

**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

**MITSUBISHI Proprietary**

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**ORDERING INFORMATION**

Tape & reel 3000pcs./reel

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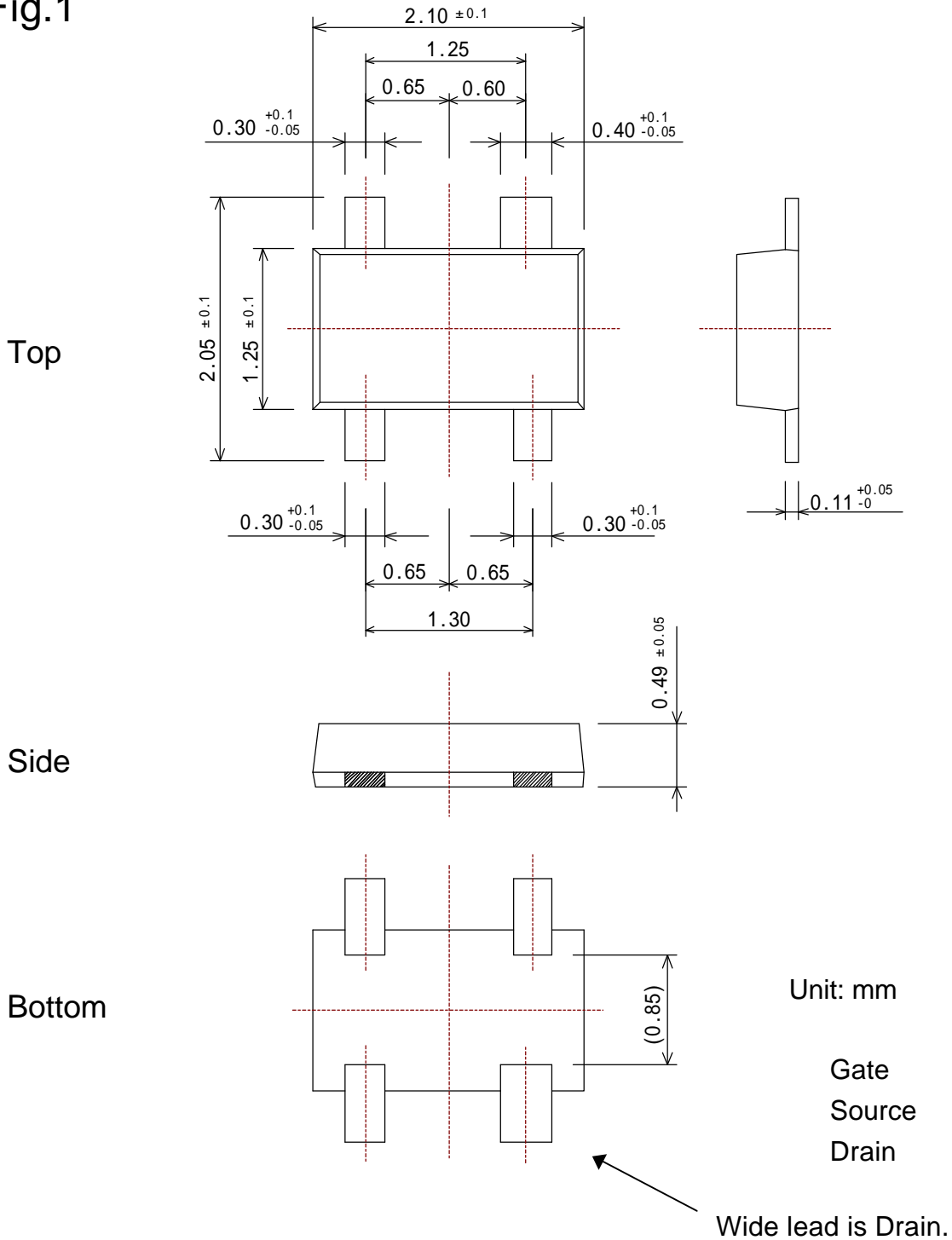
**ABSOLUTE MAXIMUM RATINGS** (Ta=25°C)

Symbol	Parameter	Ratings	Unit
$V_{GDO}$	Gate to drain voltage	-4	V
$V_{GSO}$	Gate to source voltage	-4	V
$I_D$	Drain current	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	$I_G=-10\mu A$	-3	--	--	V
$I_{GSS}$	Gate to source leakage current	$V_{GS}=-2V, V_{DS}=0V$	--	--	50	$\mu A$
$I_{DSS}$	Saturated drain current	$V_{GS}=0V, V_{DS}=2V$	10	--	60	mA
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS}=2V, I_D=500\mu A$	-0.1	--	-1.5	V
Gs	Associated gain	$V_{DS}=2V,$ $I_D=7.5mA, f=12GHz$	10.0	11.5	--	dB
NFmin.	Minimum noise figure		--	0.6	0.8	dB

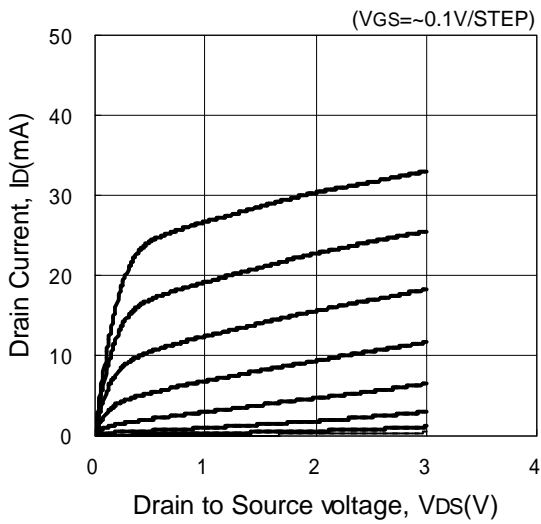
Fig.1



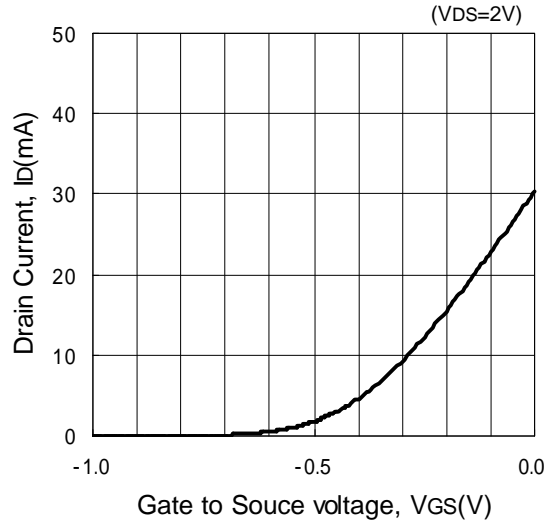
(GD-30)

TYPICAL CHARACTERISTICS (Ta=25°C)

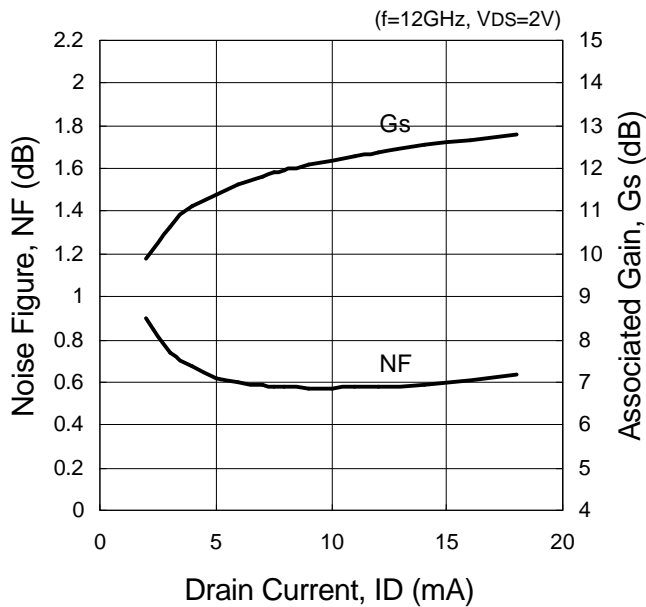
**ID vs. VDS**



**ID vs. VGS**



**NF & Gs vs. ID**

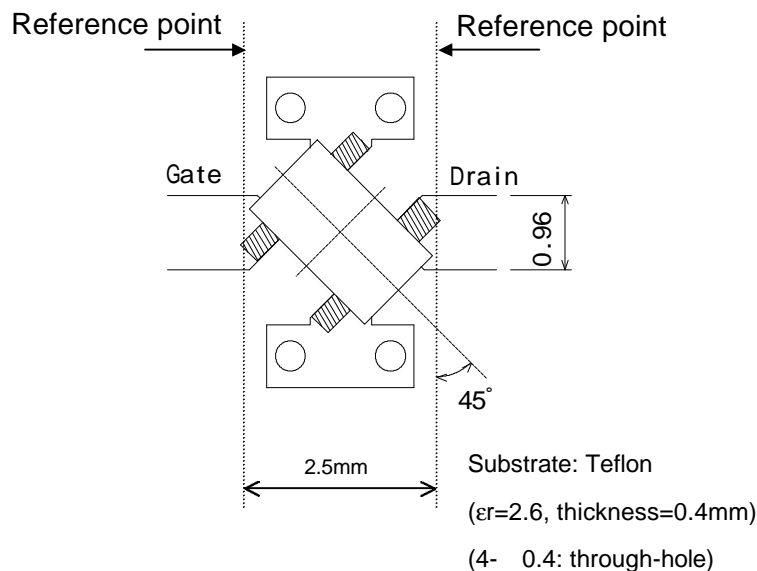


S Parameters (Conditions:  $V_{DS}=2V, I_D=7.5mA, T_a=25^\circ C$ )

Freq. f (GHz)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	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 ( $V_{DS}=2V, I_D=7.5mA, T_a=25^\circ C$ )

f (GHz)	opt		Rn	NFmin
	Magn.	Angle(deg.)	( )	(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



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