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DESCRIPTION

The MGF4961B super-low noise HEMT (High Electron Mobility Transistor) is designed for use in K band amplifiers.

FEATURES

Low noise figure @ f=20GHz
NFmin. = 0.7dB (Typ.)

High associated gain @ f=20GHz
Gs = 13.5dB (Typ.)

APPLICATION

C to K band low noise amplifiers

QUALITY GRADE

GG

RECOMMENDED BIAS CONDITIONS

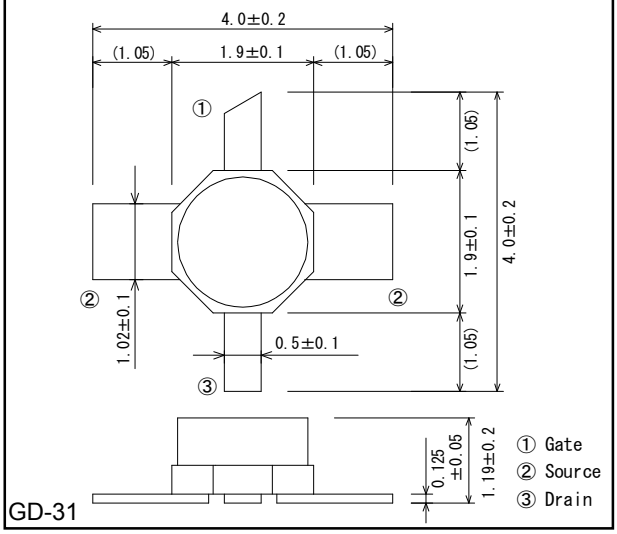
V_{DS}=2V , I_D=10mA

ORDERING INFORMATION

Tape & reel 4000pcs./reel

Outline Drawing

(unit: mm)



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.

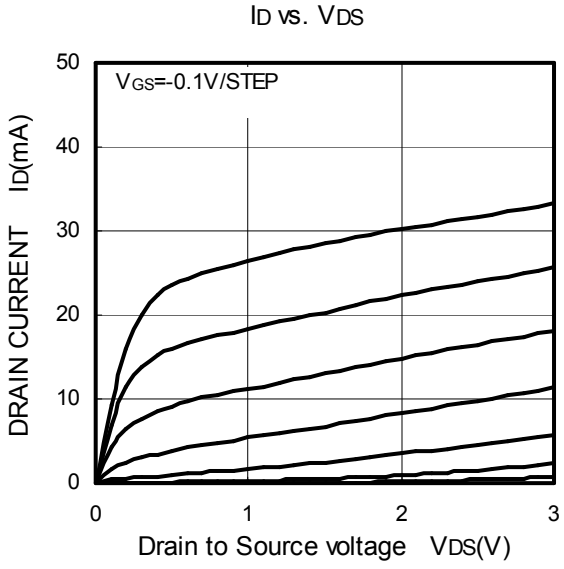
ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

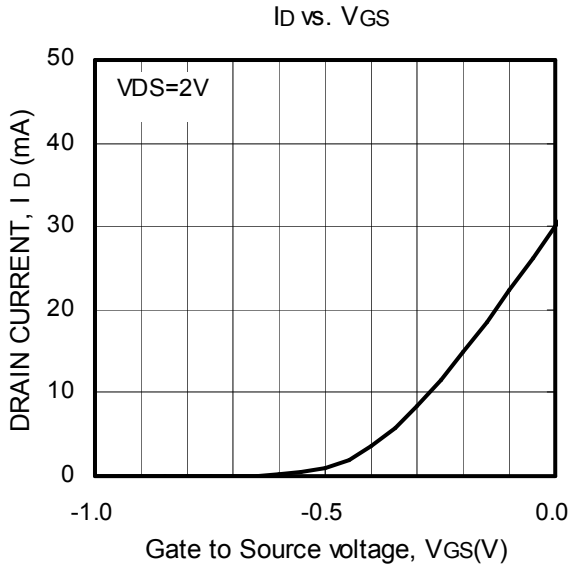
Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-4	V
V_{GSO}	Gate to source voltage	-4	V
I_D	Drain current	IDSS	mA
PT	Total power dissipation	50	mW
T_{ch}	Channel temperature	125	°C
T_{stg}	Storage temperature	-55 to +125	°C

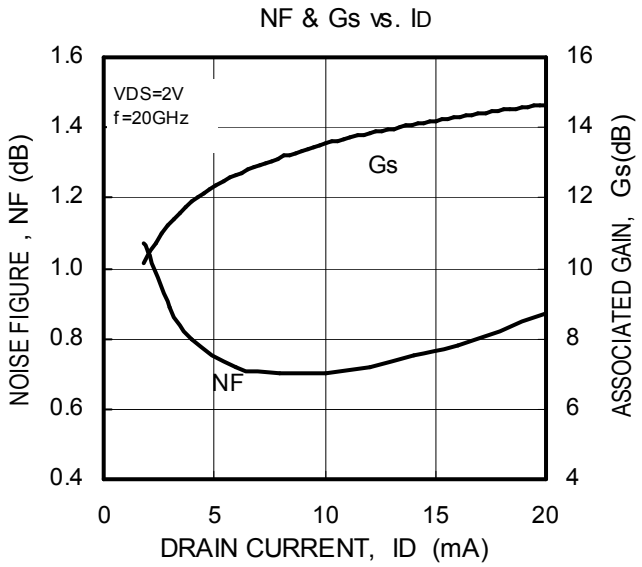
ELECTRICAL CHARACTERISTICS (Ta=25°C)

Synbol	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	15	--	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,I_D=10mA	11.5	13.5	--	dB
NFmin.	Minimum noise figure	f=20GHz	--	0.70	0.95	dB

TYPICAL CHARACTERISTICS (Ta=25°C)







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S PARAMETERS

(Ta=25°C,VDS=2V,ID=10mA)

Freq.	S11		S21		S12		S22	
(GHz)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)
1	0.991	-16.4	4.743	162.8	0.015	76.9	0.658	-13.0
2	0.967	-32.5	4.652	146.3	0.028	66.2	0.643	-25.8
3	0.928	-48.5	4.525	129.9	0.041	54.8	0.622	-38.9
4	0.886	-64.5	4.403	113.8	0.052	43.4	0.596	-51.4
5	0.835	-80.3	4.252	98.3	0.059	33.1	0.571	-63.0
6	0.782	-98.8	4.089	81.6	0.065	21.3	0.541	-76.5
7	0.729	-115.0	3.885	66.6	0.068	11.7	0.517	-87.6
8	0.682	-130.4	3.665	52.2	0.067	2.6	0.492	-98.0
9	0.637	-145.0	3.437	39.2	0.066	-6.2	0.474	-106.1
10	0.563	-155.8	3.265	28.3	0.063	-15.5	0.461	-116.0
11	0.536	-165.2	3.248	17.1	0.051	-21.9	0.461	-121.0
12	0.527	-175.0	3.266	5.0	0.043	-19.3	0.479	-128.9
13	0.520	172.8	3.303	-8.4	0.047	-17.7	0.480	-139.8
14	0.509	160.4	3.422	-21.6	0.047	-15.3	0.487	-147.7
15	0.474	145.5	3.542	-36.3	0.044	-19.1	0.489	-157.0
16	0.459	129.1	3.659	-52.3	0.052	-15.0	0.482	-167.4
17	0.449	104.5	3.881	-68.5	0.058	-26.7	0.488	-177.8
18	0.445	74.9	4.101	-89.4	0.062	-44.4	0.473	164.4
19	0.473	40.8	4.063	-111.4	0.059	-68.0	0.402	143.4
20	0.534	8.1	3.940	-134.0	0.052	-93.8	0.325	118.7
21	0.597	-21.4	3.685	-157.2	0.050	-125.1	0.251	86.6
22	0.657	-44.1	3.324	179.7	0.046	-155.7	0.198	46.3
23	0.695	-64.0	2.969	158.8	0.058	169.5	0.216	3.2
24	0.696	-79.4	2.570	138.3	0.065	148.6	0.247	-27.3
25	0.686	-93.5	2.294	119.4	0.082	128.7	0.289	-45.2
26	0.656	-105.2	2.038	100.1	0.095	118.8	0.346	-56.5

NOISE PARAMETERS

(VDS=2V,ID=10mA, Ta=25°C)

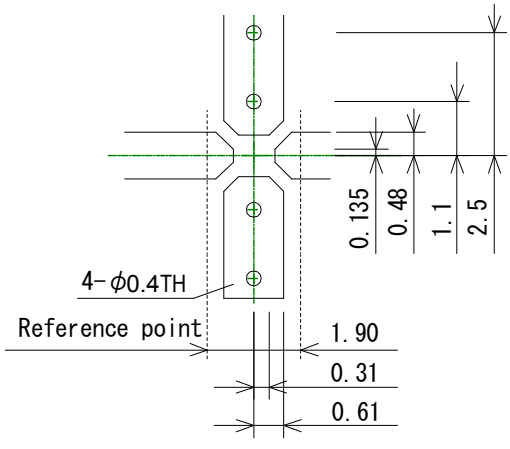
Freq.	Γopt		Rn	NFmin
(GHz)	(mag)	(ang)		(dB)
12	0.525	144.8	0.08	0.43
13	0.462	166.2	0.09	0.47
14	0.403	-174.0	0.11	0.51
15	0.348	-155.5	0.12	0.55
16	0.297	-138.3	0.13	0.58
17	0.249	-122.1	0.14	0.61
18	0.204	-106.8	0.15	0.64
19	0.186	-72.3	0.19	0.67
20	0.168	-39.5	0.23	0.70
21	0.223	-14.6	0.29	0.80
22	0.276	17.5	0.35	0.89
23	0.296	36.8	0.39	0.97
24	0.315	55.2	0.43	1.05
25	0.333	72.9	0.47	1.13
26	0.350	89.9	0.51	1.20

Note) Rn is normalized by 50ohm

S parameter measurement:

Board: εr=2.6

Thickness = 0.4mm



(Unit: mm)

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