

DESCRIPTION

The MGF495*A 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. = 0.45dB (TYP.)
 MGF4952A : NFmin. = 0.65dB (TYP.)
- High associated gain @ f=12GHz
 Gs = 12.0dB (TYP.)

APPLICATION

C to K band low noise amplifiers.

QUALITY GRADE

GG

RECOMMENDED BIAS CONDITIONS

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

Outline Drawing

Fig.1

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.

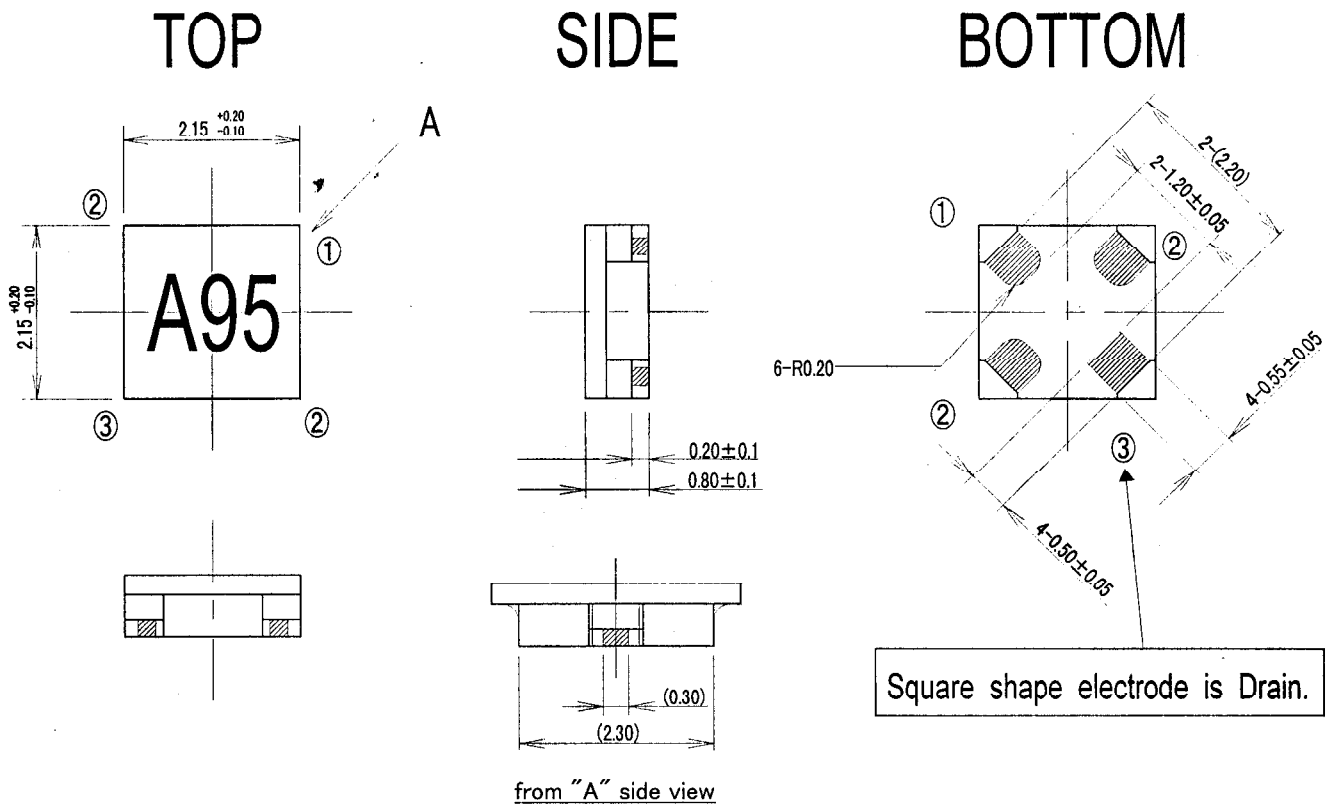
ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

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	μA	
I_{DSS}	Saturated drain current	$V_{GS}=0V, V_{DS}=2V$	--	35	--	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	$V_{DS}=2V, I_D=10mA$	--	75	--	mS	
Gs	Associated gain	$V_{DS}=2V$	11.0	12.0	--	dB	
NFmin.	Minimum noise figure	$I_D=10mA$					
		f=12GHz	MGF4951A	--	0.45	0.50	dB
			MGF4952A	--	0.65	0.80	dB

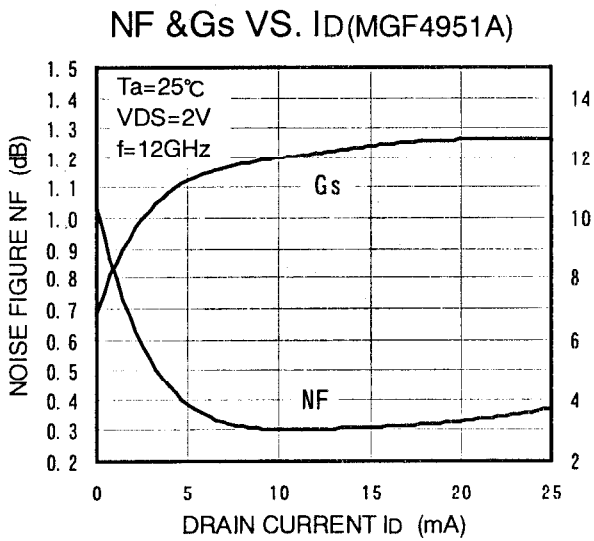
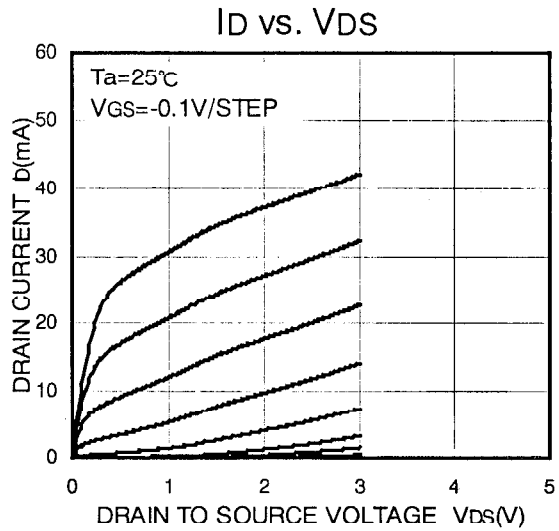
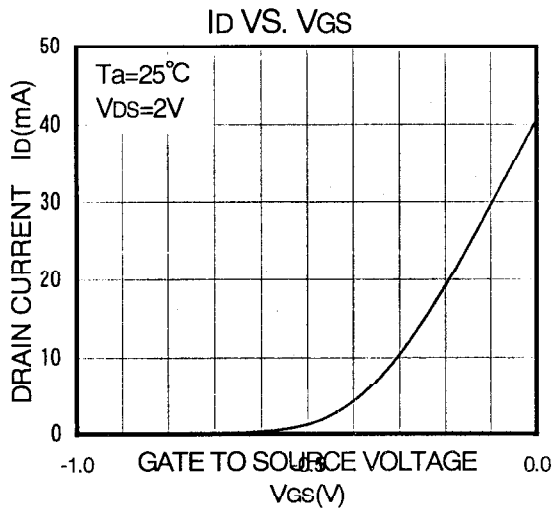
Fig.1



unit : mm

- ① Gate
- ② Source
- ③ Drain

TYPICAL CHARACTERISTICS (Ta=25°C)



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

Freq. (GHz)	S11		S21		S12		S22		K	MSG/MAG (dB)
	Magn.	Angle	Magn.	Angle	Magn.	Angle	Magn.	Angle		
1.0	0.991	-12.7	5.721	157.6	0.034	71.6	0.508	-2.3	0.35	22.3
2.0	0.965	-29.1	5.551	142.5	0.050	63.1	0.478	-17.0	0.38	20.4
3.0	0.880	-45.1	5.240	127.0	0.064	52.4	0.449	-31.9	0.53	19.1
4.0	0.820	-60.4	4.852	111.6	0.076	41.1	0.421	-46.5	0.61	18.0
5.0	0.760	-74.8	4.443	96.8	0.086	30.1	0.395	-60.9	0.70	17.1
6.0	0.696	-88.1	4.052	82.5	0.094	20.0	0.370	-75.1	0.79	16.3
7.0	0.644	-100.4	3.711	68.8	0.101	10.6	0.346	-89.0	0.88	15.7
8.0	0.597	-111.7	3.437	55.5	0.106	1.9	0.324	-102.7	0.97	15.1
9.0	0.554	-122.3	3.235	42.6	0.110	-6.6	0.303	-116.1	1.05	13.3
10.0	0.517	-132.4	3.103	29.8	0.113	-15.0	0.284	-129.3	1.12	12.3
11.0	0.485	-142.4	3.209	16.8	0.115	-23.6	0.266	-142.2	1.18	11.7
12.0	0.461	-152.7	2.995	3.4	0.117	-32.4	0.250	-154.9	1.21	11.3
13.0	0.444	-164.0	2.982	-11.0	0.118	-41.7	0.235	-167.4	1.24	11.1
14.0	0.435	-176.9	2.971	-27.0	0.120	-51.4	0.221	-179.6	1.25	11.0
15.0	0.435	167.8	2.948	-45.9	0.121	-61.9	0.209	168.4	1.25	10.8
16.0	0.444	149.2	2.908	-69.0	0.123	-73.6	0.198	156.7	1.25	10.7
17.0	0.464	126.3	2.861	-98.6	0.126	-87.3	0.188	145.2	1.25	10.6
18.0	0.494	98.2	2.840	-137.5	0.129	-104.8	0.180	134.0	1.22	10.6

Noise Parameters (Ta=25°C, VDS=2V, ID=10mA)

f (GHz)	Γ_{opt}		Rn (Ω)	NF(dB)		Gs (dB)
	Magn.	Angle		MGF4951A	MGF4952A	
12	0.32	132	3.3	0.45	0.65	12.0