

■ Features

- High Output Power: $P_{sat}=48.0\text{dBm}$ (Typ.)
- High Gain: $G_p=11.0\text{dB}$ (Typ.)
- High Power Added Efficiency: $PAE=41\%$ (Typ.)
- Broad Band: 8.5 to 9.8GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\text{ohm}$
- Hermetically Sealed Package


■ Description

The SGC8598-50B-R is a high power GaN-HEMT that is internally matched for X-band radar bands to provide optimum power and gain in a 50ohm system.

ABSOLUTE MAXIMUM RATING (Case Temperature $T_c=25\text{ deg.C}$)

| Item | Symbol | Rating | Unit |
|----------------------|-----------|-------------|-------|
| Drain-Source Voltage | V_{DS} | 55 | V |
| Gate-Source Voltage | V_{GS} | -15 | V |
| Storage Temperature | T_{stg} | -55 to +125 | deg.C |
| Channel Temperature | T_{ch} | +250 | deg.C |

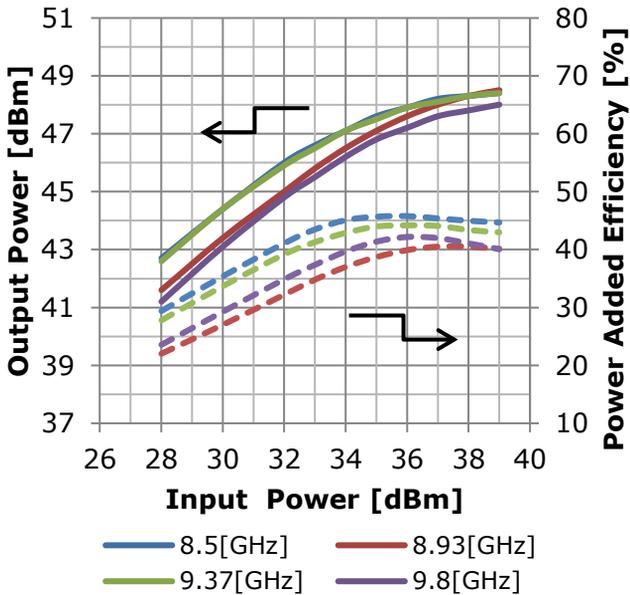
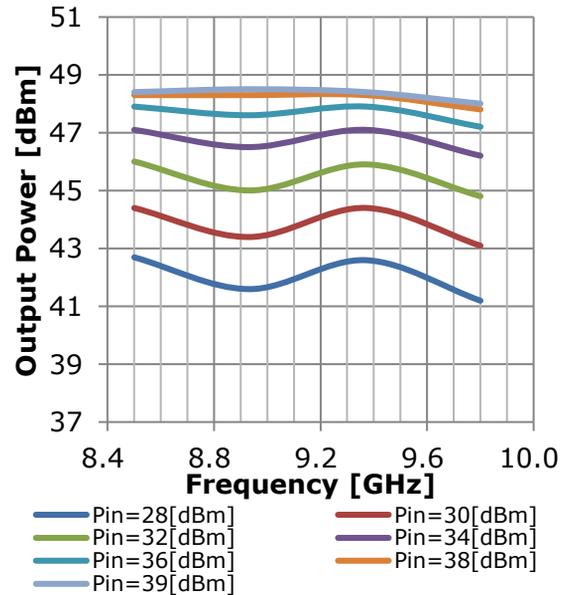
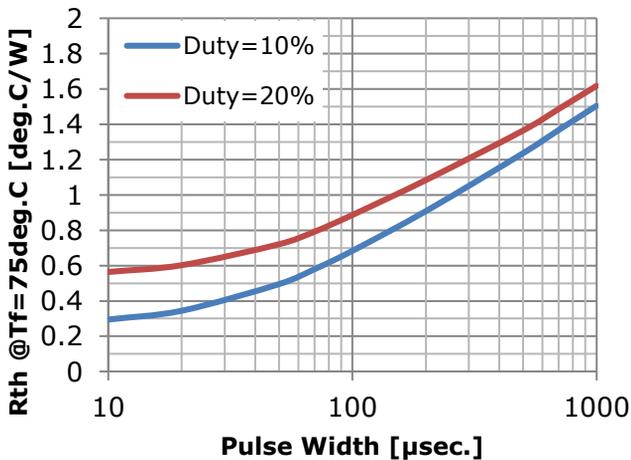
RECOMMENDED OPERATING CONDITION

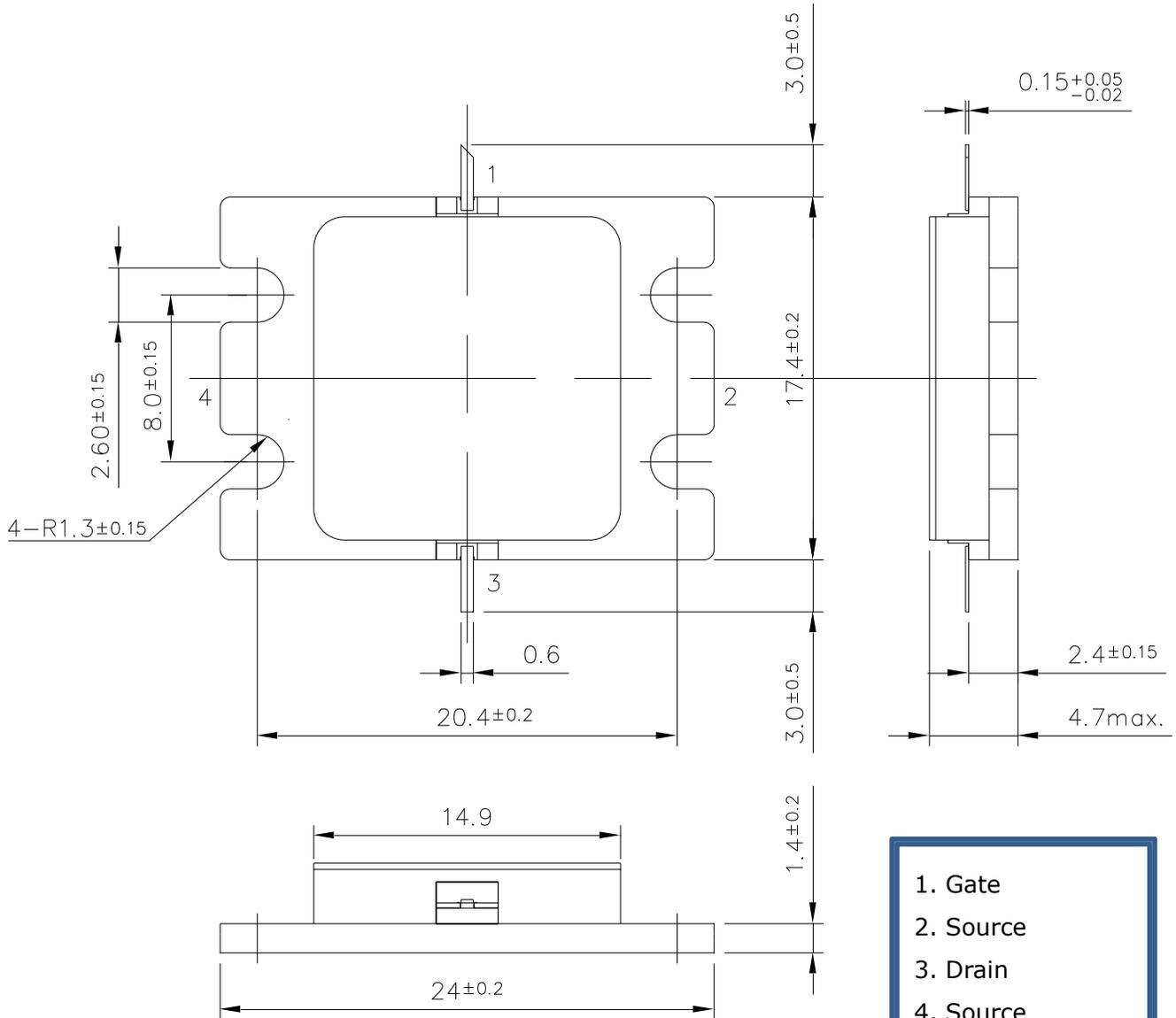
| Item | Symbol | Condition | Limit | Unit |
|----------------------|-----------|---------------------|--------------------|-------|
| Drain-Source Voltage | V_{DS} | | ≤ 50 | V |
| Forward Gate Current | I_{GF} | $R_g=100\text{ohm}$ | ≤ 30.8 | mA |
| Reverse Gate Current | I_{GR} | $R_g=100\text{ohm}$ | ≥ -2.2 | mA |
| Channel Temperature | T_{ch} | | $< +200$ | deg.C |
| Output Power | P_{out} | | $\leq P5\text{dB}$ | dBm |

ELECTRICAL CHARACTERISTICS (Case Temperature $T_c=25\text{ deg.C}$)

| Item | Symbol | Condition | Limit | | | Unit |
|---|------------|--|-------|------|------|---------|
| | | | Min. | Typ. | Max. | |
| Pinch-off Voltage | V_p | $V_{DS}=50\text{V}, I_{DS}=3.0\text{mA}$ | - | -4.5 | - | V |
| Frequency Range | Freq. | $V_{DS}=50\text{V-typ.}$ $I_{DS(DC)}=0.17\text{A-typ.}$ Pulse Width=100 $\mu\text{sec.}$ Duty=10% | 8.5 | - | 9.8 | GHz |
| Output Power at $P_{in}=38\text{dBm}$ | P_{sat} | | 47.0 | 48.0 | - | dBm |
| Power Gain at $P_{out}=47\text{dBm}$ | G_p | | 10.0 | 11.0 | - | dB |
| Drain Current at $P_{in}=38\text{dBm}$ | I_{DSR} | | - | 2.8 | 4.1 | A |
| Power Added Efficiency at $P_{in}=38\text{dBm}$ | PAE | | - | 41 | - | % |
| Gain Flatness | ΔG | | - | 1.6 | - | dB |
| Thermal Resistance | R_{th} | Channel to Case ($P_{diss}=50\text{W}, \text{CW}$) | - | 2.4 | 3.0 | deg.C/W |

| | |
|-----------------|-----------------|
| CASE STYLE | IK |
| RoHS Compliance | YES |
| ESD | Class 2 |
| | 2000V to <4000V |

● RF Characteristics
Output Power & Power Added Efficiency vs. Input Power
 $V_{DS}=50V, I_{DS(DC)}=0.17A$
 PW=100 μ sec., Duty=10%

Output Power vs. Frequency
 $V_{DS}=50V, I_{DS(DC)}=0.17A$
 PW=100 μ sec., Duty=10%

● Thermal Characteristics In Pulsed Operation
Rth vs. Pulse Width


● Package Outline
Case Style : IK


| |
|-----------------------|
| 1. Gate |
| 2. Source |
| 3. Drain |
| 4. Source |
| Unit: mm |
| Tolerance: ± 0.15 |

For Safety, Observe the Following Procedures Environmental Management

- Do not put this product into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Respect all applicable laws of the country when discarding this product.
This product must be disposed in accordance with methods specified by applicable hazardous waste procedures.

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