MITSUBISHI ELECTRIC

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

MGF0907B

L & S BAND /10W
non - matched

DESCRIPTION

The MGF0907B, GaAs FET with an N-channel schottky gate, is designed for use L & S band applications.

FEATURES

- Class A operation
- High output power
  P1dB=40.0dBm(T.Y.P) @f=2.3GHz
- High power gain
  GLP=10.0dB(TYP.) @f=2.3GHz
- High power added efficiency
  P.A.E=37%(TYP.) @f=2.3GHz,P1dB
- Hermetically sealed metal-ceramic package with ceramic lid

APPLICATION

- For L & S band power amplifiers

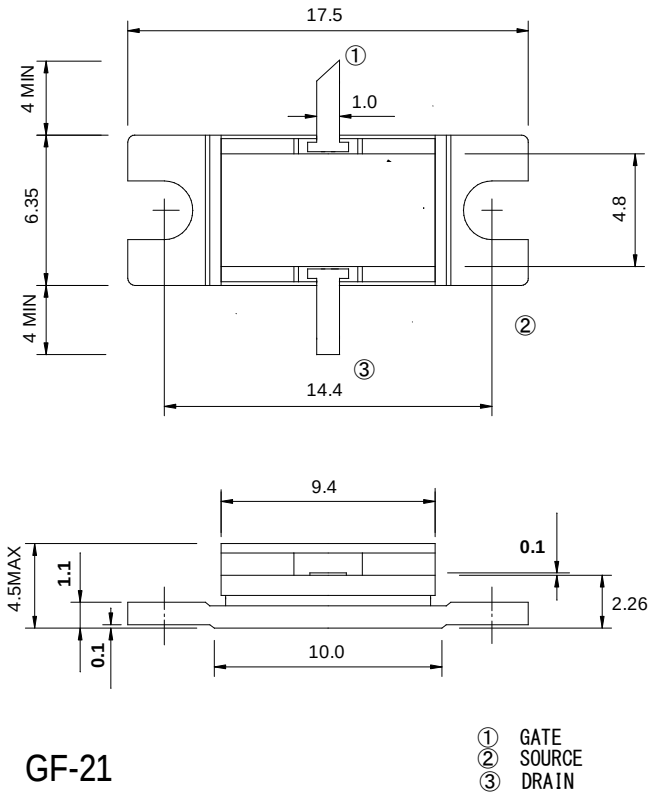
QUALITY

- IG

RECOMMENDED BIAS CONDITIONS

- Vds=10V • Ids=2.4A • Rg=50Ω

OUTLINE DRAWING Unit : millimeters



Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to Source Voltage	-15	V
VGSO	Gate to source voltage	-15	V
ID	Drain Current	7	A
IGR	Reverse gate current	-20	mA
IGF	Forward gate current	42	mA
PT*1	Total power dissipation	37.5	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	-	5	7	A
gm	Transconductance	VDS=3V, ID=2.2A	-	2	-	S
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=20mA	-	-3.0	-4.5	V
P1dB	1dB gain compression power	VDS=10V,ID(RF off)=2.4A	38.5	40	-	dBm
GLP *2	Linear power gain	f=2.3GHz	8	10	-	dB
ID	Drain current	*2 : Pin=20dBm	-	2.2	-	A
P.A.E	Power added efficiency			37	-	%
Rth(ch-c) *3	Thermal resistance	ΔVf method	-	-	4.0	°C/W

*3 :Channel-case

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Specification are subject to change without notice.

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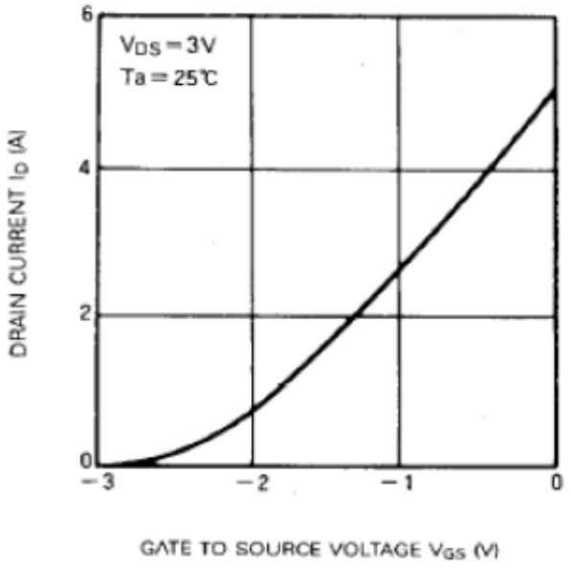
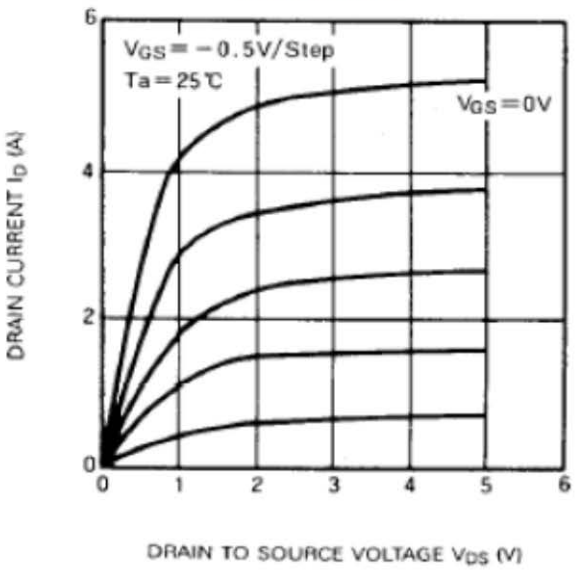
MGF0907B TYPICAL CHARACTERISTICS(Ta=25deg.C)

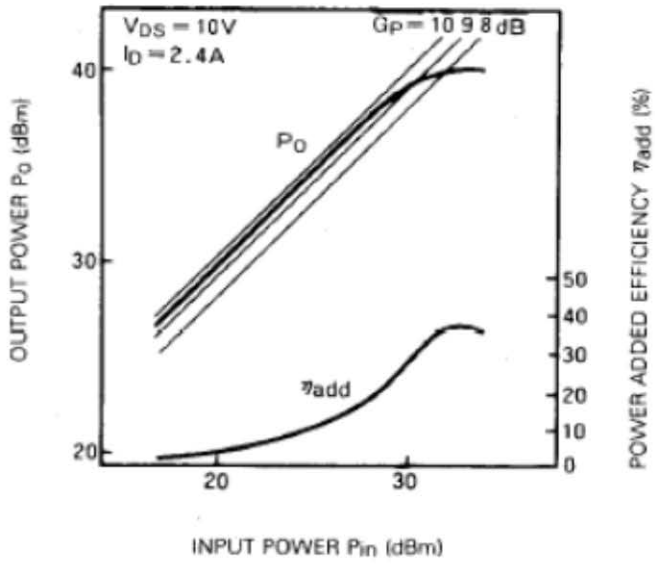
ID vs. VGS



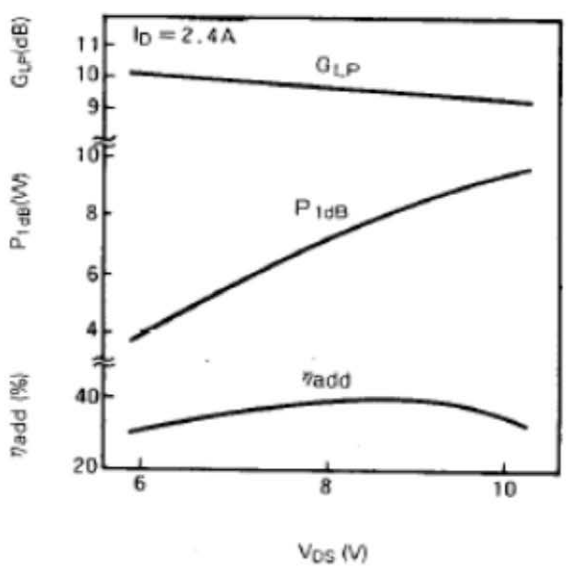
ID vs. VDS



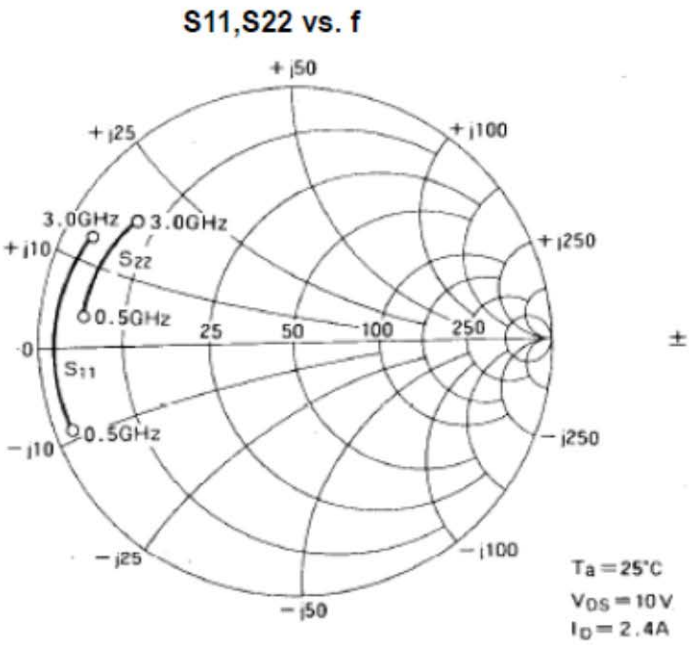
Po, PAE vs. Pin (f=2.3GHz)

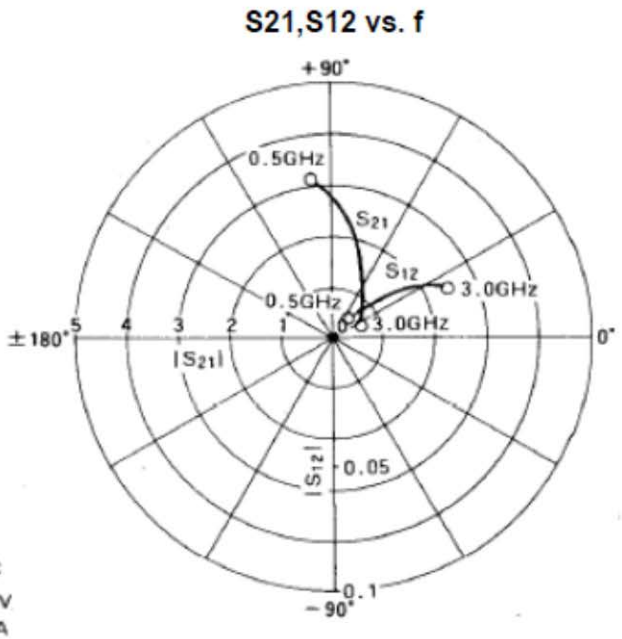


GLP, P1dB, ID, PAE vs. VDS (f=2.3GHz)



MGF0907B S-parameters(Ta=25deg.C , VDS=10(V), IDS=2.4(A))





f	S11		S21		S12		S22		K	MAG
(GHz)	Magn.	Ang. (deg)	Magn	Ang. (deg)	Magn.	Ang. (deg)	Magn.	Ang. (deg)		(dB)
0.5	0.947	−162.1	3.089	96.7	0.010	45.8	0.823	171.6	1.086	23.1
0.6	0.943	−165.6	2.793	90.8	0.012	44.1	0.822	170.1	1.055	22.2
0.7	0.939	−168.7	2.524	85.5	0.014	42.7	0.822	168.7	1.038	21.4
0.8	0.936	−171.4	2.281	80.7	0.014	41.5	0.821	167.5	1.024	20.6
0.9	0.934	−173.8	2.092	76.4	0.017	40.5	0.821	166.4	1.043	19.6
1.0	0.932	−175.9	1.865	72.7	0.018	39.7	0.820	165.5	1.072	18.5
1.1	0.931	−177.7	1.691	69.3	0.019	39.0	0.819	164.7	1.095	17.6
1.2	0.930	−179.3	1.537	66.4	0.020	38.4	0.818	164.0	1.124	16.7
1.3	0.929	179.3	1.401	63.7	0.021	37.9	0.817	163.3	1.157	15.8
1.4	0.929	178.1	1.284	61.4	0.021	37.5	0.816	162.7	1.219	15.0
1.5	0.928	177.0	1.183	59.3	0.022	37.2	0.815	162.1	1.257	14.3
1.6	0.928	176.0	1.096	57.4	0.022	36.9	0.813	161.5	1.328	13.6
1.7	0.927	175.1	1.024	55.6	0.023	36.6	0.811	160.8	1.367	12.7
1.8	0.927	174.2	0.964	54.0	0.023	36.3	0.810	160.2	1.430	12.3
1.9	0.926	173.3	0.915	52.4	0.024	35.9	0.808	159.4	1.461	11.8
2.0	0.925	172.3	0.875	50.9	0.025	35.5	0.806	158.6	1.488	11.3
2.1	0.923	171.2	0.844	49.3	0.026	35.0	0.803	157.7	1.527	10.8
2.2	0.921	170.0	0.820	47.6	0.027	34.4	0.801	156.7	1.555	10.4
2.3	0.919	168.6	0.801	45.8	0.028	33.7	0.798	155.5	1.584	10.1
2.4	0.916	167.1	0.787	43.9	0.030	32.8	0.769	154.1	1.574	9.7
2.5	0.912	165.3	0.776	41.7	0.032	31.8	0.792	152.6	1.587	9.4
2.6	0.907	163.3	0.767	39.2	0.035	30.6	0.789	150.9	1.570	9.0
2.7	0.902	160.9	0.757	36.5	0.037	29.1	0.786	148.9	1.594	8.6
2.8	0.895	158.3	0.746	33.4	0.040	27.4	0.782	146.6	1.614	8.1
2.9	0.887	155.2	0.735	29.9	0.044	25.4	0.778	144.1	1.620	7.6
3.0	0.879	151.7	0.719	26.0	0.048	23.1	0.774	141.4	1.636	7.1

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