

DESCRIPTION

The MGF4951A/MGF4952A super-low noise HEMT (High Electron Mobility Transistor) is designed for use in C to K band amplifiers.

The lead-less ceramic package assures minimum parasitic losses.

FEATURES

Low noise figure @ f=12GHz
 MGF4951A : NFmin. = 0.40dB (Typ.)
 MGF4952A : NFmin. = 0.60dB (Typ.)

High associated gain @ f=12GHz
 Gs = 12.0dB (Typ.)

APPLICATION

C to K band low noise amplifiers

QUALITY GRADE

GG

RECOMMENDED BIAS CONDITIONS

V_{DS}=2V , I_D=10mA

ORDERING INFORMATION

Tape & reel 3000pcs./reel

Outline Drawing

Fig.1

MITSUBISHI Proprietary

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ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V _{GDO}	Gate to drain voltage	-4	V
V _{GSO}	Gate to source voltage	-4	V
I _D	Drain current	60	mA
PT	Total power dissipation	50	mW
T _{ch}	Channel temperature	125	°C
T _{stg}	Storage temperature	-65 to +125	°C

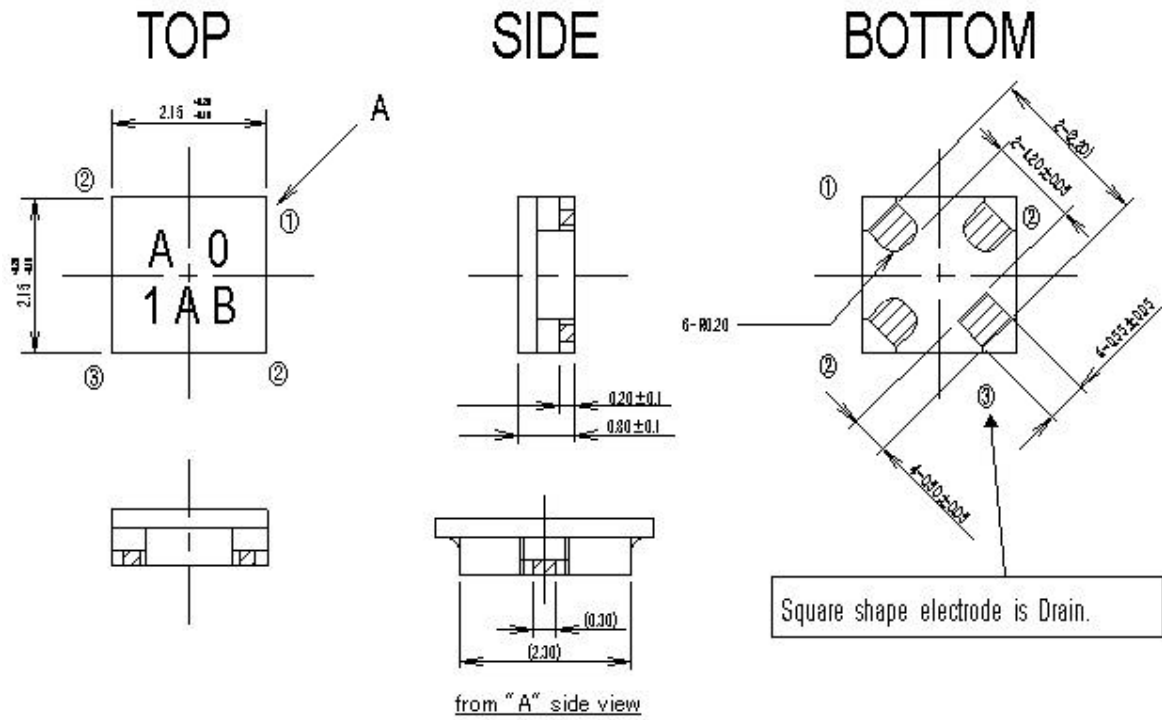
ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit	
			MIN.	TYP.	MAX		
V _{(BR)GDO}	Gate to drain breakdown voltage	I _G =-10μA	-3	--	--	V	
I _{GSS}	Gate to source leakage current	V _{GS} =-2V, V _{DS} =0V	--	--	50	μA	
I _{DSS}	Saturated drain current	V _{GS} =0V, V _{DS} =2V	15	--	60	mA	
V _{GS(off)}	Gate to source cut-off voltage	V _{DS} =2V, I _D =500μA	-0.1	--	-1.5	V	
gm	Transconductance	V _{DS} =2V, I _D =10mA	--	70	--	mS	
Gs	Associated gain	V _{DS} =2V,	11.0	12.0	--	dB	
NFmin.	Minimum noise figure	I _D =10mA	MGF4951A	--	0.40	0.50	dB
		f=12GHz	MGF4952A	--	0.60	0.80	dB

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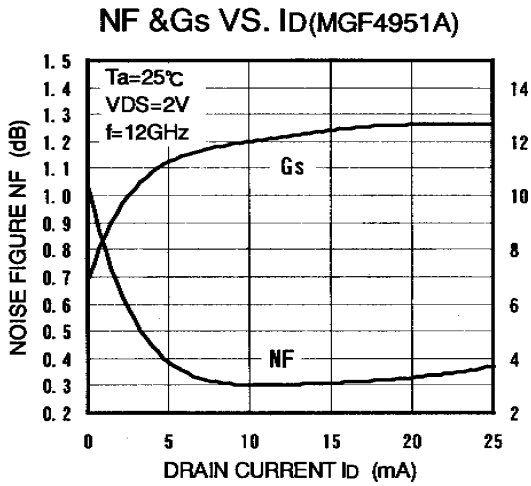
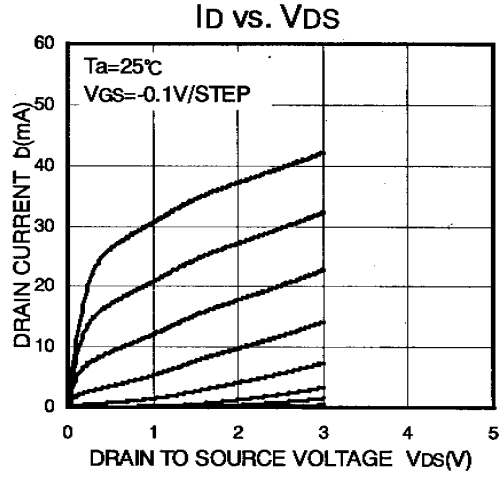
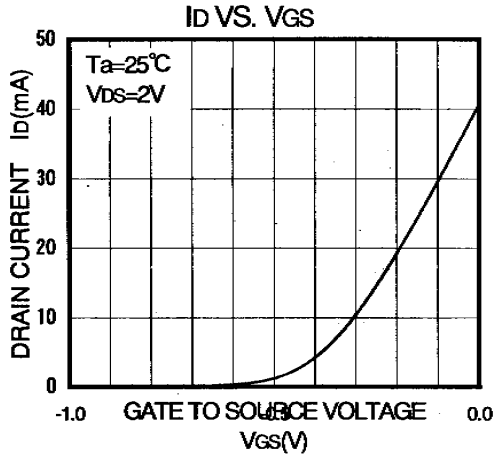
Fig.1

Unit : mm



- ① Gate
- ② Source
- ③ Drain

TYPICAL CHARACTERISTICS (Ta=25°C)



S PARAMETERS

(Ta=25°C,VDS=2V,ID=10mA)

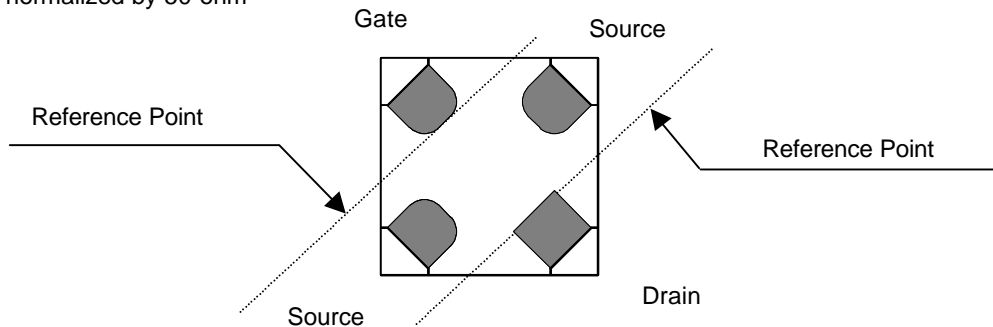
f (GHz)	S11		S21		S12		S22	
	Magn.	Angle	Magn.	Angle	Magn.	Angle	Magn.	Angle
1.0	0.978	-14.5	4.800	163.6	0.019	78.3	0.525	-13.5
2.0	0.930	-26.3	4.857	152.8	0.037	72.5	0.513	-22.5
3.0	0.884	-43.8	4.702	133.4	0.053	59.5	0.491	-37.6
4.0	0.818	-59.6	4.514	119.5	0.066	51.1	0.458	-47.5
5.0	0.768	-71.1	4.224	108.2	0.076	44.7	0.449	-54.6
6.0	0.722	-80.2	4.008	98.9	0.084	40.1	0.444	-58.7
7.0	0.681	-88.9	3.841	89.8	0.092	36.6	0.439	-61.2
8.0	0.652	-100.4	3.681	81.5	0.099	33.6	0.440	-68.2
9.0	0.627	-114.4	3.540	74.7	0.108	30.9	0.444	-70.2
10.0	0.593	-123.2	3.476	69.5	0.117	28.7	0.442	-72.3
11.0	0.542	-133.8	3.474	65.5	0.130	26.6	0.418	-76.0
12.0	0.475	-148.6	3.487	62.5	0.142	24.8	0.380	-78.3
13.0	0.406	-178.7	3.458	60.2	0.153	23.4	0.326	-82.4
14.0	0.333	147.3	3.415	58.5	0.162	22.4	0.234	-90.5
15.0	0.298	110.1	3.309	57.2	0.172	21.6	0.132	-83.7
16.0	0.338	81.5	3.150	56.2	0.175	21.0	0.068	-20.3
17.0	0.443	60.0	2.965	55.5	0.176	20.6	0.169	25.0
18.0	0.564	44.4	2.670	55.1	0.171	20.3	0.301	26.1
19.0	0.675	32.1	2.323	54.8	0.159	20.1	0.431	21.3
20.0	0.763	18.5	2.030	54.6	0.146	19.9	0.537	15.7
21.0	0.846	8.8	1.714	54.5	0.133	19.8	0.612	4.5
22.0	0.892	1.4	1.457	54.4	0.119	19.7	0.684	1.2
23.0	0.912	-4.8	1.233	54.3	0.104	19.6	0.749	-2.5
24.0	0.927	-9.4	1.026	54.2	0.093	19.5	0.796	-5.5
25.0	0.932	-14.0	0.864	54.1	0.080	19.4	0.843	-7.1
26.0	0.933	-18.4	0.732	54.0	0.069	19.3	0.881	-8.6

NOISE PARAMETERS

(Ta=25°C,VDS=2V,ID=10mA)

f (GHz)	Gamma-opt		Rn (ohm)	NF (dB)
	Magn.	Angle		
4.0	0.64	49.7	0.21	0.21
8.0	0.61	100.5	0.12	0.31
12.0	0.55	143.4	0.04	0.45
14.0	0.51	158.9	0.03	0.52
18.0	0.41	172.5	0.06	0.66

Note) Rn is normalized by 50-ohm



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