MGF4953A/MGF4954A

SUPER LOW NOISE InGaAs HEMT (Leadless Ceramic Package)

DESCRIPTION

The MGF4953A/MGF4954A 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
MGF4953A : NFmin. = 0.45dB (Typ.)
MGF4954A : NFmin. = 0.65dB (Typ.)

● High associated gain @ f=12GHz
Gs = 13.5dB (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 measure such as (I) placement of substitutive , auxiliary circuits , (ii) use of non-flammble material or (iii) prevention against any malfunction or mishap.

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

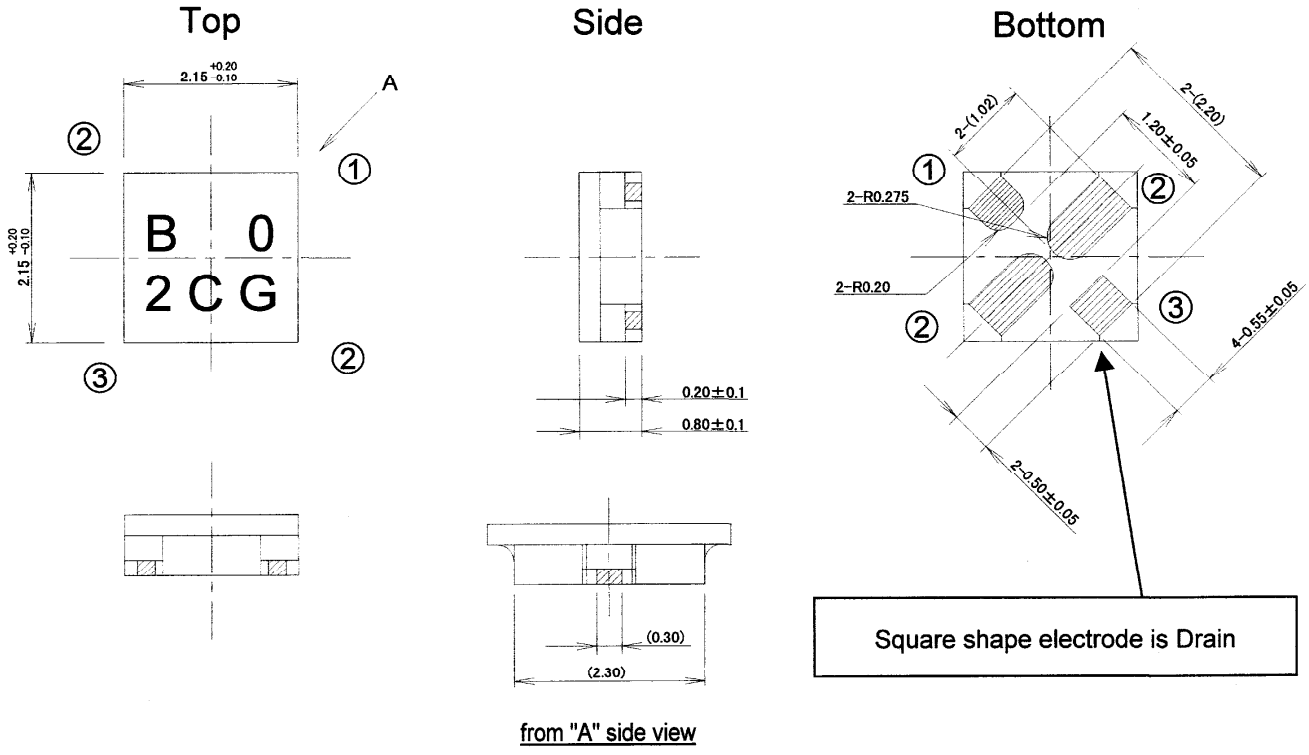
Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-4	V
V_{GSO}	Gate to source voltage	-4	V
I_D	Drain current	60	mA
PT	Total power dissipation	50	mW
T_{ch}	Channel temperature	125	°C
T_{stg}	Storage temperature	-65 to +125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions		Limits			Unit
				MIN.	TYP.	MAX.	
$V_{(BR)GDO}$	Gate to drain breakdown voltage	I_G=-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		10	--	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,		12.0	13.5	--	dB
NFmin.	Minimum noise figure	I_D=10mA	MGF4953A	--	0.45	0.50	dB
		f=12GHz	MGF4954A	--	0.65	0.80	dB

Fig.1

Unit : mm



from "A" side view

① Gate
② Source
③ Drain

S PARAMETERS

(Ta=25°C,VDS=2V,ID=10mA)

f	S11		S21		S12		S22	
(GHz)	Magn.	Angle	Magn.	Angle	Magn.	Angle	Magn.	Angle
4.0	0.913	-47.9	5.312	133.3	0.056	51.2	0.522	-43.9
5.0	0.844	-62.3	5.273	121.7	0.069	42.7	0.521	-52.6
6.0	0.815	-75.8	5.033	108.8	0.075	33.9	0.524	-69.6
7.0	0.827	-89.1	4.740	98.5	0.080	26.0	0.481	-78.7
8.0	0.826	-99.4	4.541	89.3	0.087	19.8	0.483	-84.6
9.0	0.801	-107.7	4.420	80.3	0.096	13.9	0.472	-91.6
10.0	0.764	-115.5	4.348	72.1	0.105	6.5	0.444	-97.3
11.0	0.725	-127.0	4.334	62.3	0.115	-1.0	0.416	-107.2
12.0	0.698	-140.9	4.256	51.5	0.119	-10.1	0.402	-119.6
13.0	0.669	-153.9	4.168	40.8	0.126	-18.3	0.382	-130.7
14.0	0.641	-168.8	4.095	30.8	0.141	-27.2	0.326	-143.6
15.0	0.612	168.1	3.743	18.4	0.143	-37.3	0.249	-165.1
16.0	0.570	155.3	3.366	16.2	0.137	-48.3	0.181	174.7
17.0	0.594	152.8	3.986	6.3	0.132	-51.7	0.202	-168.3
18.0	0.577	141.4	3.960	-8.5	0.139	-57.1	0.212	-176.8