

**< Power GaAs HEMT >**

# MGF4851A

**Leadless ceramic package**
**DESCRIPTION**

The MGF4851A power InGaAs HEMT (High Electron Mobility Transistor) is designed for use in S to K band amplifiers.

The lead-less ceramic package assures minimum parasitic losses.

**FEATURES**

High gain and High P1dB

Glp=11dB , P1dB=14.5dBm (Typ.) @ f=12GHz

**APPLICATION**

S to K band low noise amplifiers

**QUALITY GRADE**

GG

**RECOMMENDED BIAS CONDITIONS**

VDS=2.5V , ID=25mA

**ORDERING INFORMATION**

Tape & reel 3,000pcs/reel

**RoHS COMPLIANT**

MGF4851A is a RoHS compliant product. RoHS compliance is indicated by the letter "G" after the Lot Marking.

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

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-5	V
VGSO	Gate to source voltage	-5	V
ID	Drain current	IDSS	mA
PT	Total power dissipation	100	mW
Tch	Channel temperature	125	°C
Tstg	Storage temperature	-65 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	IG=-10μA	-3	--	--	V
IDSS	Saturated drain current	VGS=0V,VDS=2.5V	30	60	120	mA
VGS(off)	Gate to source cut-off voltage	VDS=2.5V,ID=500μA	-0.1	-0.8	-2.0	V
P1dB	Output Power at 1dB gain Compression	VDS=2.5V,ID=25mA f=12GHz	12	14.5	--	dBm
Glp	Linear Power Gain	VDS=2.5V,ID=25mA f=12GHz,Pin=-5dBm	9	11	--	dB

Note: P1dB and Glp are tested with sampling inspection.

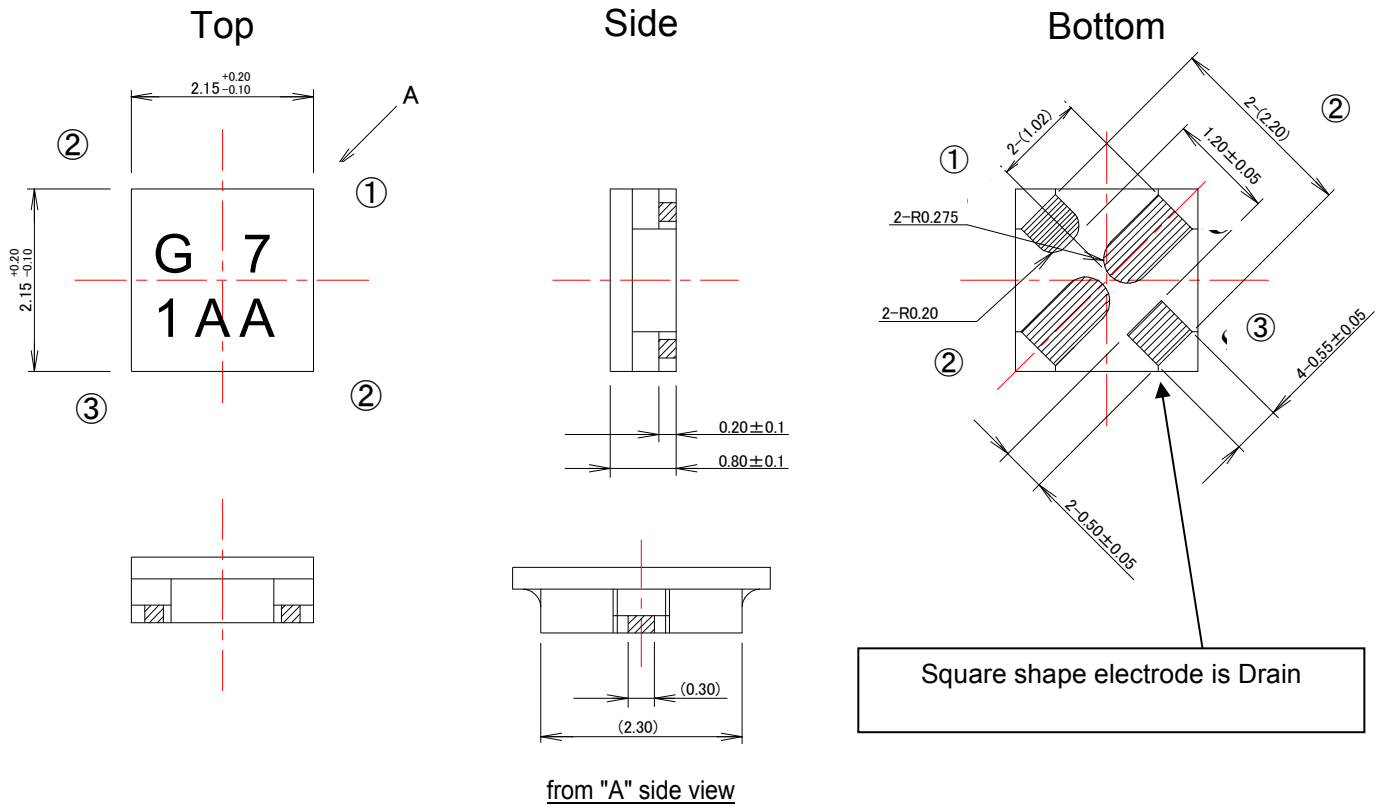
## Outline Drawing

Fig. 1

**MITSUBISHI Proprietary**

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Fig.1

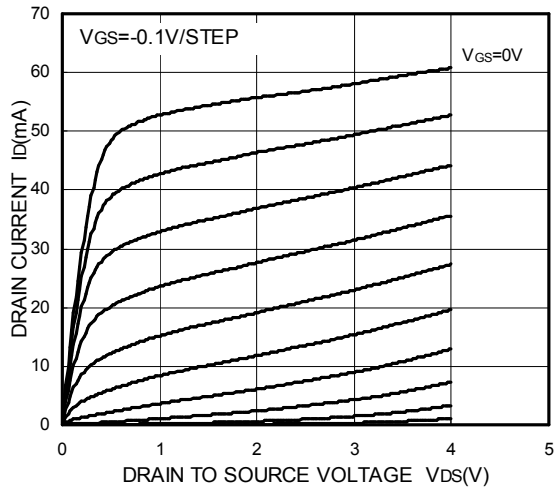


Unit: mm

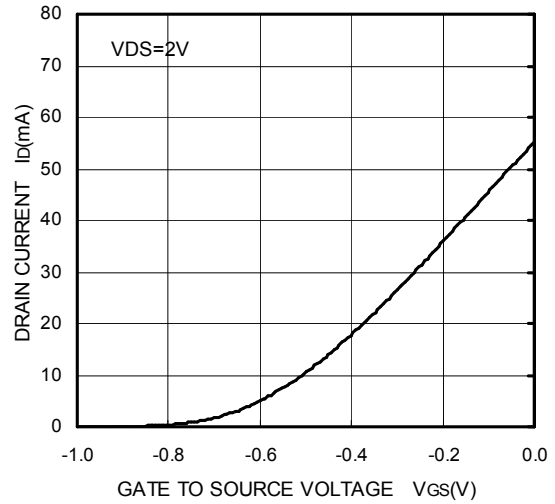
- ① Gate
- ② Source
- ③ Drain

TYPICAL CHARACTERISTICS (Ta=25°C)

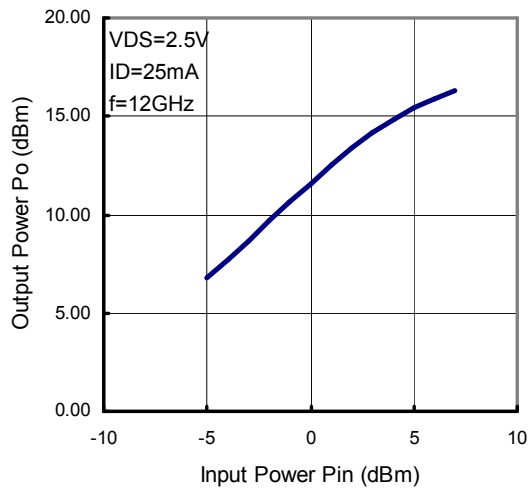
**ID vs. VDS**



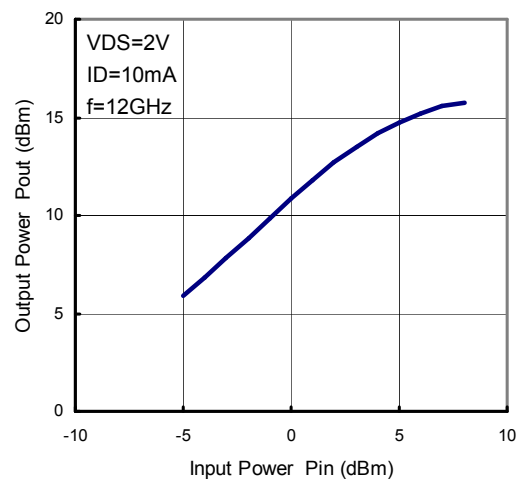
**ID vs. VGS**



**Po vs. Pin**

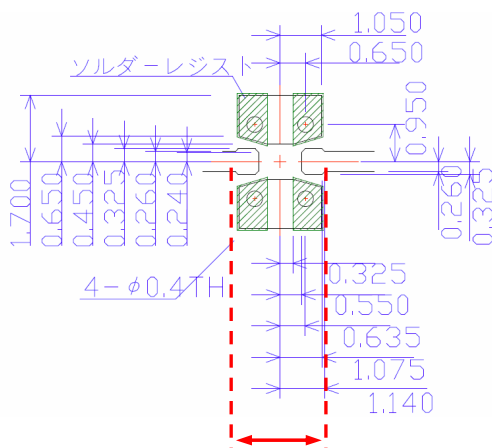


**Po vs. Pin**



**S PARAMETERS** (VDS=2.5V, ID=25mA, Ta=room temperature)

Freq. (GHz)	S11		S21		S12		S22	
	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)
1	0.988	-17.6	5.833	163.3	0.014	76.8	0.550	-14.2
2	0.969	-34.6	5.713	147.5	0.028	64.2	0.543	-28.1
3	0.942	-51.1	5.536	132.3	0.040	52.7	0.534	-41.2
4	0.908	-67.4	5.339	117.4	0.052	40.8	0.519	-53.9
5	0.874	-82.6	5.125	103.4	0.061	30.1	0.508	-65.4
6	0.841	-97.4	4.942	89.7	0.070	19.8	0.494	-76.3
7	0.806	-111.9	4.769	76.2	0.078	9.8	0.478	-86.7
8	0.766	-126.6	4.603	62.7	0.086	-0.2	0.455	-97.5
9	0.714	-140.8	4.408	50.2	0.091	-12.4	0.415	-107.0
10	0.670	-154.5	4.277	37.8	0.093	-22.2	0.384	-115.3
11	0.638	-169.3	4.211	25.3	0.096	-31.4	0.351	-124.1
12	0.608	174.5	4.176	12.4	0.099	-40.7	0.318	-132.9
13	0.581	157.3	4.131	-0.9	0.102	-49.9	0.274	-143.7
14	0.569	137.4	4.114	-15.3	0.106	-61.5	0.226	-153.8
15	0.565	115.0	4.038	-30.5	0.103	-71.2	0.184	-165.4
16	0.566	91.9	3.890	-45.6	0.106	-79.8	0.130	177.0
17	0.592	69.4	3.763	-60.3	0.109	-91.6	0.085	130.2
18	0.624	48.6	3.608	-76.1	0.108	-103.7	0.075	59.9
19	0.680	28.2	3.372	-92.2	0.107	-116.0	0.132	18.2
20	0.739	7.7	3.099	-107.8	0.100	-129.0	0.188	-4.6
21	0.771	-9.2	2.815	-122.3	0.093	-138.2	0.251	-20.0
22	0.818	-23.0	2.576	-136.1	0.093	-149.6	0.314	-32.0
23	0.863	-38.7	2.313	-151.8	0.087	-160.1	0.394	-44.3
24	0.877	-51.5	2.018	-165.3	0.077	-173.8	0.447	-56.9
25	0.893	-63.1	1.799	-177.3	0.069	176.9	0.499	-66.2
26	0.908	-73.2	1.625	171.0	0.068	171.0	0.530	-73.6



Measurement plane (2.2mm)

Recommended foot pattern; RO4350B/ROGERS( $\epsilon_r=3.48$ ,  $t=0.254$ mm)

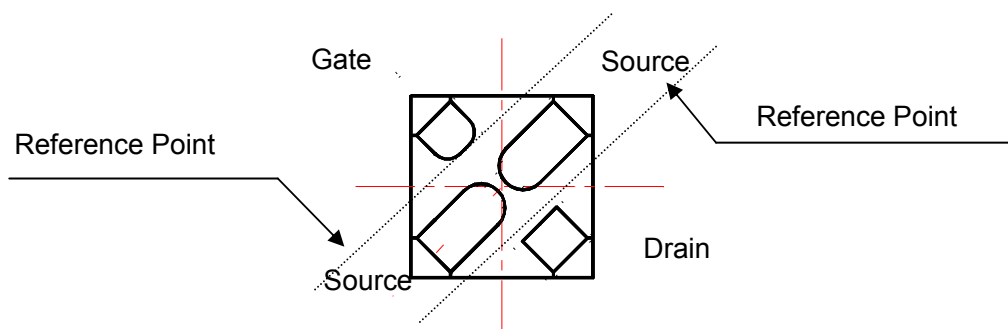
**Note:**

We are ready to provide nonlinear model for ADS and MWO users. If you are interested, please contact our sales offices.

## S PARAMETERS

(Conditions : VDS=2.5V, ID=25mA, Ta=25deg.C)

f (GHz)	S11		S21		S12		S22	
	Magn.	Angle	Magn.	Angle	Magn.	Angle	Magn.	Angle
1	0.986	-16.1	6.558	165.2	0.015	79.0	0.539	-13.6
2	0.959	-35.1	6.385	148.7	0.028	65.3	0.531	-30.0
3	0.933	-47.6	6.118	136.8	0.040	56.6	0.525	-38.9
4	0.898	-64.4	5.865	123.4	0.050	46.8	0.502	-49.8
5	0.867	-76.5	5.505	112.8	0.058	38.6	0.498	-58.1
6	0.840	-86.5	5.187	103.8	0.064	32.3	0.492	-63.8
7	0.813	-96.0	4.891	94.8	0.069	26.7	0.487	-67.9
8	0.792	-106.6	4.710	83.6	0.073	18.8	0.487	-74.3
9	0.766	-114.9	4.538	74.9	0.077	14.2	0.486	-77.8
10	0.744	-123.4	4.500	66.5	0.083	10.6	0.483	-81.1
11	0.709	-133.5	4.514	57.5	0.092	3.1	0.468	-86.3
12	0.658	-146.0	4.549	47.0	0.099	-4.6	0.437	-91.4
13	0.607	-160.7	4.589	36.3	0.106	-12.3	0.392	-97.5
14	0.561	176.4	4.607	20.9	0.113	-25.3	0.324	-109.3
15	0.523	151.0	4.547	7.2	0.116	-36.3	0.241	-118.6
16	0.542	123.0	4.470	-6.8	0.120	-48.5	0.140	-131.0
17	0.598	95.1	4.267	-21.7	0.119	-59.8	0.030	-165.6
18	0.679	70.3	3.880	-37.6	0.113	-71.3	0.097	43.6
19	0.760	51.1	3.447	-51.9	0.105	-83.2	0.214	30.0
20	0.827	35.4	3.005	-65.2	0.094	-94.0	0.323	19.9
21	0.890	21.0	2.560	-80.4	0.084	-106.2	0.407	8.0
22	0.921	10.8	2.187	-90.3	0.074	-111.9	0.481	2.4
23	0.932	2.6	1.879	-100.1	0.064	-117.3	0.570	-2.3
24	0.933	-3.9	1.555	-108.1	0.056	-124.3	0.625	-6.3
25	0.947	-9.0	1.330	-114.7	0.049	-127.9	0.681	-7.6
26	0.947	-14.4	1.146	-121.8	0.042	-128.9	0.730	-8.8



**Note:**

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