MGF1801BT

TAPE CARRIER MICROWAVE POWER GaAs FET

DESCRIPTION

The MGF1801BT , medium-power GaAs FET with an N-channel Schottky gate , is designed for use S-X band amplifiers and oscillators. The hermetically sealed metal-ceramic package assures minimum parasitic losses , and has a configuration suitable for microstrip circuits.

The MGF1801BT is mounted in the super 24 tape .

FEATURES

- High output power at 1dB gain compression
  P_{1dB} = 23dBm (TYP.) @ f=8GHz
- High linear gain
  G_{LP} = 9dB (TYP.) @ f=8GHz
- High reliability and stability

APPLICATION

S to X band medium-power amplifiers and oscillators .

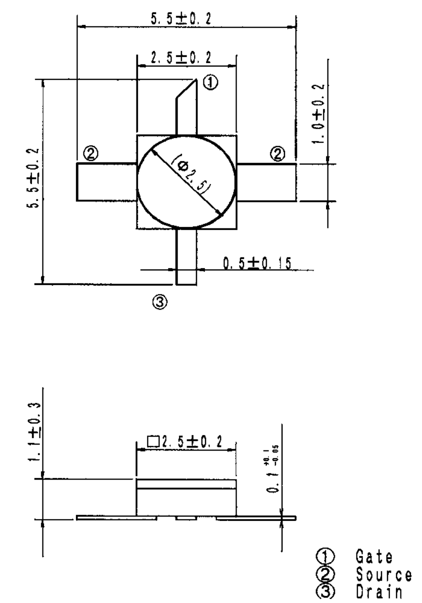
QUALITY GRADE

IG

RECOMMENDED BIAS CONDITIONS

V_{DS}=6V , I_D=100mA

OUTLINE DRAWING Unit:millimeters



GD-24

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.

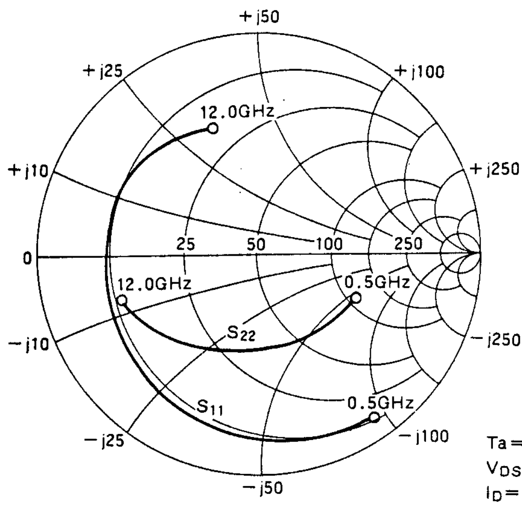
ABSOLUTE MAXIMUM RATINGS (Ta=25℃)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-8	V
V_{GSO}	Gate to source voltage	-8	V
I_D	Drain current	250	mA
IGR	Reverse gate current	-0.6	mA
IGF	Forward gate current	1.5	mA
PT	Total power dissipation	1.2	mW
T_{ch}	Channel temperature	175	°C
T_{stg}	Storage temperature	-65～+175	°C

ELECTRICAL CHARACTERISTICS (Ta=25℃)

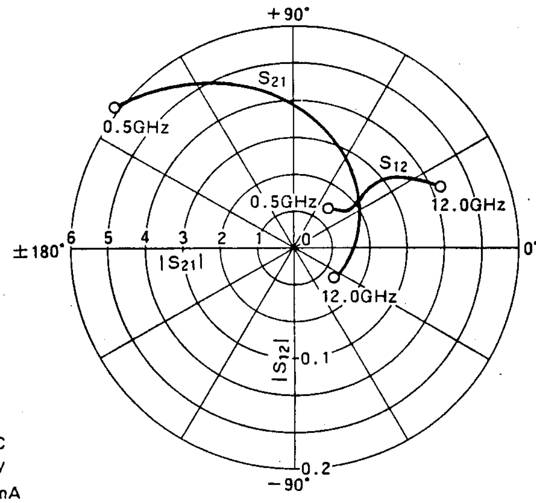
Symbol	Parameter	Test conditions	Limits			Unit
			MIN.	TYP.	MAX.	
$V_{(BR)GDO}$	Gate to drain breakdown voltage	I_G=-200μA	-8	--	--	V
$V_{(BR)GSO}$	Gate to source breakdown voltage	I_G=-200μA	-8	--	--	V
I_{GSS}	Gate to source leakage current	V_{GS}=-3V,V_{DS}=0V	--	--	20	μA
I_{DSS}	Saturated drain current	V_{GS}=0V,V_{DS}=3V	150	200	250	mA
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V,I_D=100μA	-1.5	--	-4.5	V
gm	Transconductance	V_{DS}=6V,I_D=100mA	70	90	--	mS
G_{LP}	Linear power gain	V_{DS}=6V, I_D=100mA	7.0	9.0	--	dB
P_{1dB}	Output power at 1dB gain compression	f=12GHz	21.8	23.0	--	dBm

S_{11}, S_{22} vs. f



Ta=25℃
V_{DS}=6V
I_D=100mA

S_{21}, S_{12} vs. f

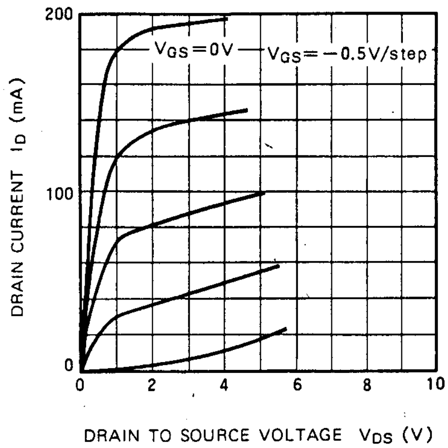


S PARAMETERS (Ta=25°C, V_{DS}=6V, I_D=100mA)

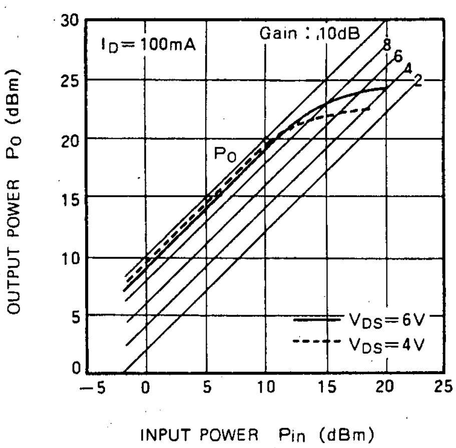
Freq. (GHz)	S11		S21		S12		S22		K	MSG/MAG (dB)
	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.		
0.5	0.899	−56.8	6.115	140.3	0.047	52.1	0.471	−25.2	0.371	21.2
1.0	0.874	−69.4	5.682	130.4	0.049	49.3	0.462	−32.7	0.394	20.7
1.5	0.848	−82.1	5.248	120.5	0.050	46.4	0.452	−40.1	0.431	20.2
2.0	0.822	−94.7	4.815	110.6	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

TYPICAL CHARACTERISTICS (Ta=25℃)

I_D vs. V_{DS}



P_o vs. P_{in}
(f = 8 GHz)



P_o vs. P_{in}
(f = 12 GHz)