DESCRIPTION

The MGF4931AM 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. = 0.6dB (Typ.)

High associated gain @ f=12GHz
Gs = 11.5dB (Typ.)

APPLICATION

S to Ku band low noise amplifiers

QUALITY GRADE

GG

RECOMMENDED BIAS CONDITIONS

V_{DS}=2V , I_D=7.5mA

Outline Drawing

Fig.1

ORDERING INFORMATION

Tape & reel 3000pcs./reel

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.

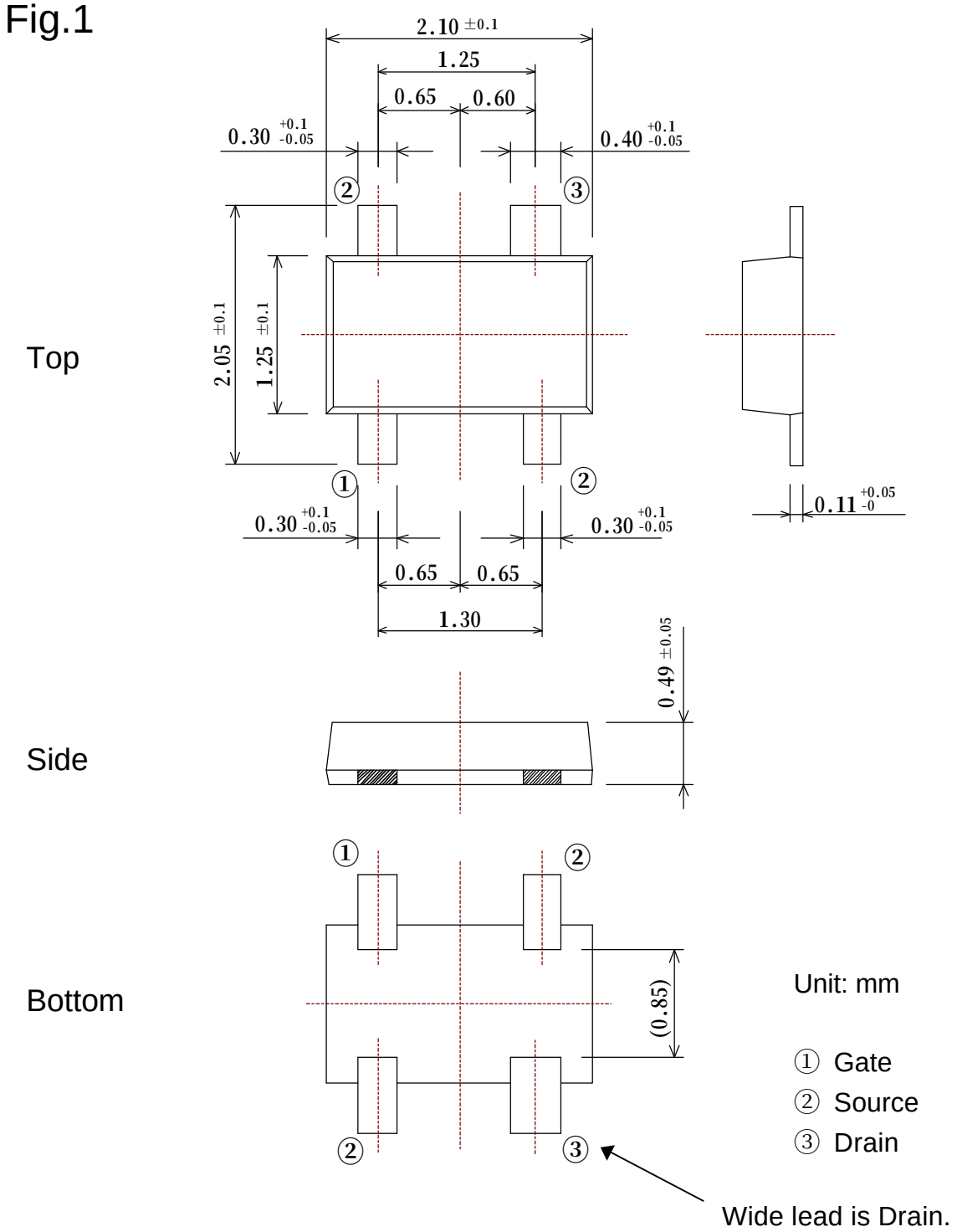
ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-4	V
V_{GSO}	Gate to source voltage	-4	V
I_D	Drain current	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	--	--	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
Gs	Associated gain	V_{DS}=2V,	10.0	11.5	--	dB
NFmin.	Minimum noise figure	I_D=7.5mA,f=12GHz	--	0.6	0.8	dB

Fig.1

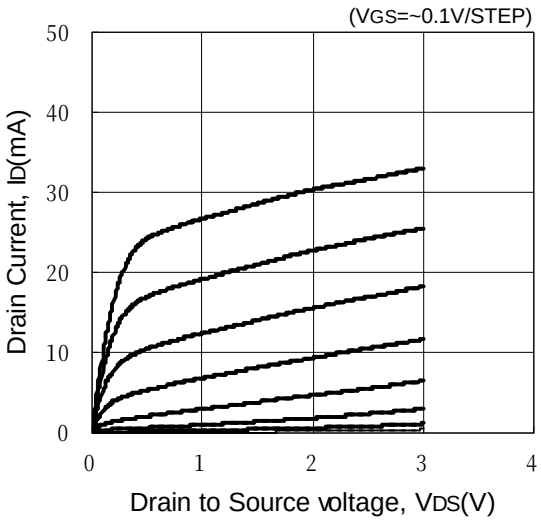


Unit: mm

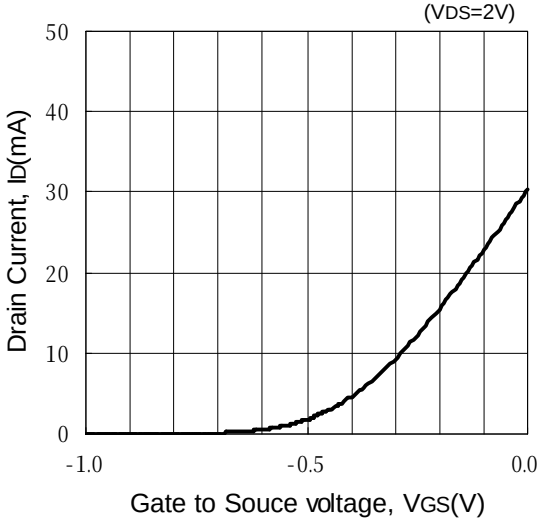
(GD-30)

TYPICAL CHARACTERISTICS (Ta=25°C)

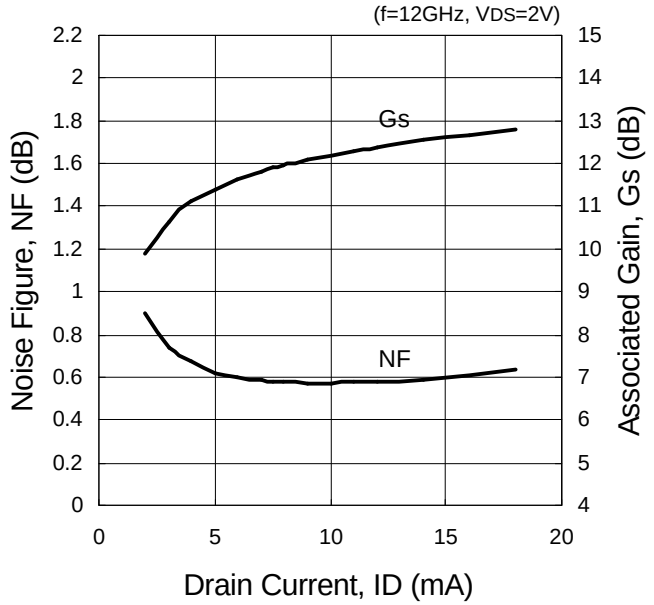
ID vs. VDS



ID vs. VGS



NF & Gs vs. ID

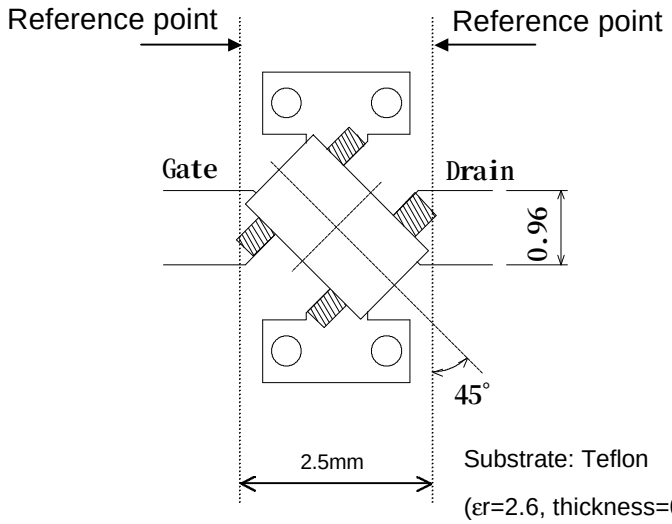


S Parameters (Conditions: V_{DS}=2V, I_D=7.5mA, Ta=25°C)

Freq.	S_{11}		S_{21}		S_{12}		S_{22}	
f (GHz)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
1	0.997	-14.6	4.101	163.3	0.016	77.8	0.732	-12.4
2	0.992	-30.0	4.175	148.0	0.033	67.7	0.707	-23.8
3	0.919	-44.7	4.122	131.5	0.047	56.8	0.675	-35.3
4	0.850	-59.1	4.132	116.7	0.059	45.9	0.634	-46.0
5	0.779	-74.9	4.110	101.9	0.069	38.7	0.604	-55.6
6	0.700	-94.1	4.003	84.5	0.075	29.2	0.506	-70.8
7	0.645	-105.9	3.925	73.2	0.080	26.5	0.484	-75.6
8	0.574	-122.0	3.863	59.9	0.088	23.3	0.454	-83.3
9	0.509	-142.8	3.734	45.5	0.094	17.5	0.407	-94.0
10	0.475	-165.1	3.523	30.1	0.096	12.1	0.375	-109.8
11	0.480	175.2	3.293	16.0	0.100	8.2	0.362	-126.9
12	0.488	157.4	3.055	1.8	0.104	4.2	0.352	-144.4
13	0.507	142.1	2.864	-10.6	0.112	1.2	0.331	-160.3
14	0.513	126.2	2.720	-22.8	0.123	-3.1	0.295	-178.0

Noise Parameters (V_{DS}=2V,I_D=7.5mA, Ta=25°C)

f	Γ_{opt}		Rn	NFmin
(GHz)	Magn.	Angle(deg.)	(Ω)	(dB)
8	0.43	105.6	13.5	0.52
12	0.33	164.0	5.6	0.59
14	0.46	-147.9	7.2	0.89



Substrate: Teflon

(εr=2.6, thickness=0.4mm)

(4-φ0.4: through-hole)

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