 to 3400	-	1.18	1.65
	3400 to 3800	-	0.77	0.89
	3800 to 4200	-	0.55	0.65
	4400 to 5000	-	0.44	0.54
	5150 to 5850	-	0.45	0.54
Insertion Loss (dB) ( -40 to +85 °C )	3300 to 3400	-	-	1.77
	3400 to 3800	-	-	0.96
	3800 to 4200	-	-	0.72
	4400 to 5000	-	-	0.64
	5150 to 5850	-	-	0.64
VSWR (High-Band Port)	3300 to 3400	-	1.29	2.00
	3400 to 3800	-	1.24	2.00
	3800 to 4200	-	1.26	2.00
	4400 to 5000	-	1.21	2.00
	5150 to 5850	-	1.19	2.00
Attenuation (dB)	698 to 960	17	18.7	-
	1427 to 1511	15	16.7	-
	1710 to 2170	15	16.6	-
	2300 to 2690	14	16.6	-
	10300 to 11700	18	23.4	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

**DPX165850DT-8086A2****ELECTRICAL CHARACTERISTICS**

( Measurement )

**Common**

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Isolation (dB)	698 to 960	17	18.7	-
	1427 to 1511	14	16.0	-
	1710 to 2170	14	15.8	-
	2300 to 2690	14	18.6	-
	3300 to 3400	10	14.7	-
	3400 to 3800	13	16.6	-
	3800 to 4200	14	16.6	-
	4400 to 5000	16	18.1	-
	5150 to 5850	20	23.6	-
VSWR	698 to 960	-	1.12	2.0
	1427 to 1511	-	1.30	2.0
	1710 to 2170	-	1.33	2.0
	2300 to 2690	-	1.16	2.0
	3300 to 3400	-	1.26	2.0
	3400 to 3800	-	1.22	2.0
	3800 to 4200	-	1.20	2.0
	4400 to 5000	-	1.15	2.0
	5150 to 5850	-	1.17	2.0
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

**MAXIMUM RATINGS**

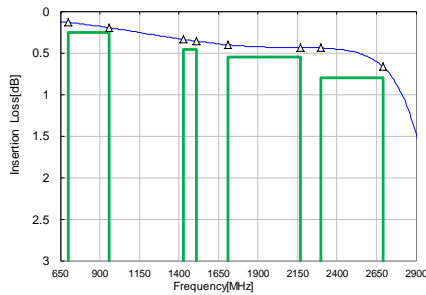
Parameter		TDK Spec	Conditions
Operating temperature (°C)		-40 to +85 °C	
Storage temperature (°C)		-40 to +85 °C	
Power Handling (W) *1	Low-Band	824 to 960	Duty 50%
		1710 to 1990	Duty 50%
		698 to 2690	Duty 100%
	High-Band	3300 to 4200	Duty 100%
		4400 to 5000	Duty 100%
		5150 to 5850	Duty 100%
Human 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

# DPX165850DT-8086A2

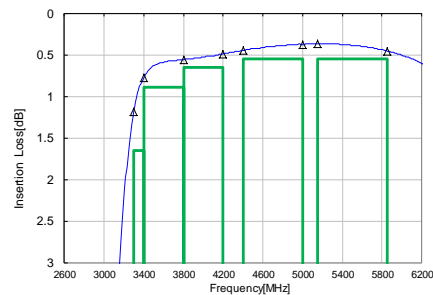
## FREQUENCY CHARACTERISTICS

Low-Band Port Insertion Loss S21



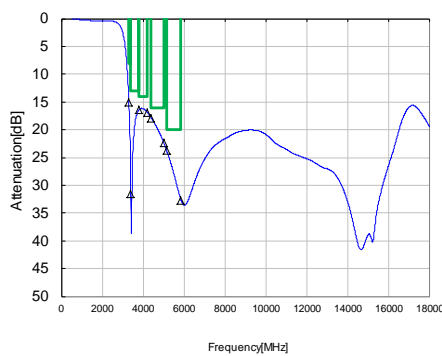
698 MHz	0.13 dB
960 MHz	0.19 dB
1427 MHz	0.33 dB
1511 MHz	0.35 dB
1710 MHz	0.40 dB
2170 MHz	0.43 dB
2300 MHz	0.44 dB
2690 MHz	0.66 dB

High-Band Port Insertion Loss S31



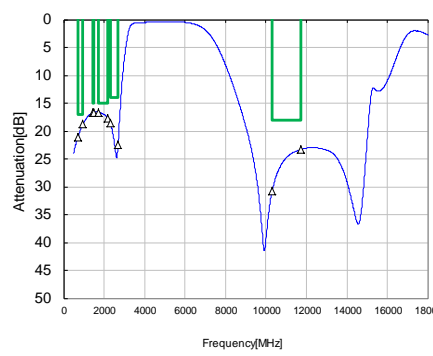
3300 MHz	1.18 dB
3400 MHz	0.77 dB
3800 MHz	0.55 dB
4200 MHz	0.48 dB
4400 MHz	0.44 dB
5000 MHz	0.37 dB
5150 MHz	0.36 dB
5850 MHz	0.45 dB

Low-Band Port Attenuation S21



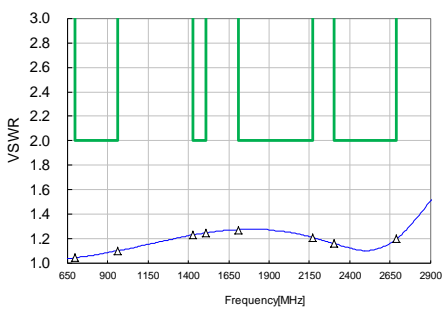
3300 MHz	15.0 dB
3400 MHz	31.6 dB
3800 MHz	16.4 dB
4200 MHz	16.9 dB
4400 MHz	17.9 dB
5000 MHz	22.3 dB
5150 MHz	23.8 dB
5850 MHz	32.7 dB

High-Band Port Attenuation S31



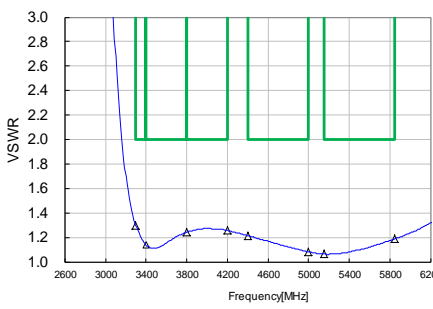
698 MHz	21.2 dB
960 MHz	18.7 dB
1427 MHz	16.7 dB
1511 MHz	16.7 dB
1710 MHz	16.6 dB
2170 MHz	17.7 dB
2300 MHz	18.6 dB
2690 MHz	22.5 dB
10300 MHz	30.8 dB
11700 MHz	23.4 dB

Low-Band Port VSWR S22



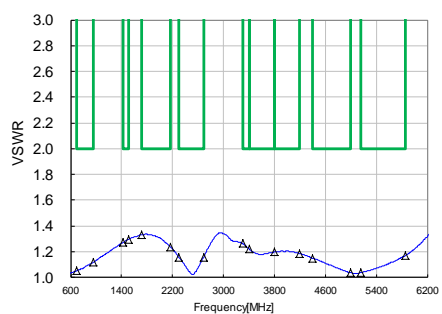
698 MHz	1.04
960 MHz	1.10
1427 MHz	1.23
1511 MHz	1.25
1710 MHz	1.27
2170 MHz	1.21
2300 MHz	1.16
2690 MHz	1.20

High-Band Port VSWR S33



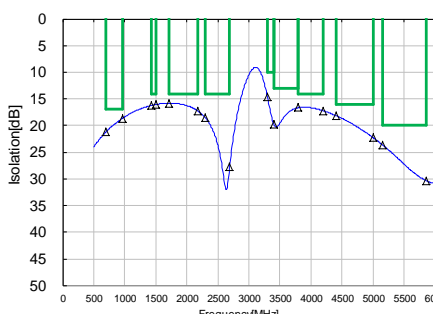
3300 MHz	1.29
3400 MHz	1.14
3800 MHz	1.24
4200 MHz	1.26
4400 MHz	1.21
5000 MHz	1.08
5150 MHz	1.06
5850 MHz	1.19

Common Port VSWR S11



698 MHz	1.05
960 MHz	1.12
1427 MHz	1.27
1511 MHz	1.30
1710 MHz	1.33
2170 MHz	1.24
2300 MHz	1.16
2690 MHz	1.16
3300 MHz	1.26
3400 MHz	1.22
3800 MHz	1.20
4200 MHz	1.19
4400 MHz	1.15
5000 MHz	1.04
5150 MHz	1.04
5850 MHz	1.17

Isolation (Low - High) S23

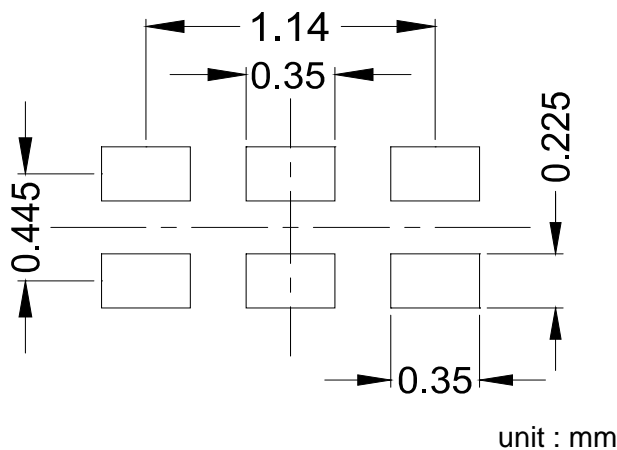


698 MHz	21.2 dB
960 MHz	18.7 dB
1427 MHz	16.2 dB
1511 MHz	16.0 dB
1710 MHz	15.8 dB
2170 MHz	17.2 dB
2300 MHz	18.6 dB
2690 MHz	27.7 dB
3300 MHz	14.7 dB
3400 MHz	19.7 dB
3800 MHz	16.6 dB
4200 MHz	17.2 dB
4400 MHz	18.1 dB
5000 MHz	22.3 dB
5150 MHz	23.6 dB
5850 MHz	30.3 dB

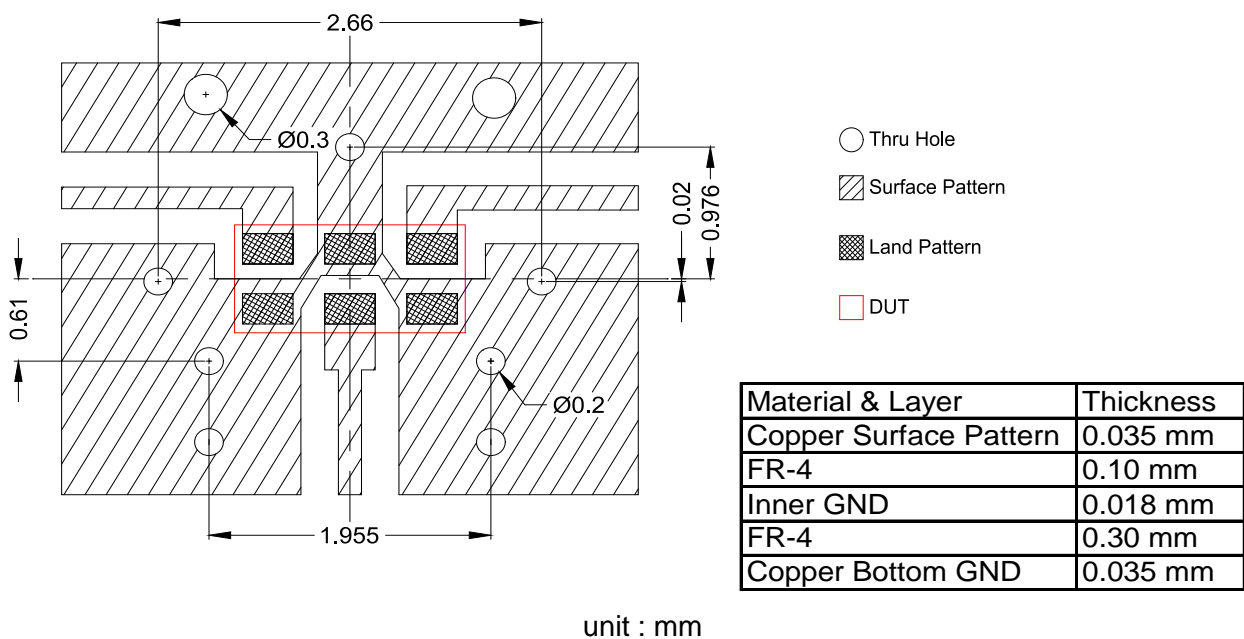
All specifications are subject to change without notice.

## DPX165850DT-8086A2

### RECOMMENDED LAND PATTERN



### EVALUATION BOARD



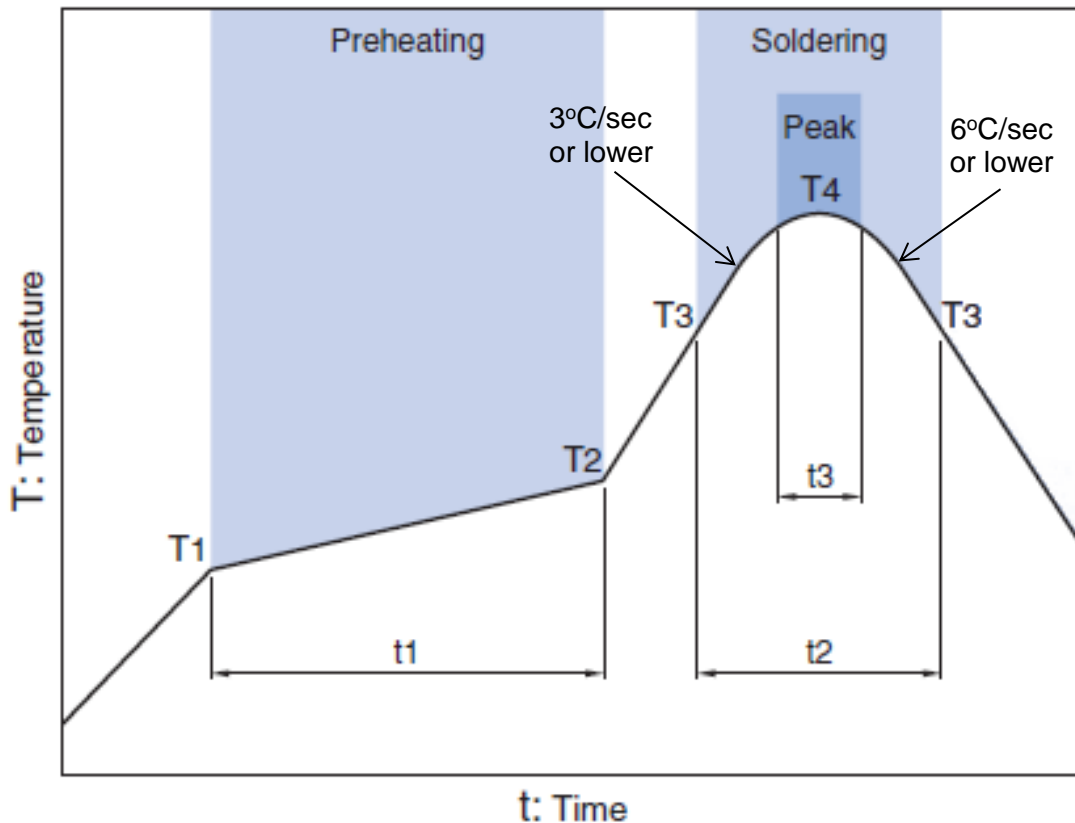
\* Line width should be designed to match 50 ohm characteristic impedance depending on PCB material and thickness.

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

### ENVIRONMENT INFORMATION

RoHS Statement  
RoHS Compliance

## RECOMMENDED REFLOW PROFILE



Preheating			Soldering			
Temp.		Time	Critical zone (T3 to T4)		Peak	
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

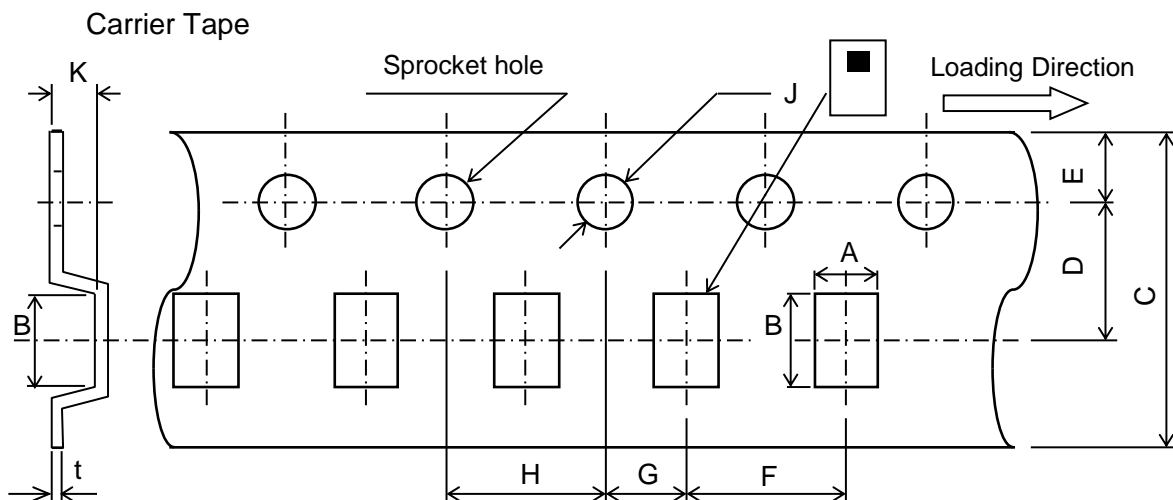
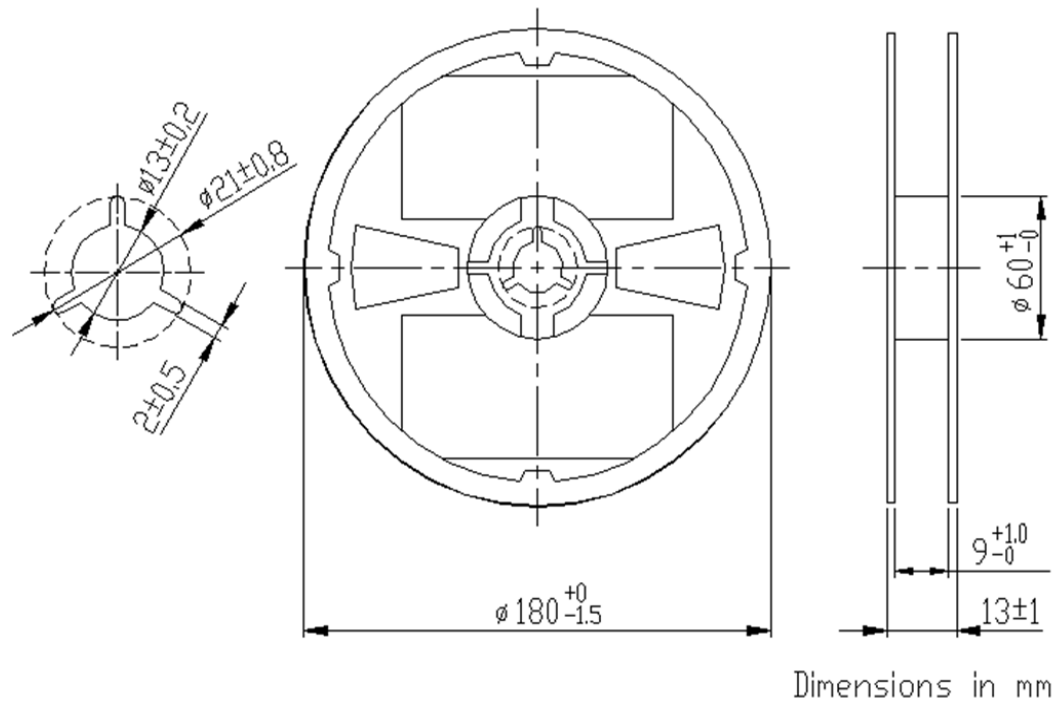
\* t3 : Time within 5°C of actual peak temperature

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)

**DPX165850DT-8086A2****PACKAGING STYLE**

## Reel Dimensions



## 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
$\pm 0.05$	$\pm 0.05$	$\pm 0.2$	$\pm 0.05$	$\pm 0.1$	$\pm 0.1$	$\pm 0.05$	$\pm 0.1$	$+0.1/-0$	MAX	$\pm 0.05$

STANDARD PACKAGE QUANTITY ( pieces/reel )
4,000

All specifications are subject to change without notice.

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## 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.

 <b>REMINDERS</b>
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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.