DESCRIPTION

The MGF4934CM super-low noise HEMT (High Electron Mobility Transistor) is designed for use in S to Ku band amplifiers.

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

FEATURES

Low noise figure @ f=12GHz
NFmin. = 0.50dB (Typ.)

High associated gain @ f=12GHz
Gs = 13.0dB (Typ.)

APPLICATION

S to Ku 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

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-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	-3	V
V_{GSO}	Gate to source voltage	-3	V
I_D	Drain current	IDSS	mA
PT	Total power dissipation	50	mW
T_{ch}	Channel temperature	125	°C
T_{stg}	Storage temperature	-55 to +125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

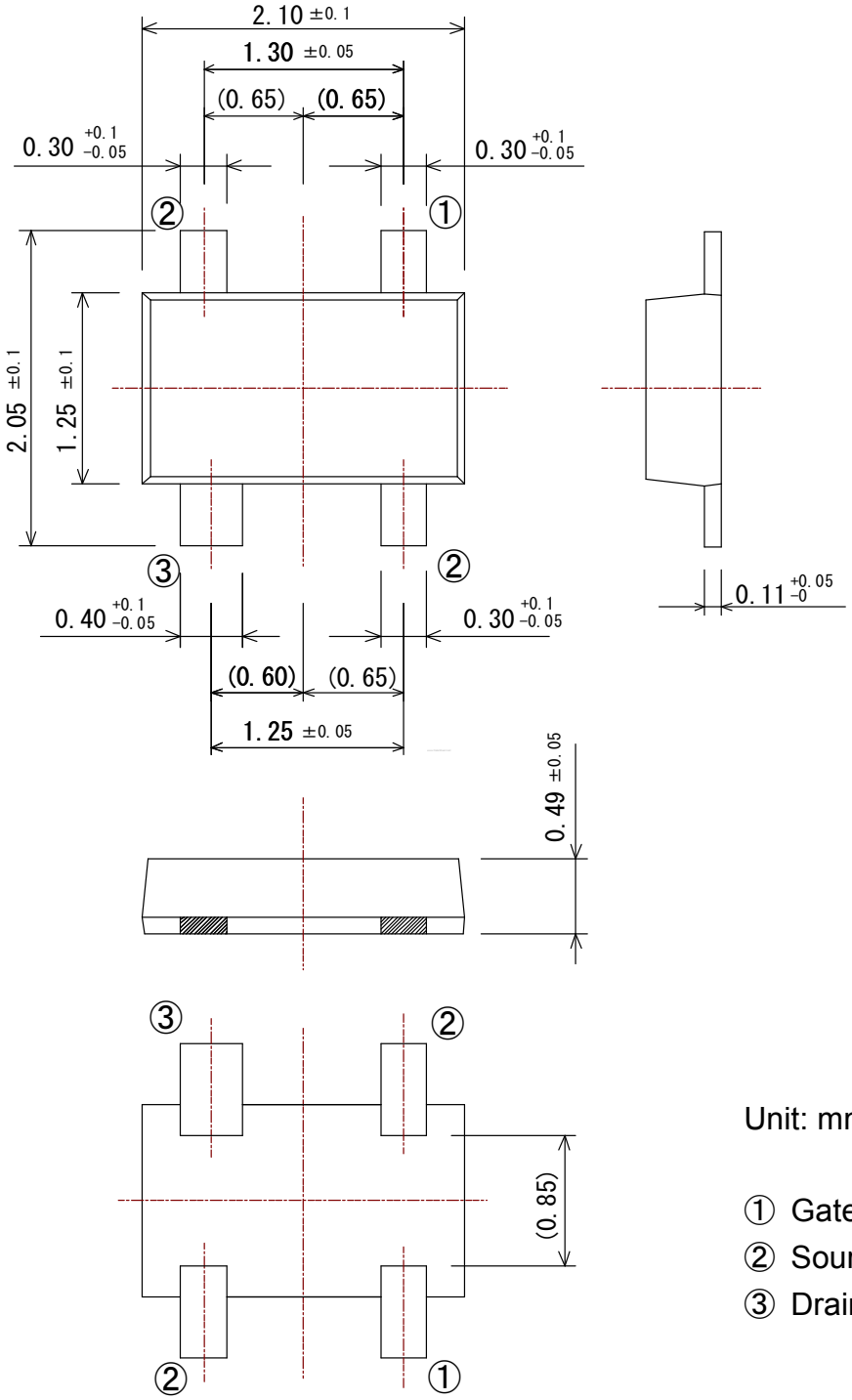
Symbol	Parameter	Test conditions	Limits			Unit
			MIN.	TYP.	MAX	
$V_{(BR)GDO}$	Gate to drain breakdown voltage	I_G=-10μA	-3.5	--	--	V
I_{GSS}	Gate to source leakage current	V_{GS}=-2V,V_{DS}=0V	--	--	50	μA
I_{DSS}	Saturated drain current	V_{GS}=0V,V_{DS}=2V	12	--	60	mA
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=2V,I_D=500μA	-0.1	--	-1.5	V
Gs	Associated gain	V_{DS}=2V,	11.5	13.0	--	dB
NFmin.	Minimum noise figure	I_D=10mA,f=12GHz	--	0.50	0.75	dB

Fig.1

Top

Side

Bottom



Unit: mm

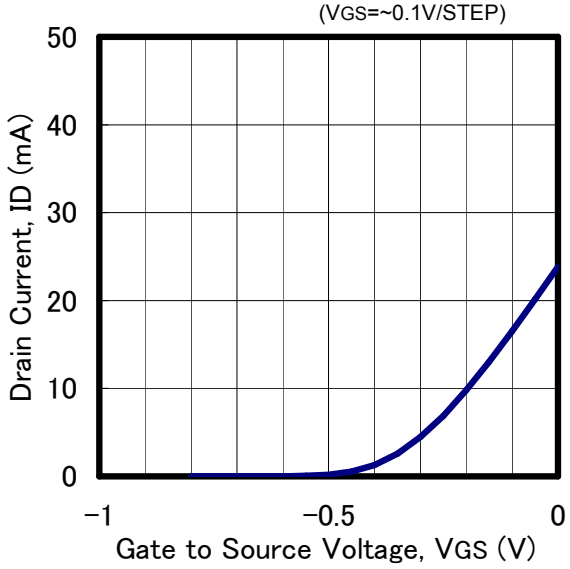
① Gate
② Source
③ Drain

(GD-30)

TYPICAL CHARACTERISTICS (Ta=25°C)

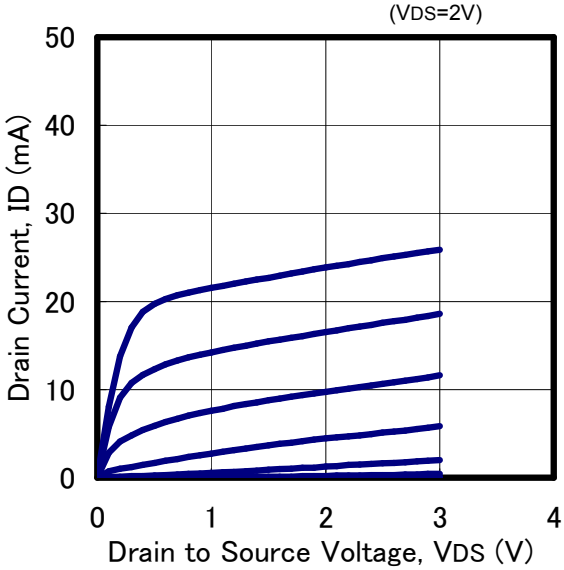
ID vs. VDS

(VGS=-0.1V/STEP)

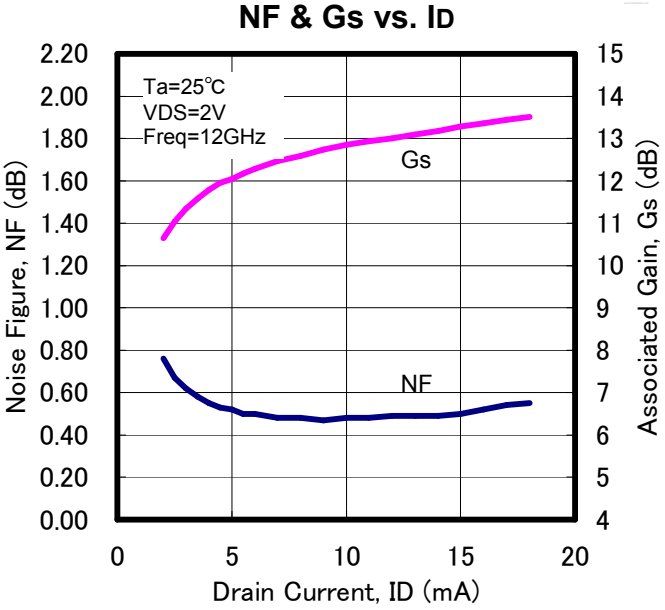


ID vs. VGS

(VDS=2V)



NF & Gs vs. ID



S PARAMETERS

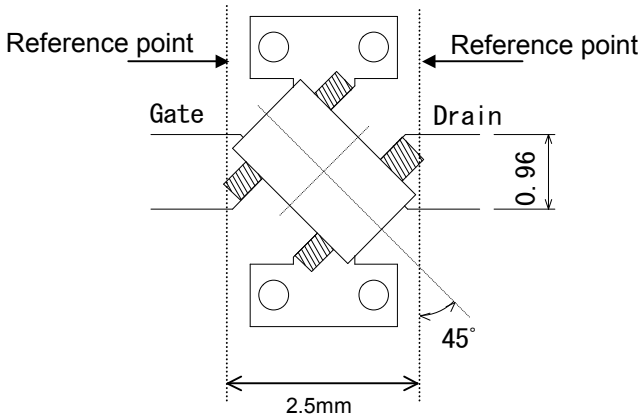
(VDS=2V,ID=10mA,Ta=room temperature)

Freq.	S11		S21		S12		S22	
(GHz)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)
1	0.990	−16.3	5.156	158.7	0.032	79.5	0.758	−9.2
2	0.985	−30.1	4.971	145.3	0.037	70.2	0.728	−19.5
3	0.930	−43.8	4.787	131.9	0.042	60.9	0.698	−29.9
4	0.860	−57.5	4.602	118.5	0.047	51.6	0.668	−40.3
5	0.802	−72.1	4.470	103.9	0.055	43.4	0.634	−50.0
6	0.737	−87.3	4.343	89.3	0.061	36.2	0.594	−59.5
7	0.668	−103.2	4.212	74.6	0.066	29.7	0.555	−68.9
8	0.599	−119.6	4.042	60.2	0.070	24.0	0.514	−78.3
9	0.533	−136.5	3.852	46.4	0.072	18.9	0.473	−87.3
10	0.477	−152.0	3.672	33.9	0.072	17.3	0.440	−95.2
11	0.442	−168.0	3.537	21.6	0.076	17.1	0.418	−104.2
12	0.421	175.7	3.429	9.5	0.083	17.2	0.400	−114.1
13	0.406	159.0	3.331	−2.4	0.090	15.9	0.383	−124.4
14	0.405	142.8	3.264	−14.1	0.099	14.1	0.375	−135.6
15	0.425	126.5	3.236	−26.9	0.115	10.1	0.379	−150.3
16	0.460	110.8	3.214	−40.8	0.137	5.3	0.403	−168.9
17	0.503	94.9	3.149	−54.5	0.156	−2.2	0.417	172.6
18	0.547	80.2	3.058	−68.3	0.175	−11.2	0.448	153.5

Noise Parameter

(V_{DS}=2V,I_D=10mA, Ta=room temperature))

Freq.	NFmin	Γopt		Rn
(GHz)	(dB)	(mag)	(ang)	(Ω)
1	0.25	0.97	8.2	17.5
2	0.25	0.97	14.5	15.4
3	0.26	0.94	22.9	14.0
4	0.29	0.91	30.2	12.5
5	0.30	0.88	40.2	11.0
6	0.32	0.82	48.2	9.5
7	0.35	0.74	61.2	8.0
8	0.37	0.65	75.5	6.5
9	0.39	0.57	91.3	5.0
10	0.42	0.49	108.4	3.6
11	0.46	0.44	127.0	2.6
12	0.49	0.39	146.9	1.9
13	0.53	0.34	168.2	1.8
14	0.57	0.30	−169.1	2.0



Board: εr=2.6

Thickness: 0.4mm

(4-φ0.4: through-hole)

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