0.5W Packaged Single-Bias PHEMT GaAs Power FETs

FEATURES

- 0.5W Typical Output Power at 6GHz
- 12dB Typical Linear Power Gain at 6GHz
- High Linearity: IP3 = 37 dBm Typical at 6GHz
- High Power Added Efficiency:
  Nominal PAE of 35% at 6GHz
- Breakdown Voltage: $BV_{DGO} \geq 15V$
- Lg = 0.35 μm, Wg = 1.2 mm
- 100 % DC Tested
- Suitable for High Reliability Application
- Lost Cost Ceramic Package

PHOTO ENLARGEMENT

DESCRIPTION

The TC3947 is a self-bias Cu-based ceramic packaged device with TC1401N PHEMT GaAs FETs, which is designed to provide the single power supply application. The Cu-based ceramic package provides excellent thermal conductivity for the GaAs FET. The devices only need to provide the positive voltage to drain and ground the source, which is suitable for oscillator, power amplifier application in a wide range of commercial application. All devices are 100% DC tested to assure consistent quality.

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	26	27		dBm
G_L	Linear Power Gain, f = 6GHz V_{DS} = 8 V		12		dB
IP3	Intercept Point of the 3rd-order Intermodulation, f = 6GHz V_{DS} = 8 V, *P_{SCL} = 14 dBm		37		dBm
PAE	Power Added Efficiency at 1dB Compression Power, f = 6GHz		35		%
I_{DS}	Drain-Source Current at V_{DS} = 8 V		150		mA
BV_{DGO}	Drain-Gate Breakdown Voltage at I_{DGO} = 0.6mA	15	18		Volts
R_{th}	Thermal Resistance		25		°C/W

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

TRANSCOM, INC., 90 Dasoong 7th Road, Tainan Science-Based Industrial Park, Hsin-She Shiang, Tainan County Taiwan, R.O.C.
Web-Site: www.transcominc.com.tw Phone: 886-6-5050086 Fax: 886-6-5051602

ABSOLUTE MAXIMUM RATINGS (T_A=25 °C)

Symbol	Parameter	Rating
V_{DS}	Drain-Source Voltage	12 V
P_{in}	RF Input Power, CW	23 dBm
P_T	Continuous Dissipation	1.5 W
T_{CH}	Channel Temperature	175 °C
T_{STG}	Storage Temperature	- 65 °C to +175 °C

RECOMMANDED OPERATING CONDITION

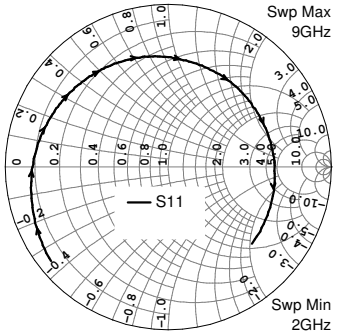
Symbol	Parameter	Rating
V_{DS}	Drain to Source Voltage	8 V

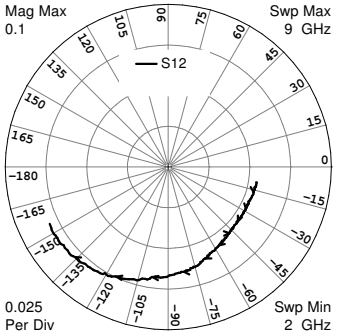
HANDLING PRECAUTIONS:

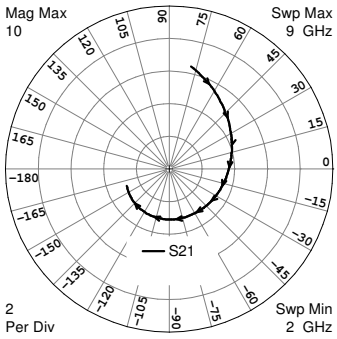
The user must operate in a clean, dry environment. Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. The static discharge must be less than 300V

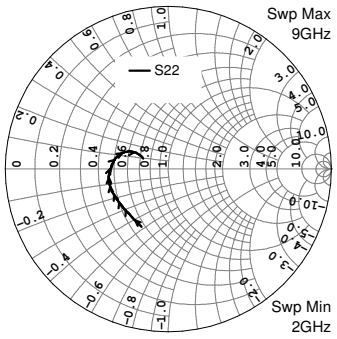
TYPICAL SCATTERING PARAMETERS (T_A=25℃)

Power Bias : V_{DS} = 8 V



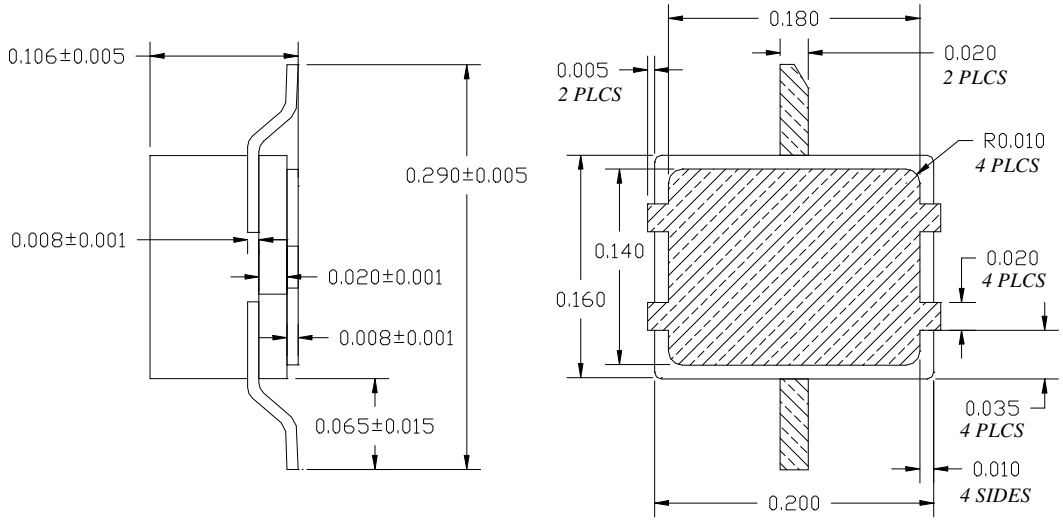




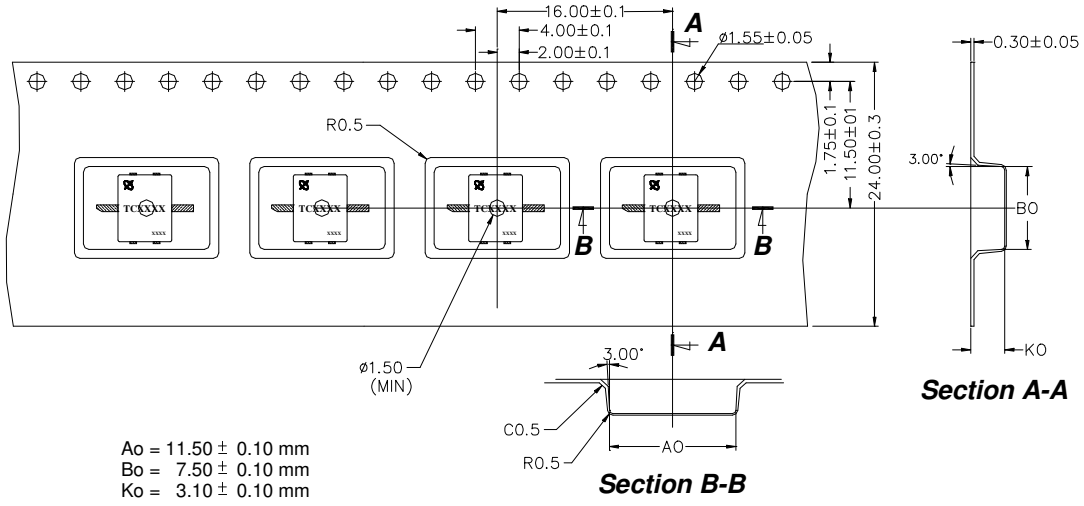


FREQUENCY	S11		S21		S12		S22	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2	0.9220	-141.26	6.4289	77.92	0.0547	-9.83	0.3911	-114.68
3	0.8392	-177.56	4.7859	42.29	0.0540	-27.82	0.3655	-135.66
4	0.7771	154.31	3.8915	12.43	0.0544	-42.37	0.3667	-149.66
5	0.7312	127.67	3.4277	-15.60	0.0570	-56.45	0.3720	-162.36
6	0.6867	97.72	3.1929	-44.87	0.0628	-72.62	0.3653	-174.71
7	0.6527	61.25	3.1172	-77.14	0.0681	-95.09	0.3380	172.52
8	0.6462	13.47	3.0560	-115.66	0.0771	-121.38	0.2813	157.99
9	0.6967	-42.62	2.7920	-158.14	0.0807	-154.35	0.1664	157.44

OUTLINE DIMENSIONS (in inch)



Tape & Reel Package Orientation (mm)



Standard Reel Size	7 inch
Standard Reel Quantity	400