

Low-Cost Self-Bias Low Noise PHEMT GaAs FETs

FEATURES

- 1.5 dB Typical Noise Figure at 6 GHz
- 17 dBm Typical Output Power at 6 GHz
- High Linear Power Gain:
 $G_L = 13$ dB Typical at 6 GHz
- $L_g = 0.25 \mu\text{m}$, $W_g = 160 \mu\text{m}$
- 100 % DC Tested
- Low Cost Plastic SOT143R Package

PHOTO ENLARGEMENT



DESCRIPTION

The TC3911 is a self-bias medium power SOT143R packaged device with TC1101 PHEMT chip, which is designed to provide the single power supply application. The device is suitable for oscillator, low noise amplifier in a wide range of commercial application. All devices are 100% DC tested to assure consistent quality.

ELECTRICAL SPECIFICATIONS ($T_A=25^\circ\text{C}$)

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
NF	Noise Figure at $V_{DS} = 3.3$ V, $f = 6$ GHz		1.5	1.8	dB
P_{1dB}	Output Power at 1dB Gain Compression Point , $V_{DS} = 3.3$ V $f = 2.45$ GHz, $f = 6$ GHz	16 16	17 17		dBm
G_L	Linear Power Gain, $V_{DS} = 3.3$ V $f = 2.45$ GHz, $f = 6$ GHz	18 11	20 13		dB
I_{DS}	Drain-Source Current at $V_{DS} = 3.3$ V		20		mA
R_{th}	Thermal Resistance		130		$^\circ\text{C}/\text{W}$

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$)

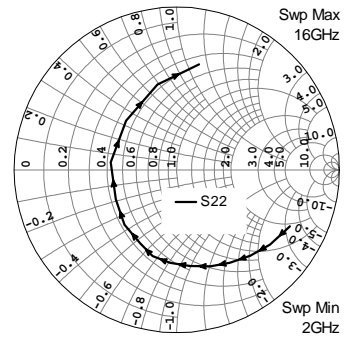
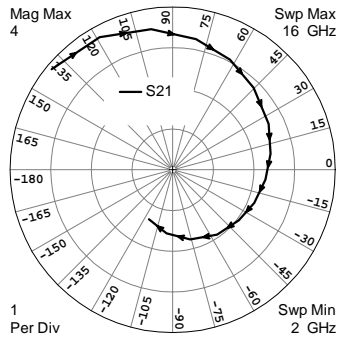
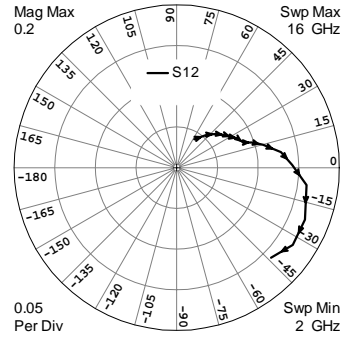
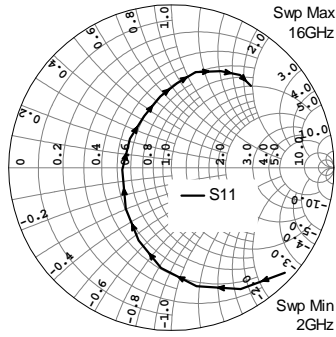
Symbol	Parameter	Rating
V_{DS}	Drain-Source Voltage	7.0 V
P_{in}	RF Input Power, CW	14 dBm
P_T	Continuous Dissipation	150 mW
T_{CH}	Channel Temperature	175 $^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 $^\circ\text{C}$ to +175 $^\circ\text{C}$

HANDLING PRECAUTIONS:

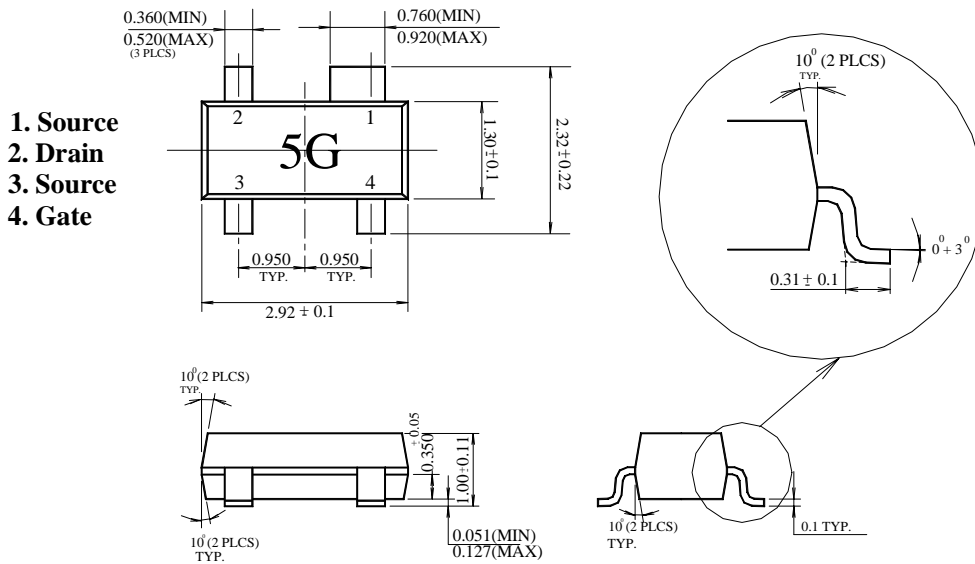
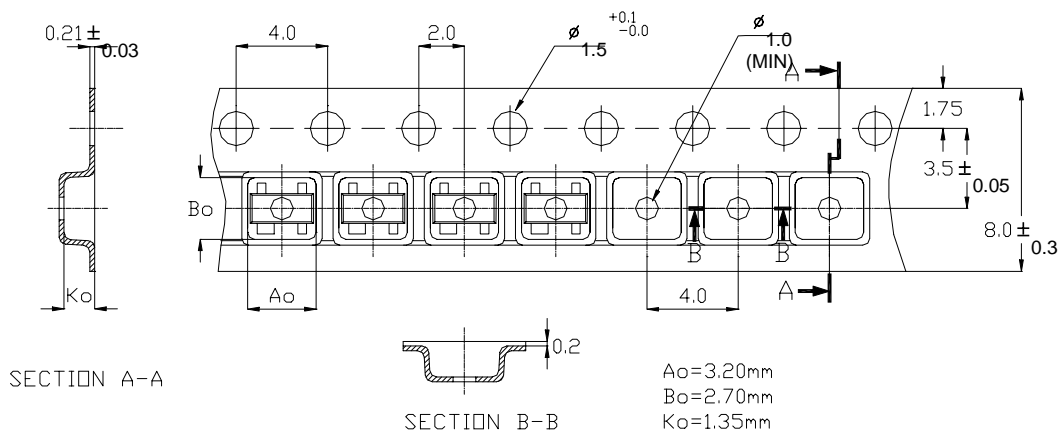
The user must operate in a clean, dry environment. Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. The static discharge must be less than 300V.

TYPICAL SCATTERING PARAMETERS (T_A=25 °C)

V_{DS} = 3.3 V



FREQUENCY (GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2	0.9500	-42.78	3.8656	140.28	0.0407	58.34	0.7770	-26.49
3	0.8591	-60.22	3.7184	118.83	0.0548	47.68	0.7337	-38.67
4	0.7451	-77.97	3.4936	98.79	0.0643	40.20	0.6952	-49.45
5	0.6191	-95.89	3.2608	79.88	0.0720	33.68	0.6573	-60.18
6	0.4900	-114.25	3.0516	62.55	0.0770	29.09	0.6270	-70.75
7	0.3783	-137.90	2.8343	45.35	0.0830	25.58	0.5969	-82.12
8	0.3024	-177.78	2.6114	25.48	0.0872	20.69	0.5722	-94.32
9	0.3095	145.13	2.4377	9.29	0.0988	18.16	0.5503	-105.77
10	0.3573	118.25	2.2960	-5.99	0.1097	14.81	0.5048	-116.46
11	0.4431	98.93	2.1612	-22.09	0.1294	8.42	0.4653	-133.57
12	0.5193	86.22	2.0429	-37.33	0.1420	1.29	0.4176	-154.00
13	0.6060	75.76	1.9334	-55.51	0.1610	-7.58	0.4084	173.46
14	0.6655	62.79	1.7664	-76.01	0.1699	-22.07	0.4350	135.93
15	0.7077	53.49	1.5683	-95.59	0.1712	-33.66	0.5375	102.70
16	0.7019	45.73	1.3454	-115.69	0.1604	-43.69	0.6620	78.07

OUTLINE DIMENSIONS (in mm)

Tape & Reel Package Orientation (mm)


Standard Reel Size	7"
Standard Reel Quantity	3000