

Preliminary

MITSUBISHI SEMICONDUCTOR<GaAs FET>

MGF0917A

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

DESCRIPTION

The MGF0917A GaAs FET with an N-channel schottky Gate, is designed for use UHF band amplifiers.

FEATURES

- High output power
 $P_o=24\text{dBm(TYP.)}$ @ $f=1.9\text{GHz}$, $P_{in}=4\text{dBm}$
- High power gain
 $G_p=21\text{dB(TYP.)}$ @ $f=1.9\text{GHz}$
- High power added efficiency
 $\eta_{add}=38\%\text{(TYP.)}$ @ $f=1.9\text{GHz}$, $P_{in}=4\text{dBm}$
- Hermetic Package

APPLICATION

- For UHF Band power amplifiers

QUALITY

- GG

RECOMMENDED BIAS CONDITIONS

- $V_{ds}=10\text{V}$ • $I_{ds}=75\text{mA}$ • $R_g=2\text{k}\Omega$

Delivery Tape & Reel

Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGSO	Gate to source breakdown voltage	-15	V
VGDO	Gate to drain breakdown voltage	-15	V
ID	Drain current	200	mA
IGR	Reverse gate current	-0.6	mA
IGF	Forward gate current	2.5	mA
PT	Total power dissipation	2	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

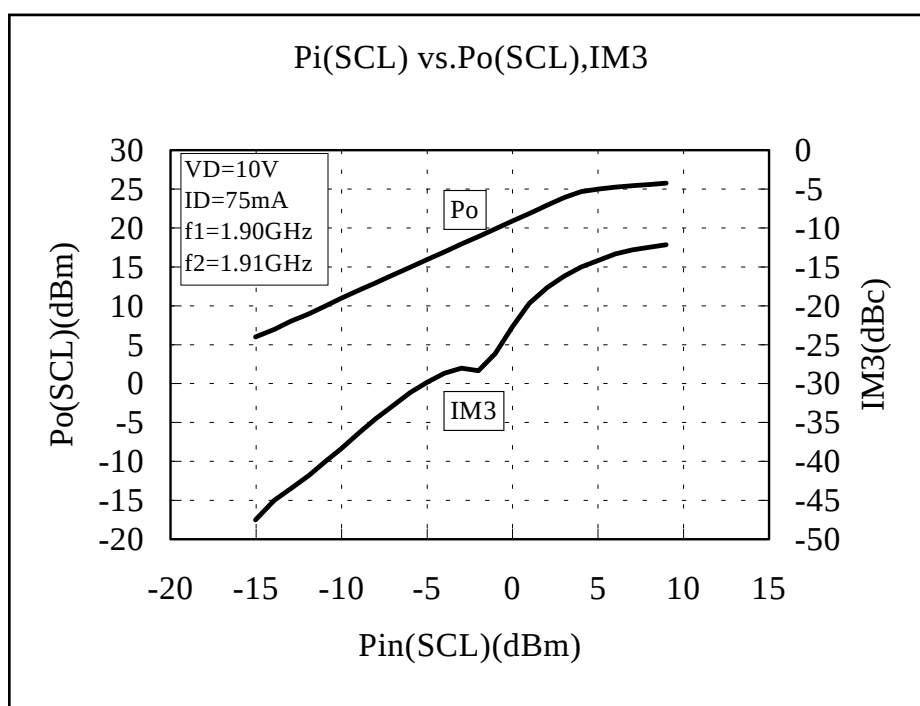
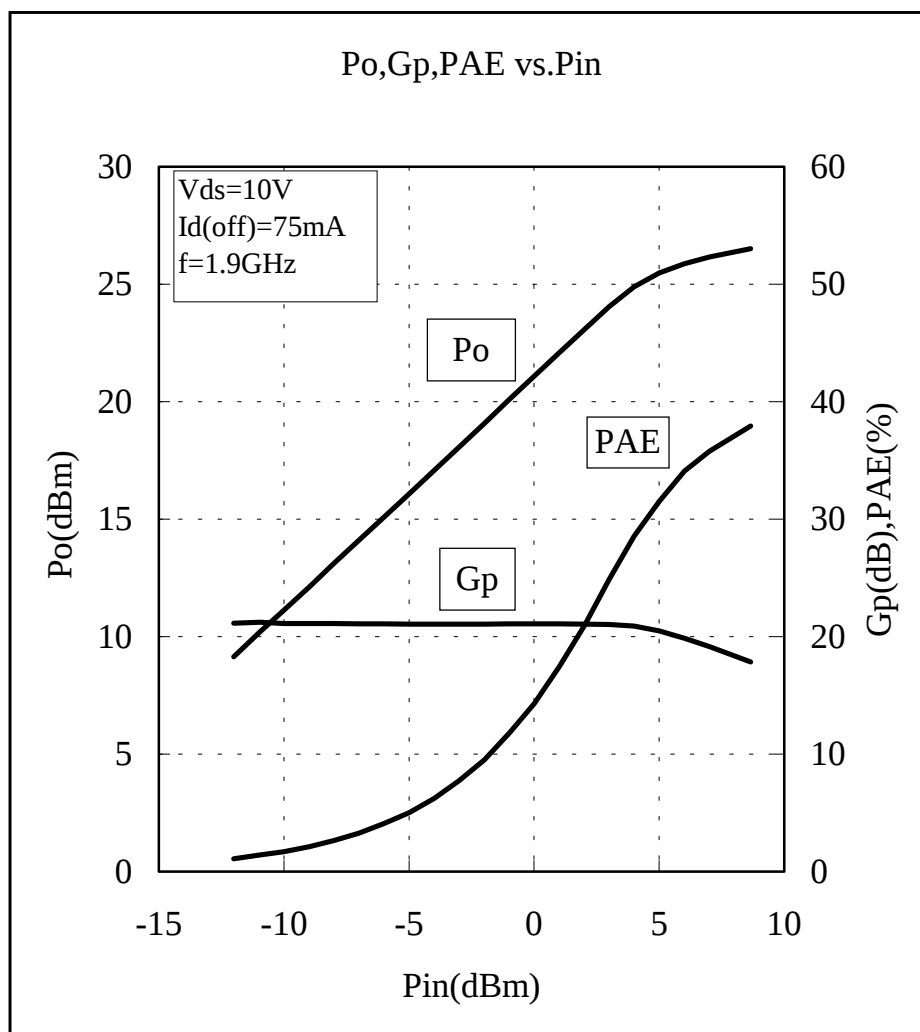
Fig.1

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	mA
VGS(off)	Gate to source cut-off voltage	$V_{DS}=3\text{V}, I_D=0.5\text{mA}$	-1.0	-	-5.0	V
gm	Transconductance	$V_{DS}=3\text{V}, I_D=75\text{mA}$	-	70	-	mS
Po	Output power	$V_{DS}=10\text{V}, I_D=75\text{mA}, f=1.9\text{GHz}$	23	24	-	dBm
η_{add}	Power added Efficiency		-	38	-	%
GLP	Linear Power Gain		-	21	-	dB
NF	Noise figure		-	0.9	-	dB
Rth(ch-c)	Thermal Resistance *1	ΔV_f Method	-	55	75	°C/W

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

MGF0917A TYPICAL CHARACTERISTICS



MGF0917A S PARAMETERS (Ta=25°C , VDS=10V,ID=75mA, Reference Plane see Fig.1)

freq. (GHz)	S11		S21		S12		S22		K	MSG/MAG (dB)
	Mag	Ang(deg)	Mag	Ang(deg)	Mag	Ang(deg)	Mag	Ang(deg)		
0.4	0.958	-15.02	4.873	169.39	0.010	104.49	0.475	-27.64	0.35	26.90
0.6	0.945	-29.64	4.511	153.57	0.012	87.97	0.519	-39.50	0.44	25.79
0.8	0.933	-44.06	4.145	137.88	0.014	71.58	0.564	-51.12	0.51	24.80
1.0	0.922	-55.42	3.856	125.48	0.015	58.58	0.601	-60.32	0.60	24.22
1.2	0.915	-64.76	3.616	115.28	0.016	47.88	0.631	-67.93	0.61	23.44
1.4	0.909	-72.80	3.412	106.54	0.017	38.74	0.656	-74.48	0.65	22.98
1.6	0.903	-79.76	3.236	98.87	0.018	30.77	0.677	-80.26	0.68	22.55
1.8	0.900	-85.96	3.079	92.04	0.018	23.64	0.697	-85.32	0.74	22.38
2.0	0.896	-91.49	2.939	85.87	0.019	17.17	0.715	-90.01	0.75	21.99
2.2	0.893	-96.48	2.814	80.22	0.019	11.32	0.730	-94.19	0.76	21.62
2.4	0.890	-101.13	2.700	75.13	0.019	5.93	0.745	-98.13	0.80	21.48
2.6	0.888	-105.44	2.596	70.36	0.020	0.96	0.758	-101.74	0.80	21.14
2.8	0.885	-109.41	2.500	65.82	0.021	-3.68	0.770	-105.12	0.80	20.81
3.0	0.883	-113.08	2.412	61.70	0.021	-8.00	0.781	-108.29	0.83	20.68
3.2	0.882	-116.60	2.330	57.80	0.021	-12.10	0.792	-111.24	0.82	20.38
3.4	0.880	-119.84	2.255	54.02	0.021	-15.98	0.801	-114.08	0.84	20.26
3.6	0.878	-123.03	2.185	50.57	0.021	-19.63	0.810	-116.80	0.87	20.14
3.8	0.877	-125.92	2.118	47.22	0.022	-23.18	0.818	-119.31	0.85	19.86
4.0	0.875	-128.79	2.057	44.00	0.022	-26.50	0.827	-121.80	0.87	19.75
4.2	0.874	-131.47	1.999	40.88	0.022	-29.62	0.834	-124.18	0.89	19.64
4.4	0.873	-134.03	1.944	37.97	0.022	-32.73	0.841	-126.36	0.87	19.37
4.6	0.872	-136.57	1.893	35.19	0.022	-35.61	0.848	-128.61	0.88	19.27
4.8	0.871	-138.93	1.844	32.49	0.022	-38.51	0.854	-130.67	0.90	19.17
5.0	0.869	-141.26	1.799	29.82	0.023	-41.18	0.860	-132.71	0.88	18.91
5.2	0.868	-143.50	1.755	27.25	0.023	-43.85	0.866	-134.66	0.89	18.81
5.4	0.866	-145.65	1.714	24.88	0.023	-46.42	0.871	-136.59	0.91	18.72
5.6	0.865	-147.78	1.675	22.42	0.023	-48.88	0.876	-138.42	0.91	18.63
5.8	0.864	-149.81	1.638	20.16	0.024	-51.24	0.881	-140.23	0.90	18.38
6.0	0.863	-151.76	1.603	17.91	0.024	-53.59	0.886	-141.96	0.90	18.29
6.2	0.861	-153.70	1.569	15.66	0.024	-55.84	0.890	-143.68	0.91	18.20
6.4	0.860	-155.63	1.537	13.51	0.024	-58.09	0.895	-145.30	0.91	18.11
6.6	0.859	-157.56	1.505	11.38	0.024	-60.32	0.899	-146.92	0.91	18.03
6.8	0.858	-159.49	1.474	9.25	0.024	-62.55	0.903	-148.52	0.91	17.93
7.0	0.857	-161.42	1.444	7.13	0.024	-64.77	0.908	-150.12	0.92	17.84

