

Preliminary

MITSUBISHI SEMICONDUCTOR<GaAs FET>

MGF0915A

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

DESCRIPTION

The MGF0915A GaAs FET with an N-channel schottky Gate, is designed for use UHF band amplifiers.

FEATURES

- High output power
 $P_o=36.5$ dBm(TYP.) @f=1.9GHz,Pin=23dBm
- High power gain
 $G_p=14.5$ dB(TYP.) @f=1.9GHz
- High power added efficiency
 $\eta_{add}=50$ %(TYP.) @f=1.9GHz,Pin=23dBm
- Hermetic Package

APPLICATION

- For UHF Band power amplifiers

QUALITY

- GG

RECOMMENDED BIAS CONDITIONS

- $V_{ds}=10V$ • $I_{ds}=800$ mA • $R_g=100\Omega$

Delivery Tape & Reel

Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGSO	Gate to sourcebreakdown voltage	-15	V
VGDO	Gate to drain breakdown voltage	-15	V
ID	Drain current	3000	mA
IGR	Reverse gate current	-10	mA
IGF	Forward gate current	21	mA
PT	Total power dissipation	18.7	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

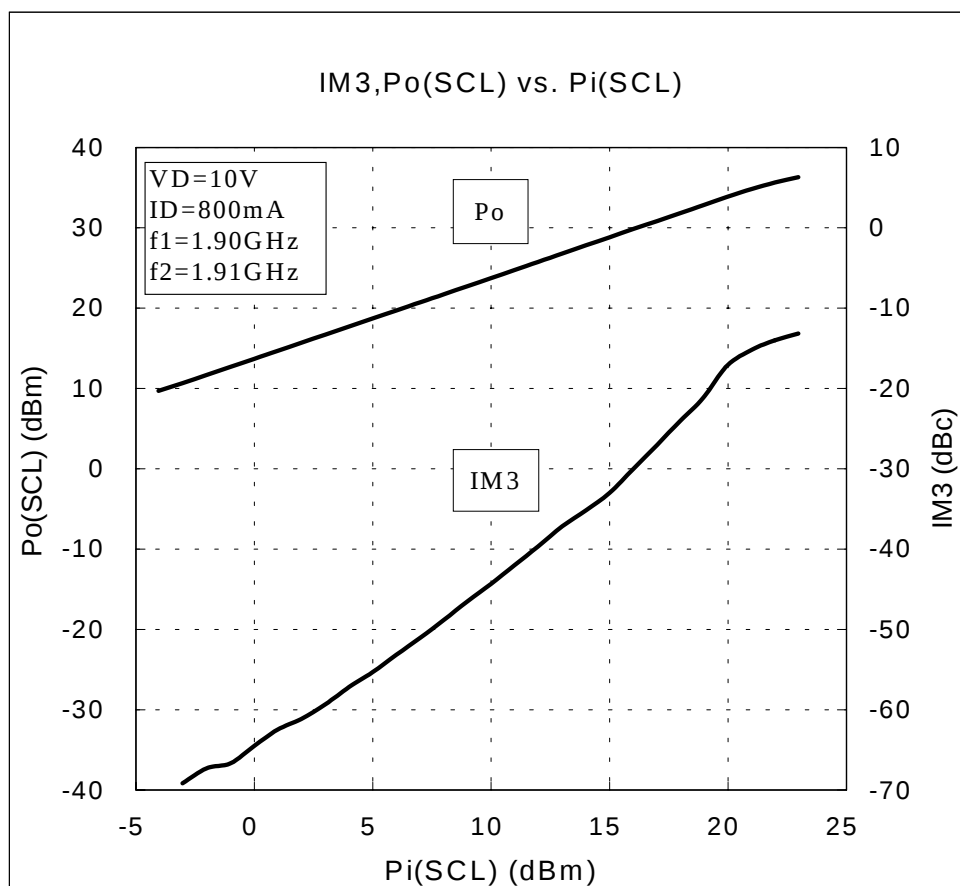
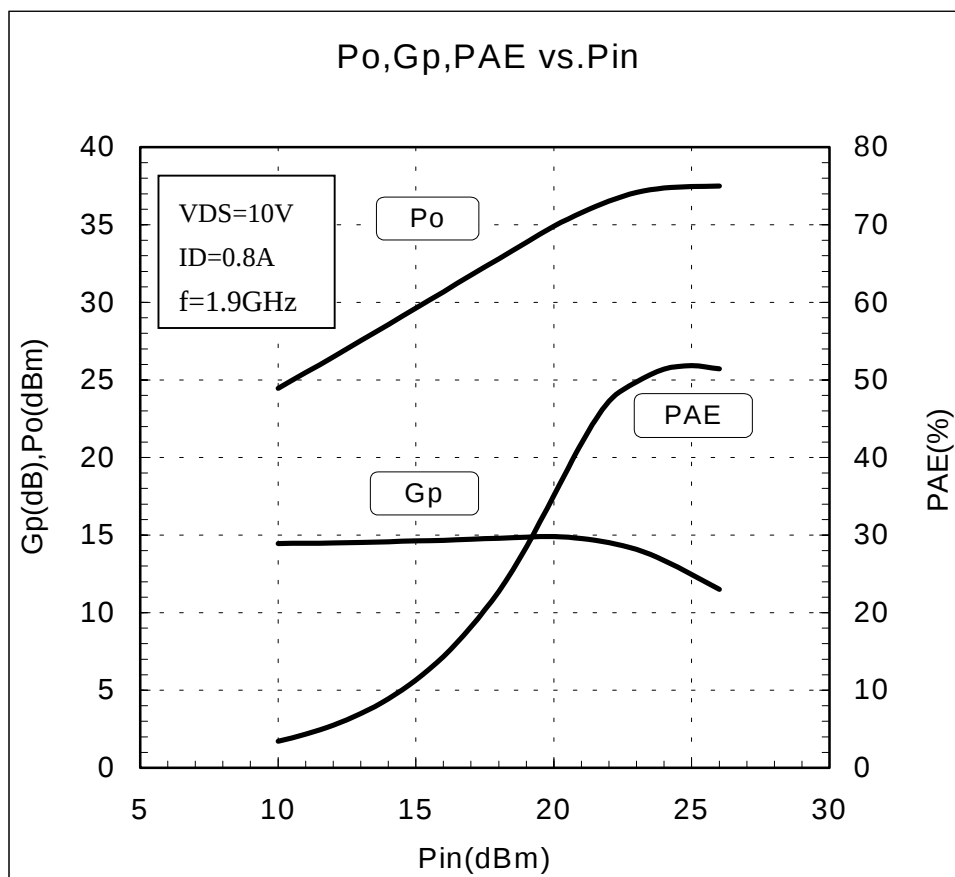
Fig.1

Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	$V_{DS}=3V, V_{GS}=0V$	-	2400	3000	mA
VGS(off)	Gate to source cut-off voltage	$V_{DS}=3V, I_D=10mA$	-1	-3	-5	V
gm	Transconductance	$V_{DS}=3V, I_D=800mA$	-	1000	-	mS
Po	Output power	$V_{DS}=10V, I_D=800mA, f=1.9GHz$ $P_{in}=23dBm$	-	36.5	-	dBm
η_{add}	Power added Efficiency		-	50	-	%
GLP	Linear Power Gain		-	14.5	-	dB
NF	Noise figure		-	2.6	-	dB
Rth(ch-c)	Thermal Resistance *1	ΔV_f Method	-	5	8	°C/W

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

MGF0915A TYPICAL CHARACTERISTICS



MGF0915A S PARAMETERS (Ta=25°C, VDS=10V, ID=800mA, Reference Plane see Fig.1)

freq.	S11		S21		S12		S22		K	MSG/MAG
(GHz)	Mag	Ang(deg)	Mag	Ang(deg)	Mag	Ang(deg)	Mag	Ang(deg)		(dB)
0.4	0.906	-130.81	5.901	106.15	0.015	22.55	0.649	-175.29	0.48	25.98
0.6	0.915	-145.25	4.217	96.95	0.017	22.55	0.653	-175.36	0.59	23.98
0.8	0.922	-155.09	3.214	89.17	0.018	23.07	0.657	-175.34	0.70	22.56
1.0	0.926	-161.66	2.603	82.37	0.018	23.77	0.660	-175.22	0.82	21.64
1.2	0.929	-166.04	2.199	76.57	0.019	24.77	0.663	-175.20	0.87	20.68
1.4	0.929	-169.13	1.901	71.35	0.019	25.95	0.667	-175.08	0.98	20.04
1.6	0.930	-171.54	1.662	66.74	0.019	27.24	0.670	-175.07	1.10	17.55
1.8	0.930	-173.64	1.472	62.43	0.019	28.63	0.674	-175.06	1.23	16.06
2.0	0.929	-175.64	1.328	58.52	0.020	30.02	0.678	-175.06	1.30	14.97
2.2	0.929	-177.65	1.218	54.71	0.020	31.41	0.682	-175.16	1.41	14.08
2.4	0.929	-179.66	1.090	51.10	0.021	32.70	0.686	-175.36	1.49	13.05
2.6	0.928	-178.44	0.995	47.49	0.021	33.89	0.692	-175.57	1.64	12.11
2.8	0.927	-176.72	0.933	43.89	0.022	34.99	0.697	-175.98	1.65	11.59
3.0	0.927	-175.20	0.879	40.29	0.023	35.99	0.702	-176.38	1.65	11.14
3.2	0.926	-173.98	0.831	36.68	0.024	36.68	0.707	-176.89	1.66	10.67
3.4	0.925	-172.96	0.789	33.09	0.025	37.29	0.712	-177.50	1.64	10.33
3.6	0.925	-172.14	0.753	29.39	0.027	37.59	0.717	-178.20	1.55	10.12
3.8	0.924	-171.02	0.722	25.69	0.028	37.69	0.721	-179.00	1.54	9.79
4.0	0.922	-169.18	0.696	22.08	0.030	37.58	0.724	-179.89	1.49	9.53
4.2	0.920	-165.80	0.676	18.35	0.031	37.15	0.728	-179.21	1.49	9.21
4.4	0.918	-165.48	0.656	14.64	0.033	36.44	0.730	-178.12	1.44	9.02
4.6	0.915	-163.82	0.640	11.00	0.035	35.50	0.732	-176.94	1.40	8.80
4.8	0.912	-162.06	0.628	7.35	0.037	34.35	0.732	-175.77	1.38	8.55
5.0	0.908	-160.17	0.619	3.78	0.040	32.88	0.731	-174.40	1.37	8.29
5.2	0.902	-157.96	0.612	0.18	0.042	31.18	0.730	-173.13	1.37	7.99
5.4	0.896	-155.62	0.608	-3.46	0.044	29.24	0.727	-171.67	1.40	7.61
5.6	0.889	-153.04	0.607	-7.12	0.048	26.98	0.723	-170.31	1.38	7.36
5.8	0.881	-150.11	0.607	-10.84	0.050	24.56	0.718	-168.86	1.43	6.95
6.0	0.873	-147.03	0.611	-14.70	0.054	22.00	0.713	-167.42	1.43	6.68
6.2	0.864	-143.67	0.616	-18.80	0.058	19.30	0.706	-165.99	1.40	6.46
6.4	0.855	-140.03	0.624	-23.15	0.062	16.45	0.699	-164.66	1.40	6.26
6.6	0.846	-136.32	0.633	-27.84	0.068	13.46	0.693	-163.24	1.32	6.27
6.8	0.839	-132.54	0.642	-33.15	0.074	10.55	0.686	-162.03	1.24	6.40
7.0	0.832	-128.69	0.654	-39.08	0.082	7.62	0.681	-160.92	1.12	6.89

