Packaged Single-Bias Medium Power PHEMT GaAs FETs

FEATURES

- 1.0 dB Typical Noise Figure at 12 GHz
- High Associated Gain: Ga = 8 dB Typical at 12 GHz
- 24dBm Typical Power at 12 GHz
- 9 dB Typical Linear Power Gain at 12 GHz
- Lg = 0.25 µm, Wg = 600 µm
- 100 % DC Tested
- Micro-X Metal Ceramic Package

PHOTO ENLARGEMENT



DESCRIPTION

The TC3938 is a single-bias medium power ceramic micro-x packaged device with TC1304 PHEMT GaAs FETs, which is designed to provide the single power supply application. The device is suitable for oscillator, medium power amplifier in a wide range of commercial applications. All devices are 100% DC tested to assure consistent quality.

ELECTRICAL SPECIFICATIONS (T_A=25 °C)

Symbol	Conditions	MIN	TYP	MAX	UNIT
NF	Noise Figure at V_{DS} = 5 V, f = 12GHz		1.0	1.5	dB
G_a	Associated Gain at V_{DS} = 5 V, f = 12GHz	7	8		dB
P_{1dB}	Output Power at 1dB Gain Compression Point, f = 12GHz V_{DS} = 5 V	23	24		dBm
G_L	Linear Power Gain, f = 12GHz V_{DS} = 5 V	7.5	9		dB
I_{DS}	Drain-Source Current at V_{DS} = 5 V		100		mA
R_{th}	Thermal Resistance		65		°C/W

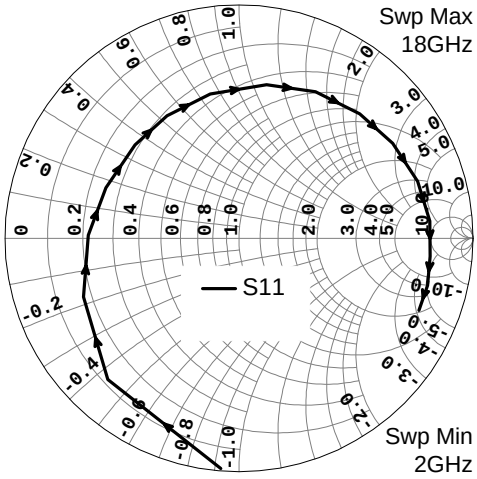
ABSOLUTE MAXIMUM RATINGS (T_A=25 °C)

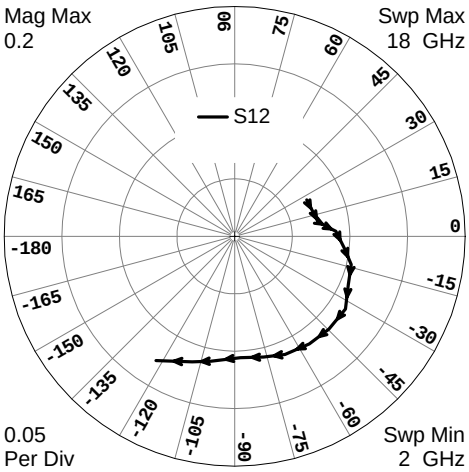
Symbol	Parameter	Rating
V_{DS}	Drain-Source Voltage	7.0 V
P_{in}	RF Input Power, CW	24 dBm
P_T	Continuous Dissipation	600 mW
T_{CH}	Channel Temperature	175 °C
T_{STG}	Storage Temperature	-65°C to +175°C

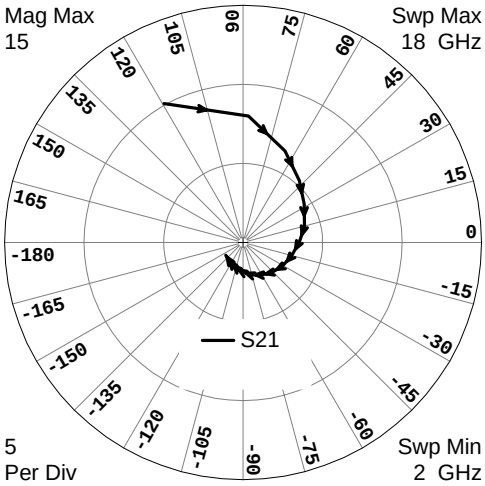
HANDLING PRECAUTIONS:

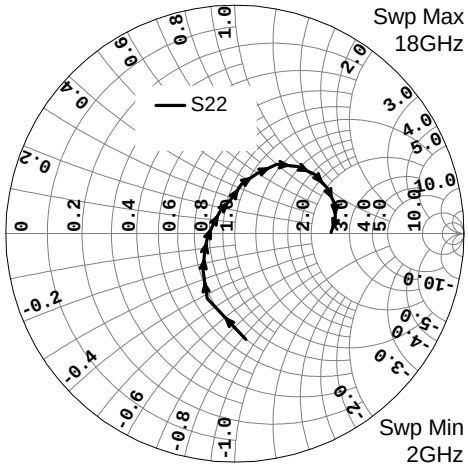
The user must operate in a clean, dry environment. Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. The static discharge must be less than 300V.

TYPICAL SCATTERING PARAMETERS (T_A=25 °C) V_{DS} = 5 V



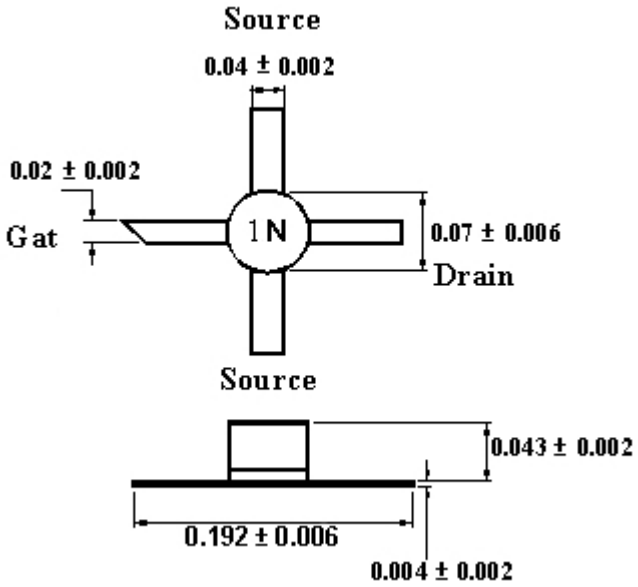




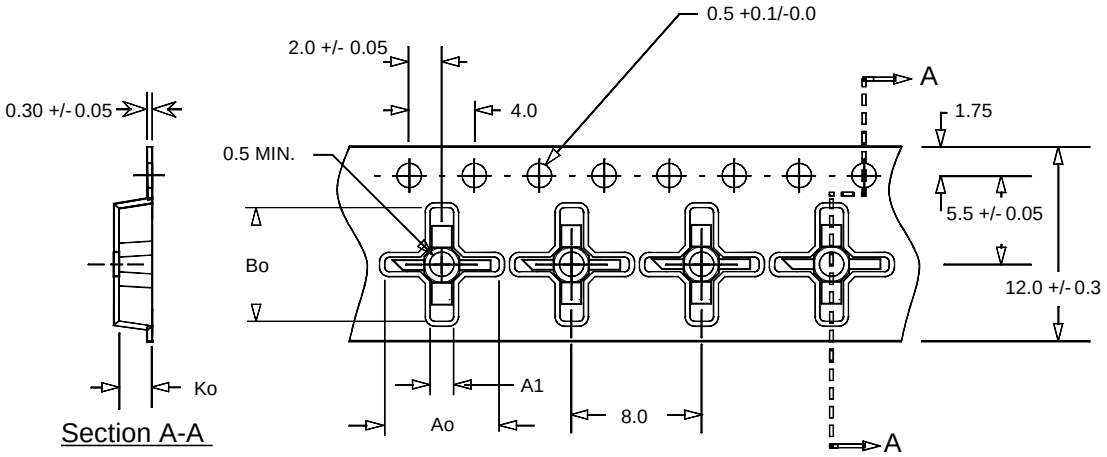


FREQUENCY	S11		S21		S12		S22	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2	0.9899	-94.49	10.0886	119.50	0.0700	26.92	0.4661	-84.14
3	0.8248	-132.76	7.9964	87.63	0.0719	14.36	0.3077	-113.14
4	0.7094	-159.33	6.3675	65.63	0.0734	9.99	0.2125	-130.99
5	0.6433	178.81	5.2844	47.81	0.0804	5.95	0.1541	-148.68
6	0.6088	159.19	4.5319	32.28	0.0878	2.90	0.1221	-170.82
7	0.5983	137.96	3.9849	14.58	0.0959	-6.42	0.1029	154.53
8	0.6083	120.43	3.5482	0.68	0.1040	-13.59	0.1188	122.04
9	0.6310	101.29	3.1807	-15.18	0.1073	-22.99	0.1560	94.13
10	0.6684	79.82	2.8945	-31.62	0.1151	-33.31	0.2201	82.28
11	0.7080	62.52	2.6062	-46.80	0.1150	-44.60	0.2815	69.66
12	0.7424	45.99	2.3325	-61.83	0.1137	-55.33	0.3533	59.04
13	0.7726	31.82	2.0896	-77.07	0.1117	-66.93	0.4023	46.88
14	0.8012	17.78	1.8510	-91.82	0.1079	-76.66	0.4351	36.43
15	0.8184	5.23	1.6631	-105.62	0.1056	-87.30	0.4492	26.42
16	0.8211	-5.34	1.5084	-119.26	0.1104	-100.70	0.4559	16.03
17	0.8301	-14.03	1.4072	-131.18	0.1153	-108.69	0.4420	7.60
18	0.8276	-21.90	1.3512	-142.98	0.1279	-122.32	0.4200	0.54

OUTLINE DIMENSIONS (in inch)



Tape & Reel Package Orientation (in mm)



Ao = 7.0 mm
A1 = 1.45 mm
Bo = 7.0 mm
B1 = 0.9 mm
Ko = 2.0 mm

Standard Reel Size	7”
Standard Reel Quantity	1000