

# GHSD6P0020AT

20W, 50V, DC-6GHz GaN RF Transistor



## Description

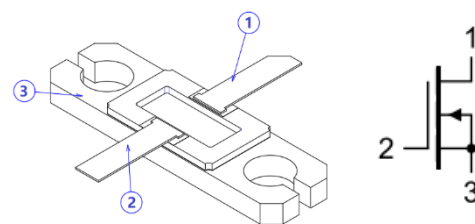
The GHSD6P0020AT is a 20W (P3dB), discrete GaN on SiC HEMT which operates from DC to 6 GHz.

## Features

- Frequency: DC to 6 GHz
- Output Power(P3dB)<sup>1</sup>: 20 W
- Linear Gain<sub>1</sub>: 21.5 dB
- Typical DE(P3dB)<sup>1</sup>: 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

- GHSD6P0020AT

# GHSD6P0020AT

20W, 50V, DC-6GHz GaN RF Transistor



## 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, $I_{DQ}$	-	36	-	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	—	—	1.8
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	—	—	+31
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.

# GHSD6P0020AT

20W, 50V, DC-6GHz GaN RF Transistor



## Pulsed Characterization – Load-Pull Performance – Power Tuned

Test conditions unless otherwise noted:  $V_D = +50$  V,  $I_{DQ} = 36$  mA, Temp = +25 °C.

Parameter	Typical Values	Units
Frequency	2.6	GHz
Linear Gain, $G_{LIN}$	20	dB
Output Power at 3dB compression point, $P_{3dB}$	44	dBm
Drain-Efficiency at 3dB compression point	72	%
Gain at 3dB compression point	17	dB

## Pulsed Characterization – Load-Pull Performance – Efficiency Tuned

Test conditions unless otherwise noted:  $V_D = +50$  V,  $I_{DQ} = 36$  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, $P_{3dB}$	43	dBm
Drain-Efficiency at 3dB compression	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

# GHSD6P0020AT

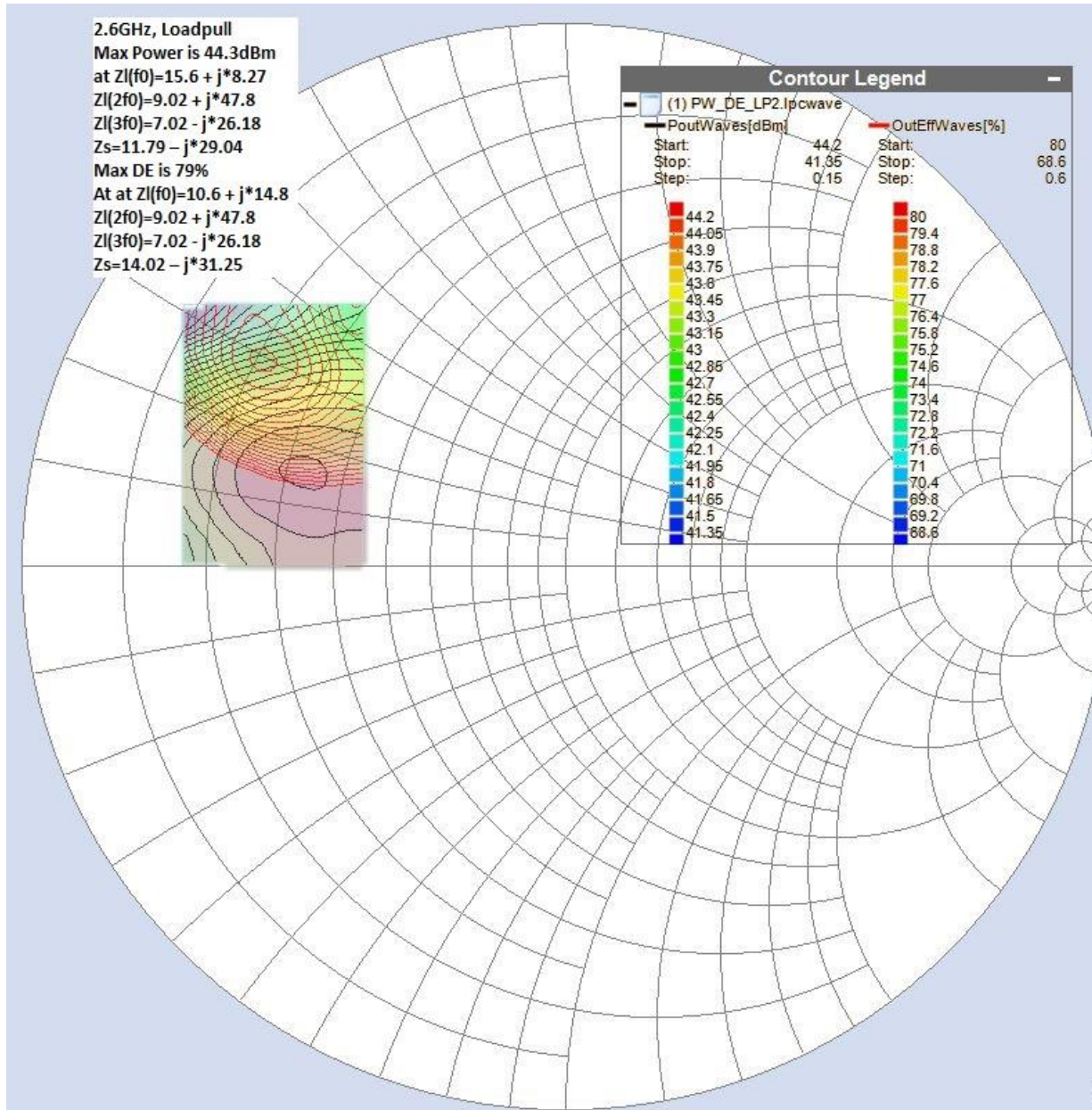
20W, 50V, DC-6GHz GaN RF Transistor



## Load-Pull Smith Charts

Test conditions:  $V_D = 50\text{ V}$ ,  $I_{DQ} = 36\text{ mA}$ ,  $100\text{ us PW}$ , 10% DC pulsed.

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



# GHSD6P0020AT

20W, 50V, DC-6GHz GaN RF Transistor

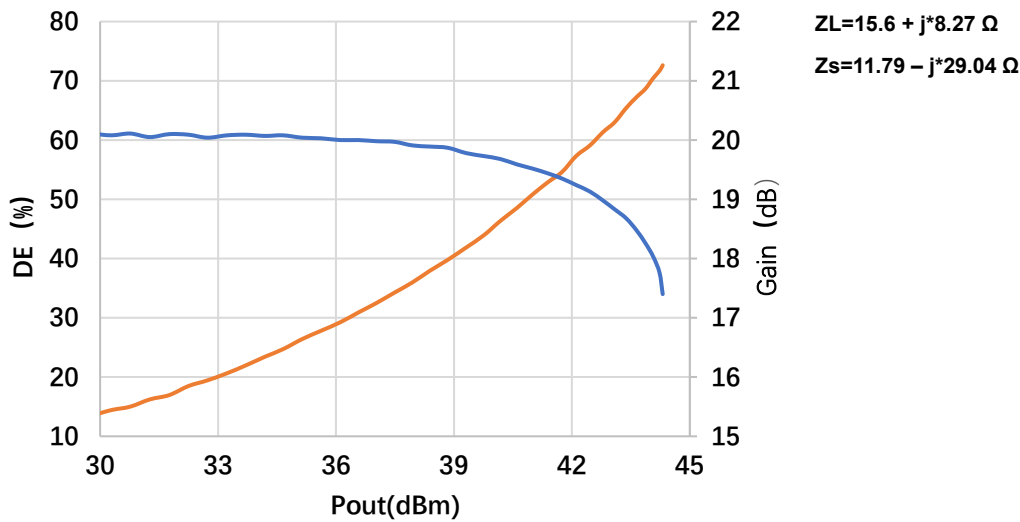


## Typical Performance – Load-Pull Drive-up

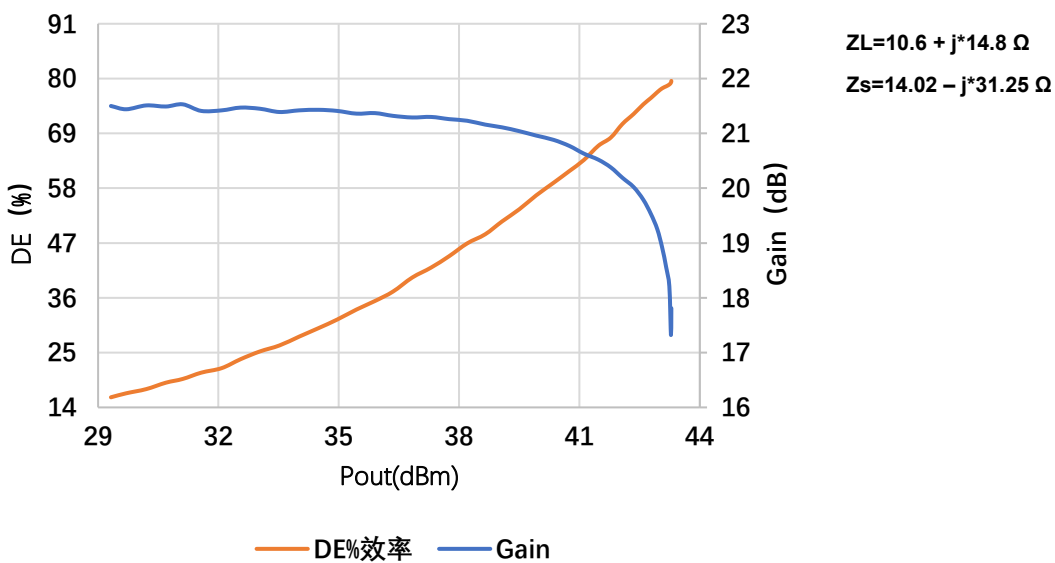
Test conditions:  $V_D = 50\text{ V}$ ,  $I_{DQ} = 36\text{ mA}$ ,  $100\text{ us PW}$ ,  $10\%$  DC pulsed.

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

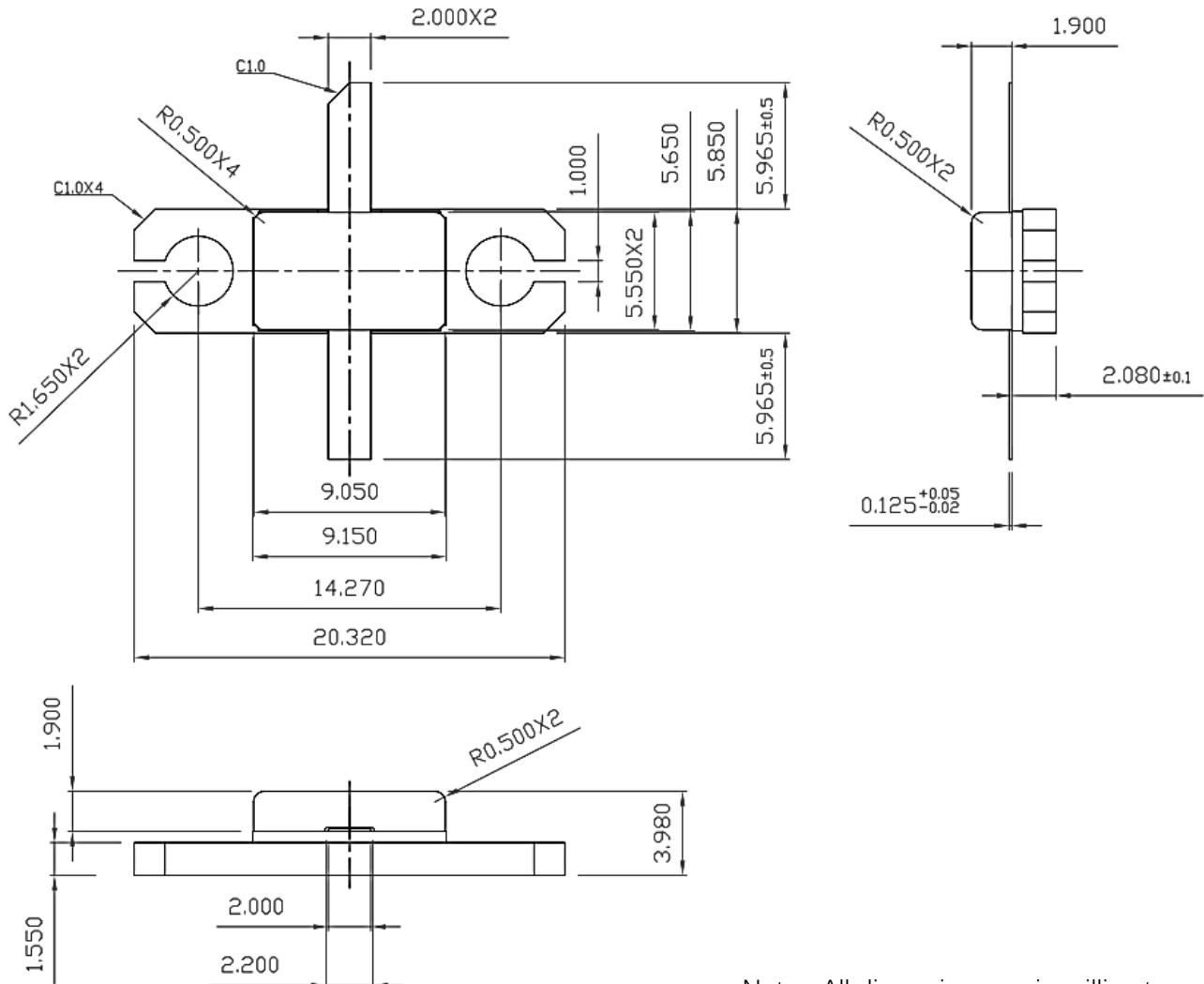


# GHSD6P0020AT

20W, 50V, DC-6GHz GaN RF Transistor



## Package outline



Notes: All dimensions are in millimeters.

技术要求:

1. 未注公差: ±0.13mm。

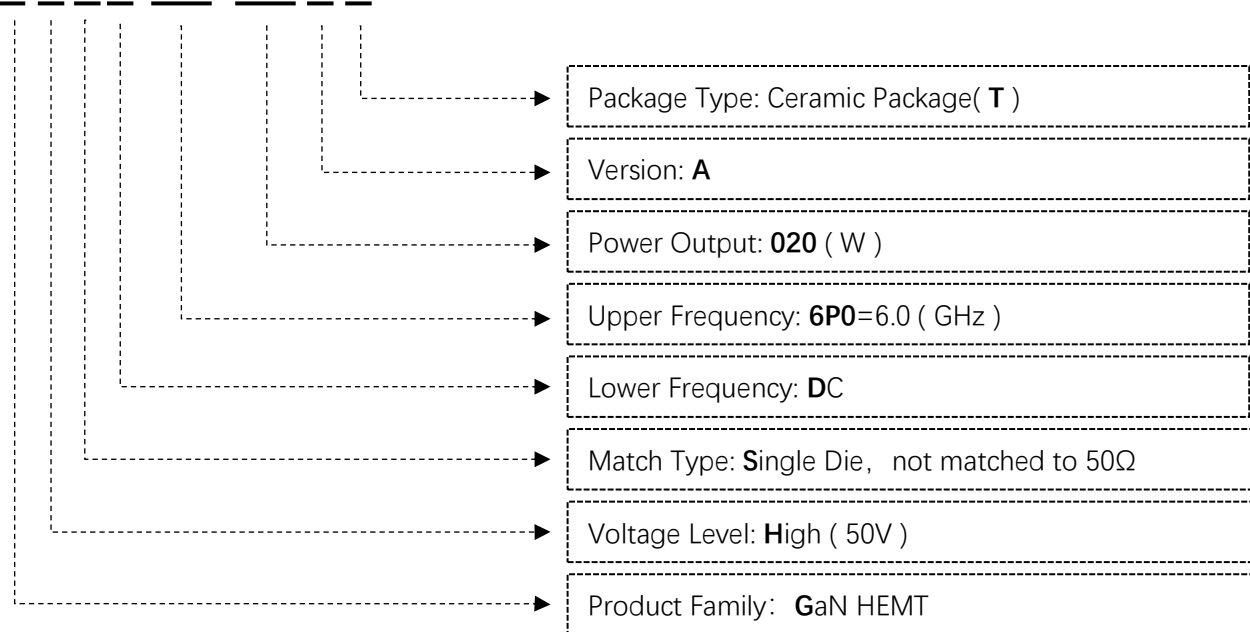
# GHSD6P0020AT

20W, 50V, DC-6GHz GaN RF Transistor



## Part Number System

**G H S D 6 P 0 0 2 0 A T**



# GHSD6P0020AT

20W, 50V, DC-6GHz GaN RF Transistor

---



## 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

Tel: 86-(0)755-82522200

Email: [sales@sdsxchip.com](mailto:sales@sdsxchip.com)

Address: #318, Floor 3, Block A, SDCIC Mansion, 6 Guanglan Rd,  
Futian Free Trade Zone, Futian Dist., Shenzhen

Website: [www.sdsxchip.com](http://www.sdsxchip.com)