DESCRIPTION

The MGF4935AM 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. = 0.45dB (Typ.)

High associated gain @ f=12GHz
Gs = 12.0dB (Typ.)

APPLICATION

S to Ku band low noise amplifiers

QUALITY GRADE

GG

RECOMMENDED BIAS CONDITIONS

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

Outline Drawing

Fig.1

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ORDERING INFORMATION

Tape & reel 3000pcs/reel

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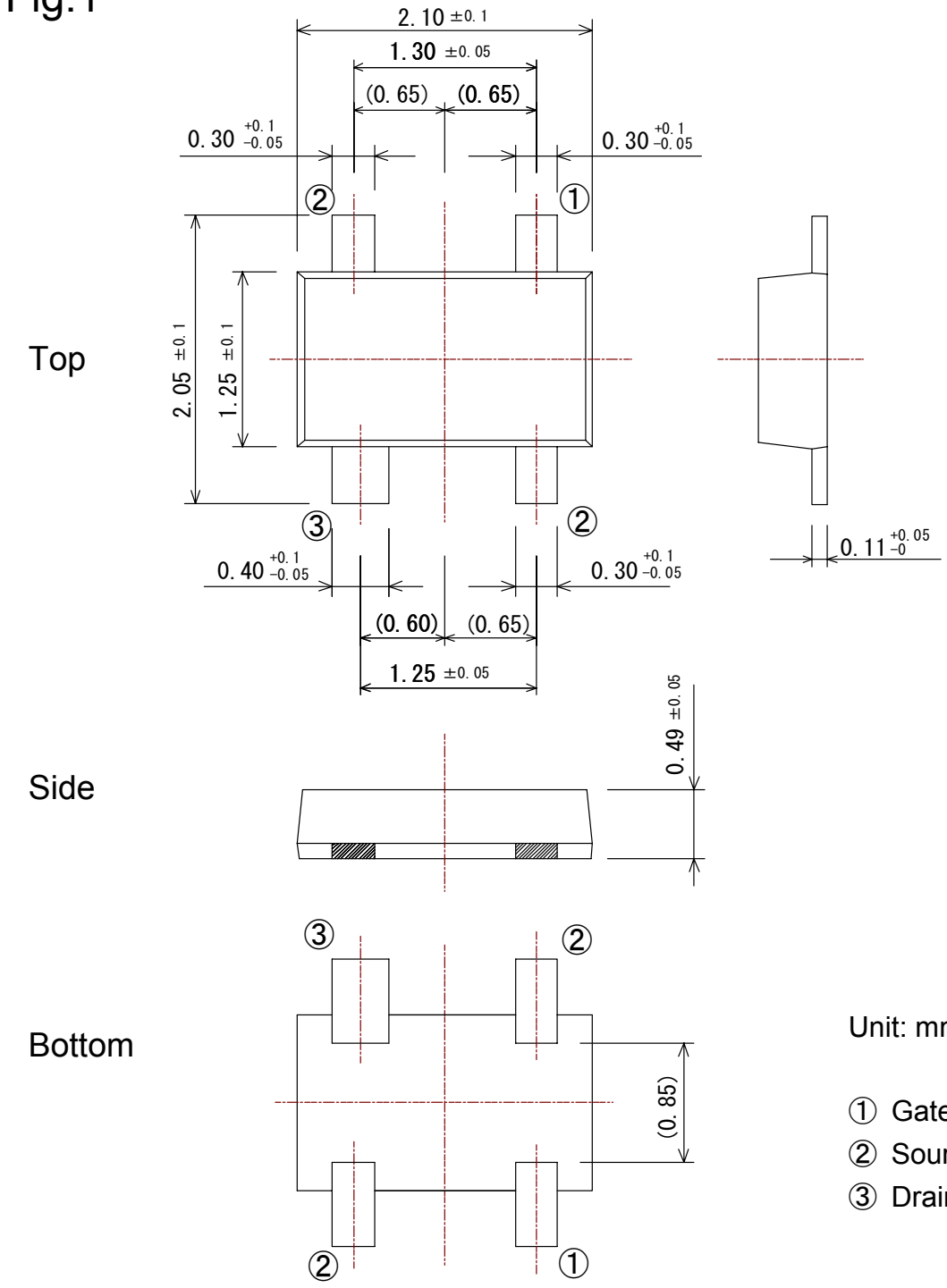
ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-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,	11.0	12.0	--	dB
NFmin.	Minimum noise figure	I_D=10mA,f=12GHz	--	0.45	0.65	dB

Fig.1



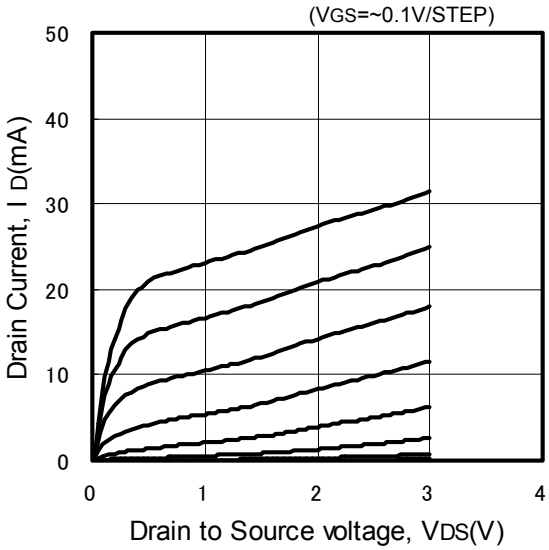
Unit: mm

① Gate
② Source
③ Drain

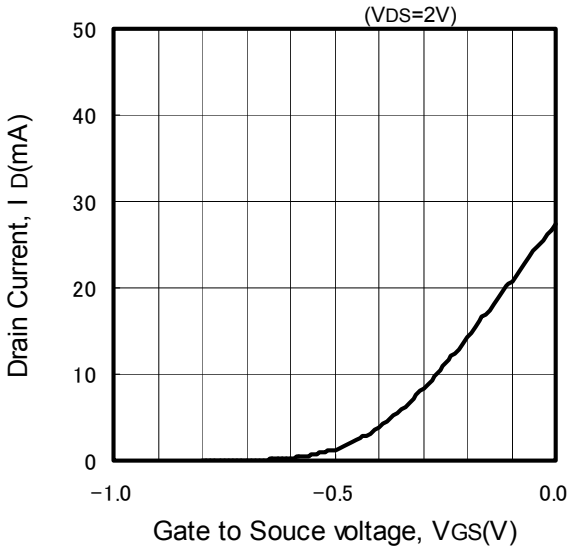
(GD-30)

TYPICAL CHARACTERISTICS (Ta=25°C)

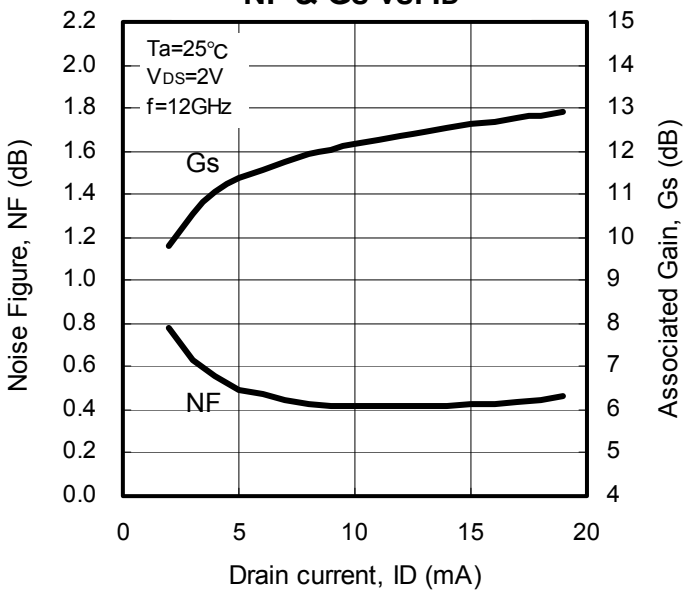
ID vs. VDS



ID vs. VGS



NF & Gs vs. ID



S PARAMETERS

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

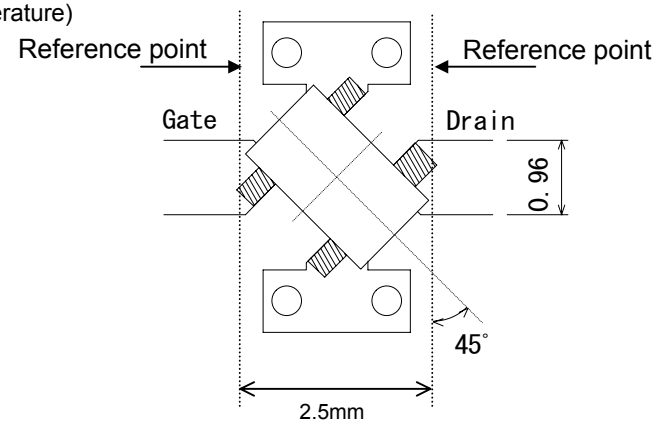
Freq.	S11		S21		S12		S22	
(GHz)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)
1	0.990	-13.4	4.592	164.5	0.013	80.2	0.669	-10.6
2	0.964	-26.9	4.545	149.2	0.027	71.6	0.658	-21.3
3	0.923	-40.6	4.476	134.3	0.039	62.7	0.636	-31.2
4	0.866	-54.5	4.463	119.5	0.051	54.6	0.603	-41.8
5	0.804	-68.1	4.370	105.1	0.061	46.8	0.569	-51.7
6	0.734	-82.3	4.241	91.0	0.069	39.3	0.529	-61.1
7	0.659	-96.5	4.113	77.4	0.076	33.2	0.488	-69.7
8	0.582	-111.0	3.965	64.0	0.082	28.2	0.446	-77.6
9	0.507	-126.1	3.804	51.4	0.086	24.0	0.404	-84.9
10	0.438	-142.0	3.660	38.9	0.091	20.9	0.368	-91.9
11	0.381	-158.6	3.548	26.9	0.097	19.0	0.338	-99.5
12	0.340	-178.7	3.440	14.7	0.106	16.9	0.320	-109.4
13	0.319	158.0	3.355	2.2	0.118	13.2	0.303	-120.9
14	0.327	133.9	3.276	-10.8	0.131	8.5	0.300	-137.1
15	0.370	112.0	3.191	-24.0	0.146	2.8	0.307	-157.2
16	0.440	93.2	3.080	-37.9	0.159	-4.2	0.327	179.4
17	0.520	78.4	2.914	-51.9	0.173	-11.5	0.369	157.8
18	0.601	64.0	2.690	-66.0	0.183	-19.4	0.419	137.5
19	0.672	50.4	2.405	-78.6	0.190	-27.1	0.472	122.4
20	0.737	38.9	2.146	-88.9	0.195	-34.2	0.510	110.5
21	0.800	30.7	1.931	-99.1	0.197	-42.0	0.548	98.5
22	0.847	27.2	1.738	-108.8	0.196	-49.0	0.582	83.9
23	0.886	25.8	1.574	-118.1	0.195	-55.9	0.619	68.2
24	0.920	23.1	1.459	-127.4	0.193	-61.4	0.652	52.9
25	0.948	16.5	1.382	-137.6	0.202	-67.4	0.693	40.5
26	0.954	3.1	1.332	-150.9	0.213	-77.2	0.730	31.4

Noise Parameter

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

Freq.	NFmin	Γopt		Rn
(GHz)	(dB)	(mag)	(ang)	(Ω)
1	0.20	0.99	3.1	18.0
2	0.20	0.98	8.3	16.5
3	0.21	0.98	14.9	15.0
4	0.22	0.97	20.4	13.5
5	0.24	0.95	30.4	12.0
6	0.26	0.90	41.5	10.5
7	0.29	0.83	52.7	9.0
8	0.31	0.71	68.0	7.0
9	0.34	0.60	83.3	5.5
10	0.37	0.50	99.7	4.0
11	0.40	0.41	117.8	3.0
12	0.44	0.33	137.8	2.5
13	0.47	0.27	162.0	2.5
14	0.51	0.24	-178.1	2.5

Note ; Rn is normalized by 50 ohm.



Board: εr=2.6

Thickness: 0.4mm

(4-φ0.4: through-hole)

S PARAMETERS

(VDS=0V,VGS=0V,Ta=room temperature)

Freq.	S11		S21		S12		S22	
(GHz)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)
1	0.999	-11.6	0.008	97.0	0.008	96.6	0.648	168.2
2	0.996	-24.0	0.018	98.4	0.018	100.0	0.648	156.5
3	0.990	-36.5	0.032	97.9	0.032	98.7	0.652	144.6
4	0.988	-50.0	0.050	94.7	0.050	94.7	0.664	133.1
5	0.981	-64.3	0.073	87.6	0.074	87.8	0.674	121.4
6	0.972	-79.2	0.099	79.4	0.100	79.7	0.682	109.6
7	0.958	-95.5	0.130	69.2	0.130	69.1	0.693	97.9
8	0.944	-113.8	0.165	58.0	0.165	58.2	0.706	87.1
9	0.918	-133.8	0.200	45.6	0.200	45.8	0.717	76.9
10	0.896	-155.7	0.235	32.2	0.237	32.2	0.725	67.5
11	0.881	-179.8	0.269	17.4	0.269	17.5	0.732	59.1
12	0.865	154.3	0.292	2.2	0.294	2.2	0.739	51.4
13	0.863	127.9	0.306	-13.3	0.307	-13.6	0.747	44.3
14	0.873	103.1	0.306	-28.4	0.307	-28.4	0.751	36.9
15	0.885	82.6	0.294	-41.6	0.295	-41.5	0.755	29.4
16	0.901	66.1	0.280	-52.6	0.280	-52.5	0.764	22.4
17	0.912	52.7	0.264	-61.5	0.265	-61.5	0.768	16.4
18	0.922	40.6	0.252	-69.0	0.252	-69.0	0.778	12.5
19	0.926	28.9	0.242	-76.7	0.242	-76.8	0.784	11.1
20	0.933	19.0	0.224	-84.1	0.225	-83.9	0.777	10.0
21	0.941	12.3	0.210	-89.8	0.210	-89.2	0.761	6.6
22	0.942	10.5	0.193	-94.8	0.193	-94.7	0.749	-0.3
23	0.943	10.3	0.176	-100.3	0.175	-100.9	0.743	-9.5
24	0.958	9.3	0.163	-103.8	0.163	-103.9	0.755	-19.4
25	0.970	3.2	0.158	-109.2	0.157	-109.0	0.781	-28.9
26	0.951	-10.3	0.151	-117.4	0.149	-118.2	0.789	-36.1

(VDS=0V,VGS=-2V,Ta=room temperature)

Freq.	S11		S21		S12		S22	
(GHz)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)
1	0.997	-9.0	0.022	81.0	0.023	79.7	0.997	-9.9
2	0.997	-18.1	0.045	70.6	0.045	70.6	0.995	-19.8
3	0.997	-27.7	0.068	60.4	0.068	61.1	0.993	-29.2
4	0.993	-37.3	0.092	50.9	0.092	50.6	0.987	-39.0
5	0.988	-47.1	0.116	40.8	0.116	40.9	0.980	-49.4
6	0.985	-57.4	0.139	30.9	0.139	30.6	0.979	-59.2
7	0.972	-68.0	0.162	19.9	0.162	19.8	0.974	-69.1
8	0.973	-79.2	0.184	8.1	0.185	8.1	0.966	-79.5
9	0.956	-91.8	0.201	-4.1	0.202	-4.2	0.957	-89.9
10	0.942	-104.7	0.216	-17.7	0.216	-17.8	0.950	-101.6
11	0.938	-119.1	0.221	-32.2	0.220	-32.3	0.942	-114.0
12	0.934	-136.1	0.217	-47.7	0.218	-47.8	0.942	-127.8
13	0.928	-156.1	0.201	-65.7	0.201	-65.7	0.934	-143.2
14	0.935	-178.9	0.170	-85.7	0.169	-85.7	0.941	-161.1
15	0.939	155.9	0.119	-107.4	0.119	-107.2	0.945	179.1
16	0.943	130.2	0.057	-127.3	0.057	-127.6	0.954	158.6
17	0.949	105.8	0.005	-25.0	0.005	-27.7	0.963	139.9
18	0.952	83.3	0.051	6.5	0.050	7.1	0.970	123.7
19	0.957	63.4	0.086	-4.4	0.086	-4.4	0.978	112.1
20	0.963	46.8	0.115	-16.6	0.115	-16.8	0.976	101.9
21	0.972	35.0	0.133	-29.5	0.132	-28.8	0.961	90.3
22	0.970	29.8	0.143	-40.0	0.143	-39.8	0.951	76.5
23	0.967	27.0	0.145	-49.6	0.147	-49.5	0.941	61.2
24	0.974	24.0	0.149	-56.9	0.149	-57.0	0.953	46.5
25	0.983	17.1	0.159	-64.6	0.159	-64.7	0.974	33.8
26	0.960	2.8	0.168	-75.8	0.168	-75.4	0.990	24.2

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