



# NJG1107HB6

## ■ABSOLUTE MAXIMUM RATINGS

( $T_a=+25^{\circ}\text{C}$ ,  $Z_s=Z_l=50\text{ohm}$ )

| PARAMETER         | SYMBOL    | CONDITIONS           | RATINGS  | UNIT               |
|-------------------|-----------|----------------------|----------|--------------------|
| Drain Voltage     | $V_{DD}$  |                      | 6.0      | V                  |
| Input Power       | Pin       | $V_{DD}=2.7\text{V}$ | +15      | dBm                |
| Power Dissipation | $P_D$     | At on PCB board      | 135      | mW                 |
| Operating Temp.   | $T_{opr}$ |                      | -40~+85  | $^{\circ}\text{C}$ |
| Storage Temp.     | $T_{stg}$ |                      | -55~+150 | $^{\circ}\text{C}$ |

## ■ELECTRICAL CHARACTERISTICS

( $V_{DD}=2.7\text{V}$ ,  $f=1.575\text{GHz}$ ,  $T_a=+25^{\circ}\text{C}$ ,  $Z_s=Z_l=50\text{ohm}$ , TEST CIRCUIT)

| PARAMETER                         | SYMBOL            | CONDITIONS   | MIN   | TYP   | MAX  | UNIT |
|-----------------------------------|-------------------|--|-------|-------|------|------|
| Operating Frequency               | freq1             |  | 1.57  | 1.575 | 1.58 | GHz  |
| Drain Voltage                     | $V_{DD}$          |  | 2.5   | 2.7   | 5.5  | V    |
| Operating Current                 | $I_{DD}$          | RF OFF   | -     | 2.5   | 3.2  | mA   |
| Small Signal Gain                 | Gain              |  | 15.0  | 17.0  | -    | dB   |
| Noise Figure                      | NF                |  | -     | 1.1   | 1.3  | dB   |
| Pin at 1dB Gain Compression point | $P_{-1\text{dB}}$ |  | -20.0 | -16.0 | -    | dBm  |
| Input 3rd Order Intercept Point   | IIP3              | $f=1.575+1.5751\text{GHz}$<br>$RFin=-35\text{dBm}$ | -7.0  | -4.0  | -    | dBm  |
| RF Input Port VSWR                | $VSWR_i$          |  | -     | 1.6   | 2.0  |      |
| RF Output Port VSWR               | $VSWR_o$          |  |       | 1.6   | 2.2  |      |

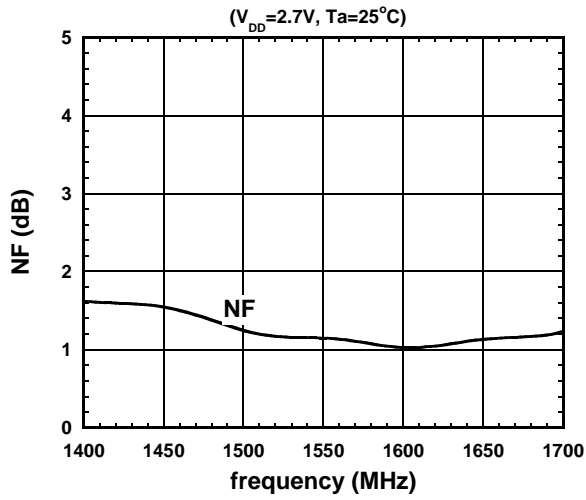
## ■PIN CONFIGURATION

| Pin     | Function | Description   |
|---------|----------|---|
| 1       | Rfout    | RF output and voltage supply pin. External matching circuits and a bypass capacitor is required. L3 is a RF choke inductor and C1 is a DC blocking capacitor. These elements are used as output matching circuit. C2 is a bypass capacitor. |
| 2,4,5,8 | N/C      | Neutral terminal. Should be connected to the ground.  |
| 3       | EXTCAP   | An external bypass capacitor is required.   |
| 6       | GND      | Ground pin. To keep good RF grounding performance, please use multiple via holes to connect with ground plane and this pin.   |
| 7       | Rfin     | RF input pin. A DC blocking capacitor is not required. An external matching circuit is required.  |

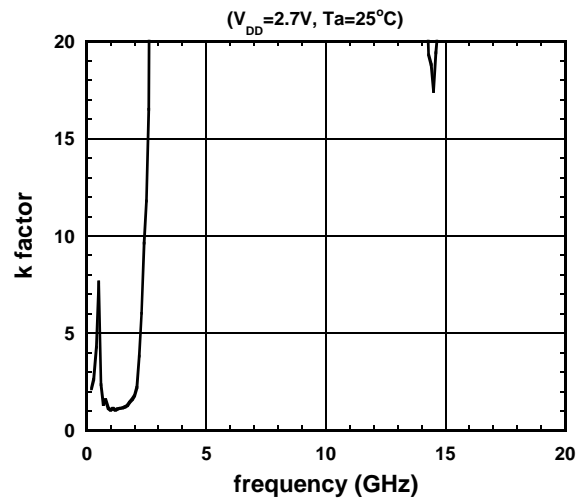
# NJG1107HB6

## TYPICAL CHARACTERISTICS

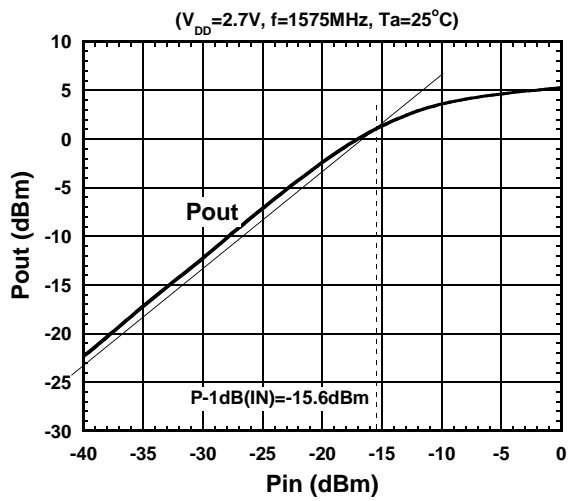
NF vs. frequency



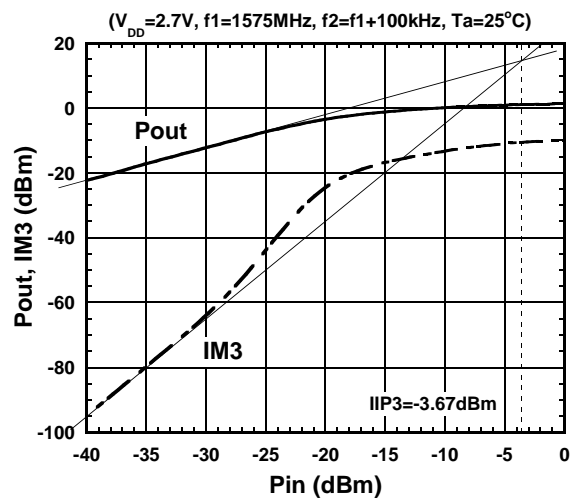
k factor vs. frequency



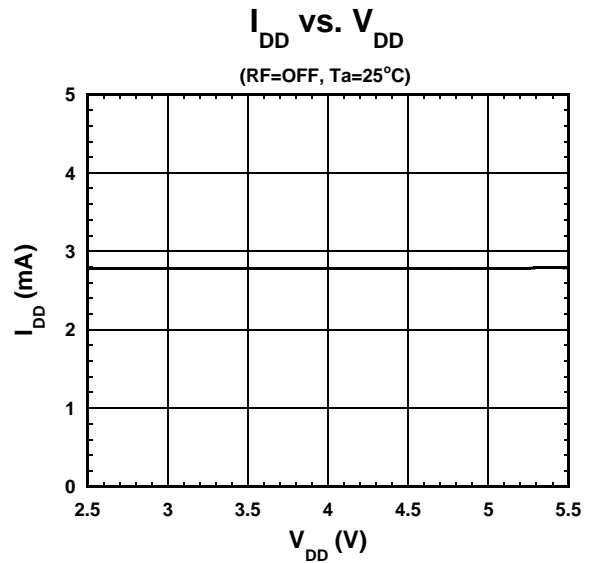
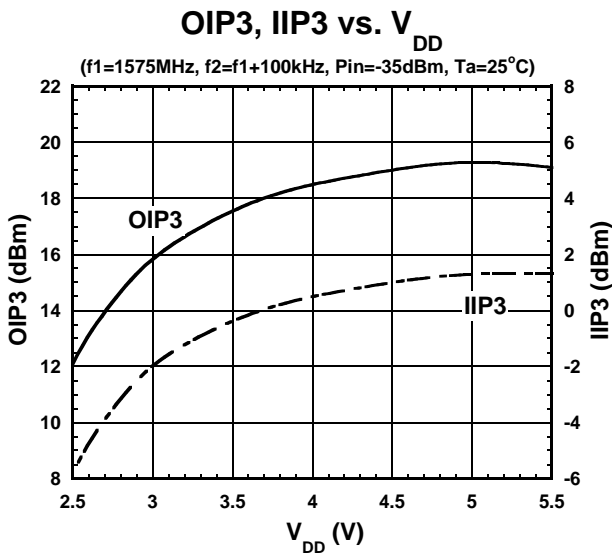
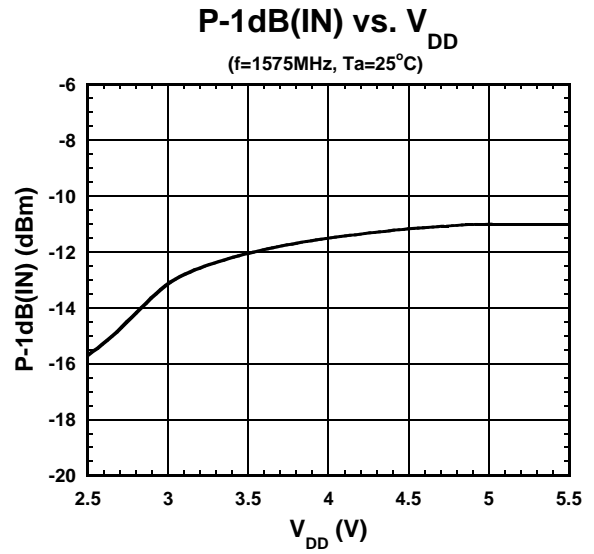
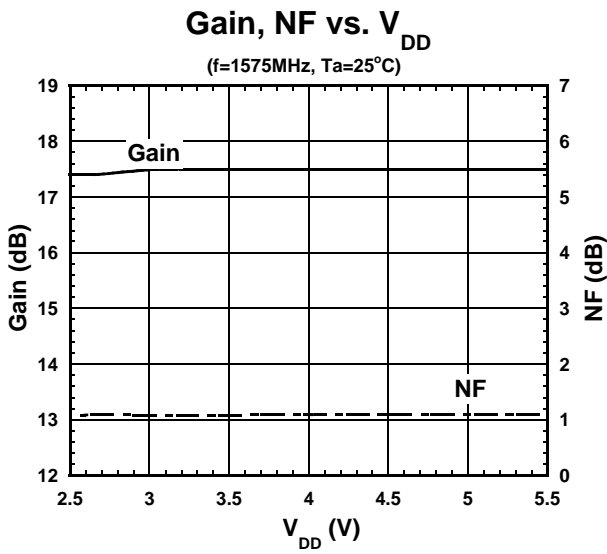
Pout vs. Pin



Pout, IM3 vs. Pin

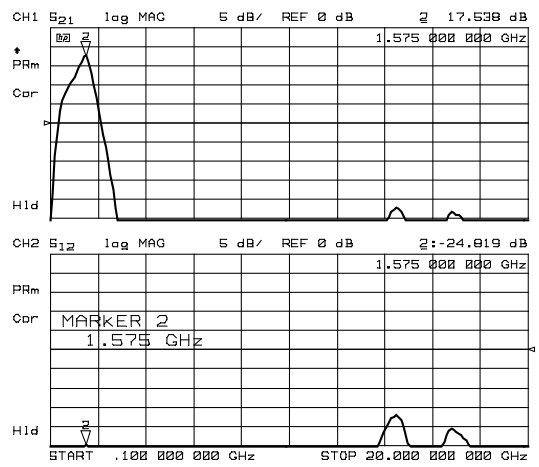
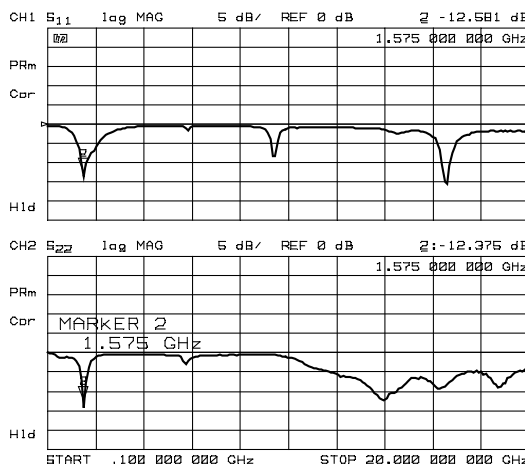
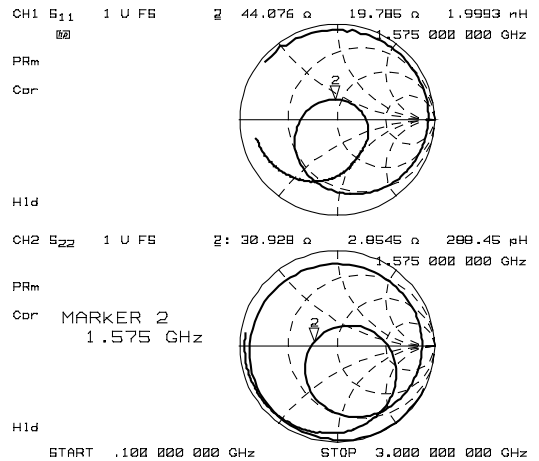
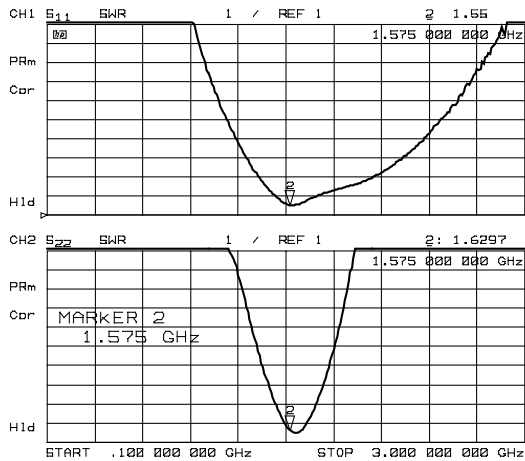
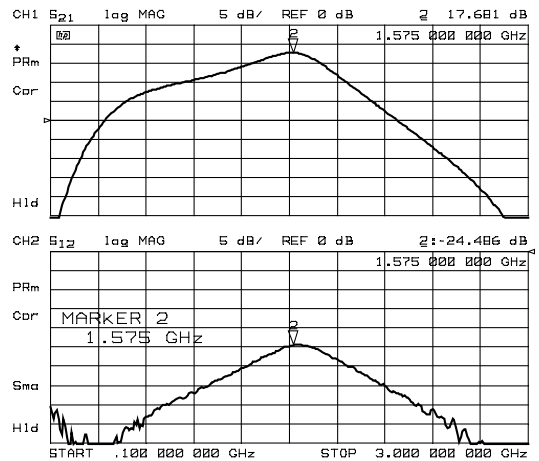
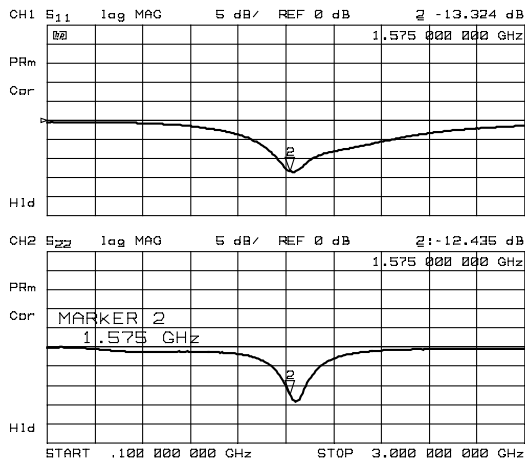


## TYPICAL CHARACTERISTICS

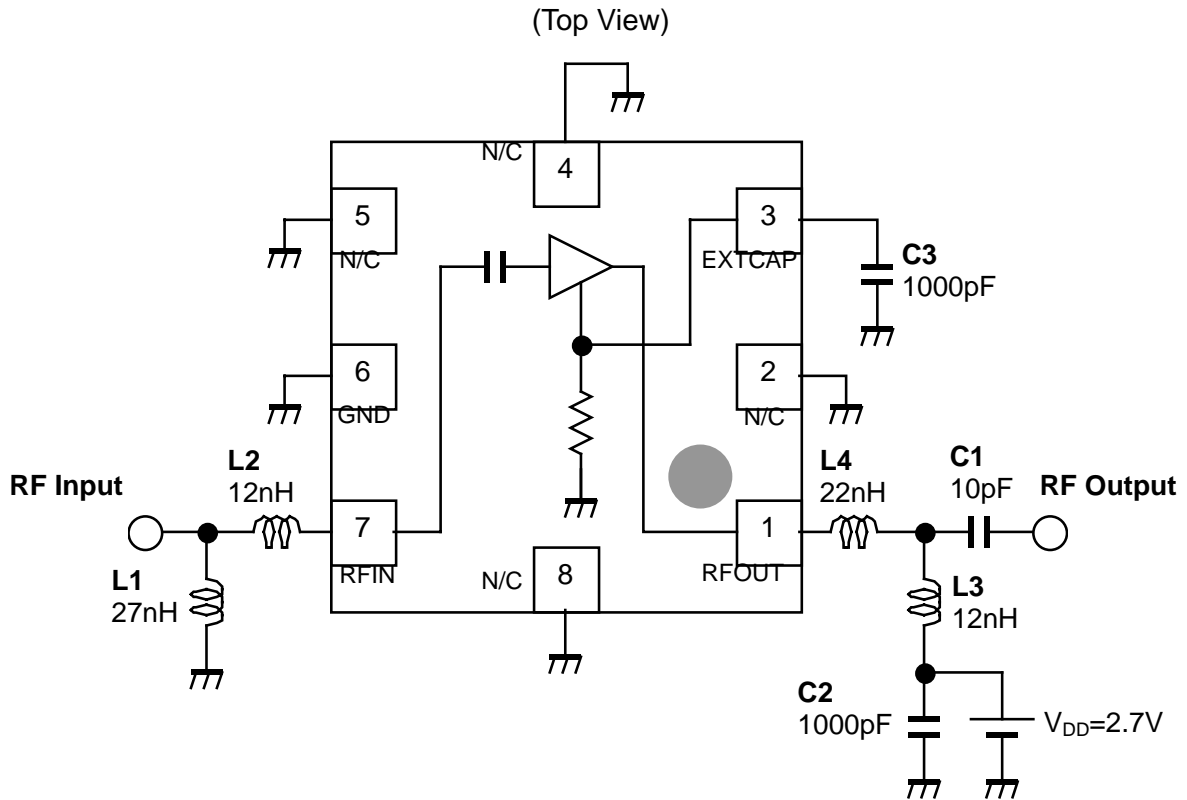


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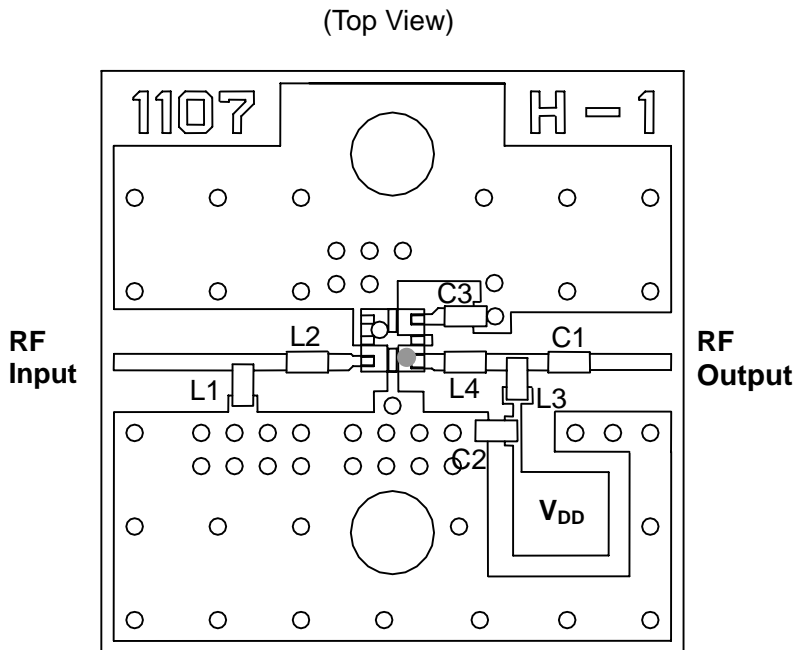
## TYPICAL CHARACTERISTICS



## TEST CIRCUIT



## RECOMMENDED PCB DESIGN

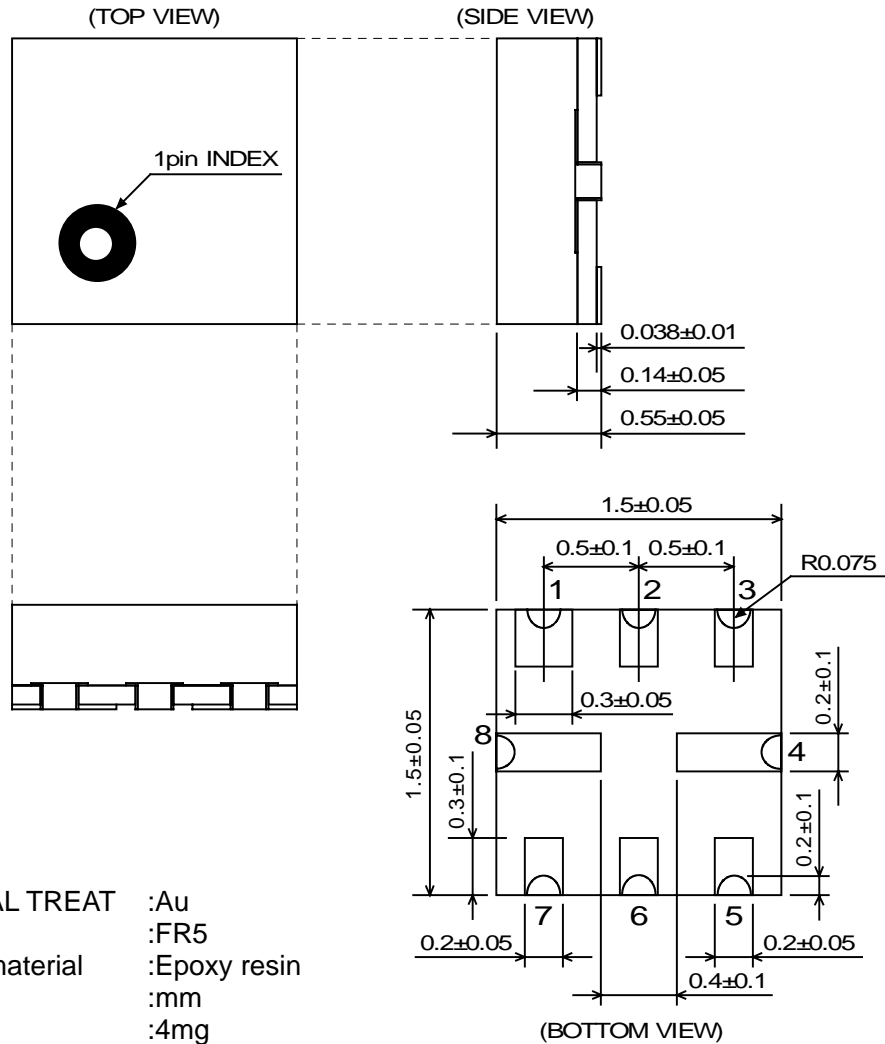


| Parts ID   | Comment        |
|------------|----------------|
| L1, L3, L4 | TDK (MLK1005)  |
| L2         | TDK (MLG1005)  |
| C1~C3      | MURATA (GRP15) |

PCB (FR-4):  
 $t=0.2\text{mm}$   
 MICROSTRIP LINE WIDTH  
 $=0.4\text{mm}$  ( $Z_0=50\text{ohm}$ )  
 PCB SIZE= $14.0\text{mm} \times 14.0\text{mm}$

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## PACKAGE OUTLINE (USB8-B6)



### Cautions on using this product

This product contains Gallium-Arsenide (GaAs) which is a harmful material.

- Do NOT eat or put into mouth.
- Do NOT dispose in fire or break up this product.
- Do NOT chemically make gas or powder with this product.
- To waste this product, please obey the relating law of your country.

### [CAUTION]

The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.

This product may be damaged with electric static discharge (ESD) or spike voltage. Please handle with care to avoid these damages.