

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

MGF1601B-01

S to X BAND / 0.15W

non - matched

DESCRIPTION

The MGF1601B-01, medium-power GaAs FET with an N-channel Schottky gate, is designed for use in S to X band amplifiers and oscillators. The hermetically sealed metalceramic package assures minimum parasitic losses, and has a configuration suitable for microstrip circuits.

FEATURES

- High linear power gain
G_{lp}=8.0dB @f=8GHz
- High P1dB
P1dB=21.8dBm(TYP.) @f=8GHz

APPLICATION

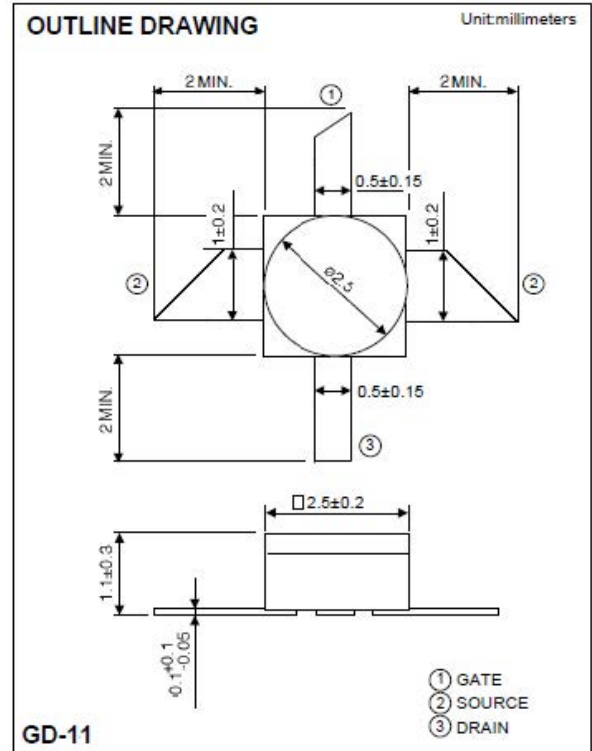
- S to X Band medium-power amplifiers and oscillators

QUALITY

- GG

RECOMMENDED BIAS CONDITION

- V_{DS}=6V, I_D=100mA Refer to Bias Procedure



Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V _{GD0}	Gate to drain breakdown voltage	-8	V
V _{GS0}	Gate to source breakdown voltage	-8	V
I _D	Drain current	250	mA
I _{GR}	Reverse gate current	-0.6	mA
I _{GF}	Forward gate current	1.5	mA
P _T	Total power dissipation	1.2	W
T _{ch}	Channel temperature	175	°C
T _{stg}	Storage temperature	-65 to +175	°C

Keep Safety first in your circuit designs!

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Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V _{(BR)GD0}	Gate to drain breakdown voltage	I _g =200μA	-8	-	-	V
V _{(BR)GS0}	Gate to source breakdown voltage	I _g =200μA	-8	-	-	V
I _{GSS}	Gate to source leakage current	V _{DS} =0V, V _{GS} =-3V	-	-	20	μA
I _{DSS}	Saturated drain current	V _{DS} =3V, V _{GS} =0V	150	200	250	mA
V _{GS(off)}	Gate to source cut-off voltage	V _{DS} =3V, I _D =100μA	-1.5	-	-4.5	V
g _m	Transconductance	V _{DS} =3V, I _D =100mA	70	90	-	mS
GLP	Linear Power Gain	V _{DS} =6V, I _D =100mA, f=8GHz	6	8	-	dB
P1dB	Output power at 1dB gain compression	V _{DS} =6V, I _D =100mA, f=8GHz	20.8	21.8	-	dBm
R _{th(ch-c)}	Thermal resistance *1	ΔVf method	-	-	125	°C/W

*1: Channel to ambient

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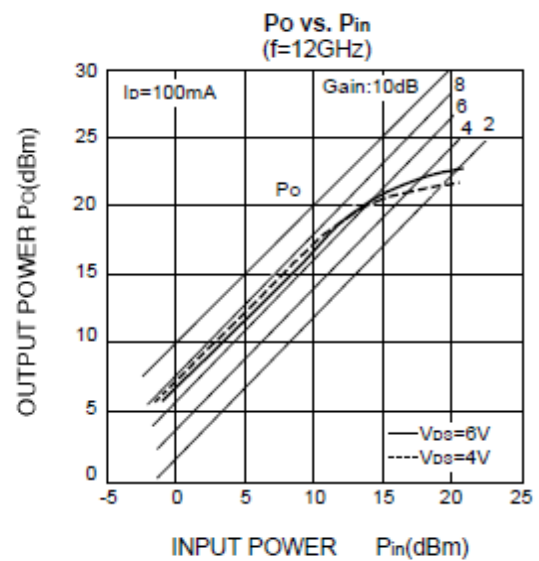
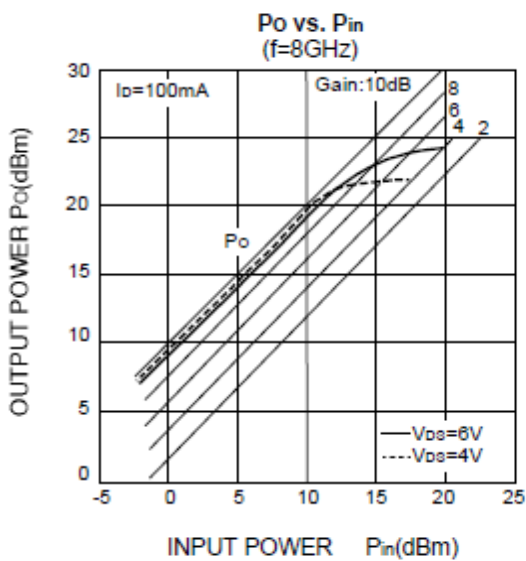
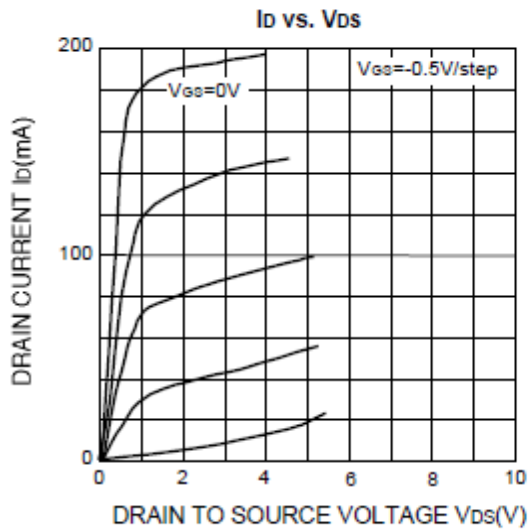
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MGF1601B-01 TYPICAL CHARACTERISTICS

($T_a=25^\circ\text{C}$)



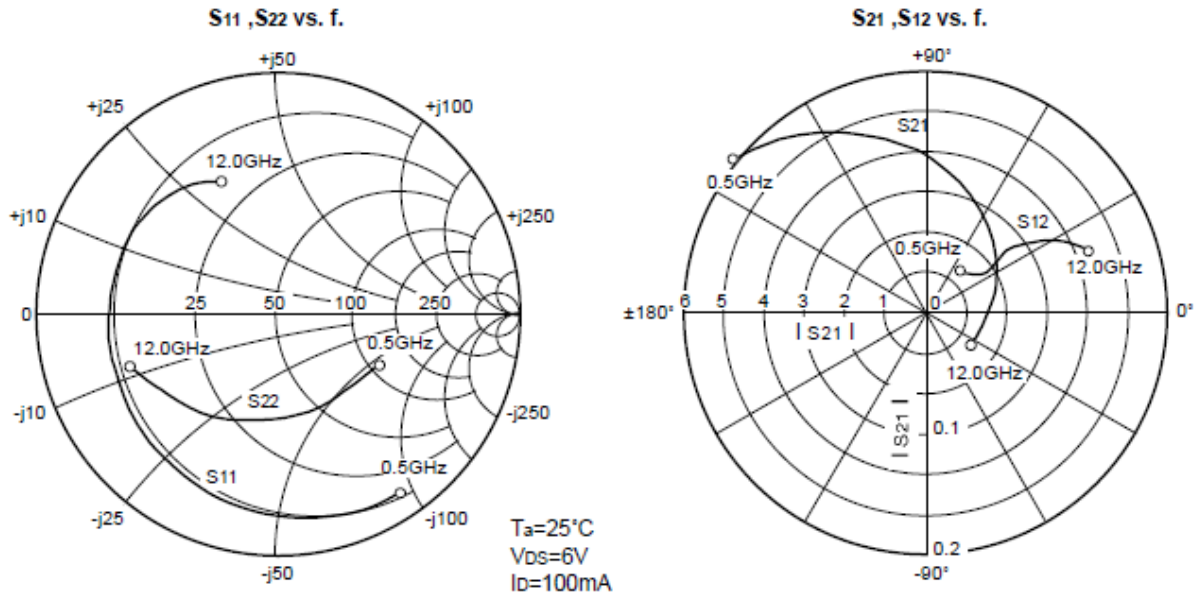
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MGF1601B-01 S PARAMETERS (Ta=25°C, Vd=6V, Id=100mA)



Freq. (GHz)	S11		S21		S12		S22		K	MSG/MAG (dB)
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)		
0.5	0.899	-56.8	6.115	140.3	0.047	52.1	0.471	-25.2	0.371	21.2
1.0	0.874	-69.4	5.682	130.4	0.049	49.3	0.462	-32.7	0.394	20.7
1.5	0.848	-82.1	5.248	120.5	0.050	46.4	0.452	-40.1	0.431	20.2
2.0	0.822	-94.7	4.815	110.6	0.052	43.6	0.442	-47.5	0.485	19.7
2.5	0.796	-107.4	4.382	100.6	0.054	40.8	0.432	-54.9	0.558	19.1
3.0	0.771	-120.0	3.949	90.8	0.056	38.0	0.422	-62.4	0.657	18.5
3.5	0.745	-132.7	3.515	80.9	0.057	35.1	0.413	-69.8	0.789	17.9
4.0	0.719	-145.3	3.082	71.0	0.059	32.3	0.403	-77.2	0.964	17.2
4.5	0.713	-153.3	2.863	63.3	0.060	33.3	0.412	-84.2	1.006	16.3
5.0	0.706	-161.3	2.645	55.6	0.062	34.3	0.421	-91.1	1.064	14.8
5.5	0.700	-169.3	2.426	47.9	0.063	35.2	0.431	-98.1	1.142	13.6
6.0	0.694	-177.3	2.207	40.2	0.064	36.2	0.440	-105.0	1.245	12.4
6.5	0.691	-176.9	2.090	33.9	0.068	37.6	0.458	-110.3	1.202	12.1
7.0	0.689	-171.1	1.973	27.5	0.073	39.0	0.476	-115.5	1.172	11.8
7.5	0.686	-165.2	1.856	21.2	0.077	40.4	0.494	-120.8	1.153	11.5
8.0	0.683	-159.4	1.739	14.8	0.081	41.8	0.512	-126.0	1.146	11.0
8.5	0.677	-153.1	1.671	8.5	0.089	40.5	0.530	-130.8	1.072	11.1
9.0	0.670	-146.9	1.602	2.1	0.096	39.3	0.549	-135.5	1.011	11.6
9.5	0.664	-140.6	1.534	-4.3	0.104	38.0	0.567	-140.3	0.962	11.7
10.0	0.657	-134.3	1.466	-10.6	0.111	36.7	0.585	-145.0	0.922	11.2
10.5	0.645	-127.8	1.413	-17.0	0.118	33.2	0.601	-149.4	0.893	10.8
11.0	0.632	-121.3	1.360	-23.4	0.126	29.8	0.618	-153.9	0.867	10.4
11.5	0.620	-114.8	1.308	-29.7	0.133	26.3	0.635	-158.3	0.844	9.9
12.0	0.608	-108.3	1.255	-36.1	0.140	22.8	0.651	-162.7	0.823	9.5

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