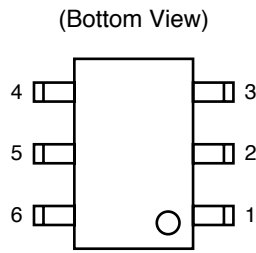
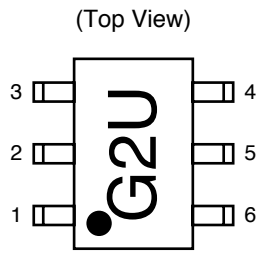


★ PIN CONNECTIONS



| Pin No. | Pin Name           |
|---------|--------------------|
| 1       | OUT1               |
| 2       | GND                |
| 3       | OUT2               |
| 4       | V <sub>cont2</sub> |
| 5       | IN                 |
| 6       | V <sub>cont1</sub> |

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

| Parameter                     | Symbol                | Ratings                      | Unit |
|-------------------------------|-----------------------|------------------------------|------|
| Control Voltage 1, 2          | V <sub>cont1, 2</sub> | -6.0 to +6.0 <sup>Note</sup> | V    |
| Input Power                   | P <sub>in</sub>       | +36                          | dBm  |
| Total Power Dissipation       | P <sub>tot</sub>      | 0.15                         | W    |
| 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)

| Parameter              | Symbol               | MIN. | TYP. | MAX. | Unit |
|------------------------|----------------------|------|------|------|------|
| Control Voltage (High) | V <sub>cont(H)</sub> | +2.7 | +2.8 | +3.0 | V    |
| Control Voltage (Low)  | V <sub>cont(L)</sub> | -0.2 | 0    | +0.2 | V    |

**ELECTRICAL CHARACTERISTICS**

( $T_A = +25^\circ\text{C}$ ,  $V_{\text{cont1}} = 2.8\text{ V}$ ,  $V_{\text{cont2}} = 0\text{ V}$  or  $V_{\text{cont1}} = 0\text{ V}$ ,  $V_{\text{cont2}} = 2.8\text{ V}$ ,  $Z_o = 50\ \Omega$ , Off chip DC blocking capacitors value; 56 pF, unless otherwise specified)

| Parameter   | Symbol                         | Test Conditions  | MIN. | TYP. | MAX. | Unit |
|---|--------------------------------|--|------|------|------|------|
| Insertion Loss  | $L_{\text{INS}}$               | $f = 0.5\text{ to }1.0\text{ GHz}$   | -    | 0.25 | 0.45 | dB   |
|   |                                | $f = 2.0\text{ GHz}$   | -    | 0.30 | 0.50 | dB   |
|   |                                | $f = 2.5\text{ GHz}$   | -    | 0.40 | -    | dB   |
| Isolation   | $ISL$                          | $f = 0.5\text{ to }2.0\text{ GHz}$   | 24   | 28   | -    | dB   |
|   |                                | $f = 2.5\text{ GHz}$   | -    | 25   | -    | dB   |
| Input Return Loss                                       | $RL_{\text{in}}$               | $f = 0.5\text{ to }2.5\text{ GHz}$   | 15   | 20   | -    | dB   |
| Output Return Loss                                      | $RL_{\text{out}}$              | $f = 0.5\text{ to }2.5\text{ GHz}$   | 15   | 20   | -    | dB   |
| Input Power at 0.1 dB Compression Point <sup>Note</sup> | $P_{\text{in}(0.1\text{ dB})}$ | $f = 1.0\text{ GHz}$ ,<br>$V_{\text{cont}} = 2.8\text{ V/0 V}$                                     | 32.5 | 34   | -    | dBm  |
| 2nd Harmonics   | $2f_0$                         | $f = 1.0\text{ GHz}$ , $V_{\text{cont}} = 2.8\text{ V/0 V}$ ,<br>$P_{\text{in}} = 30.5\text{ dBm}$ | 65   | 75   | -    | dBc  |
| 3rd Harmonics   | $3f_0$                         | $f = 1.0\text{ GHz}$ , $V_{\text{cont}} = 2.8\text{ V/0 V}$ ,<br>$P_{\text{in}} = 30.5\text{ dBm}$ | 65   | 75   | -    | dBc  |
| Switching Speed   | $t_{\text{sw}}$                |  | -    | 150  | -    | ns   |
| Control Current   | $I_{\text{cont}}$              | $V_{\text{cont}} = 2.8\text{ V/0 V}$ , RF Non  | -    | 1    | 50   | μA   |

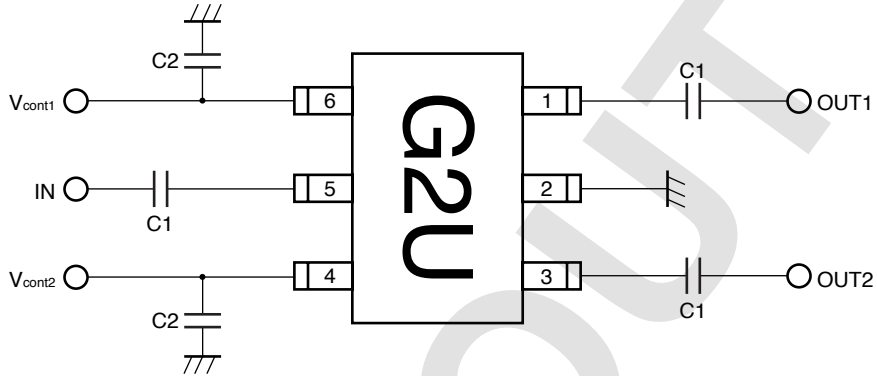
**Note**  $P_{\text{in}(0.1\text{ dB})}$  are measured the input power level when the insertion loss increase more 0.1 than that of linear range. All other characteristics are measured in linear range.

**Caution** When the μPG2009TB is used it is necessary to use DC blocking capacitors for No.1 (OUT1), No.3 (OUT2) and No.5 (IN). 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.

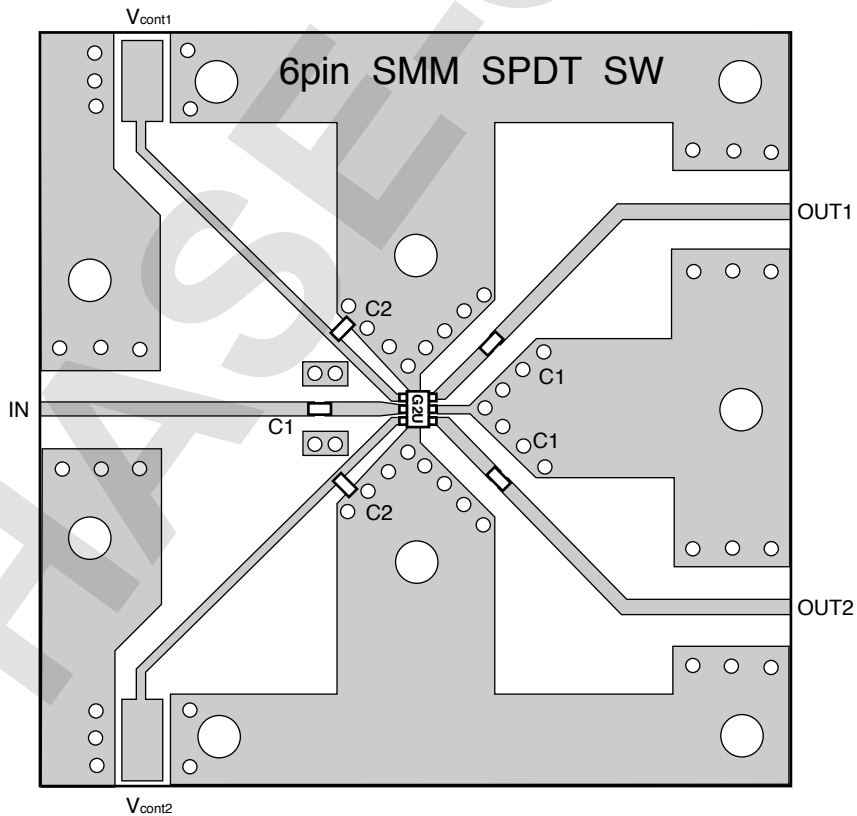
The range of recommended DC blocking capacitor value is less than 100 pF.

**EVALUATION CIRCUIT**

$V_{cont1} = 2.8\text{ V}$ ,  $V_{cont2} = 0\text{ V}$  or  $V_{cont2} = 0\text{ V}$ ,  $V_{cont1} = 2.8\text{ V}$ , off chip DC blocking capacitors value  $C1 = 56\text{ pF}$ ,  $C2 = 1\text{ 000 pF}$  (Bypass), using the standard evaluation board.



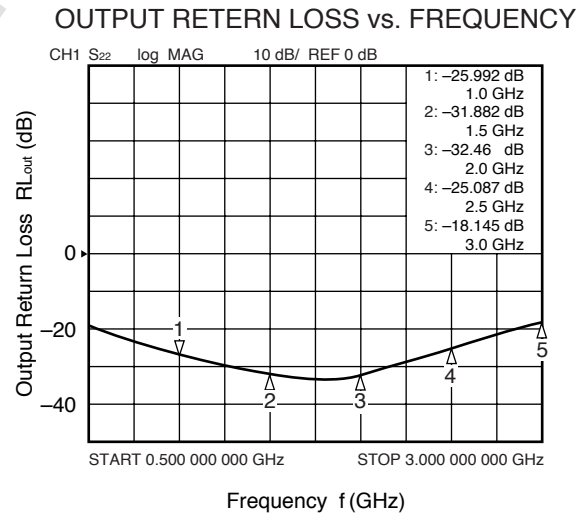
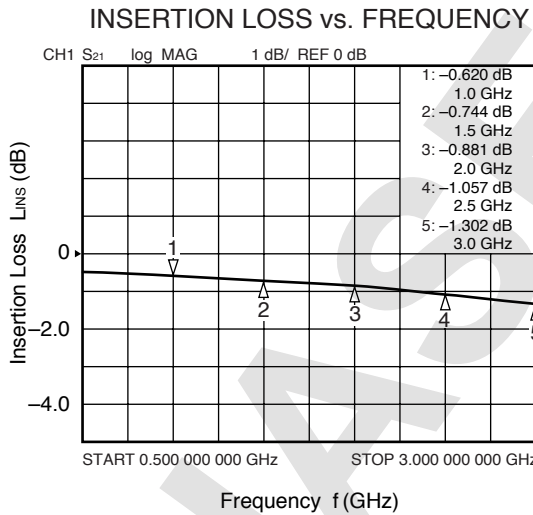
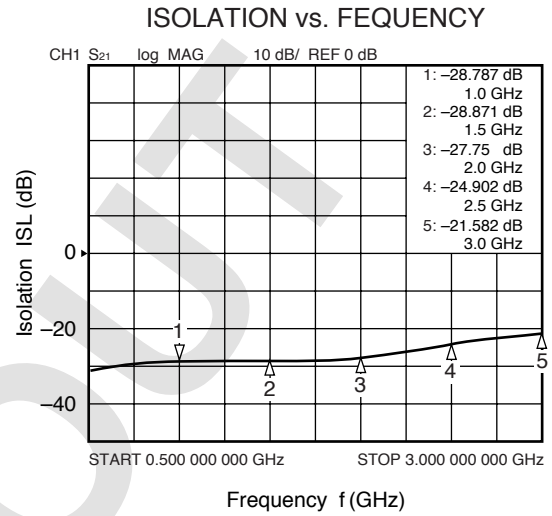
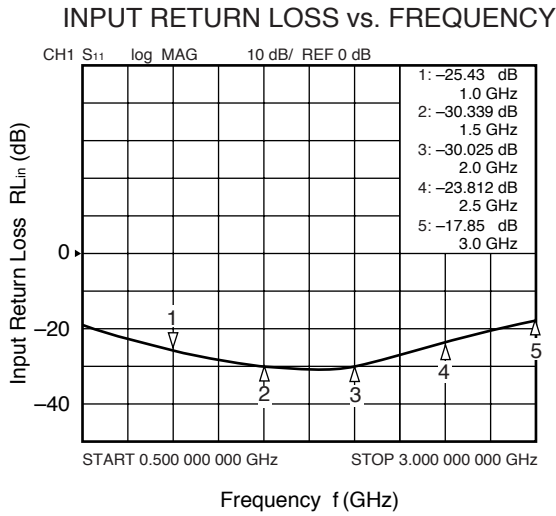
**EVALUATION BOARD**



**TRUTH TABLE**

| $V_{cont1}$ | $V_{cont2}$ | IN-OUT1 | IN-OUT2 |
|-------------|-------------|---------|---------|
| Low         | High        | OFF     | ON      |
| High        | Low         | ON      | OFF     |

**TYPICAL CHARACTERISTICS (T<sub>A</sub> = +25°C, V<sub>cont1/2</sub> = 2.8 V/0 V, P<sub>in</sub> = 0 dBm, OUT2 side is 50 Ω termination, unless otherwise specified)**



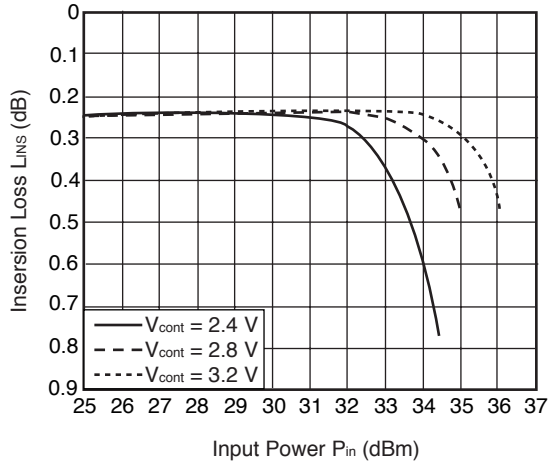
**Caution** These characteristics values include the losses of the evaluation board.

**Remark** The graphs indicate nominal characteristics.

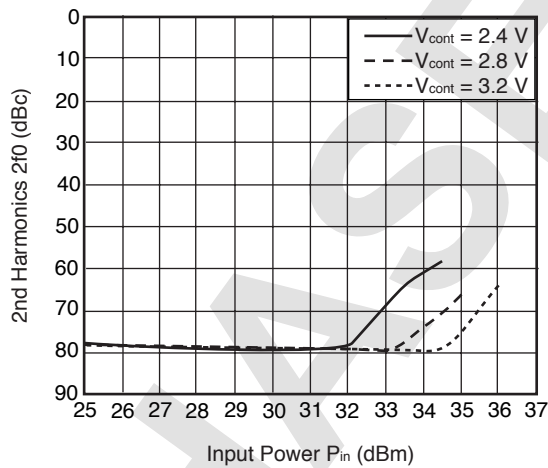
**TYPICAL CHARACTERISTICS**

(f = 2 GHz, OUT2 side is 50 Ω termination, unless otherwise specified)

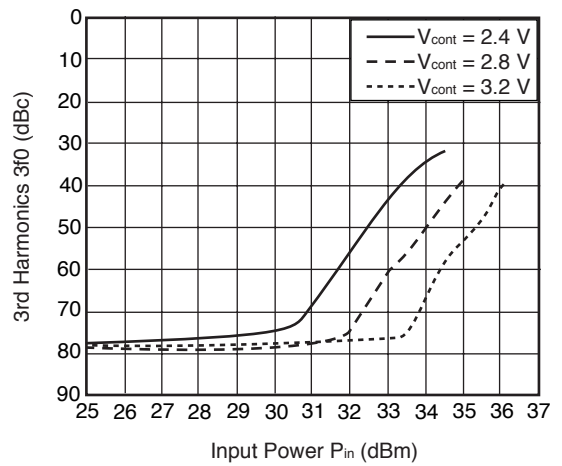
RELATION BETWEEN CONTROL VOLTAGE OF INSERTION LOSS



RELATION BETWEEN CONTROL VOLTAGE OF 2nd HARMONICS



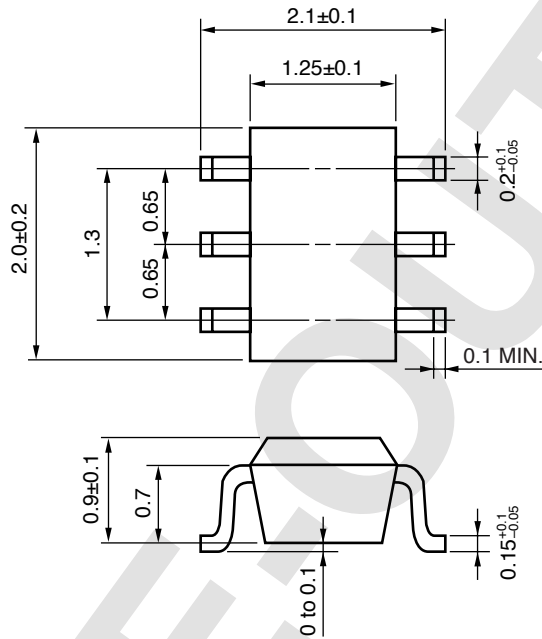
RELATION BETWEEN CONTROL VOLTAGE OF 3rd HARMONICS



**Remark** The graphs indicate nominal characteristics.

**PACKAGE DIMENSIONS**

**6-PIN SUPER MINIMOLD (UNIT: mm)**



PHASE

**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            |
| VPS              | Peak temperature (package surface temperature) : 215°C or below<br>Time at temperature of 200°C or higher : 25 to 40 seconds<br>Preheating time at 120 to 150°C : 30 to 60 seconds<br>Maximum number of reflow processes : 3 times<br>Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below  | VP215            |
| 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 (pin 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).**

**SAFETY INFORMATION ON THIS PRODUCT**

|                       |                      |   |
|-----------------------|----------------------|---|
| <p><b>Caution</b></p> | <p>GaAs Products</p> | <p>The product contains gallium arsenide, GaAs.<br/>GaAs vapor and powder are hazardous to human health if inhaled or ingested.</p> <ul style="list-style-type: none"> <li>• Do not destroy or burn the product.</li> <li>• Do not cut or cleave off any part of the product.</li> <li>• Do not crush or chemically dissolve the product.</li> <li>• Do not put the product in the mouth.</li> </ul> <p>Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.</p> |
|-----------------------|----------------------|---|

PHASE-OUT



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