

Preliminary

MITSUBISHI SEMICONDUCTOR<GaAs FET>

MGF0916A

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

DESCRIPTION

The MGF0916A GaAs FET with an N-channel schottky Gate, is designed for use UHF band amplifiers.

FEATURES

- High output power
 $P_o=23\text{dBm(TYP.)}$ @ $f=1.9\text{GHz}$, $P_{in}=5\text{dBm}$
- High power gain
 $G_p=19\text{dB(TYP.)}$ @ $f=1.9\text{GHz}$
- High power added efficiency
 $\eta_{add}=30\%(\text{TYP.})$ @ $f=1.9\text{GHz}$, $P_{in}=5\text{dBm}$
- Hermetic Package

APPLICATION

- For UHF Band power amplifiers

QUALITY

- GG

RECOMMENDED BIAS CONDITIONS

- $V_{ds}=6\text{V}$ • $I_{ds}=100\text{mA}$ • $R_g=1\text{k}\Omega$

Delivery Tape & Reel

Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGSO	Gate to source breakdown voltage	-8	V
VGDO	Gate to drain breakdown voltage	-8	V
ID	Drain current	250	mA
IGR	Reverse gate current	-0.6	mA
IGF	Forward gate current	1.5	mA
PT	Total power dissipation	1.5	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

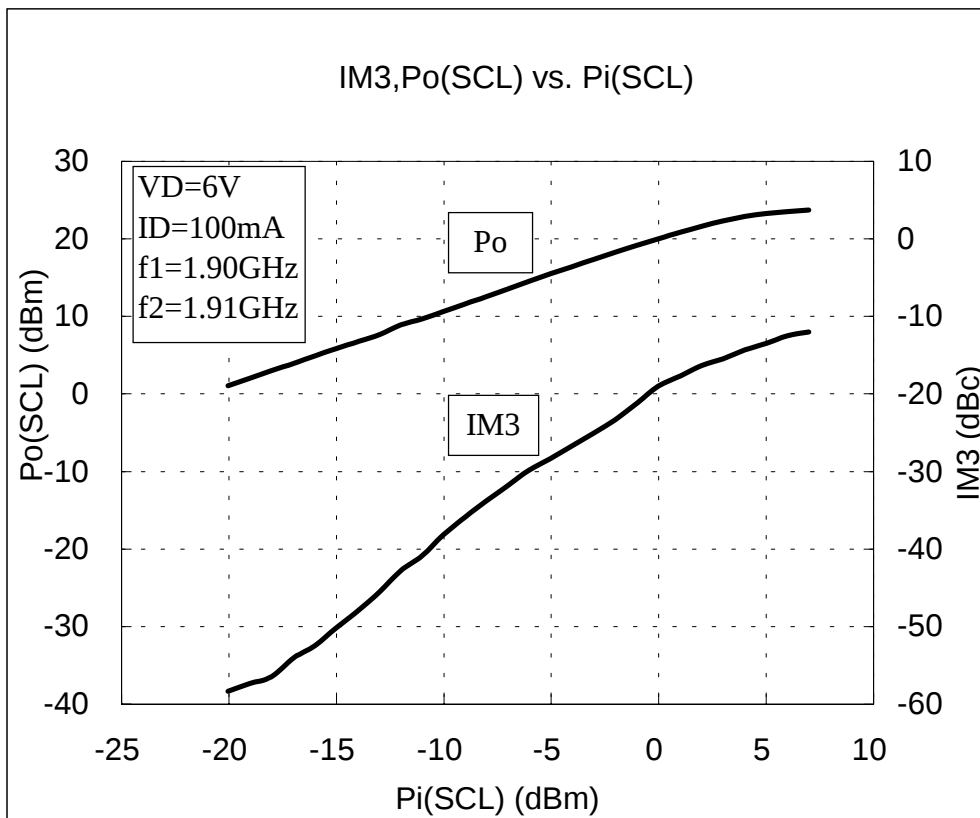
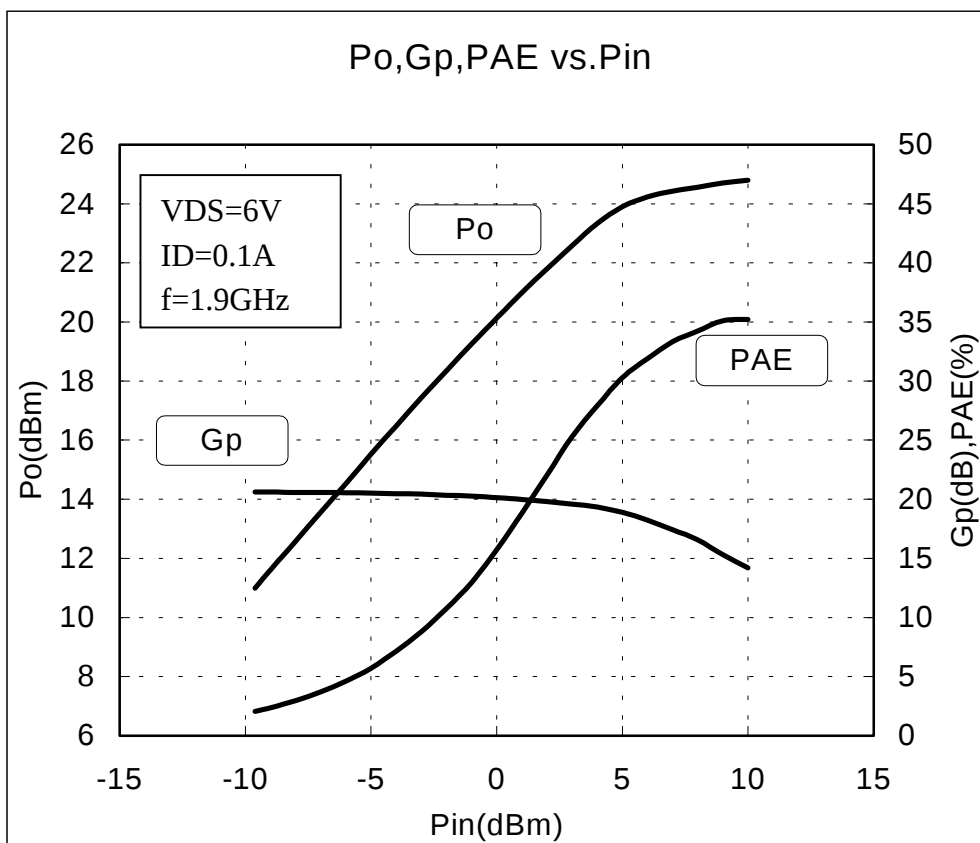
Fig.1

Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	$V_{DS}=3\text{V}, V_{GS}=0\text{V}$	150	200	250	mA
VGS(off)	Gate to source cut-off voltage	$V_{DS}=3\text{V}, I_D=0.1\text{mA}$	-1.5	-	-4.5	V
gm	Transconductance	$V_{DS}=3\text{V}, I_D=100\text{mA}$	-	90	-	mS
Po	Output power	$V_{DS}=6\text{V}, I_D=100\text{mA}, f=1.9\text{GHz}$ $P_{in}=5\text{dBm}$	-	23	-	dBm
η_{add}	Power added Efficiency		-	30	-	%
GLP	Linear Power Gain		-	19	-	dB
NF	Noise figure	$V_{DS}=6\text{V}, I_D=100\text{mA}, f=1.9\text{GHz}$	-	1.0	-	dB
Rth(ch-c)	Thermal Resistance *1	ΔV_f Method	-	70	100	°C/W

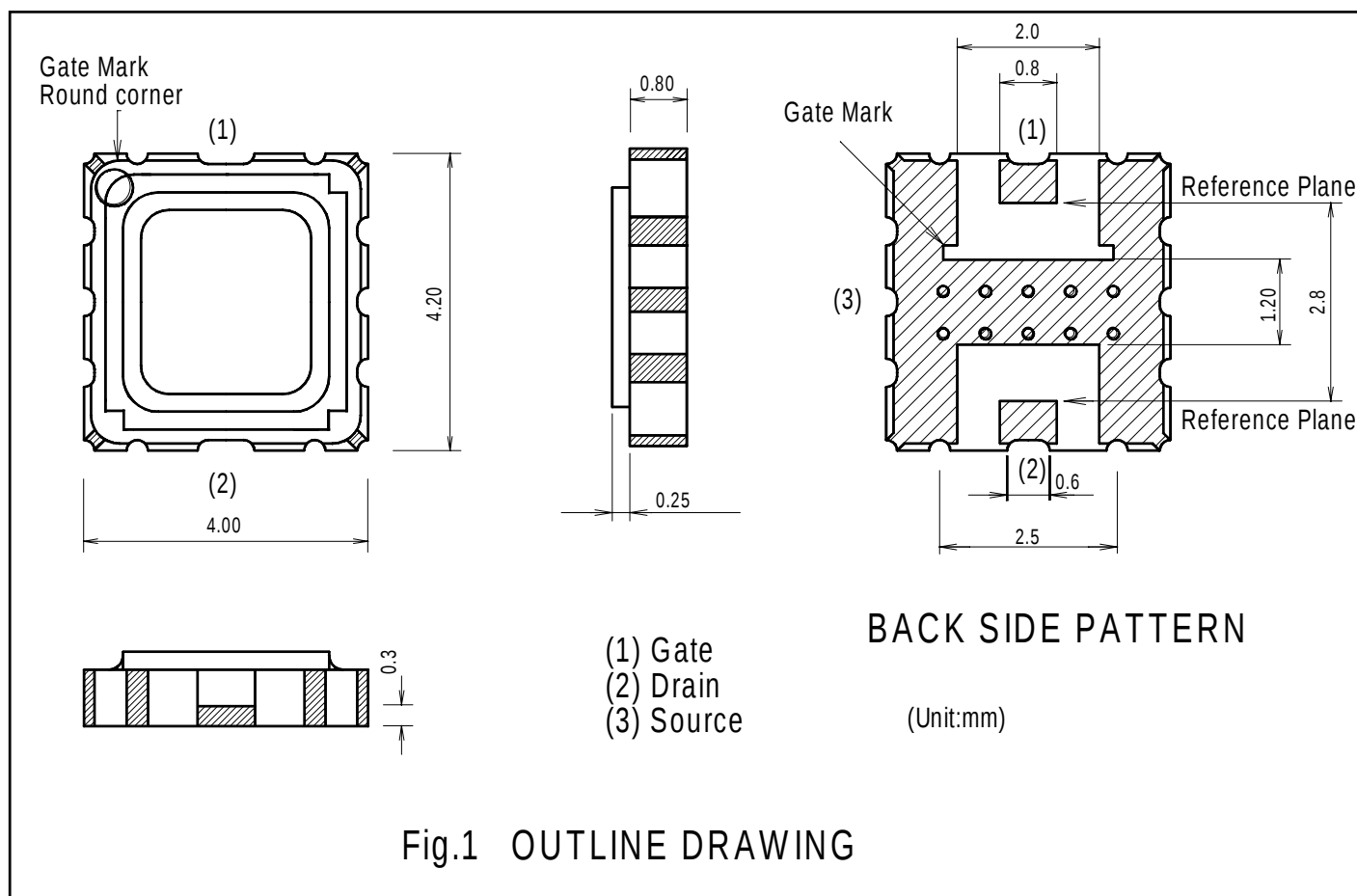
*1: Channel to case / Above parameters, ratings, limits are subject to change.

MGF0916A TYPICAL CHARACTERISTICS



MGF0916A S PARAMETERS (Ta=25°C, VDS=6V, ID=100mA, 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	0.979	-52.18	7.080	134.08	0.013	37.44	0.508	-53.57	0.15	27.23
0.6	0.955	-72.24	5.903	115.68	0.015	27.67	0.569	-71.98	0.21	25.88
0.8	0.943	-88.04	4.885	100.43	0.015	18.92	0.626	-86.03	0.26	25.10
1.0	0.937	-100.40	4.054	87.73	0.015	11.04	0.677	-96.90	0.30	24.37
1.2	0.935	-110.19	3.388	77.05	0.014	3.93	0.720	-105.58	0.36	23.84
1.4	0.936	-117.99	2.855	67.91	0.014	-2.53	0.758	-112.56	0.38	23.15
1.6	0.938	-124.41	2.428	60.03	0.013	-8.32	0.789	-118.45	0.45	22.81
1.8	0.939	-129.65	2.082	53.09	0.012	-13.52	0.816	-123.36	0.49	22.30
2.0	0.942	-134.07	1.800	46.96	0.011	-18.05	0.839	-127.61	0.55	21.97
2.2	0.944	-137.67	1.571	41.50	0.011	-21.84	0.858	-131.21	0.59	21.58
2.4	0.945	-140.93	1.375	36.44	0.011	-25.23	0.875	-134.46	0.63	21.17
2.6	0.947	-143.65	1.216	31.86	0.010	-27.88	0.890	-137.31	0.68	20.87
2.8	0.948	-146.01	1.083	27.62	0.009	-29.94	0.902	-139.85	0.72	20.58
3.0	0.949	-148.06	0.971	23.66	0.009	-31.46	0.913	-142.13	0.76	20.31
3.2	0.950	-149.86	0.879	19.90	0.009	-32.53	0.922	-144.19	0.79	20.06
3.4	0.951	-151.46	0.800	16.36	0.008	-33.14	0.930	-146.07	0.81	19.83
3.6	0.951	-152.88	0.734	12.94	0.008	-33.45	0.937	-147.79	0.83	19.61
3.8	0.952	-154.16	0.678	9.65	0.008	-33.49	0.943	-149.36	0.85	19.42
4.0	0.952	-155.32	0.631	6.43	0.008	-33.41	0.948	-150.81	0.86	19.24
4.2	0.951	-156.40	0.591	3.29	0.007	-33.23	0.953	-152.15	0.87	19.09
4.4	0.951	-157.40	0.558	0.13	0.007	-33.14	0.957	-153.39	0.89	18.95
4.6	0.950	-158.33	0.529	-3.00	0.007	-33.16	0.961	-154.54	0.90	18.82
4.8	0.949	-159.22	0.505	-6.17	0.007	-33.38	0.965	-155.60	0.92	18.70
5.0	0.947	-160.07	0.484	-9.36	0.007	-33.85	0.968	-156.59	0.95	18.59
5.2	0.945	-160.89	0.467	-12.67	0.007	-34.66	0.971	-157.50	0.99	18.48
5.4	0.942	-161.69	0.452	-16.04	0.007	-35.79	0.973	-158.36	1.03	17.35
5.6	0.939	-162.47	0.439	-19.56	0.007	-37.30	0.976	-159.16	1.08	16.59
5.8	0.935	-163.24	0.429	-23.21	0.007	-39.09	0.978	-159.91	1.13	16.00
6.0	0.930	-163.98	0.421	-27.10	0.007	-41.21	0.980	-160.62	1.19	15.47
6.2	0.924	-164.69	0.416	-31.31	0.007	-43.61	0.982	-161.29	1.26	14.95
6.4	0.917	-165.38	0.413	-35.71	0.007	-45.99	0.984	-161.95	1.30	14.60
6.6	0.909	-165.99	0.413	-40.48	0.007	-48.34	0.986	-162.59	1.34	14.38
6.8	0.898	-166.51	0.416	-45.66	0.007	-50.41	0.988	-163.23	1.34	14.31
7.0	0.887	-166.90	0.424	-51.25	0.007	-51.91	0.990	-163.88	1.31	14.46


Fig.1 OUTLINE DRAWING