

GHSD6P0008AT

10W, 50V, DC-6GHz GaN RF Transistor



Description

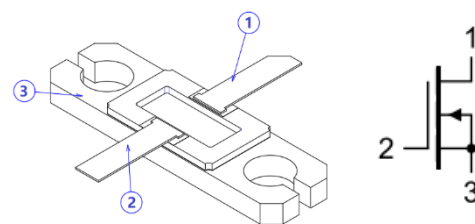
The GHSD6P0008AT is a 10W (P3dB), discrete GaN on SiC HEMT which operates from DC to 6 GHz.

Features

- Frequency: DC to 6 GHz
- Output Power(P3dB)¹: 10 W
- Linear Gain₁: 21.5 dB
- Typical DE(P3dB)¹: 79 %
- Operating Voltage: 50 V
- Low thermal resistance package
- CW and Pulse capable

Note 1: @ 2.6 GHz

Functional Block Diagram



1. Drain 2. Gate 3. Source

Applications

- Base station
- Radio relay station
- Military radar
- Civilian radar
- Test instrumentation
- Wideband or narrowband amplifiers
- Jammers
- Microwave oven

Ordering Information

- GHSD6P0008AT

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Recommended Operating Conditions

| Parameter | Min | Type | Max | Units |
|------------------------------|------|------|------|-------|
| Operating Temp Range | -40 | +25 | +85 | °C |
| Drain Voltage Range, V_D | 25 | 50 | 55 | V |
| Drain Bias Current, I_{DQ} | - | 15 | - | mA |
| Gate Voltage, V_G^1 | -3.4 | -2.9 | -2.3 | V |

Electrical performance is measured under conditions noted in the electrical specifications table.

Specifications are not guaranteed over all recommended operating conditions.

Notes:

1. To be adjusted to desired IDQ.

Absolute Maximum Ratings

| Parameter | Units | Min | Typ | Max |
|--|-------|-----|-----|-----|
| Breakdown Voltage, BV_{DG} , $T = 25^\circ\text{C}$ | V | — | — | 150 |
| Gate Voltage Range, V_G , $T = 25^\circ\text{C}$ | V | -10 | — | 1.3 |
| Drain Current, $T = 25^\circ\text{C}$ | A | — | — | 0.9 |
| Power Dissipation, CW, P_{DISS} , 85°C, Eutectic die attach using 80/20 Au/Sn | W | — | — | TBD |
| RF Input Power, CW, 2.6 GHz, $T = 25^\circ\text{C}$ | dBm | — | — | +28 |
| Storage Temperature | °C | -65 | — | 150 |

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability.

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Pulsed Characterization – Load-Pull Performance – Power Tuned

Test conditions unless otherwise noted: $V_D = +50$ V, $I_{DQ} = 15$ mA, Temp = +25 °C.

| Parameter | Typical Values | Units |
|--|----------------|-------|
| Frequency | 2.6 | GHz |
| Linear Gain, G_{LIN} | 20.2 | dB |
| Output Power at 3dB compression point, P_{3dB} | 40.8 | dBm |
| Drain-Efficiency at 3dB compression point | 71 | % |
| Gain at 3dB compression point | 17.2 | dB |

Pulsed Characterization – Load-Pull Performance – Efficiency Tuned

Test conditions unless otherwise noted: $V_D = +50$ V, $I_{DQ} = 15$ mA, Temp = +25 °C.

| Parameter | Typical Values | Units |
|--|----------------|-------|
| Frequency | 2.6 | GHz |
| Linear Gain, G_{LIN} | 21.5 | dB |
| Output Power at 3dB compression point, P_{3dB} | 39.9 | dBm |
| Drain-Efficiency at 3dB compression point | 79 | % |
| Gain at 3dB compression point | 18.5 | dB |

Thermal and Reliability Information – DC

| Parameter | Conditions | Values | Units |
|---------------------------------------|------------|--------|-------|
| Thermal Resistance, $IR(\theta_{JC})$ | TBD | TBD | °C/W |

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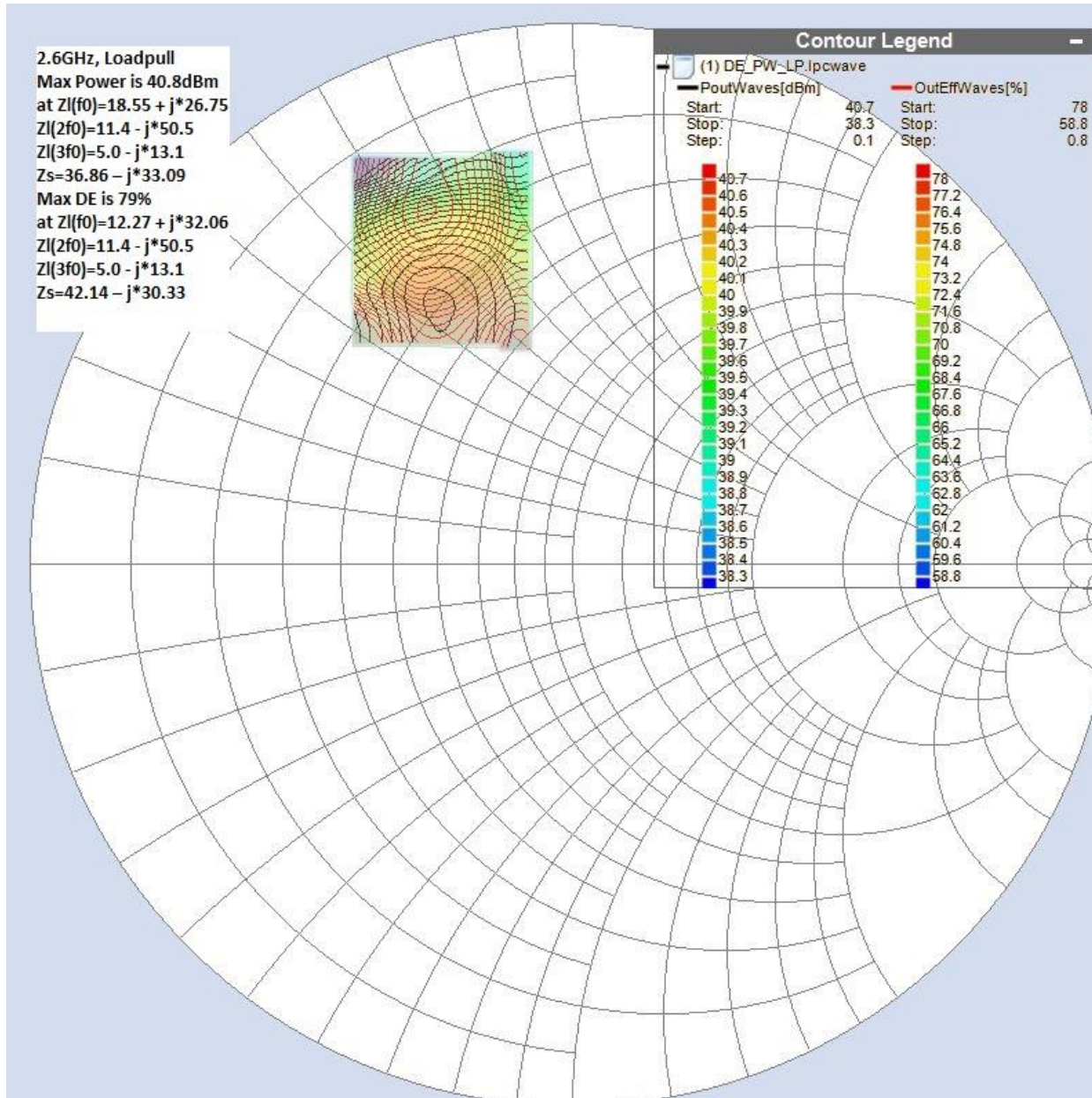
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Load-Pull Smith Charts

Test conditions: $V_D = 50\text{ V}$, $I_{DQ} = 15\text{ mA}$, 100 us PW , $10\% \text{ DC pulsed}$.

Performance is at 3 dB gain compression referenced to peak gain.



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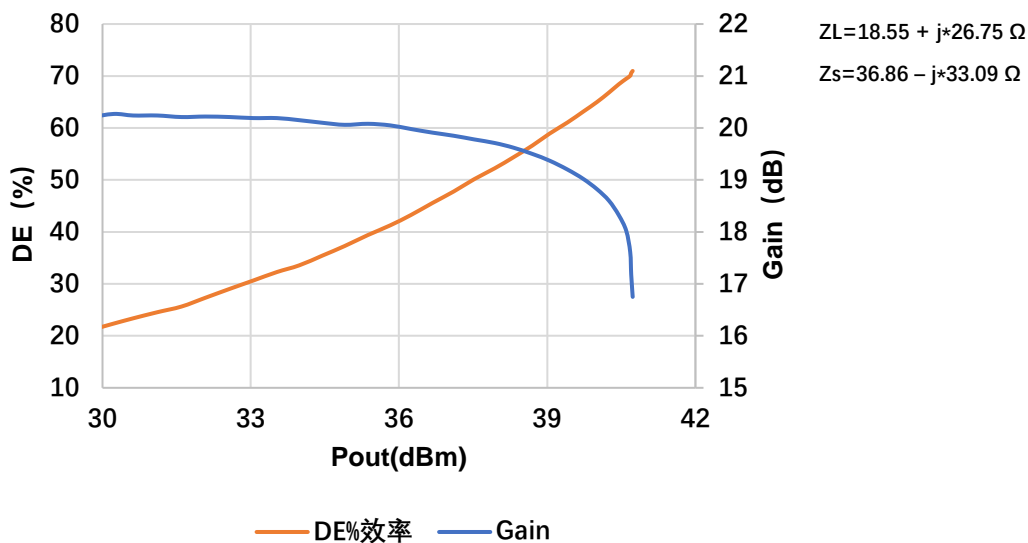


Typical Performance – Load-Pull Drive-up

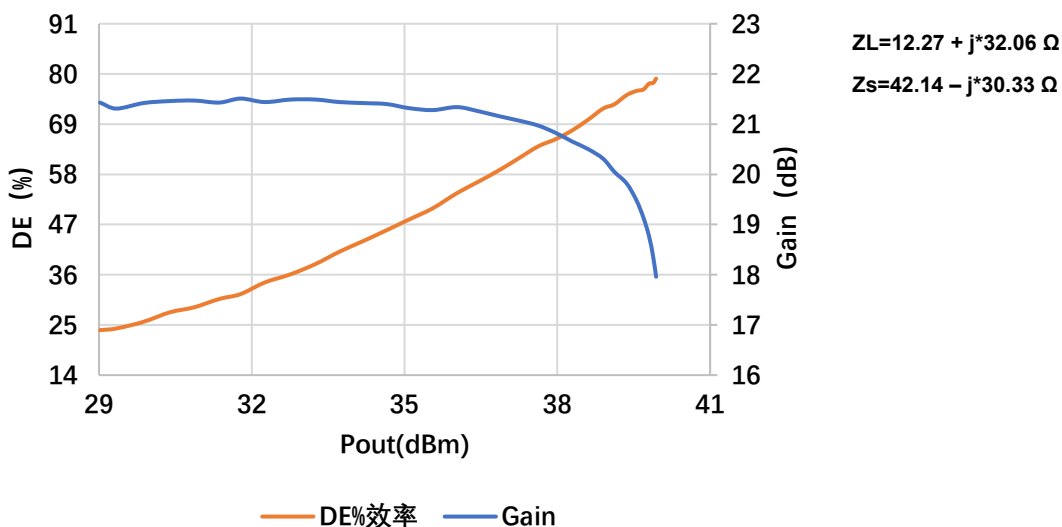
Test conditions: $V_D = 50\text{ V}$, $I_{DQ} = 15\text{ mA}$, 100 us PW , $10\% \text{ DC pulsed}$.

Performance is at 3dB gain compression referenced to peak gain.

DE & Gain vs Pout 2.6 GHz, Power Tuned



DE & Gain vs Pout 2.6 GHz, Efficiency Tuned



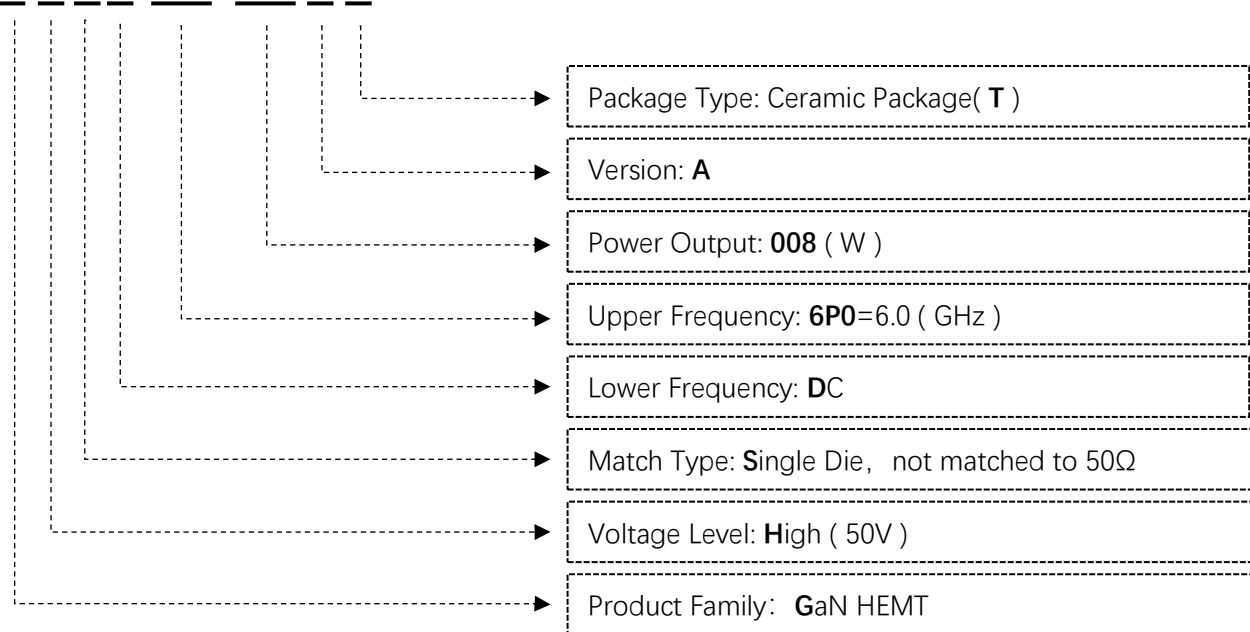
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Part Number System

G H S D 6 P 0 0 0 8 A T



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Handling Precaution

ESD countermeasure methods should be developed and used to control potential ESD damage during handling in a factory environment at each manufacturing site.

Contact Information

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