TRANSCOM

TC2571

REV.2_04/12/2004

1W 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 ≥ 43 % for Class A Operation
- Suitable for High Reliability Application
- Breakdown Voltage:
  $BV_{DGO} \geq 15$ V
- Lg = 0.35 µm, Wg = 2.4 mm
- 100 % DC Tested
- Low Cost Ceramic Package

PHOTO ENLARGEMENT

DESCRIPTION

The TC2571 is packaged the TC1501 Pseudomorphic High Electron Mobility Transistor (PHEMT) GaAs Power chip. The cu-based ceramic package that requires a surface-mount package is a low-cost and high performance package. All devices are 100% DC tested to assure consistent quality. Typical applications include high dynamic range power amplifier for commercial applications including Cellular/PCS systems, and military high performance power amplifier.

ELECTRICAL SPECIFICATIONS (T_A=25℃)

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
P_{1dB}	Output Power at 1dB Gain Compression Point , f = 6GHz V_{DS} = 8 V, I_{DS} = 300 mA	29.5	30		dBm
G_{1dB}	Power Gain at 1dB Gain Compression , f = 6GHz V_{DS} = 8 V, I_{DS} = 300 mA		11		dB
IP3	Intercept Point of the 3rd-order Intermodulation, f = 6GHz V_{DS} = 8 V, I_{DS} = 300 mA, *P_{SCL} = 17 dBm		40		dBm
PAE	Power Added Efficiency at 1dB Compression Power, f = 6GHz		43		dB
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		16		°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 : Vp = -1.5V to -1.9V (2)TC2571P1620 : Vp = -1.6V to -2.0V (3)TC2571P1721 : Vp = -1.7V to -2.1V
If required, customer can specify the requirement in purchasing document. For special Vp 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	26 dBm
P_T	Continuous Dissipation	3.8 W
T_{CH}	Channel Temperature	175 °C
T_{STG}	Storage Temperature	- 65 °C to +175 °C

RECOMMANDED OPERATING CONDITION

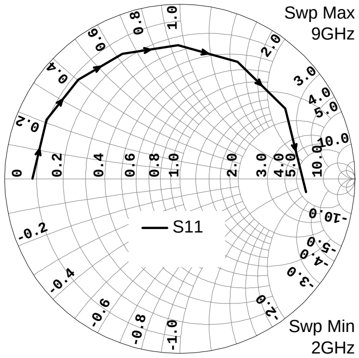
Symbol	Parameter	Rating
V_{DS}	Drain to Source Voltage	8 V
I_D	Drain Current	300 mA

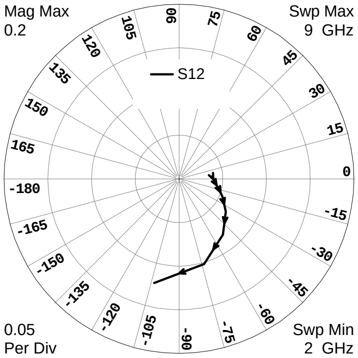
HANDLING PRECAUTIONS :

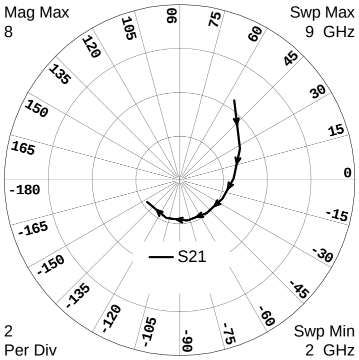
The user must operate in a clean, dry environment. Electrostatic Discharge(ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. The static discharge must less than 300V.

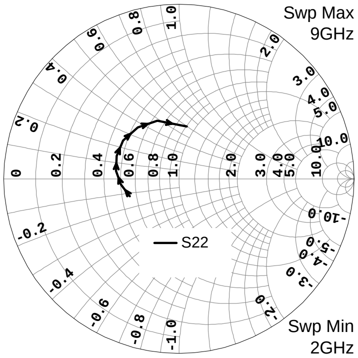
TYPICAL SCATTERING PARAMETERS (T_A=25℃)

Power Bias : V_{DS} = 8 V, I_{DS} = 300 mA



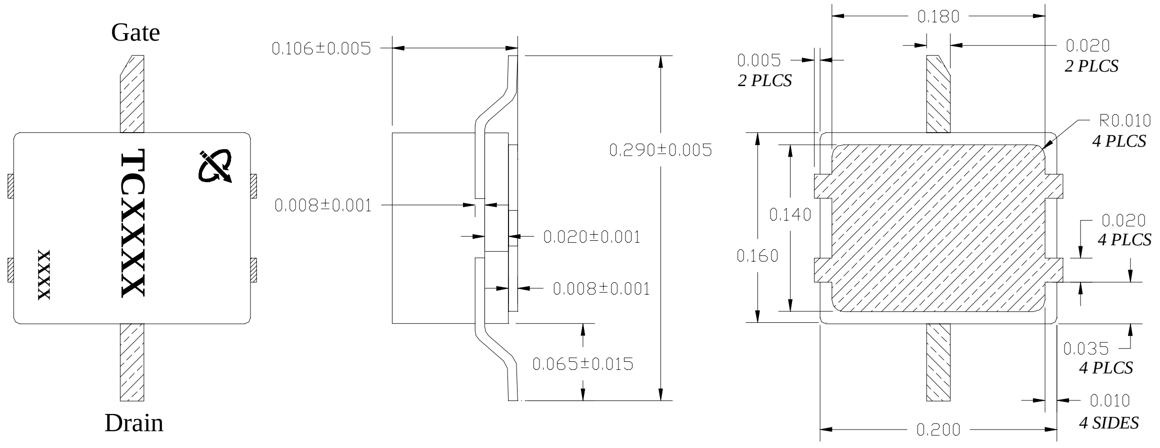






FREQUENCY	S11		S21		S12		S22	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2	0.8422	179.88	4.4104	55.63	0.0378	4.41	0.2968	-160.56
3	0.8330	156.09	3.0979	27.48	0.0410	-5.11	0.3334	-174.58
4	0.8128	135.66	2.4617	1.60	0.0463	-13.48	0.3617	172.88
5	0.7880	114.61	2.1283	-23.92	0.0531	-21.93	0.3796	159.66
6	0.7645	90.83	1.9470	-50.89	0.0655	-35.02	0.3879	145.45
7	0.7467	63.85	1.8797	-79.40	0.0813	-51.82	0.3770	128.62
8	0.7247	33.82	1.8428	-109.44	0.1016	-73.69	0.3550	110.31
9	0.7245	-5.98	1.7925	-146.06	0.1226	-103.34	0.3032	81.57

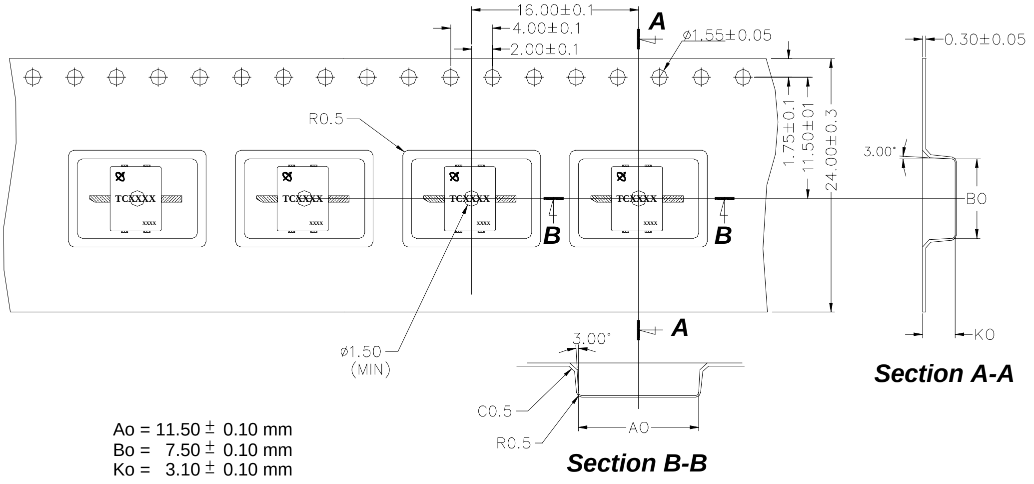
OUTLINE DIMENSIONS (in inch)



Top Side

Bottom Side(Source)

Tape & Reel Package Orientation (mm)



Ao = 11.50 ± 0.10 mm
Bo = 7.50 ± 0.10 mm
Ko = 3.10 ± 0.10 mm

Standard Reel Size	7”
Standard Reel Quantity	500