MITSUBISHI ELECTRIC

< High-power GaAs FET (small signal gain stage) >

MGF0918A

L & S BAND / 0.5W
SMD non - matched

DESCRIPTION

The MGF0918A GaAs FET with an N-channel schottky
Gate, is designed for use L & S band amplifiers.

FEATURES

- High output power
  Po=27dBm(TYP.) @f=1.9GHz,Pin=8dBm
- High power gain
  GLP=20dB(TYP.) @f=1.9GHz
- High power added efficiency
  ηadd=35%(TYP.) @f=1.9GHz,Pin=8dBm
- Hermetic Package

APPLICATION

- For L & S Band power amplifiers

QUALITY

- GG

RECOMMENDED BIAS CONDITIONS

- Vds=10V   • Ids=150mA   • Rg=1KΩ

Delivery   **-01:**Tape & Reel(1K), **-03:**Trai(50pcs)

Fig.1

Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to Drain Voltage	-15	V
VGSO	Gate to source voltage	-15	V
ID	Drain current	400	mA
IGR	Reverse gate current	-1.2	mA
IGF	Forward gate current	5.0	mA
PT*1	Total power dissipation	3	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

*1:Tc=25°C

Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V,VGS=0V	-	300	400	mA
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=1.0mA	-1	-3	-5	V
gm	Transconductance	VDS=3V,ID=150mA	-	130	-	mS
Po	Output power	VDS=10V,ID=150mA,f=1.9GHz	25	27	-	dBm
ηadd	Power added Efficiency	Pin=8dBm	-	35	-	%
GLP	Linear Power Gain	VDS=10V,ID=150mA,Pi=2dBm	18	20	-	dB
Rth(ch-c)	Thermal Resistance *1	ΔVf Method	-	35	50	°C/W

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

MITSUBISHI ELECTRIC CORPORATION

< High-power GaAs FET (small signal gain stage) >

MGF0918A

L & S BAND / 4.5W
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MGF0918A TYPICAL CHARACTERISTICS

Po,Gp,PAE vs.Pin

Vds=10V
Id(off)=150mA
f=1.9GHz

Pi(SCL) vs.Po(SCL),IM3

VD=10V
ID=150mA
f1=1.90GHz
f2=1.91GHz

< High-power GaAs FET (small signal gain stage) >
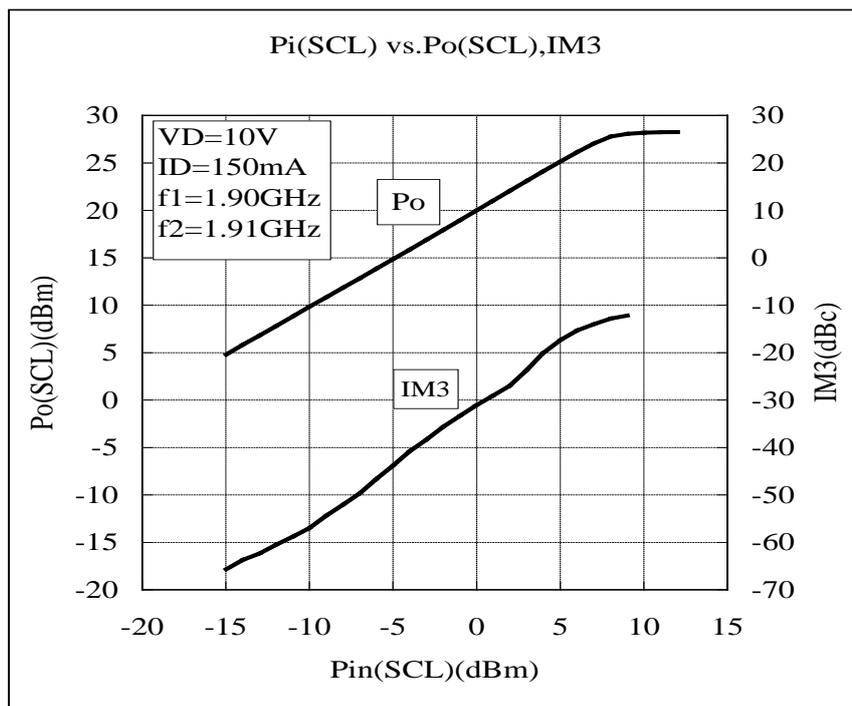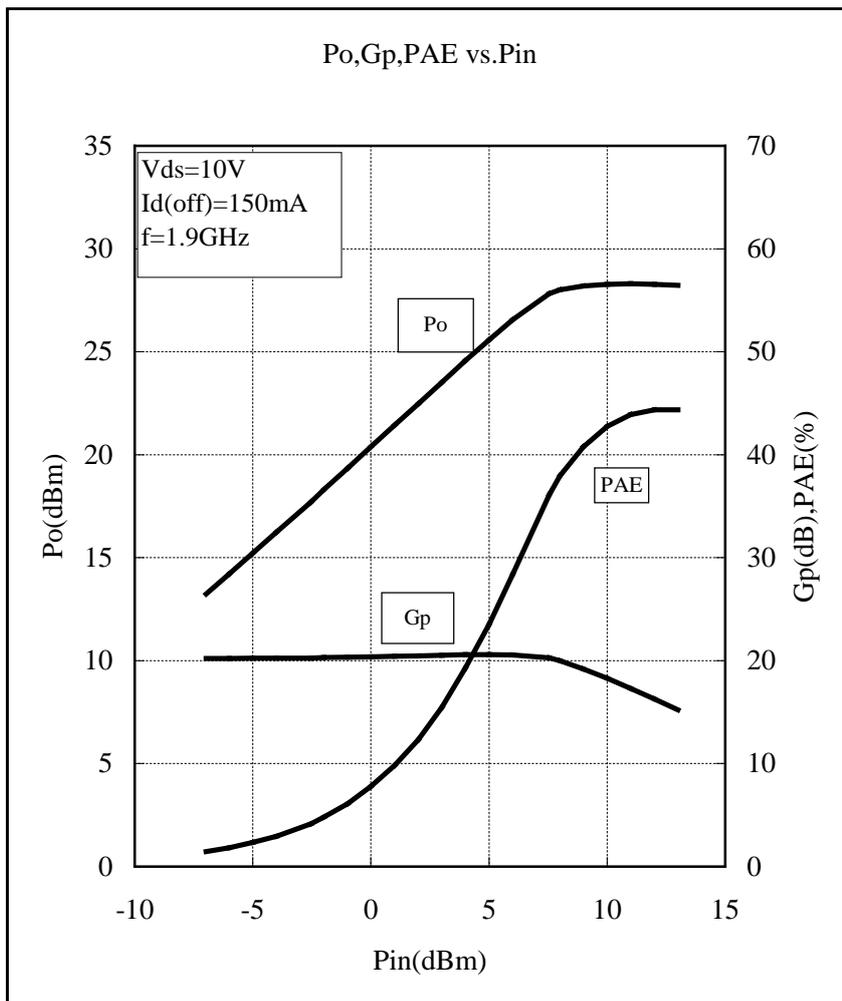
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MGF0918A S PARAMETERS (Ta=25°C, VD=10V, ID=150mA, Reference Plane see Fig.1)

freq.	S11		S21		S12		S22		K	MAG/MSG
(MHz)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)		(dB)
600	0.966	-47.70	6.220	142.02	0.015	56.75	0.302	-56.49	0.21	26.18
1000	0.939	-72.11	5.269	120.98	0.021	41.10	0.360	-78.28	0.29	24.00
1400	0.919	-90.91	4.470	103.95	0.024	27.49	0.426	-94.16	0.36	22.70
1800	0.905	-105.49	3.805	89.91	0.026	15.71	0.492	-105.68	0.42	21.65
2200	0.897	-116.96	3.257	78.05	0.026	5.60	0.553	-114.07	0.49	20.98
2600	0.892	-126.16	2.811	67.78	0.025	-3.00	0.606	-120.27	0.60	20.51
3000	0.890	-133.71	2.453	58.64	0.024	-10.20	0.651	-125.02	0.70	20.09
3400	0.889	-140.07	2.168	50.31	0.024	-16.12	0.687	-128.82	0.76	19.56
3800	0.888	-145.57	1.946	42.56	0.023	-20.89	0.716	-132.05	0.86	19.27
4200	0.886	-150.45	1.775	35.21	0.023	-24.64	0.738	-134.94	0.93	18.87
4600	0.883	-154.92	1.647	28.16	0.022	-27.52	0.754	-137.64	1.07	17.15
5000	0.877	-159.19	1.553	21.31	0.023	-29.72	0.768	-140.24	1.10	16.35
5400	0.868	-163.52	1.489	14.56	0.024	-31.42	0.779	-142.75	1.15	15.58
5800	0.856	-168.29	1.448	7.83	0.025	-32.85	0.788	-145.19	1.20	14.90
6200	0.840	-173.99	1.427	1.01	0.027	-34.23	0.797	-147.53	1.20	14.51
6600	0.820	177.60	1.423	-6.02	0.029	-35.84	0.806	-149.77	1.18	14.33
7000	0.797	172.89	1.433	-13.41	0.031	-37.92	0.814	-151.90	1.21	13.88
7400	0.771	162.95	1.457	-21.33	0.035	-40.74	0.820	-153.92	1.12	14.06
7800	0.743	154.14	1.491	-29.97	0.038	-44.55	0.824	-155.84	1.12	13.86
8200	0.713	146.69	1.536	-39.52	0.042	-49.58	0.824	-157.68	1.13	13.40
8600	0.674	137.66	1.587	-50.18	0.047	-56.03	0.818	-159.47	1.19	12.62
9000	0.618	123.53	1.643	-62.15	0.053	-64.03	0.806	-161.21	1.27	11.77
9400	0.545	102.00	1.699	-75.56	0.058	-73.66	0.786	-162.88	1.40	10.90
9800	0.485	73.05	1.748	-90.54	0.064	-84.89	0.759	-164.44	1.47	10.32
10200	0.475	39.23	1.782	-107.10	0.071	-97.58	0.723	-165.75	1.45	10.00
10600	0.535	5.13	1.788	-125.18	0.077	-111.47	0.678	-166.62	1.38	10.00
11000	0.640	-23.88	1.753	-144.56	0.082	-126.11	0.636	-166.73	1.22	10.44
11400	0.730	-43.68	1.656	-164.88	0.086	-140.87	0.609	-165.59	1.15	10.47
11800	0.813	-54.21	1.473	177.63	0.088	-154.90	0.607	-162.55	1.14	9.96
12200	0.876	-63.08	1.176	160.67	0.087	-167.09	0.636	-156.74	1.19	8.65

Gate Mark
Round corner
(1)
4.20
(2)
4.00

0.80
0.25

0.3

(1) Gate
(2) Drain
(3) Source

2.0
0.8
Gate Mark
(1)
Reference Plane
(3)
1.20
2.8
Reference Plane
(2) 0.6
2.5

BACK SIDE PATTERN

(Unit:mm)

Fig.1 OUTLINE DRAWING
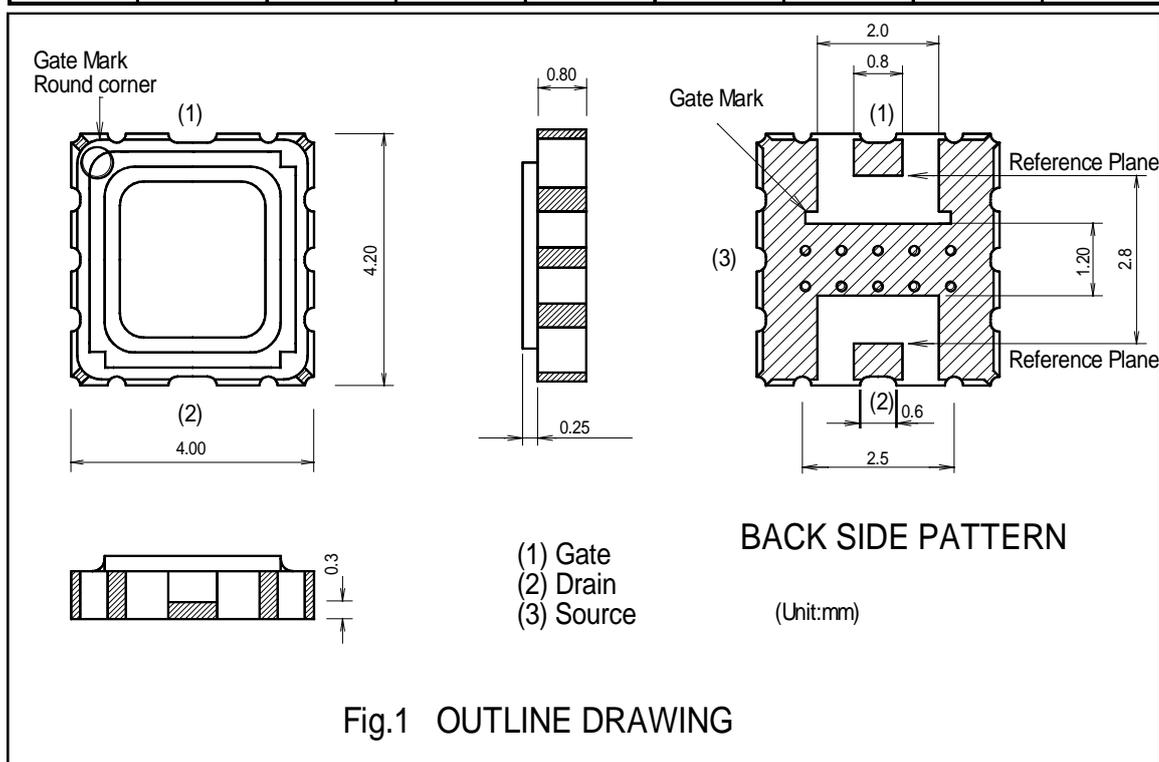
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