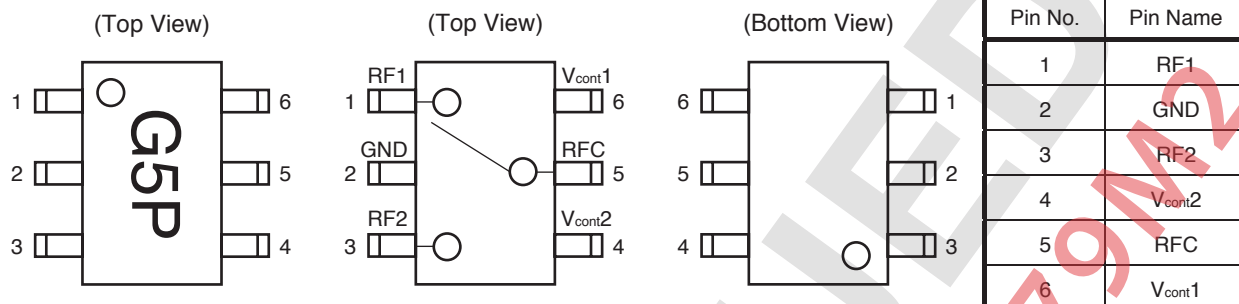


## PIN CONNECTIONS AND INTERNAL BLOCK DIAGRAM



## SW TRUTH TABLE

| ON Path | V <sub>cont1</sub> | V <sub>cont2</sub> |
|---------|--------------------|--------------------|
| RFC-RF1 | Low                | High               |
| RFC-RF2 | High               | Low                |

ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = +25°C, unless otherwise specified)

| Parameter                     | Symbol            | Ratings              | Unit |
|-------------------------------|-------------------|----------------------|------|
| Switch Control Voltage        | V <sub>cont</sub> | +6.0 <sup>Note</sup> | V    |
| Input Power                   | P <sub>in</sub>   | +33.0                | dBm  |
| Operating Ambient Temperature | T <sub>A</sub>    | -45 to +85           | °C   |
| Storage Temperature           | T <sub>stg</sub>  | -55 to +150          | °C   |

**Note** |V<sub>cont1</sub> - V<sub>cont2</sub>| ≤ 6.0 V

RECOMMENDED OPERATING RANGE (T<sub>A</sub> = +25°C, unless otherwise specified)

| Parameter                  | Symbol                                                           | MIN. | TYP. | MAX. | Unit |
|----------------------------|------------------------------------------------------------------|------|------|------|------|
| Operating Frequency        | f                                                                | 0.05 | -    | 3.0  | GHz  |
| Switch Control Voltage (H) | V <sub>cont (H)</sub>                                            | 2.5  | 3.0  | 5.3  | V    |
| Switch Control Voltage (L) | V <sub>cont (L)</sub>                                            | -0.2 | 0    | 0.2  | V    |
| Control Voltage Difference | $\Delta V_{cont (H)}$ ,<br>$\Delta V_{cont (L)}$ <sup>Note</sup> | -0.1 | 0    | 0.1  | V    |

**Note**  $\Delta V_{cont (H)} = V_{cont1 (H)} - V_{cont2 (H)}$

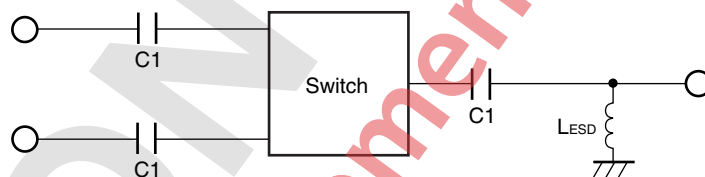
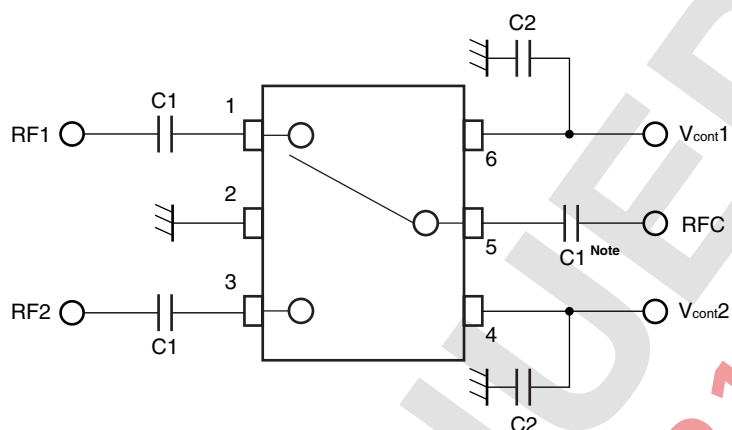
$\Delta V_{cont (L)} = V_{cont1 (L)} - V_{cont2 (L)}$

**ELECTRICAL CHARACTERISTICS**(T<sub>A</sub> = +25°C, V<sub>cont</sub> (H) = 3.0 V, V<sub>cont</sub> (L) = 0 V, DC blocking capacitors = 56 pF, unless otherwise specified)

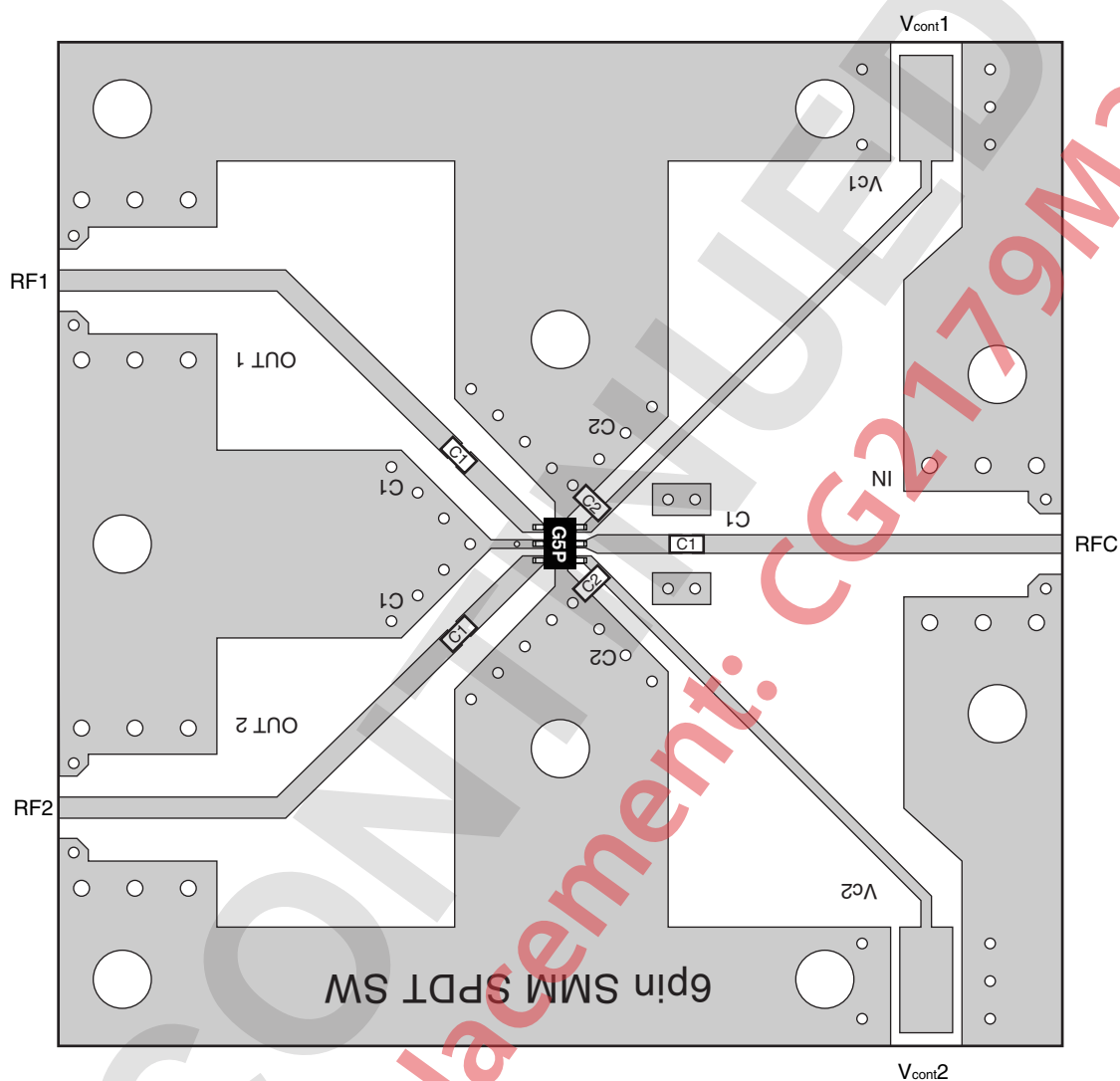
| Parameter                       | Symbol                   | Test Conditions                              | MIN.  | TYP.  | MAX. | Unit |
|---------------------------------|--------------------------|----------------------------------------------|-------|-------|------|------|
| Insertion Loss 1                | L <sub>ins1</sub>        | f = 0.05 to 0.5 GHz <sup>Note 1</sup>        | –     | 0.40  | 0.55 | dB   |
| Insertion Loss 2                | L <sub>ins2</sub>        | f = 0.5 to 1.0 GHz                           | –     | 0.40  | 0.55 | dB   |
| Insertion Loss 3                | L <sub>ins3</sub>        | f = 1.0 to 2.0 GHz                           | –     | 0.48  | 0.63 | dB   |
| Insertion Loss 4                | L <sub>ins4</sub>        | f = 2.0 to 2.5 GHz                           | –     | 0.50  | 0.65 | dB   |
| Insertion Loss 5                | L <sub>ins5</sub>        | f = 2.5 to 3.0 GHz                           | –     | 0.56  | 0.70 | dB   |
| Isolation 1                     | ISL1                     | f = 0.05 to 0.5 GHz <sup>Note 1</sup>        | 24    | 27    | –    | dB   |
| Isolation 2                     | ISL2                     | f = 0.5 to 1.0 GHz                           | 24    | 27    | –    | dB   |
| Isolation 3                     | ISL3                     | f = 1.0 to 2.0 GHz                           | 16    | 19    | –    | dB   |
| Isolation 4                     | ISL4                     | f = 2.0 to 2.5 GHz                           | 15    | 18    | –    | dB   |
| Isolation 5                     | ISL5                     | f = 2.5 to 3.0 GHz                           | 14    | 17    | –    | dB   |
| Input Return Loss 1             | RL <sub>in1</sub>        | f = 0.05 to 0.5 GHz <sup>Note 1</sup>        | 15    | 20    | –    | dB   |
| Input Return Loss 2             | RL <sub>in2</sub>        | f = 0.5 to 3.0 GHz                           | 15    | 20    | –    | dB   |
| Output Return Loss 1            | RL <sub>out1</sub>       | f = 0.05 to 0.5 GHz <sup>Note 1</sup>        | 15    | 20    | –    | dB   |
| Output Return Loss 2            | RL <sub>out2</sub>       | f = 0.5 to 3.0 GHz                           | 15    | 20    | –    | dB   |
| 0.1 dB Loss Compression         | P <sub>in (0.1 dB)</sub> | f = 2.0/2.5 GHz                              | +27.0 | +29.0 | –    | dBm  |
| Input Power <sup>Note 2</sup>   |                          | f = 0.5 to 3.0 GHz                           | –     | +29.0 | –    | dBm  |
| Input 3rd Order Intercept Point | IIP <sub>3</sub>         | f = 0.5 to 3.0 GHz, 2 tone,<br>5 MHz spicing | –     | +60   | –    | dBm  |
| Switch Control Current          | I <sub>cont</sub>        | No RF input                                  | –     | 0.3   | 20   | μA   |
| Switch Control Speed            | t <sub>sw</sub>          | 50% CTL to 90/10% RF                         | –     | 50    | 500  | ns   |

**Notes 1.** DC blocking capacitors = 1 000 pF at f = 0.05 to 0.5 GHz**2.** P<sub>in (0.1 dB)</sub> is the measured input power level when the insertion loss increases 0.1 dB more than that of linear range.**Caution** It is necessary to use DC blocking capacitors with this device.

The value of DC blocking capacitors should be chosen to accommodate the frequency of operation, bandwidth, switching speed and the condition with actual board of your system. The range of recommended DC blocking capacitor value is less than 100 pF for frequencies above 0.5 GHz, and 1 000pF for frequencies above 0.5 GHz.

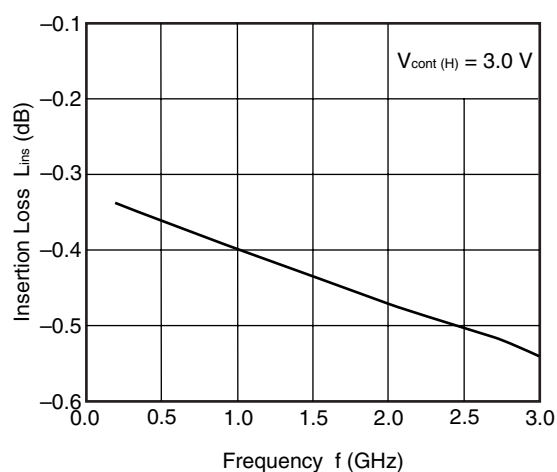
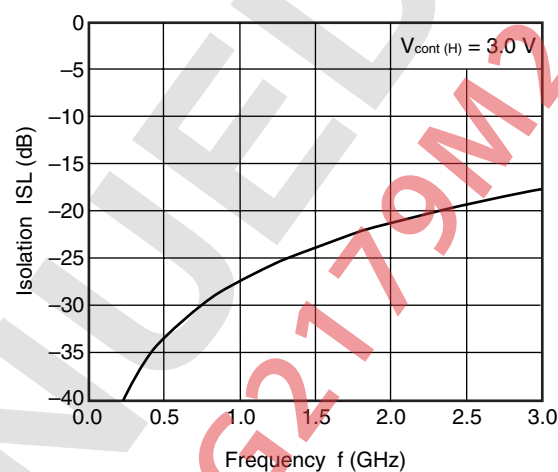
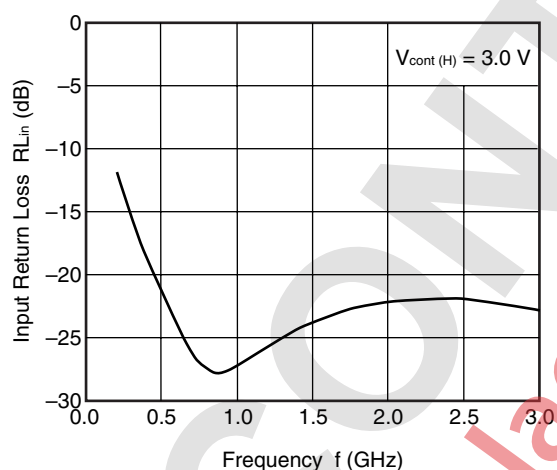
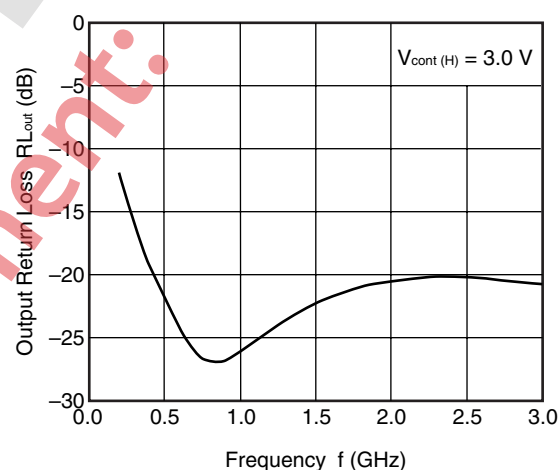
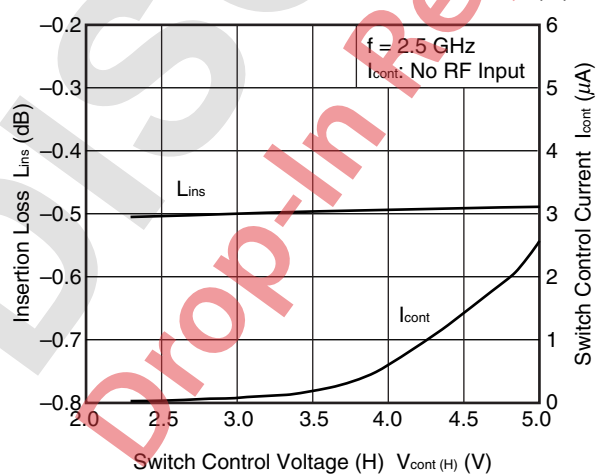
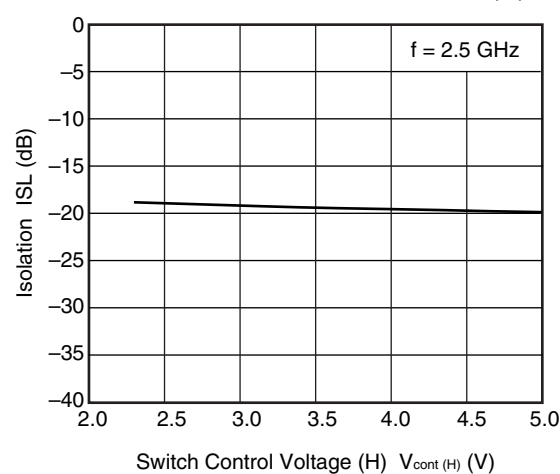


# ILLUSTRATION OF THE TEST CIRCUIT ASSEMBLED ON EVALUATION BOARD

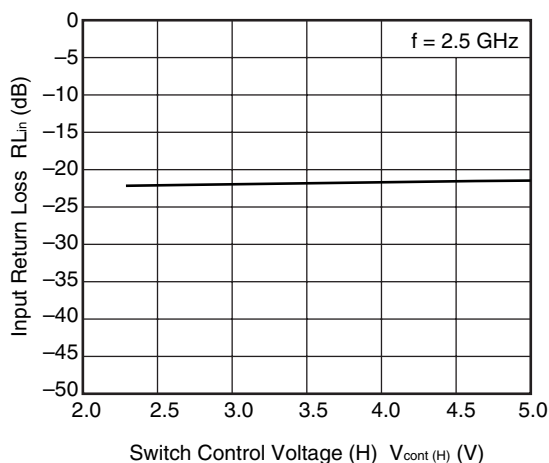


## USING THE NEC EVALUATION BOARD

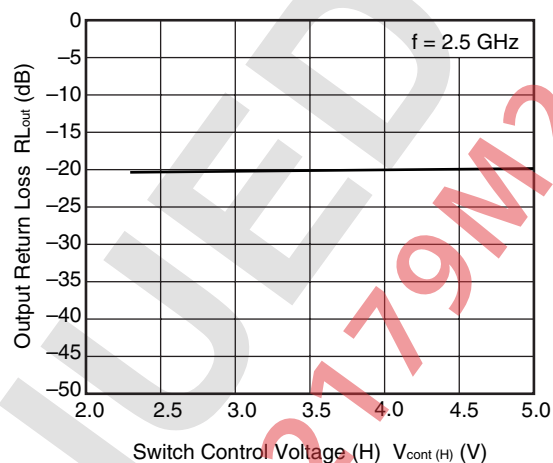
| Symbol | Test Conditions                        | Values   |
|--------|----------------------------------------|----------|
| C1     | $f = 0.05 \text{ to } 0.5 \text{ GHz}$ | 1 000 pF |
|        | $f = 0.5 \text{ to } 3.0 \text{ GHz}$  | 56 pF    |
| C2     |                                        | 1 000 pF |

**TYPICAL CHARACTERISTICS** ( $T_A = +25^\circ\text{C}$ , DC blocking capacitors = 56 pF, unless otherwise specified)RFC-RF1/RF2  
INSERTION LOSS vs. FREQUENCYRFC-RF1/RF2  
ISOLATION vs. FREQUENCYRFC-RF1/RF2  
INPUT RETURN LOSS vs. FREQUENCYRFC-RF1/RF2  
OUTPUT RETURN LOSS vs. FREQUENCYRFC-RF1/RF2 INSERTION LOSS,  
 $I_{cont}$  vs. SWITCH CONTROL VOLTAGE (H)RFC-RF1/RF2 ISOLATION vs.  
SWITCH CONTROL VOLTAGE (H)**Remark** The graphs indicate nominal characteristics.

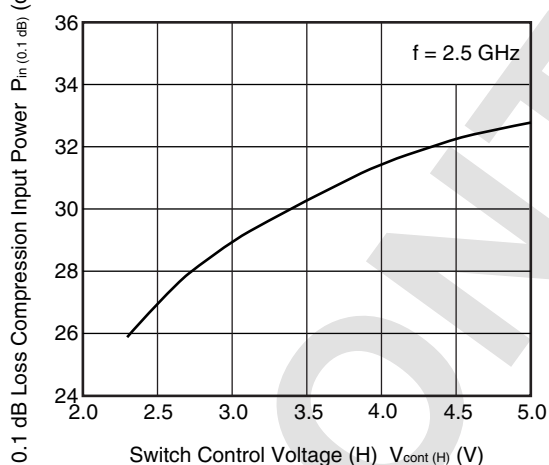
RFC-RF1/RF2 INPUT RETURN LOSS vs. SWITCH CONTROL VOLTAGE (H)



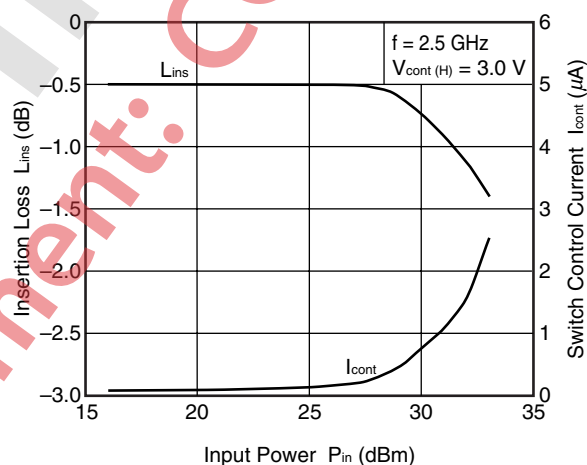
RFC-RF1/RF2 OUTPUT RETURN LOSS vs. SWITCH CONTROL VOLTAGE (H)



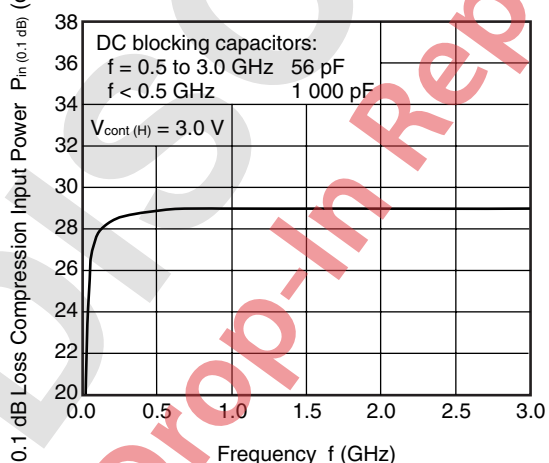
RFC-RF1/RF2  $P_{in}$  (0.1 dB) vs. SWITCH CONTROL VOLTAGE (H)



RFC-RF1/RF2 INSERTION LOSS,  $I_{cont}$  vs. INPUT POWER



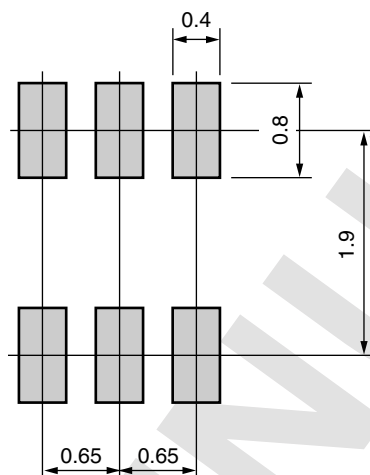
RFC-RF1/RF2  $P_{in}$  (0.1 dB) vs. FREQUENCY



**Remark** The graphs indicate nominal characteristics.

## MOUNTING PAD LAYOUT DIMENSIONS

6-PIN SUPER MINIMOLD (SC-88/SOT-363 type) (UNIT: mm)

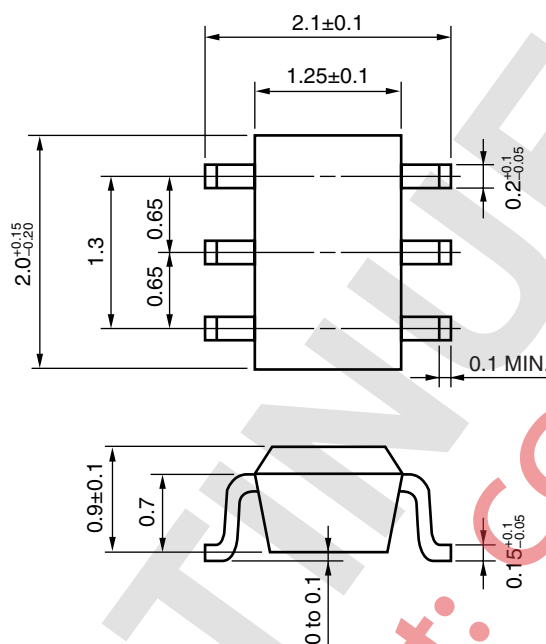


**Remark** The mounting pad layout in this document is for reference only.

When designing PCB, please consider workability of mounting, solder joint reliability, prevention of solder bridge and so on, in order to optimize the design.

**PACKAGE DIMENSIONS**

**6-PIN SUPER MINIMOLD (SC-88/SOT-363 type) (UNIT: mm)**





**RECOMMENDED SOLDERING CONDITIONS**

This product should be soldered and mounted under the following recommended conditions. For soldering methods and conditions other than those recommended below, contact your nearby sales office.

| Soldering Method | Soldering Conditions                                                                                                                                                                                                                                                                                                                                        | Condition Symbol |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Infrared Reflow  | Peak temperature (package surface temperature) : 260°C or below<br>Time at peak temperature : 10 seconds or less<br>Time at temperature of 220°C or higher : 60 seconds or less<br>Preheating time at 120 to 180°C : 120±30 seconds<br>Maximum number of reflow processes : 3 times<br>Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below | IR260            |
| Wave Soldering   | Peak temperature (molten solder temperature) : 260°C or below<br>Time at peak temperature : 10 seconds or less<br>Preheating temperature (package surface temperature) : 120°C or below<br>Maximum number of flow processes : 1 time<br>Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below                                                | WS260            |
| Partial Heating  | Peak temperature (terminal temperature) : 350°C or below<br>Soldering time (per side of device) : 3 seconds or less<br>Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below                                                                                                                                                                 | HS350            |

**Caution** Do not use different soldering methods together (except for partial heating).

**Caution**

GaAs Products

This product uses gallium arsenide (GaAs).

GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points.

- Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below.
  1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials.
  2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal.
- Do not burn, destroy, cut, crush, or chemically dissolve the product.
- Do not lick the product or in any way allow it to enter the mouth.

DISCONTINUED  
Drop-In Replacement: CG2179M2

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