



Apr. 2025 Ver.2.0  
TDK Corporation

## Multilayer Diplexer

For 2.4-2.5GHz W-LAN & Bluetooth / 5-7GHz W-LAN

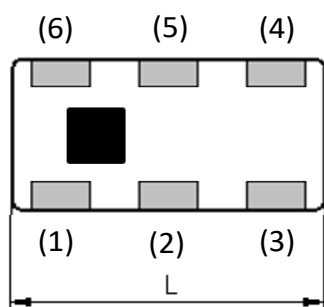
DPX Series 1.6x0.8mm [EIA 0603] TYPE

P/N: **DPX167125DT-8097B1**

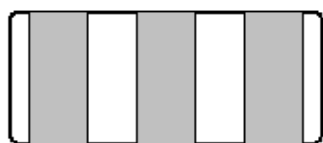
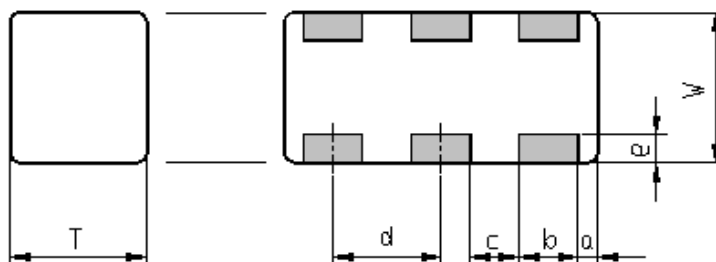
## DPX167125DT-8097B1

### SHAPES AND DIMENSIONS

[Top View]



[Bottom View]



Dimensions (mm)

| L       | W       | T       | a       | b       | c       | d       | e       |
|---------|---------|---------|---------|---------|---------|---------|---------|
| 1.60    | 0.80    | 0.60    | 0.10    | 0.30    | 0.25    | 0.55    | 0.15    |
| +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 |

Terminal functions

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

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

### TERMINATION FINISH

| Material |
|----------|
| Sn plate |

## DPX167125DT-8097B1

### ■ ELECTRICAL CHARACTERISTICS

( Measurement )

#### Low-Band

| Parameter                                | Frequency (MHz) | TDK Spec     |      |      |
|------------------------------------------|-----------------|--------------|------|------|
|                                          |                 | Min.         | Typ. | Max. |
| Insertion Loss (dB)                      | 617 to 2400     | -            | 0.22 | 0.35 |
|                                          | 2400 to 2500    | -            | 0.18 | 0.35 |
|                                          | 2500 to 2690    | -            | 0.23 | 0.40 |
| Insertion Loss (dB)<br>( -40 to +85 °C ) | 617 to 2400     | -            | -    | 0.40 |
|                                          | 2400 to 2500    | -            | -    | 0.40 |
|                                          | 2500 to 2690    | -            | -    | 0.50 |
| VSWR (Common Port)                       | 617 to 2400     | -            | 1.35 | 1.67 |
|                                          | 2400 to 2500    | -            | 1.07 | 1.67 |
|                                          | 2500 to 2690    | -            | 1.20 | 1.67 |
| VSWR (Low-Band Port)                     | 617 to 2400     | -            | 1.35 | 1.67 |
|                                          | 2400 to 2500    | -            | 1.09 | 1.67 |
|                                          | 2500 to 2690    | -            | 1.19 | 1.67 |
| Attenuation (dB)                         | 4800 to 5000    | 20           | 26.2 | -    |
|                                          | 5150 to 7125    | 20           | 23.8 | -    |
|                                          | 7200 to 7500    | 23           | 32.7 | -    |
|                                          | 9600 to 10000   | 23           | 34.3 | -    |
|                                          | 12000 to 12500  | 22           | 31.6 | -    |
| Characteristic Impedance (ohm)           |                 | 50 (Nominal) |      |      |

Ta = +25+/-5°C

#### High-Band

| Parameter                                | Frequency (MHz) | TDK Spec     |      |      |
|------------------------------------------|-----------------|--------------|------|------|
|                                          |                 | Min.         | Typ. | Max. |
| Insertion Loss (dB)                      | 5150 to 5925    | -            | 0.65 | 0.90 |
|                                          | 5925 to 7125    | -            | 0.40 | 0.75 |
| Insertion Loss (dB)<br>( -40 to +85 °C ) | 5150 to 5925    | -            | -    | 1.00 |
|                                          | 5925 to 7125    | -            | -    | 0.85 |
| VSWR (Common Port)                       | 5150 to 5925    | -            | 1.20 | 1.67 |
|                                          | 5925 to 7125    | -            | 1.21 | 1.67 |
| VSWR (High-Band Port)                    | 5150 to 5925    | -            | 1.21 | 1.67 |
|                                          | 5925 to 7125    | -            | 1.32 | 1.67 |
| Attenuation (dB)                         | 617 to 960      | 25           | 28.4 | -    |
|                                          | 1427 to 2400    | 25           | 27.2 | -    |
|                                          | 2400 to 2500    | 25           | 29.0 | -    |
|                                          | 2500 to 2690    | 25           | 29.6 | -    |
|                                          | 3300 to 3800    | 20           | 24.4 | -    |
|                                          | 3800 to 4200    | 20           | 24.4 | -    |
|                                          | 10300 to 14250  | 28           | 32.3 | -    |
|                                          | 15450 to 21375  | 17           | 30.2 | -    |
| 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) | 617 to 2400     | 25       | 26.4 | -    |
|                | 2400 to 2500    | 25       | 28.7 | -    |
|                | 2500 to 2690    | 25       | 29.5 | -    |
|                | 5150 to 5925    | 20       | 24.1 | -    |
|                | 5925 to 7125    | 20       | 25.1 | -    |

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                   | 617 to 2690     | 1             | CW Duty 100%         |
| High-Band                  | 5150 to 7125    | 1             | CW 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 |

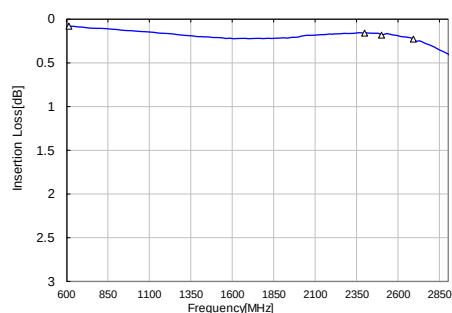
\*1 : Refer to 3GPP TS 38.101-1 V15.2.0

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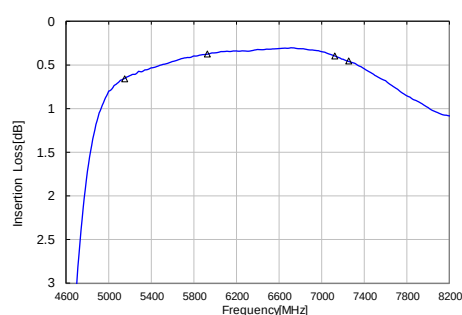
## DPX167125DT-8097B1

### FREQUENCY CHARACTERISTICS

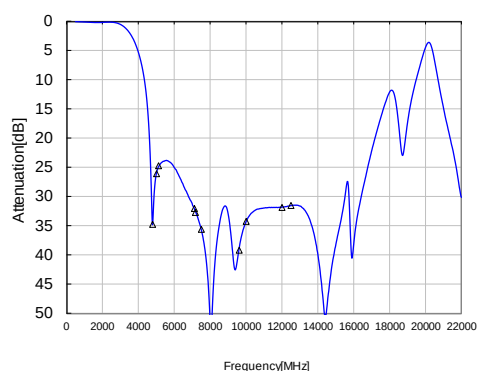
Low-Band Port Insertion Loss S21



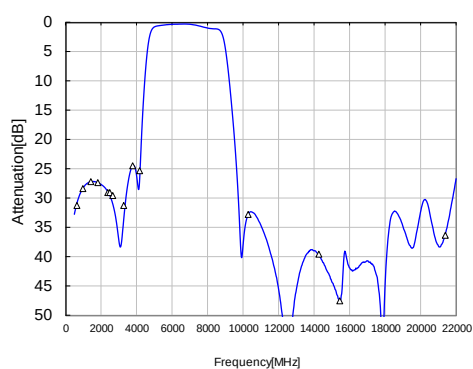
High-Band Port Insertion Loss S31



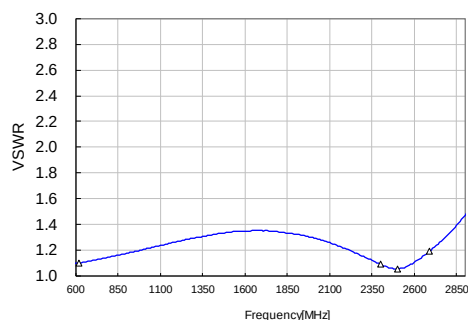
Low-Band Port Attenuation S21



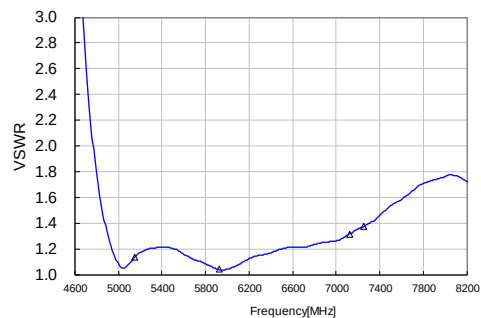
High-Band Port Attenuation S31



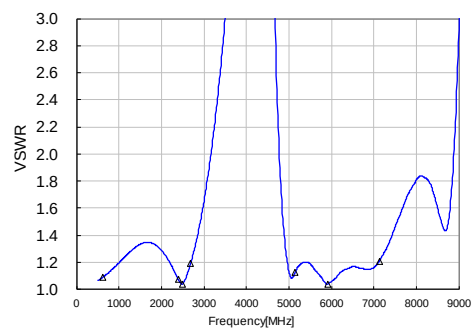
Low-Band Port VSWR S22



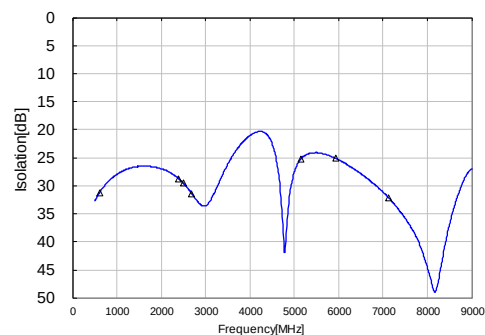
High-Band Port VSWR S33



Common Port VSWR S11



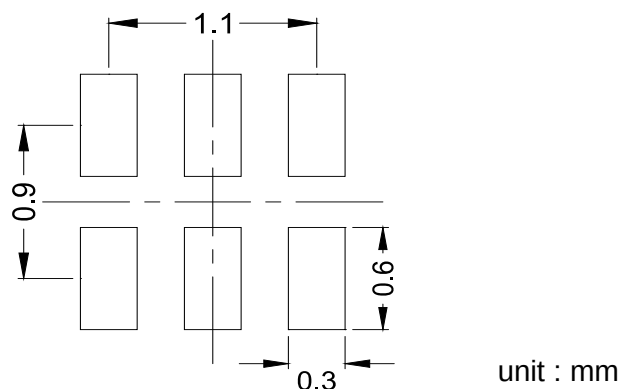
Isolation S23



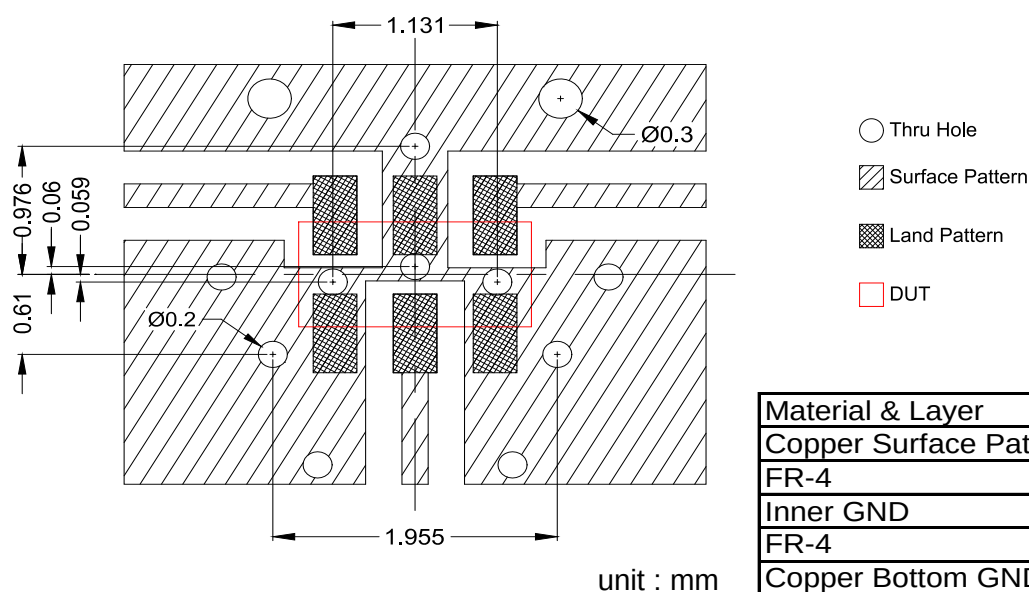
All specifications are subject to change without notice.  
Before using these products, be sure to request the delivery specifications.

## DPX167125DT-8097B1

### RECOMMENDED LAND PATTERN



### 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  |

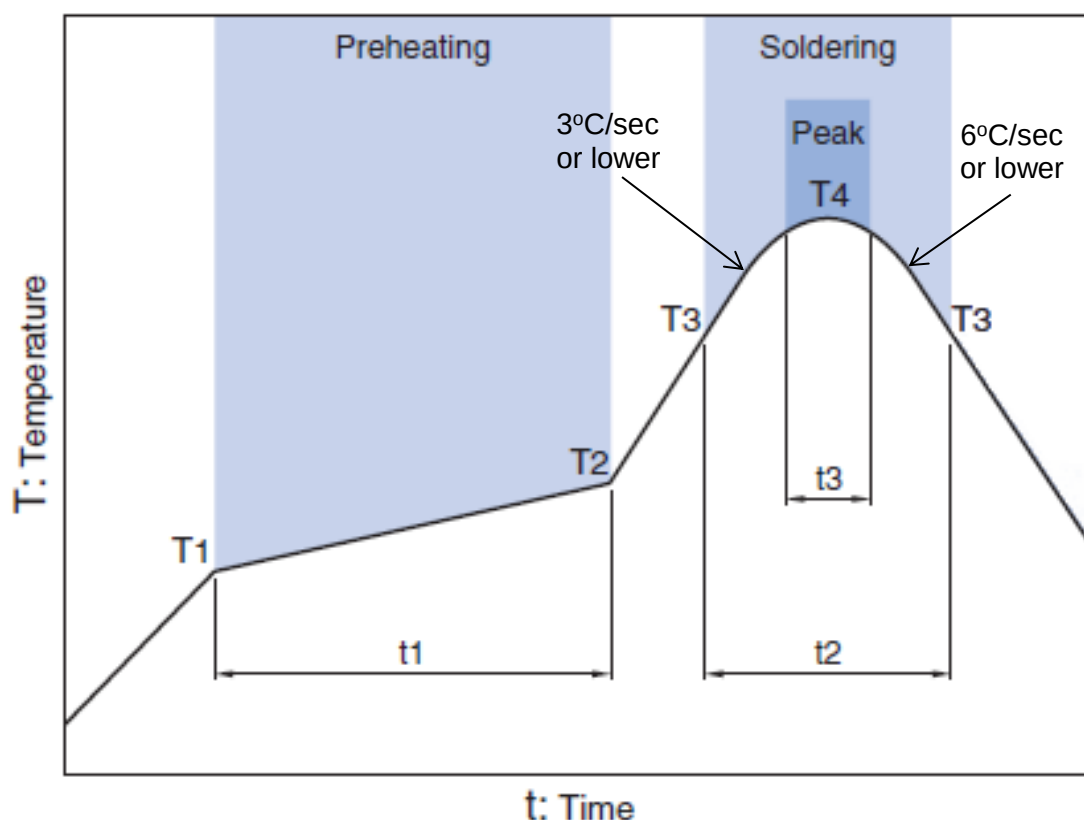
\* Line width should be designed to match 50 ohm characteristic impedance depending on PCB material and thickness.

\*\* 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

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**DPX167125DT-8097B1****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**

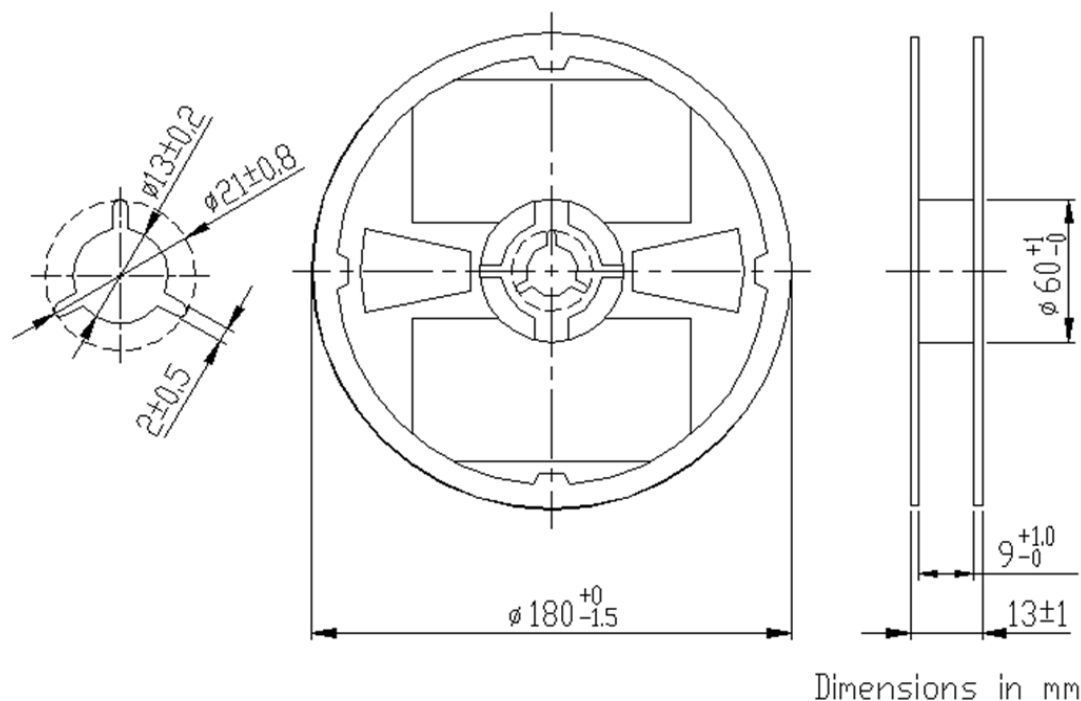
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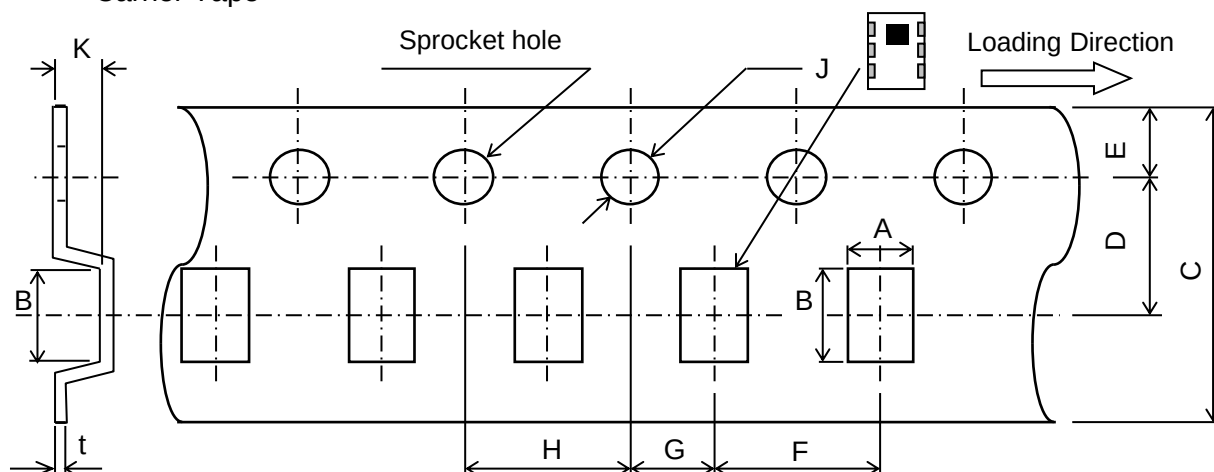
## DPX167125DT-8097B1

### PACKAGING STYLE

Reel Dimensions



Carrier Tape



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       |
| $\pm 0.05$ | $\pm 0.05$ | $+0.3/-0.1$ | $\pm 0.05$ | $\pm 0.1$ | $\pm 0.1$ | $\pm 0.05$ | $\pm 0.1$ | $+0.1/-0$ | MAX | $\pm 0.05$ |

**STANDARD PACKAGE QUANTITY**  
( pieces/reel )

4,000

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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.

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

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.