

Preliminary

MITSUBISHI SEMICONDUCTOR <GaAs FET>

MGF0913A

L & S BAND GaAs FET [SMD non - matched]

DESCRIPTION

The MGF0913A GaAs FET with an N-channel schottky Gate, is designed for use UHF band amplifiers.

FEATURES

- High output power
Po=31dBm(TYP.) @f=1.9GHz, Pin=18dBm
- High power gain
Gp=13dB(TYP.) @f=1.9GHz
- High power added efficiency
ηadd=48%(TYP.) @f=1.9GHz, Pin=18dBm
- Hermetic Package

APPLICATION

- For UHF Band power amplifiers

QUALITY

- GG

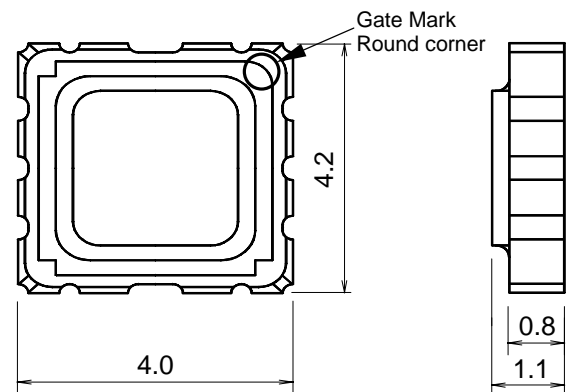
RECOMMENDED BIAS CONDITIONS

- Vds=10V
- Ids=200mA
- Rg=500Ω

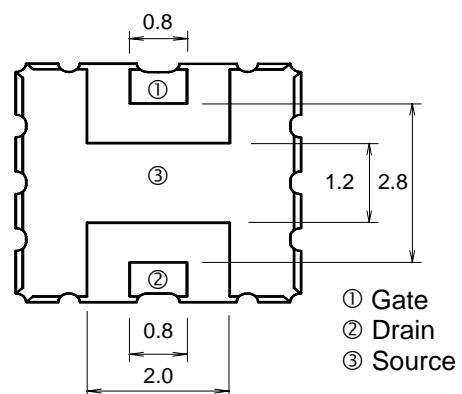
Absolute maximum ratings

Symbol	Parameter	Ratings	Unit
VGSO	Gate to source breakdown voltage	-15	V
VGDO	Gate to drain breakdown voltage	-15	V
ID	Drain current	800	mA
IGR	Reverse gate current	-2.5	mA
IGF	Forward gate current	5.4	mA
PT	Total power dissipation	3.75	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

OUTLINE DRAWING (Unit:mm)



BACK SIDE PATTERN

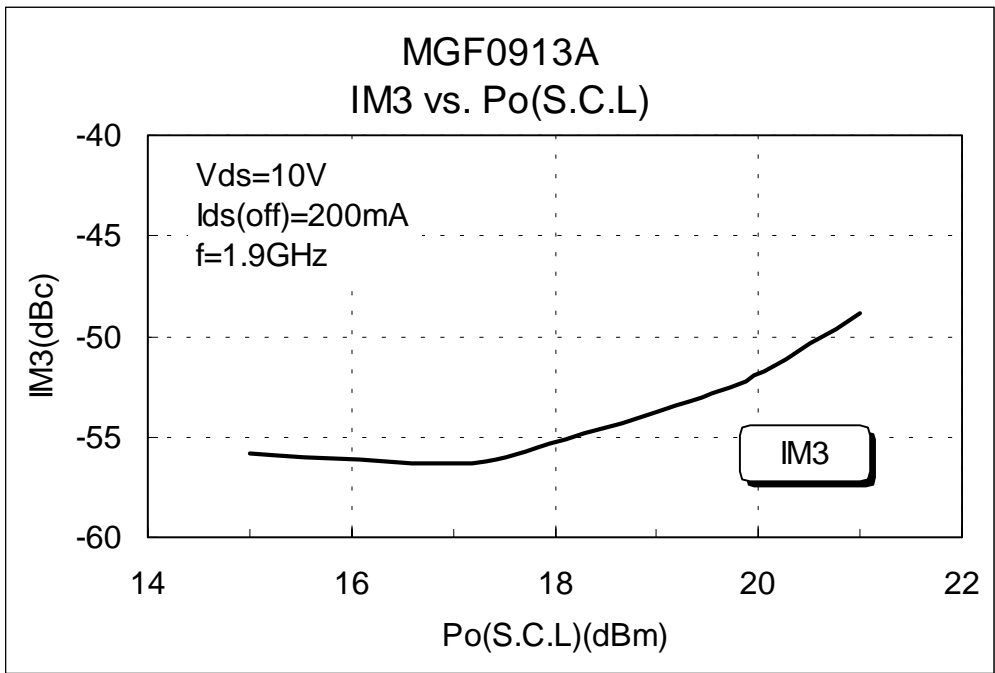
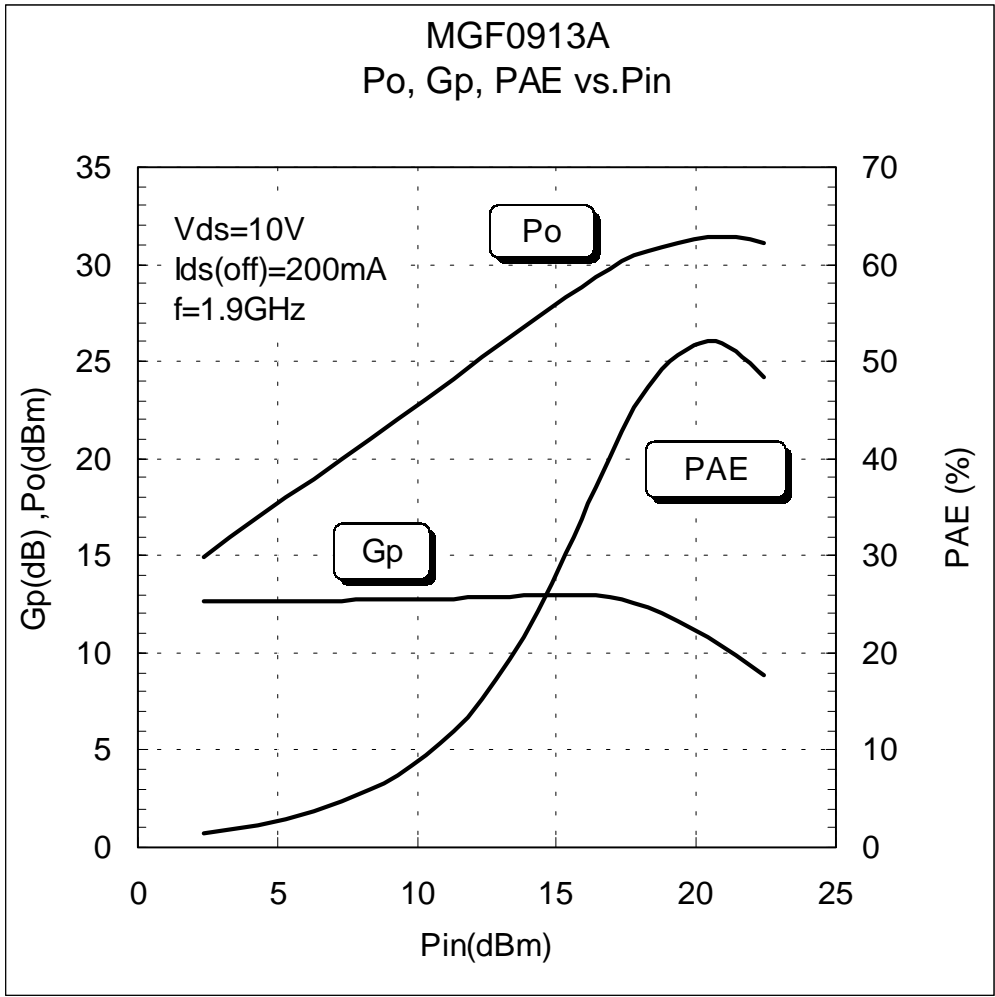


Electrical characteristics

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V, VGS=0V	400	550	800	mA
VGS(off)	Gate to source cut-off voltage	VDS=3V, ID=2.5mA	-1	-3	-5	V
gm	Transconductance	VDS=3V, ID=300mA	-	200	-	mS
Po	Output power	VDS=10V, ID=200mA, f=1.9GHz	29.5	31	-	dBm
ηadd	Power added Efficiency	Pin=18dBm	-	48	-	%
GLP	Linear Power Gain	VDS=10V, ID=200mA, f=1.9GHz	-	13	-	dB
NF	Noise figure		-	2.6	-	dB
Rth(ch-c)	Thermal Resistance *1	ΔVf Method	-	-	40	°C/W

*1: Channel to case / Above parameters, ratings, limits are subject to change.

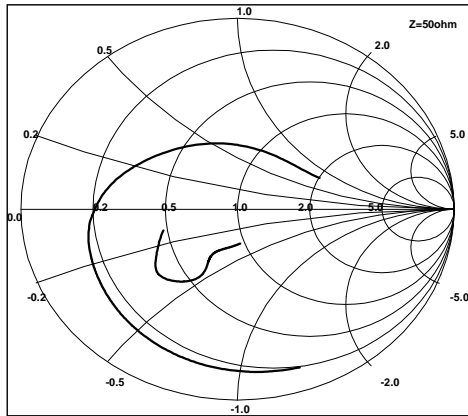
MGF0913A TYPICAL CHARACTERISTICS



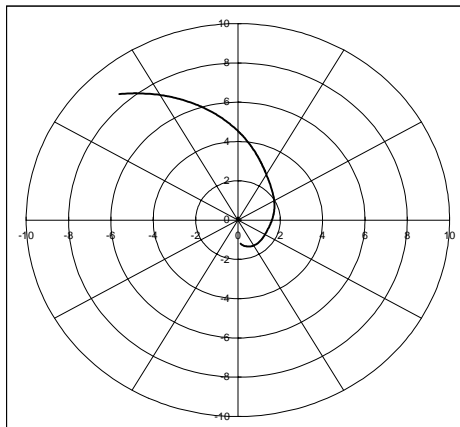
MGF0913A S PARAMETERS (Ta=25°C, VDS=10V, ID=200mA)

f	S11		S12		S21		S22		K	MSG/MAG
(GHz)	Magn.	Ang. (deg)	Magn.	Ang. (deg)	Magn.	Ang. (deg)	Magn.	Ang. (deg)		(dB)
0.4	0.877	-70.93	0.035	54.73	8.518	131.12	0.181	-86.21	0.53	23.91
0.6	0.840	-94.65	0.037	48.76	7.125	117.76	0.198	-97.60	0.62	22.84
0.8	0.811	-112.00	0.039	44.36	6.000	106.38	0.215	-105.58	0.71	21.82
1.0	0.787	-124.84	0.042	41.21	5.100	96.63	0.230	-110.87	0.81	20.85
1.2	0.768	-134.60	0.044	39.04	4.387	88.19	0.246	-114.10	0.92	19.95
1.4	0.753	-142.31	0.047	37.59	3.827	80.79	0.261	-115.81	1.02	18.15
1.6	0.741	-148.73	0.049	36.67	3.390	74.20	0.276	-116.47	1.12	16.23
1.8	0.731	-154.32	0.052	36.08	3.051	68.20	0.291	-116.45	1.21	14.91
2.0	0.721	-159.34	0.055	35.66	2.789	62.63	0.306	-116.07	1.28	13.86
2.2	0.712	-163.92	0.058	35.30	2.585	57.35	0.321	-115.59	1.34	12.99
2.4	0.703	-168.07	0.061	34.88	2.424	52.23	0.336	-115.18	1.39	12.24
2.6	0.693	-171.78	0.065	34.32	2.294	47.19	0.352	-114.99	1.44	11.58
2.8	0.681	-175.06	0.068	33.56	2.185	42.16	0.367	-115.11	1.47	10.98
3.0	0.668	-177.98	0.073	32.54	2.090	37.08	0.382	-115.59	1.50	10.41
3.2	0.652	178.67	0.077	31.24	2.005	31.92	0.397	-116.44	1.53	9.86
3.4	0.635	174.86	0.082	29.64	1.926	26.67	0.411	-117.66	1.56	9.30
3.6	0.615	170.91	0.087	27.73	1.851	21.31	0.426	-119.19	1.60	8.74
3.8	0.594	166.85	0.093	25.51	1.779	15.85	0.439	-120.98	1.63	8.18
4.0	0.570	162.63	0.099	23.01	1.712	10.30	0.452	-122.98	1.65	7.64
4.2	0.544	158.16	0.106	20.22	1.651	4.66	0.464	-125.10	1.68	7.12
4.4	0.517	153.27	0.113	17.18	1.596	-1.03	0.474	-127.26	1.69	6.63
4.6	0.489	147.80	0.121	13.89	1.549	-6.78	0.483	-129.41	1.70	6.18
4.8	0.461	141.57	0.130	10.39	1.513	-12.55	0.491	-131.48	1.70	5.79
5.0	0.433	134.43	0.138	6.69	1.488	-18.35	0.496	-133.44	1.69	5.47
5.2	0.406	126.24	0.148	2.81	1.474	-24.17	0.499	-135.26	1.67	5.22
5.4	0.381	116.93	0.158	-1.26	1.472	-30.02	0.499	-136.96	1.63	5.04
5.6	0.359	106.48	0.168	-5.51	1.478	-35.93	0.496	-138.59	1.59	4.92
5.8	0.342	94.96	0.179	-9.96	1.489	-41.92	0.490	-140.24	1.55	4.85
6.0	0.330	82.57	0.190	-14.64	1.500	-48.05	0.480	-142.04	1.50	4.79
6.2	0.326	69.59	0.201	-19.58	1.505	-54.39	0.466	-144.18	1.46	4.72
6.4	0.330	56.49	0.213	-24.84	1.491	-61.04	0.447	-146.90	1.43	4.58
6.6	0.344	43.86	0.225	-30.51	1.449	-68.11	0.424	-150.51	1.41	4.29
6.8	0.371	32.50	0.236	-36.68	1.361	-75.75	0.395	-155.39	1.42	3.76
7.0	0.412	23.38	0.248	-43.46	1.209	-84.13	0.360	-162.00	1.48	2.79

S11 & S22 vs. freq.



S21 vs. freq.



S12 vs. freq.

