

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

MGF0920A

L & S BAND / 1.6W
SMD non - matched

DESCRIPTION

The MGF0920A GaAs FET with an N-channel schottky Gate, is designed for use UHF band amplifiers.

FEATURES

- High output power
Po=32dBm(TYP.) @f=1.9GHz,Pin=15dBm
- High power gain
Gp=18dB(TYP.) @f=1.9GHz
- High power added efficiency
ηadd=45%(TYP.) @f=1.9GHz,Pin=15dBm
- Hermetic Package

APPLICATION

- For UHF Band power amplifiers

QUALITY

- GG

RECOMMENDED BIAS CONDITIONS

- Vds=10V
- Ids=400mA
- Rg=200Ω

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

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	1500	mA
IGR	Reverse gate current	-3.6	mA
IGF	Forward gate current	15	mA
PT	Total power dissipation	8.3	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V,VGS=0V	-	1000	1500	mA
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=3.0mA	-1.0	-	-5.0	V
gm	Transconductance	VDS=3V,ID=400mA	-	370	-	mS
Po	Output power	VDS=10V,ID=400mA,f=1.9GHz	30	32	-	dBm
ηadd	Power added Efficiency	Pin=15dBm	-	35	-	%
GLP	Linear Power Gain	VDS=10V,ID=400mA,f=1.9GHz	16	18	-	dB
Rth(ch-c)	Thermal Resistance *1	ΔVf Method	-	13	18	°C/W

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

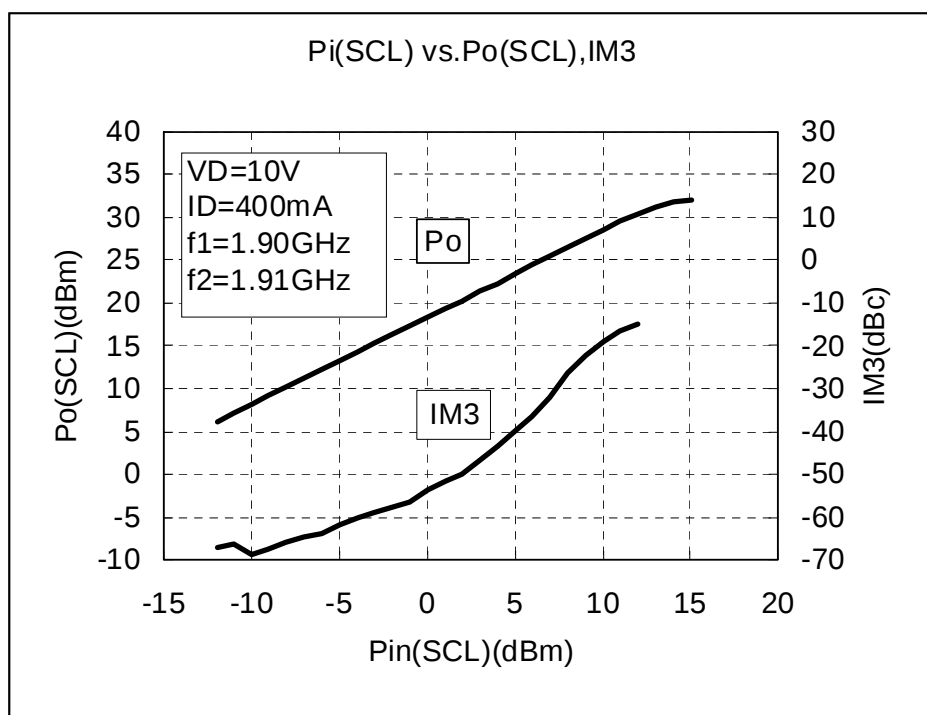
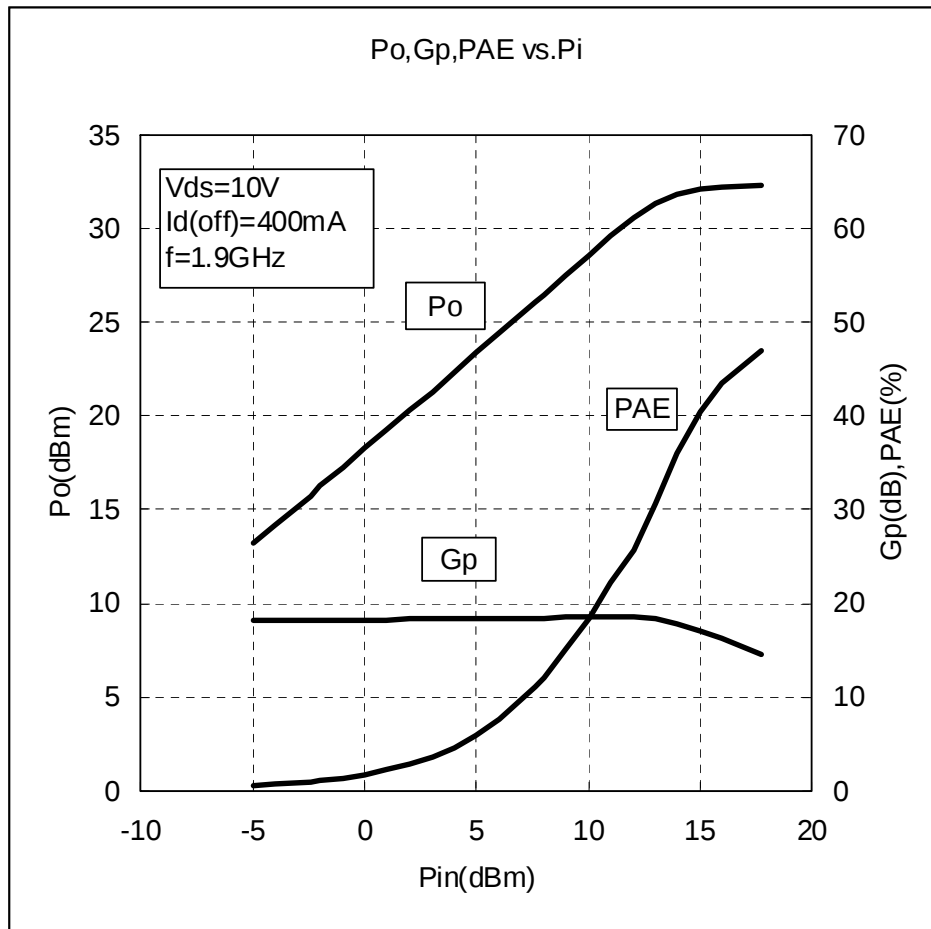
Fig.1

MGF0920A

L & S BAND / 1.6W

SMD non - matched

MGF09120A TYPICAL CHARACTERISTICS



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

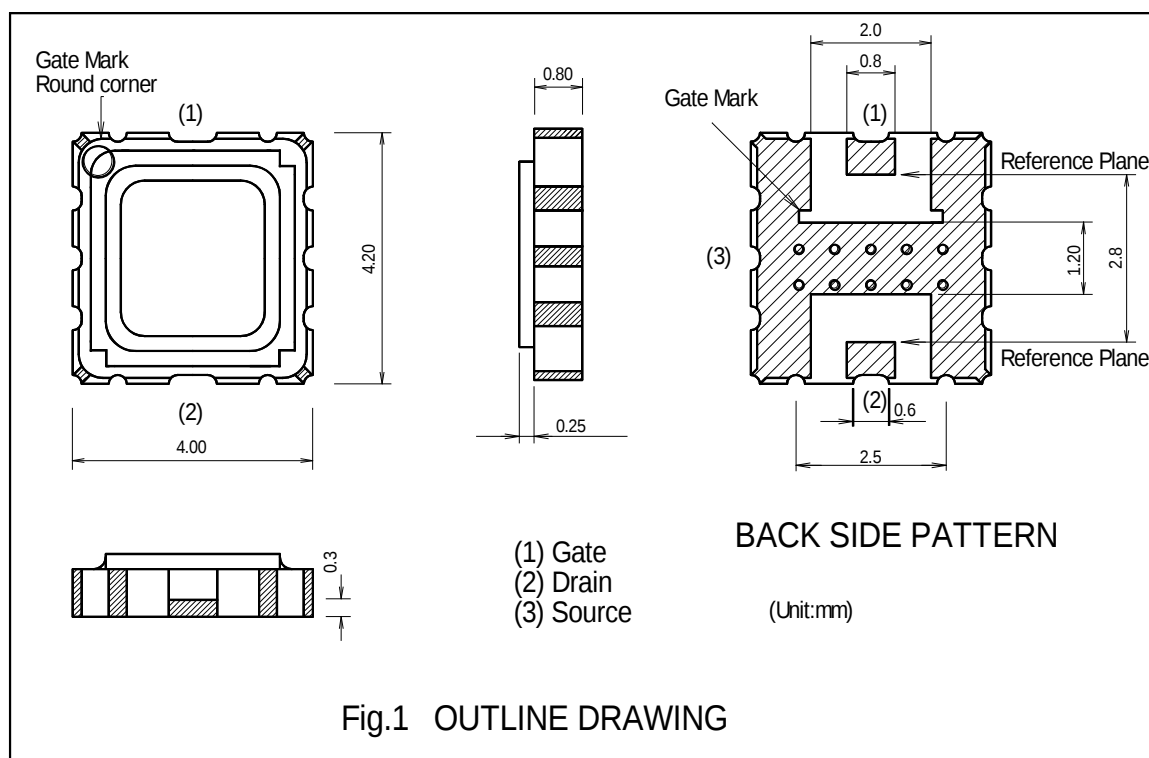
MGF0920A

L & S BAND / 1.6W

SMD non - matched

MGF0920A S PARAMETERS (Ta=25°C, VD=10V, ID=400mA, Reference Plane see Fig.1)

freq.	S11		S21		S12		S22		K	MAG/MSG
(MHz)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)		(dB)
600	0.930	-96.03	7.784	119.71	0.019	39.54	0.367	-155.36	0.25	26.12
1000	0.912	-124.52	5.692	100.24	0.023	26.68	0.427	-155.22	0.32	23.94
1400	0.903	-140.36	4.233	85.39	0.024	17.80	0.476	-154.99	0.42	22.46
1800	0.899	-149.63	3.242	73.85	0.024	12.03	0.516	-154.82	0.54	21.31
2200	0.899	-155.96	2.584	64.56	0.022	8.64	0.552	-154.81	0.75	20.70
2600	0.900	-161.19	2.156	56.76	0.021	7.04	0.583	-155.02	0.91	20.11
3000	0.901	-165.84	1.879	49.88	0.020	6.70	0.612	-155.50	1.06	18.23
3400	0.901	-169.78	1.696	43.51	0.019	7.24	0.638	-156.24	1.20	16.82
3800	0.900	-172.74	1.565	37.40	0.019	8.31	0.662	-157.24	1.24	16.23
4200	0.897	-174.91	1.462	31.40	0.020	9.66	0.684	-158.46	1.20	15.95
4600	0.893	-177.52	1.370	25.42	0.021	11.07	0.703	-159.84	1.19	15.54
5000	0.887	178.90	1.283	19.44	0.023	12.38	0.718	-161.35	1.15	15.13
5400	0.880	176.64	1.199	13.46	0.025	13.47	0.730	-162.91	1.15	14.48
5800	0.871	172.31	1.121	7.49	0.028	14.22	0.738	-164.48	1.14	13.73
6200	0.861	167.25	1.054	1.52	0.031	14.56	0.742	-166.00	1.18	12.76
6600	0.849	162.24	1.003	-4.44	0.034	14.40	0.744	-167.44	1.24	11.78
7000	0.836	157.65	0.971	-10.45	0.039	13.69	0.743	-168.79	1.20	11.27
7400	0.822	153.50	0.963	-16.57	0.044	12.36	0.739	-170.03	1.16	10.94
7800	0.805	149.52	0.978	-22.92	0.050	10.31	0.734	-171.21	1.10	10.98
8200	0.785	145.30	1.016	-29.63	0.058	7.49	0.728	-172.37	0.99	12.43
8600	0.761	140.29	1.071	-36.87	0.067	3.78	0.720	-173.62	0.90	12.04
9000	0.730	133.94	1.139	-44.85	0.078	-0.92	0.712	-175.10	0.82	11.64
9400	0.690	125.77	1.212	-53.74	0.093	-6.73	0.703	-176.99	0.75	11.15
9800	0.638	115.44	1.282	-63.76	0.110	-13.79	0.690	-179.52	0.74	10.66
10200	0.588	102.87	1.344	-75.07	0.131	-22.25	0.671	176.62	0.73	10.11
10600	0.547	88.25	1.393	-87.81	0.156	-32.28	0.644	172.09	0.72	9.51
11000	0.534	72.23	1.431	-102.03	0.186	-44.04	0.601	167.44	0.70	8.86
11400	0.562	55.90	1.464	-117.69	0.221	-57.73	0.537	162.49	0.66	8.21
11800	0.641	40.93	1.509	-134.63	0.260	-73.53	0.440	158.74	0.61	7.64
12200	0.770	29.66	1.597	-152.53	0.305	-91.61	0.300	165.54	0.58	7.19



Keep safety first in your circuit designs!

Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

Notes regarding these materials

- These materials are intended as a reference to assist our customers in the selection of the Mitsubishi semiconductor product best suited to the customer's application; they do not convey any license under any intellectual property rights, or any other rights, belonging to Mitsubishi Electric Corporation or a third party.
- Mitsubishi Electric Corporation assumes no responsibility for any damage, or infringement of any third-party's rights, originating in the use of any product data, diagrams, charts, programs, algorithms, or circuit application examples contained in these materials.
- All information contained in these materials, including product data, diagrams, charts, programs and algorithms represents information on products at the time of publication of these materials, and are subject to change by Mitsubishi Electric Corporation without notice due to product improvements or other reasons. It is therefore recommended that customers contact Mitsubishi Electric Corporation or an authorized Mitsubishi Semiconductor product distributor for the latest product information before purchasing a product listed herein.

The information described here may contain technical inaccuracies or typographical errors. Mitsubishi Electric Corporation assumes no responsibility for any damage, liability, or other loss rising from these inaccuracies or errors.

Please also pay attention to information published by Mitsubishi Electric Corporation by various means, including the Mitsubishi Semiconductor home page (<http://www.MitsubishiElectric.com/>).

- When using any or all of the information contained in these materials, including product data, diagrams, charts, programs, and algorithms, please be sure to evaluate all information as a total system before making a final decision on the applicability of the information and products. Mitsubishi Electric Corporation assumes no responsibility for any damage, liability or other loss resulting from the information contained herein.
- Mitsubishi Electric Corporation semiconductors are not designed or manufactured for use in a device or system that is used under circumstances in which human life is potentially at stake. Please contact Mitsubishi Electric Corporation or an authorized Mitsubishi Semiconductor product distributor when considering the use of a product contained herein for any specific purposes, such as apparatus or systems for transportation, vehicular, medical, aerospace, nuclear, or undersea repeater use.
- The prior written approval of Mitsubishi Electric Corporation is necessary to reprint or reproduce in whole or in part these materials.
- If these products or technologies are subject to the Japanese export control restrictions, they must be exported under a license from the Japanese government and cannot be imported into a country other than the approved destination.
Any diversion or re-export contrary to the export control laws and regulations of Japan and/or the country of destination is prohibited.
- Please contact Mitsubishi Electric Corporation or an authorized Mitsubishi Semiconductor product distributor for further details on these materials or the products contained therein.