MITSUBISHI
ELECTRIC

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

MGF0906B

L & S BAND / 5W
non - matched

DESCRIPTION

The MGF0906B, GaAs FET with an N-channel schottky gate, is designed for L & S band applications.

FEATURES

- Class A operation
- High output power
  P1dB=37.0dBm(T.Y.P) @f=2.3GHz
- High power gain
  GLP=11.0dB(TYP.) @f=2.3GHz
- High power added efficiency
  P.A.E=40%(TYP.) @f=2.3GHz,P1dB
- Hermetically sealed metal-ceramic package with ceramic lid

APPLICATION

- For L & S band power amplifiers

QUALITY

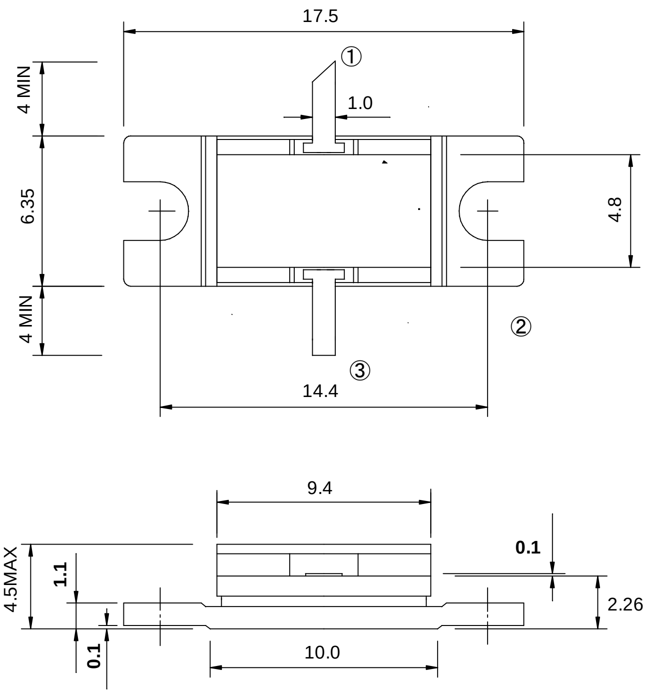
- IG

RECOMMENDED BIAS CONDITIONS

- Vds=10V
- Ids=1.2A
- Rg=100Ω

OUTLINE DRAWING

Unit : millimeters



GF-21

① GATE
② SOURCE
③ DRAIN

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	3.5	A
IGR	Reverse gate current	-10	mA
IGF	Forward gate current	21	mA
PT*1	Total power dissipation	23	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

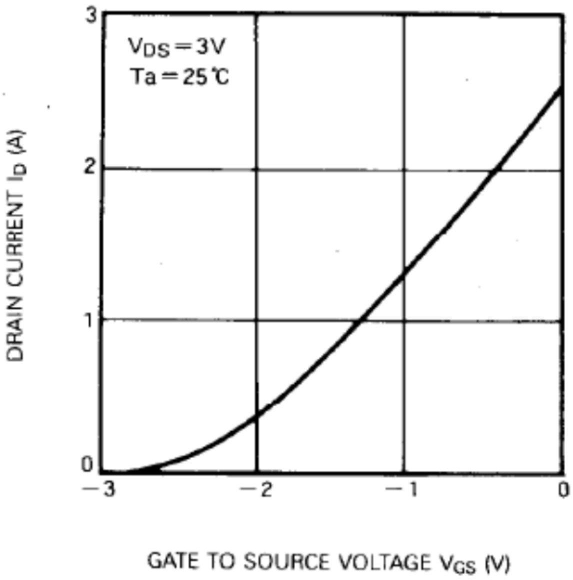
*1:Tc=25°C

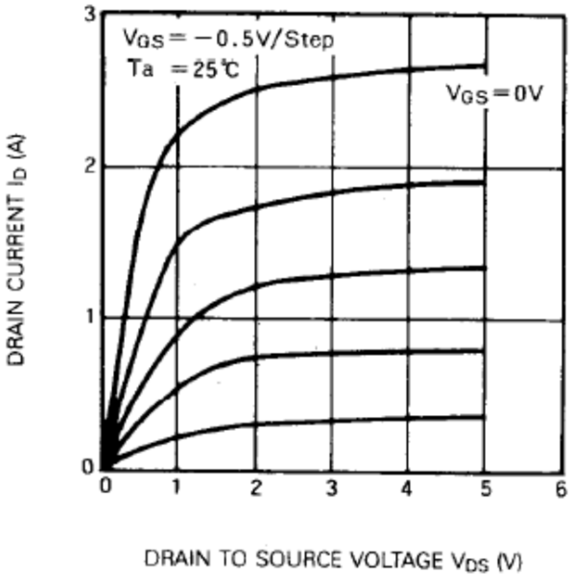
Electrical characteristics (Ta=25°C)

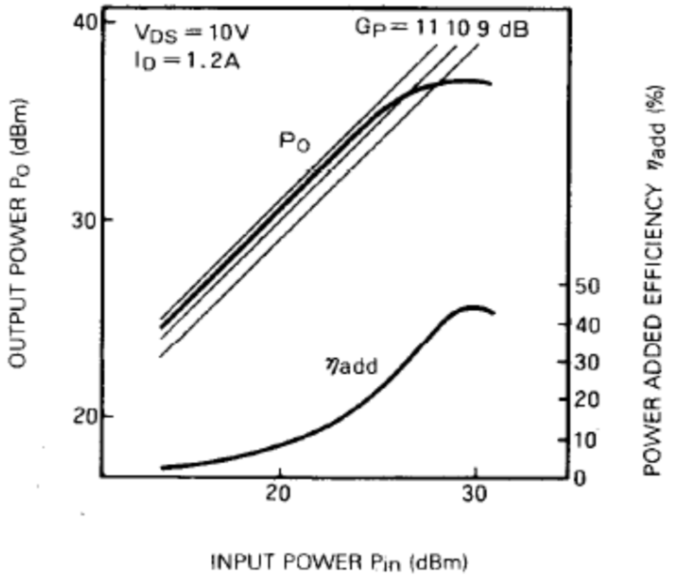
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V, VGS=0V	-	2.5	3.5	A
gm	Transconductance	VDS=3V, ID=1.1A	-	1	-	S
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=10mA	-	-3.0	-4.5	V
P1dB	1dB gain compression power	VDS=10V,ID(RF off)=1.2A f=2.3GHz *2 : Pin=15dBm	35.5	37	-	dBm
GLP *2	Linear power gain		10	11	-	dB
ID	Drain current		-	1.1	-	A
P.A.E	Power added efficiency			40	-	%
Rth(ch-c) *3	Thermal resistance	ΔVf method	-	-	6.5	°C/W

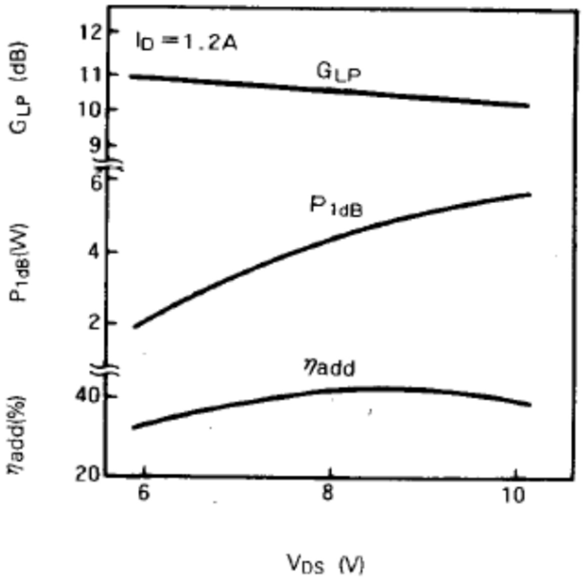
*3 :Channel-case

MGF0906B TYPICAL CHARACTERISTICS(Ta=25deg.C)



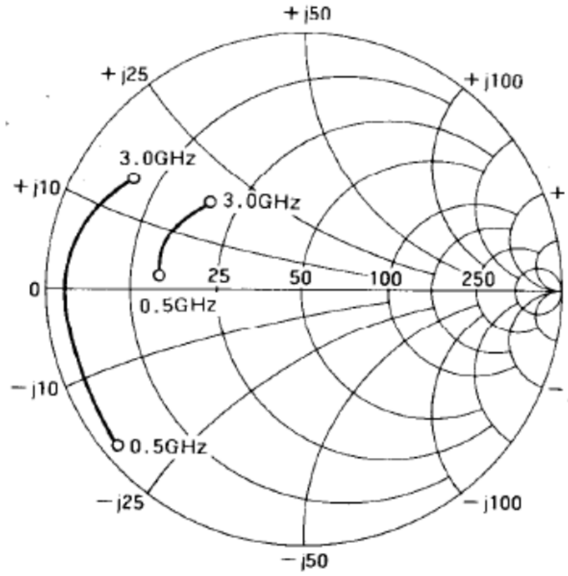






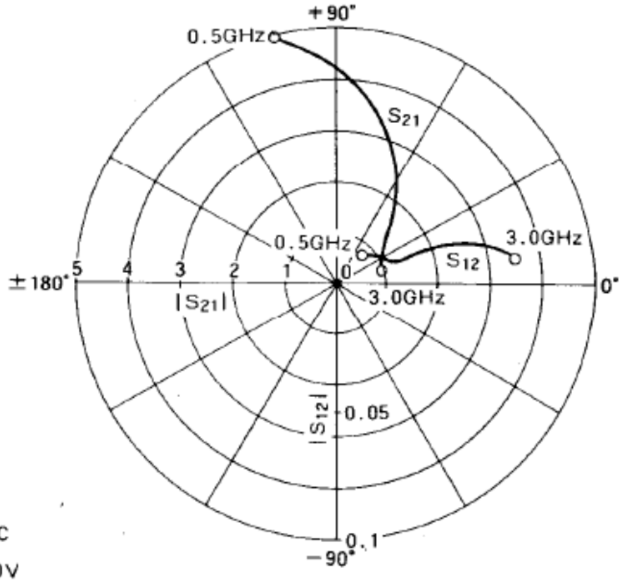
MGF0906B S-parameters(Ta=25deg.C , VDS=10(V),IDS=1.2(A))

S11,S22 vs. f



Ta = 25°C
V_{DS} = 10V
I_D = 1.2A

S21,S12 vs. f



f	S_{11}		S_{21}		S_{12}		S_{22}		K	MSG/MAG
(GHz)	Magn.	Ang. (deg.)	Magn.	Ang. (deg.)	Magn.	Ang. (deg.)	Magn.	Ang. (deg.)		(dB)
0.5	0.922	−139.9	4.997	104.1	0.016	51.5	0.673	174.9	0.869	25.0
0.6	0.913	−146.2	4.570	97.5	0.019	44.9	0.674	172.5	0.837	23.8
0.7	0.906	−151.8	4.176	91.5	0.022	39.3	0.676	170.4	0.807	22.8
0.8	0.900	−156.8	3.815	85.9	0.023	34.6	0.677	168.6	0.826	22.1
0.9	0.896	−161.2	3.484	80.9	0.025	30.7	0.679	167.0	0.819	21.4
1.0	0.894	−165.0	3.182	76.3	0.026	27.7	0.680	165.7	0.834	20.9
1.1	0.892	−168.4	2.909	72.2	0.026	25.2	0.680	164.5	0.883	20.5
1.2	0.891	−171.4	2.662	68.3	0.027	23.4	0.681	163.5	0.906	19.9
1.3	0.891	−174.0	2.440	64.8	0.027	22.1	0.681	162.6	0.959	19.6
1.4	0.891	−176.3	2.242	61.6	0.027	21.3	0.680	161.8	1.024	18.2
1.5	0.892	−178.3	2.067	58.7	0.027	20.9	0.679	161.1	1.086	17.1
1.6	0.892	179.9	1.913	55.9	0.027	20.7	0.678	160.5	1.160	16.1
1.7	0.892	178.2	1.779	53.2	0.028	20.8	0.676	159.8	1.202	15.3
1.8	0.892	176.6	1.664	50.7	0.028	21.0	0.673	159.2	1.285	14.5
1.9	0.891	175.1	1.565	48.2	0.029	21.3	0.670	158.6	1.334	13.9
2.0	0.890	173.6	1.482	45.8	0.030	21.6	0.666	157.9	1.384	13.2
2.1	0.887	172.0	1.414	43.4	0.031	21.9	0.661	157.1	1.455	12.6
2.2	0.883	170.2	1.359	40.8	0.033	21.9	0.655	156.3	1.487	12.0
2.3	0.877	168.3	1.315	38.2	0.035	21.8	0.649	155.3	1.538	11.4
2.4	0.870	166.2	1.282	35.4	0.038	21.3	0.642	154.1	1.553	10.9
2.5	0.861	163.8	1.258	32.5	0.042	20.5	0.633	152.8	1.554	10.4
2.6	0.850	161.1	1.241	29.3	0.046	19.2	0.624	151.3	1.569	9.9
2.7	0.837	157.9	1.231	25.8	0.051	17.4	0.614	149.5	1.569	9.4
2.8	0.821	154.4	1.226	22.0	0.057	15.0	0.602	147.5	1.566	8.9
2.9	0.803	150.3	1.224	17.9	0.064	11.9	0.589	145.1	1.566	8.4
3.0	0.781	145.6	1.224	13.4	0.072	8.0	0.576	142.5	1.549	7.9

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