

**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

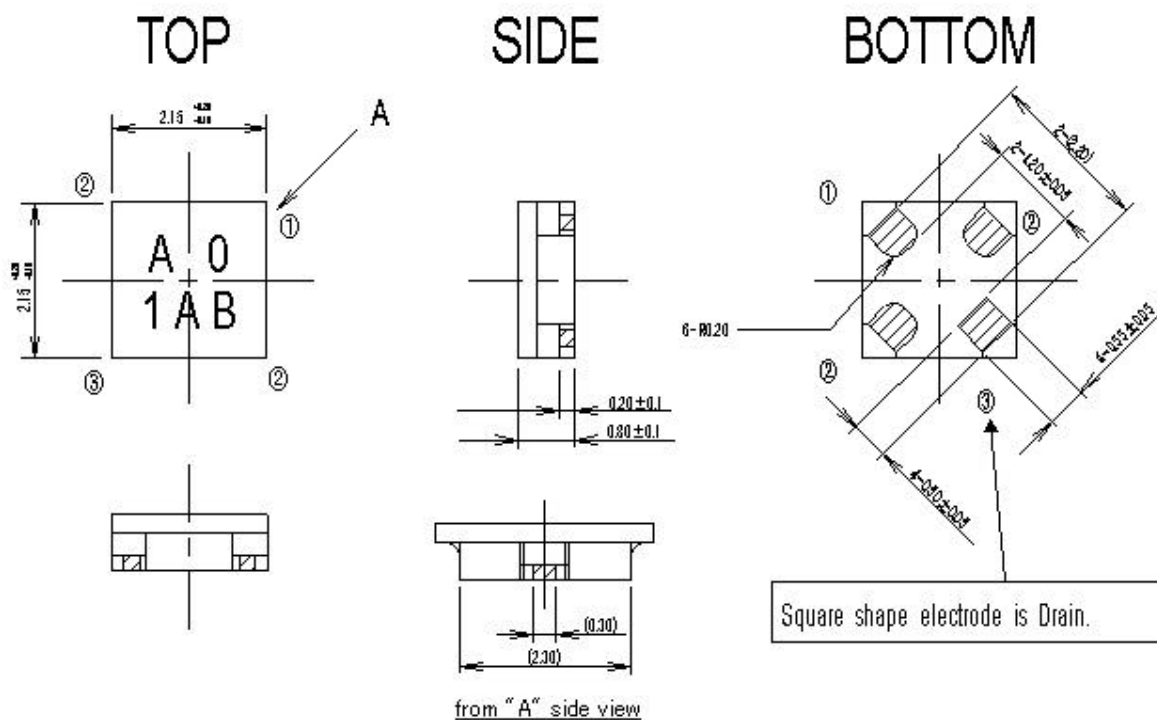
**ELECTRICAL CHARACTERISTICS** (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			MIN.	TYP.	MAX	
$V_{(BR)GDO}$	Gate to drain breakdown voltage	$I_G=-10\mu A$	-3	--	--	V
$I_{GSS}$	Gate to source leakage current	$V_{GS}=-2V, V_{DS}=0V$	--	--	50	$\mu A$
$I_{DSS}$	Saturated drain current	$V_{GS}=0V, V_{DS}=2V$	15	--	60	mA
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS}=2V, I_D=500\mu A$	-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				

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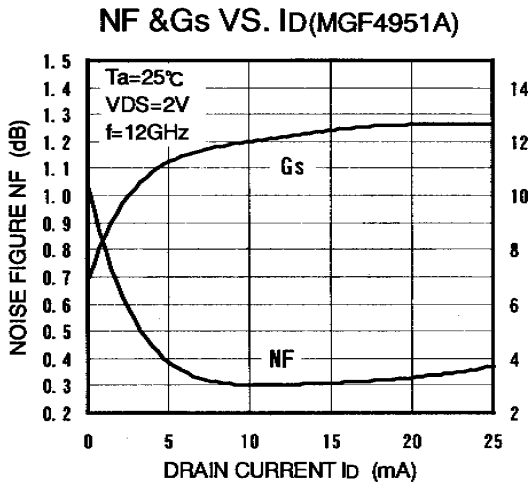
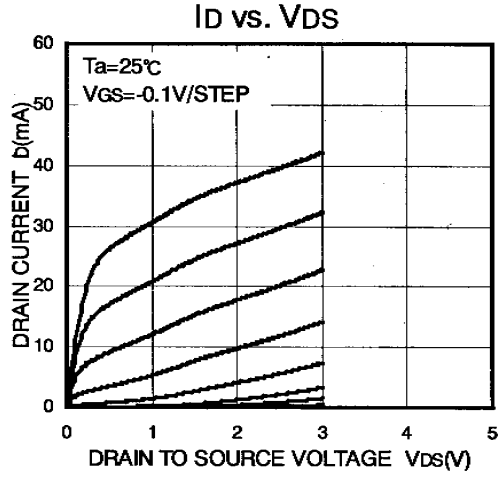
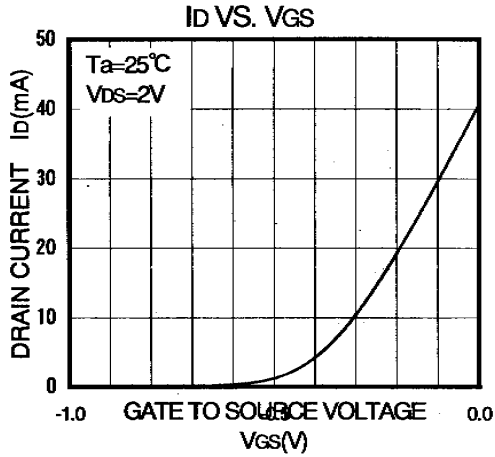
Fig.1

Unit : mm



- ① Gate
- ② Source
- ③ Drain

TYPICAL CHARACTERISTICS (Ta=25°C)



S PARAMETERS

(Ta=25°C,VDS=2V,ID=10mA)

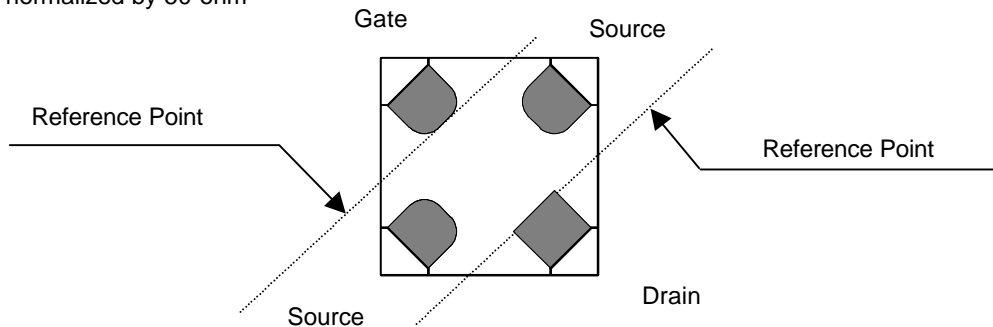
f (GHz)	S11		S21		S12		S22	
	Magn.	Angle	Magn.	Angle	Magn.	Angle	Magn.	Angle
1.0	0.978	-14.5	4.800	163.6	0.019	78.3	0.525	-13.5
2.0	0.930	-26.3	4.857	152.8	0.037	72.5	0.513	-22.5
3.0	0.884	-43.8	4.702	133.4	0.053	59.5	0.491	-37.6
4.0	0.818	-59.6	4.514	119.5	0.066	51.1	0.458	-47.5
5.0	0.768	-71.1	4.224	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	45.6	0.099	27.8	0.440	-68.2
9.0	0.627	-17.3	3.540	66.6	0.108	24.0	0.444	-70.2
10.0	0.593	-114.4	3.476	57.5	0.117	21.3	0.442	-72.3
11.0	0.542	-123.2	3.474	47.7	0.130	15.6	0.418	-76.0
12.0	0.475	-133.8	3.487	37.0	0.142	9.6	0.380	-78.3
13.0	0.406	-148.6	3.458	25.5	0.153	2.4	0.326	-82.4
14.0	0.333	-178.7	3.415	7.5	0.162	-11.0	0.234	-90.5
15.0	0.298	147.3	3.309	-5.6	0.172	-20.2	0.132	-83.7
16.0	0.338	110.1	3.150	-20.1	0.175	-30.0	0.068	-20.3
17.0	0.443	81.5	2.965	-34.2	0.176	-39.6	0.169	25.0
18.0	0.564	60.0	2.670	-48.8	0.171	-50.4	0.301	26.1
19.0	0.675	44.4	2.323	-62.6	0.159	-60.0	0.431	21.3
20.0	0.763	32.1	2.030	-74.2	0.146	-69.4	0.537	15.7
21.0	0.846	18.5	1.714	-90.8	0.133	-80.3	0.612	4.5
22.0	0.892	8.8	1.457	-101.1	0.119	-86.8	0.684	1.2
23.0	0.912	1.4	1.233	-109.9	0.104	-92.2	0.749	-2.5
24.0	0.927	-4.8	1.026	-118.4	0.093	-95.3	0.796	-5.5
25.0	0.932	-9.4	0.864	-124.7	0.080	-98.0	0.843	-7.1
26.0	0.933	-14.0	0.732	-130.2	0.069	-100.6	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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