

1 W Low-Cost Packaged PHEMT GaAs Power FETs

FEATURES

- 1W Typical Output Power at 6 GHz
- 11dB Typical Power Gain at 6 GHz
- High Linearity: IP3 = 40 dBm Typical at 6 GHz
- High Power Added Efficiency:
PAE \geq 43 % for Class A Operation
- Suitable for High Reliability Application
- Breakdown Voltage: BV_{DGO} \geq 15 V
- L_g = 0.35 μ m, W_g = 2.4 mm
- Tight V_p ranges control
- High RF input power handling capability
- 100 % DC Tested
- Low Cost Ceramic Package

PHOTO ENLARGEMENT



DESCRIPTION

The TC2571 is packaged with the TC1501 Pseudomorphic High Electron Mobility Transistor (PHEMT) GaAs Power chip. The Cu-based ceramic package provides excellent thermal conductivity for the GaAs FET. All devices are 100% DC tested to assure consistent quality. Typical applications include high dynamic range power amplifiers for commercial and military high performance power applications.

ELECTRICAL SPECIFICATIONS (T_A=25°C)

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
P _{1dB}	Output Power at 1dB Gain Compression Point, $f = 6\text{GHz}$ V _{DS} = 8 V, I _{DS} = 240 mA	29.5	30		dBm
G _{1dB}	Power Gain at 1dB Gain Compression, $f = 6\text{GHz}$ V _{DS} = 8 V, I _{DS} = 240 mA		11		dB
IP3	Intercept Point of the 3 rd -order Intermodulation, $f = 6\text{GHz}$ V _{DS} = 8 V, I _{DS} = 240 mA, *P _{SCL} = 17 dBm		40		dBm
PAE	Power Added Efficiency at 1dB Compression Power, $f = 6\text{GHz}$		43		%
I _{DSS}	Saturated Drain-Source Current at V _{DS} = 2 V, V _{GS} = 0 V		600		mA
g _m	Transconductance at V _{DS} = 2 V, V _{GS} = 0 V		400		mS
V _P	Pinch-off Voltage at V _{DS} = 2 V, I _D = 4.8 mA		-1.7**		Volts
BV _{DGO}	Drain-Gate Breakdown Voltage at I _{DGO} = 1.2 mA	15	18		Volts
R _{th}	Thermal Resistance		20		°C/W

* P_{SCL} : Output Power of Single Carrier Level

** For the tight control of the pinch-off voltage range, we divide TC2571 into 3 model numbers to fit customer design requirement

(1)TC2571P1519 : V_p = -1.5V to -1.9V (2)TC2571P1620 : V_p = -1.6V to -2.0V (3)TC2571P1721 : V_p = -1.7V to -2.1V

If required, customer can specify the requirement in purchasing document. For special V_p requirement, please contact factory for details.

ABSOLUTE MAXIMUM RATINGS (T_A=25 °C)

Symbol	Parameter	Rating
V _{DS}	Drain-Source Voltage	12 V
V _{GS}	Gate-Source Voltage	-5 V
I _{DS}	Drain Current	I _{DSS}
P _{in}	RF Input Power, CW	28 dBm
P _T	Continuous Dissipation	3.8 W
T _{CH}	Channel Temperature	175 °C
T _{STG}	Storage Temperature	- 65 °C to +175 °C

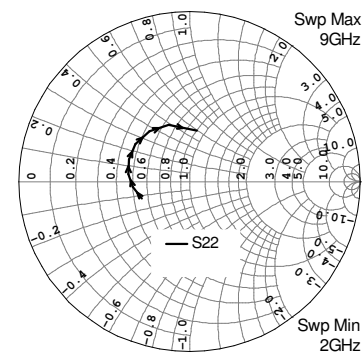
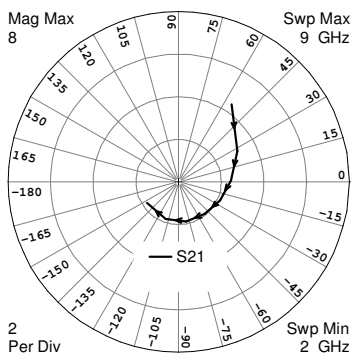
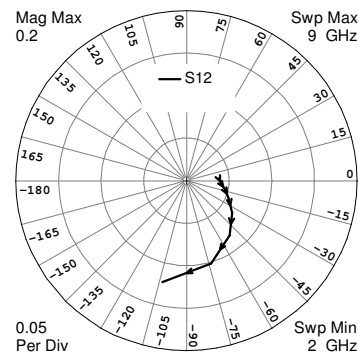
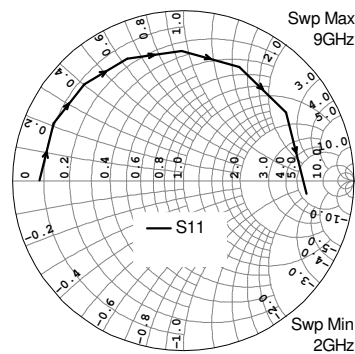
RECOMMENDED OPERATING CONDITION

Symbol	Parameter	Rating
V _{DS}	Drain to Source Voltage	8 V
I _D	Drain Current	240 mA

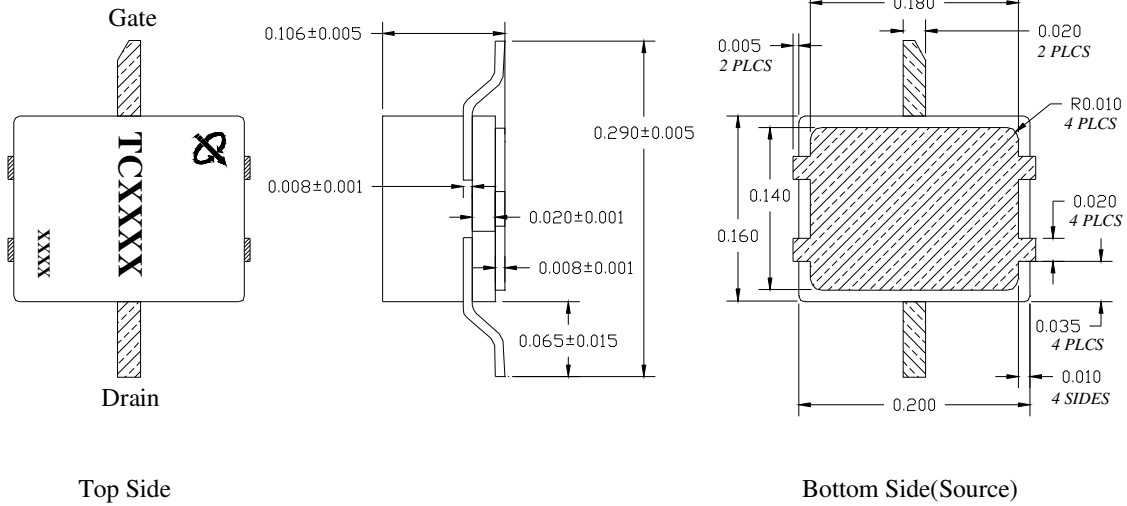
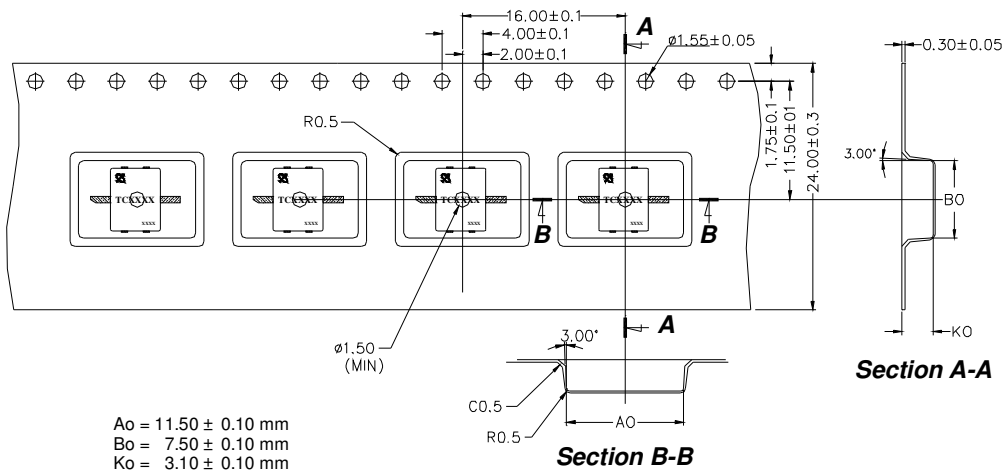
HANDLING PRECAUTIONS :

The user must operate in a clean, dry environment. Electrostatic Discharge(ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. The static discharge must less than 300V.

TYPICAL SCATTERING PARAMETERS (T_A=25°C)

 Power Bias : V_{DS} = 8 V, I_{DS} = 240 mA


FREQUENCY	S11	S21	S12	S22
20.8422	179.88	241.04	55.63	0.8328
3	0.8330	156.09	3.0979	27.48
4	0.8128	135.66	2.4617	1.60
5	0.7880	114.61	2.1283	-23.92
6	0.7645	90.83	1.9470	-50.89
7	0.7467	63.85	1.8797	-79.40
8	0.7247	33.82	1.8428	-109.44
9	0.7245	-5.98	1.7925	-146.06

OUTLINE DIMENSIONS (Unit: inch)

Tape & Reel Package Orientation (Unit: mm)


Standard Reel Size	7"
Standard Reel Quantity	400