

## Low-Cost Single-Bias Medium Power PHEMT GaAs FETs

### FEATURES

- 22 dBm Typical Output Power at 6 GHz
- High Linear Power Gain:  $G_L = 12$  dB Typical at 6 GHz
- $L_g = 0.25 \mu\text{m}$ ,  $W_g = 300 \mu\text{m}$
- 100 % DC Tested
- Low Cost Plastic SOT143R Package

### PHOTO ENLARGEMENT



### DESCRIPTION

The TC3921 is a single-bias medium power SOT143R packaged device with TC1201 PHEMT chip, which is designed to provide the single power supply applications. 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 ( $T_A=25^\circ\text{C}$ )

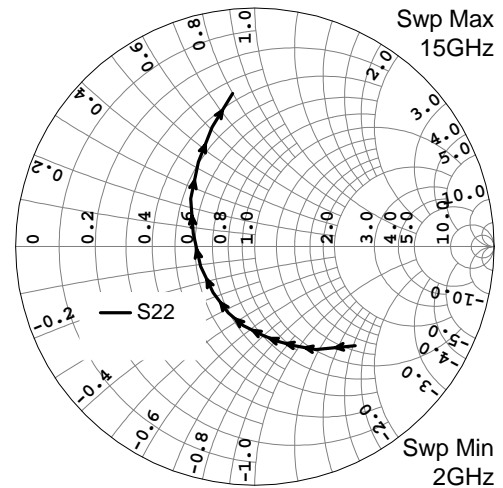
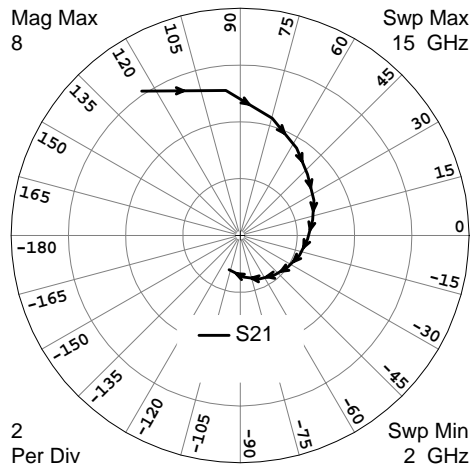
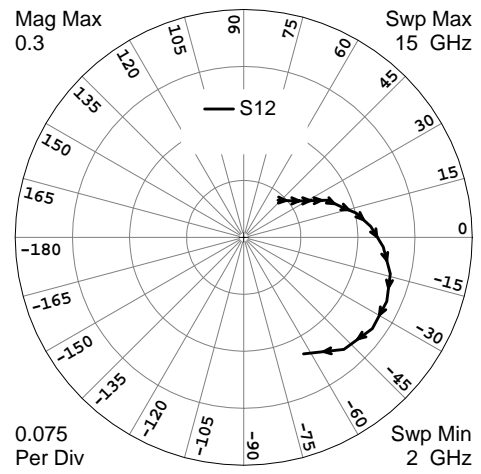
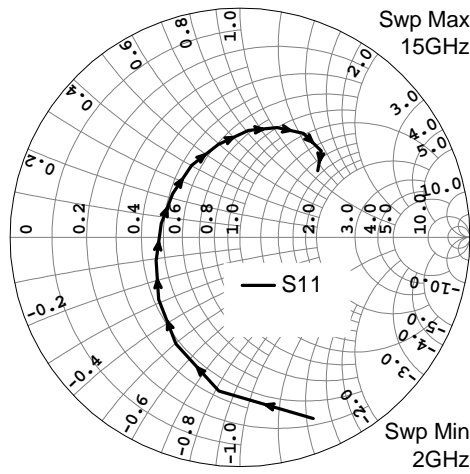
Symbol	Conditions	MIN	TYP	MAX	UNIT
$P_{1dB}$	Output Power at 1dB Gain Compression Point, $f = 6\text{GHz}$ , $V_{DS} = 5\text{V}$	21	22		dBm
$G_L$	Linear Power Gain, $f = 6\text{GHz}$ , $V_{DS} = 5\text{V}$	10	12		dB
$I_{DS}$	Drain-Source Current at $V_{DS} = 5\text{V}$		40		mA
$R_{th}$	Thermal Resistance		125		$^\circ\text{C/W}$

### 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	21 dBm
$P_T$	Continuous Dissipation	300 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<sub>A</sub>=25 °C) V<sub>DS</sub> = 4 V**


FREQUENCY (GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2	0.8522	-68.02	6.1316	124.07	0.0667	47.45	0.5908	-44.65
3	0.6771	-97.79	5.1289	95.57	0.0816	36.20	0.5016	-59.46
4	0.5419	-120.83	4.2744	74.76	0.0933	31.14	0.4472	-68.21
5	0.4451	-142.51	3.6515	57.27	0.1064	27.12	0.4089	-76.53
6	0.3783	-164.22	3.1951	42.29	0.1200	24.11	0.3729	-85.20
7	0.3478	170.12	2.8587	25.54	0.1349	17.28	0.3350	-98.23
8	0.3496	146.91	2.5836	11.94	0.1509	12.35	0.2992	-111.84
9	0.3782	123.92	2.3665	-3.21	0.1677	4.92	0.2590	-132.12
10	0.4159	103.26	2.1938	-18.78	0.1835	-3.98	0.2416	-159.94
11	0.4677	85.66	2.0011	-34.38	0.1985	-14.06	0.2631	167.90
12	0.5054	71.32	1.8383	-49.46	0.2058	-24.19	0.3341	143.13
13	0.5310	58.76	1.6676	-66.48	0.2073	-35.42	0.4256	123.63
14	0.5171	46.81	1.4791	-85.09	0.1976	-48.30	0.5311	109.60
15	0.4467	40.60	1.2689	-107.68	0.1723	-62.80	0.6482	98.29
16	0.3971	58.93	0.8986	-138.41	0.1111	-70.67	0.7897	84.27
17	0.5138	30.09	3.4825	-85.38	0.0699	-82.26	0.4426	169.29
18	0.5504	15.19	3.2919	-100.35	0.0736	-100.33	0.4585	153.28

