

< Low Noise GaAs HEMT >

MGF4965BM

4pin flat lead package

DESCRIPTION

The MGF4965BM super-low noise InGaAs HEMT (High Electron Mobility Transistor) is designed for use in K band amplifiers.

The 4pin flat lead package is small-thin size, and offers high cost performance.

FEATURES

Low noise figure @ f=20GHz

NFmin. = 0.95dB (Typ.)

High associated gain @ f=20GHz

Gs = 11.5dB (Typ.)

APPLICATION

C to K band low noise amplifiers

QUALITY GRADE

GG

RECOMMENDED BIAS CONDITIONS

VDS=2V, ID=10mA

ORDERING INFORMATION

Tape & reel 15000pcs/reel

RoHS COMPLIANT

MGF4965BM is a RoHS compliant product. RoHS compliance is indicated by the letter "G" after the Lot Marking.

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-3	V
VGSO	Gate to source voltage	-3	V
VDS	Drain to source voltage	3	V
ID	Drain current	IDSS	mA
PT	Total power dissipation	50	mW
Tch	Channel temperature	125	°C
Tstg	Storage temperature	-55 to +125	°C
Top	Operation temperature	-55 to +125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			MIN.	TYP.	MAX	
V(BR)GDO	Gate to drain breakdown voltage	IG=-10μA	-3.5	--	--	V
IGSS	Gate to source leakage current	VGS=-2V, VDS=0V	--	--	50	μA
IDSS	Saturated drain current	VGS=0V, VDS=2V	12	--	60	mA
VGS(off)	Gate to source cut-off voltage	VDS=2V, ID=500μA	-0.1	--	-1.5	V
Gs	Associated gain	VDS=2V,	9.5	11.5	--	dB
NFmin.	Minimum noise figure	ID=10mA, f=20GHz	--	0.95	1.25	dB

Note: Gs and NFmin. are tested with sampling inspection.

Thermal resistance (Rth) of this product : 800°C/W

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CSTG-14440

MITSUBISHI ELECTRIC CORPORATION

Outline Drawing

Fig.1

MITSUBISHI Proprietary

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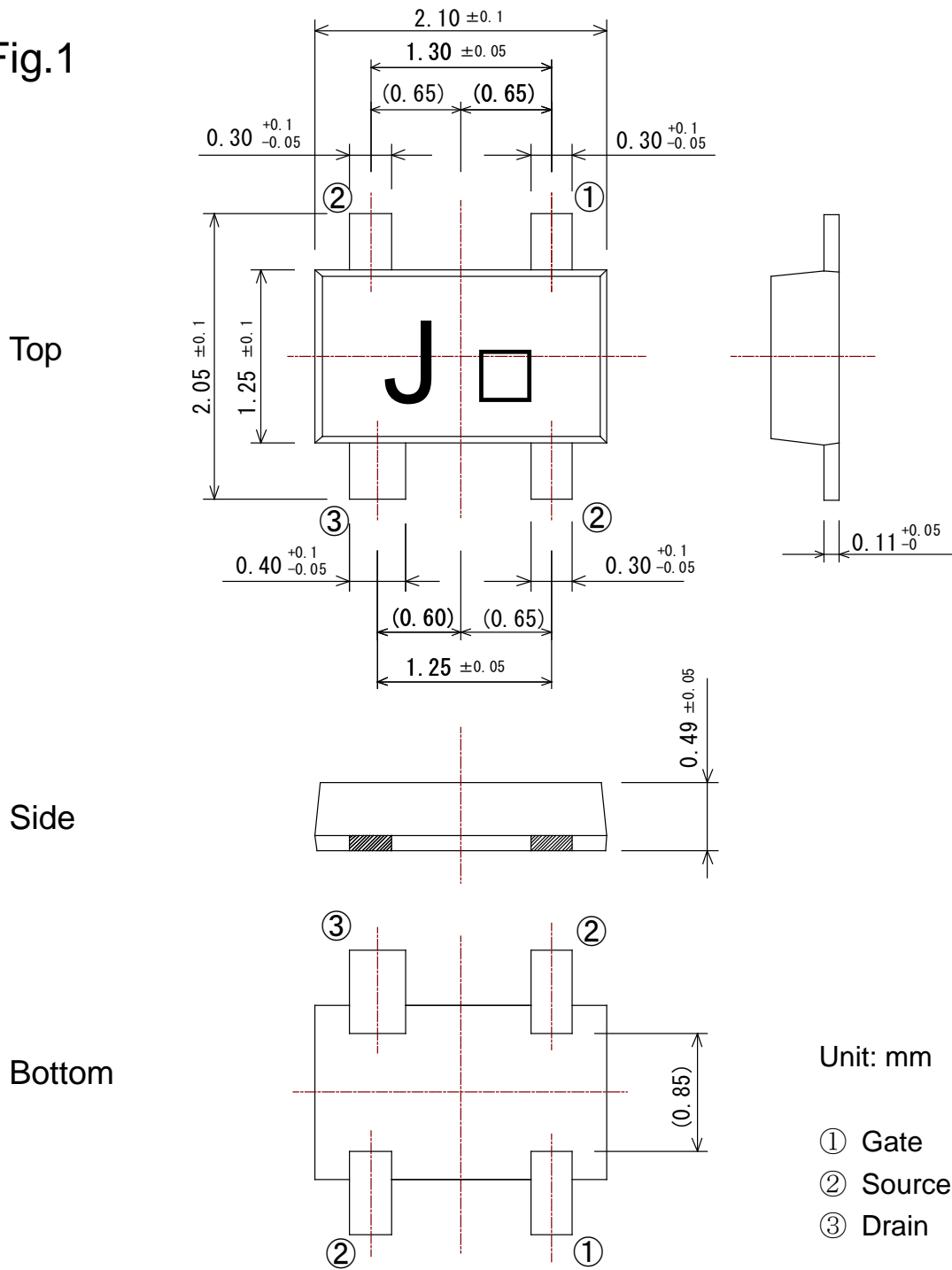


CAUTION!

This device is sensitive to ElectroStatic Discharge (ESD). Care should be needed during transport and handling.

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Fig.1



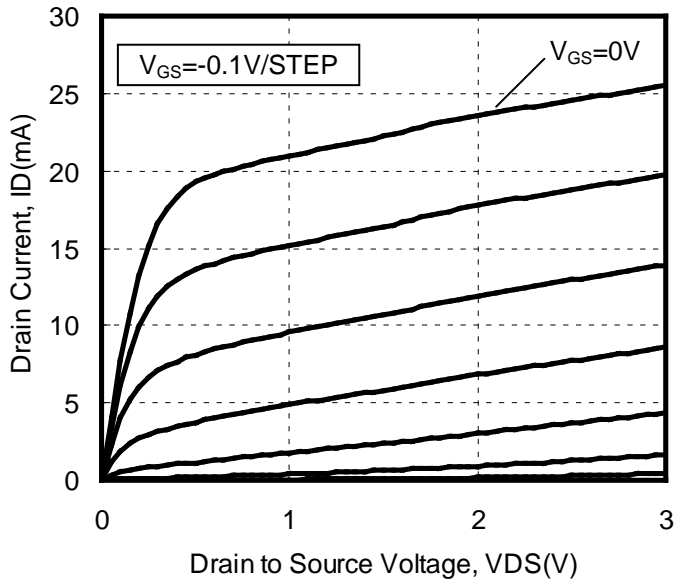
Unit: mm

- ① Gate
- ② Source
- ③ Drain

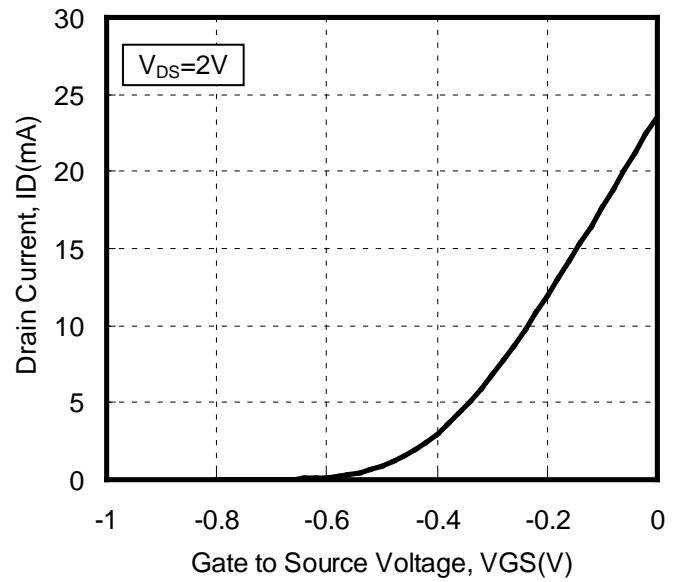
(GD-30)

TYPICAL CHARACTERISTICS (Ta=25°C)

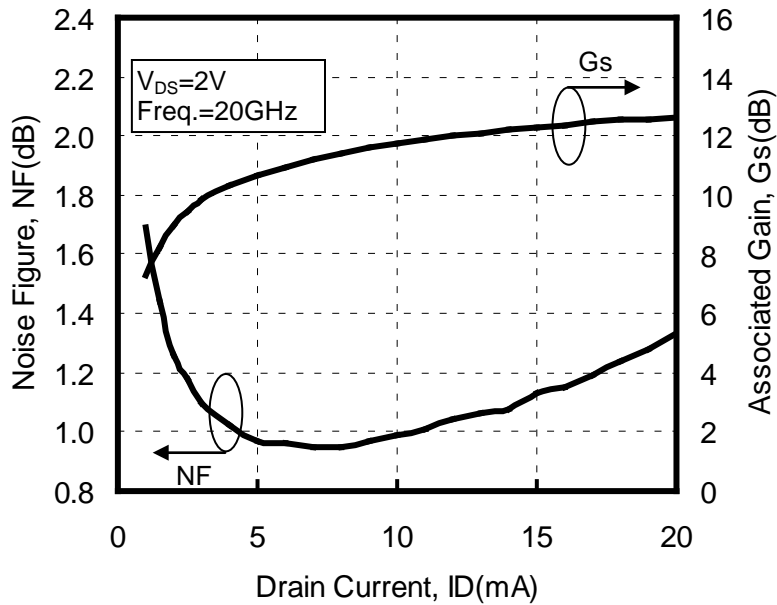
I_D vs. V_{DS}



I_D vs. V_{GS}



NF & G_s vs. I_D

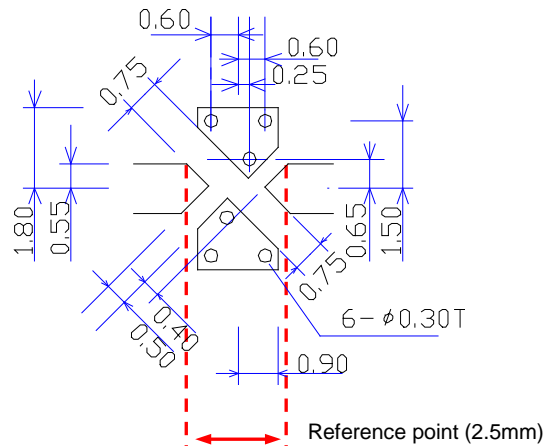


S PARAMETERS (Ta=25°C, VDS=2V, ID=10mA)

Freq. GHz	S11		S21		S12		S22	
	Magn.	Angle	Magn.	Angle	Magn.	Angle	Magn.	Angle
1	0.986	-12.3	4.240	166.2	0.011	79.8	0.743	-9.7
2	0.971	-24.5	4.301	153.3	0.022	70.5	0.732	-19.7
3	0.948	-37.0	4.261	140.2	0.033	61.0	0.716	-29.9
4	0.918	-50.2	4.349	126.5	0.043	51.2	0.692	-40.4
5	0.875	-64.4	4.414	112.1	0.052	40.9	0.661	-51.4
6	0.826	-79.3	4.408	97.7	0.060	30.6	0.625	-62.8
7	0.764	-95.4	4.417	82.5	0.067	20.0	0.580	-74.8
8	0.686	-113.2	4.324	67.0	0.071	7.2	0.522	-87.3
9	0.615	-131.4	4.167	52.2	0.074	-4.5	0.466	-99.8
10	0.546	-149.1	3.994	38.5	0.068	-13.8	0.411	-109.8
11	0.508	-167.4	3.863	25.5	0.064	-20.2	0.375	-120.2
12	0.493	173.4	3.764	12.2	0.062	-23.7	0.352	-132.4
13	0.481	153.9	3.631	-1.0	0.058	-30.1	0.318	-145.2
14	0.494	135.2	3.539	-14.2	0.056	-34.2	0.298	-158.6
15	0.531	118.7	3.504	-28.9	0.056	-33.4	0.305	-174.4
16	0.568	102.2	3.363	-44.0	0.057	-36.8	0.312	165.8
17	0.607	86.3	3.147	-59.0	0.061	-40.7	0.324	142.6
18	0.642	72.8	2.923	-74.2	0.067	-46.8	0.348	121.3
19	0.673	60.2	2.644	-88.1	0.070	-56.8	0.381	100.9
20	0.704	48.8	2.401	-99.6	0.070	-65.1	0.414	82.3
21	0.723	38.2	2.215	-112.4	0.071	-75.5	0.452	67.3
22	0.727	28.5	2.006	-125.4	0.074	-81.3	0.489	54.1
23	0.742	20.1	1.826	-136.0	0.072	-91.2	0.525	44.1
24	0.746	13.9	1.650	-145.8	0.073	-103.1	0.563	35.0
25	0.759	7.0	1.549	-155.7	0.071	-111.4	0.601	26.8
26	0.777	-0.8	1.450	-166.9	0.067	-118.4	0.628	18.7

NOISE PARAMETERS (Ta=25°C, VDS=2V, ID=10mA)

Freq. GHz	NFmin dB	Γ_{opt}		Rn/50
		Magn.	Angle	
12	0.45	0.414	146.1	0.06
13	0.52	0.356	167.0	0.05
14	0.58	0.314	-171.5	0.07
15	0.65	0.292	-149.9	0.08
16	0.72	0.292	-128.2	0.11
17	0.78	0.319	-106.8	0.14
18	0.85	0.373	-85.6	0.19
19	0.90	0.458	-64.5	0.26
20	0.95	0.577	-43.8	0.38



Recommended foot pattern; RO4003C/ROGERS (εr=3.38, t=0.51mm)

Note: We are ready to provide nonlinear model for ADS and MWO users. If you are interested, please contact our sales offices.

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