

< Power GaAs HEMT >

MGF4841AL

Micro-X type plastic package

DESCRIPTION

The MGF4841AL power InGaAs HEMT (High Electron Mobility Transistor) is designed for use in S to K band amplifiers.

FEATURES

High gain and High Pout

$G_{lp}=11.5\text{dB}$, $P_{1\text{dB}}=14.0\text{dBm}$, $P_{\text{out,sat}}=16.0\text{dBm}$ @ $f=12\text{GHz}$

APPLICATION

S to K band low noise amplifiers

QUALITY GRADE

GG

RECOMMENDED BIAS CONDITIONS

$V_{\text{DS}}=2.5\text{V}$, $I_{\text{DS}}=25\text{mA}$

ORDERING INFORMATION

Tape & reel 4,000pcs/reel

RoHS COMPLIANT

MGF4841AL 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	-4	V
VGSO	Gate to source voltage	-4	V
ID	Drain current	IDSS	mA
PT	Total power dissipation	130	mW
Tch	Channel temperature	125	°C
Tstg	Storage temperature	-55 to +125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			MIN.	TYP.	MAX	
$V_{(\text{BR})\text{GDO}}$	Gate to drain breakdown voltage	$I_G=-10\mu\text{A}$	-4	--	--	V
I_{DSS}	Saturated drain current	$V_{\text{GS}}=0\text{V}$, $V_{\text{DS}}=2.5\text{V}$	30	--	80	mA
$V_{\text{GS(off)}}$	Gate to source cut-off voltage	$V_{\text{DS}}=2.5\text{V}$, $I_{\text{D}}=500\mu\text{A}$	-0.1	--	-2.0	V
$P_{\text{out,sat}}$	Output Power at $P_{\text{in}}=7\text{dB}$	$V_{\text{DS}}=2.5\text{V}$, $I_{\text{DS}}=25\text{mA}$ $f=12.0\text{GHz}$, $P_{\text{in}}=7\text{dB}$	13.0	16.0	--	dBm
$P_{1\text{dB}}$	Output Power at 1dB gain compression	$V_{\text{DS}}=2.5\text{V}$, $I_{\text{DS}}=25\text{mA}$ $f=12.0\text{GHz}$	11.0	14.0	--	dBm
G_{lp}	Linear Power Gain	$V_{\text{DS}}=2.5\text{V}$, $I_{\text{DS}}=25\text{mA}$ $f=12.0\text{GHz}$, $P_{\text{in}}=-6\text{dBm}$	9.0	11.5	--	dB

Note: $P_{\text{out,sat}}$, $P_{1\text{dB}}$ and G_{lp} are tested with sampling inspection.

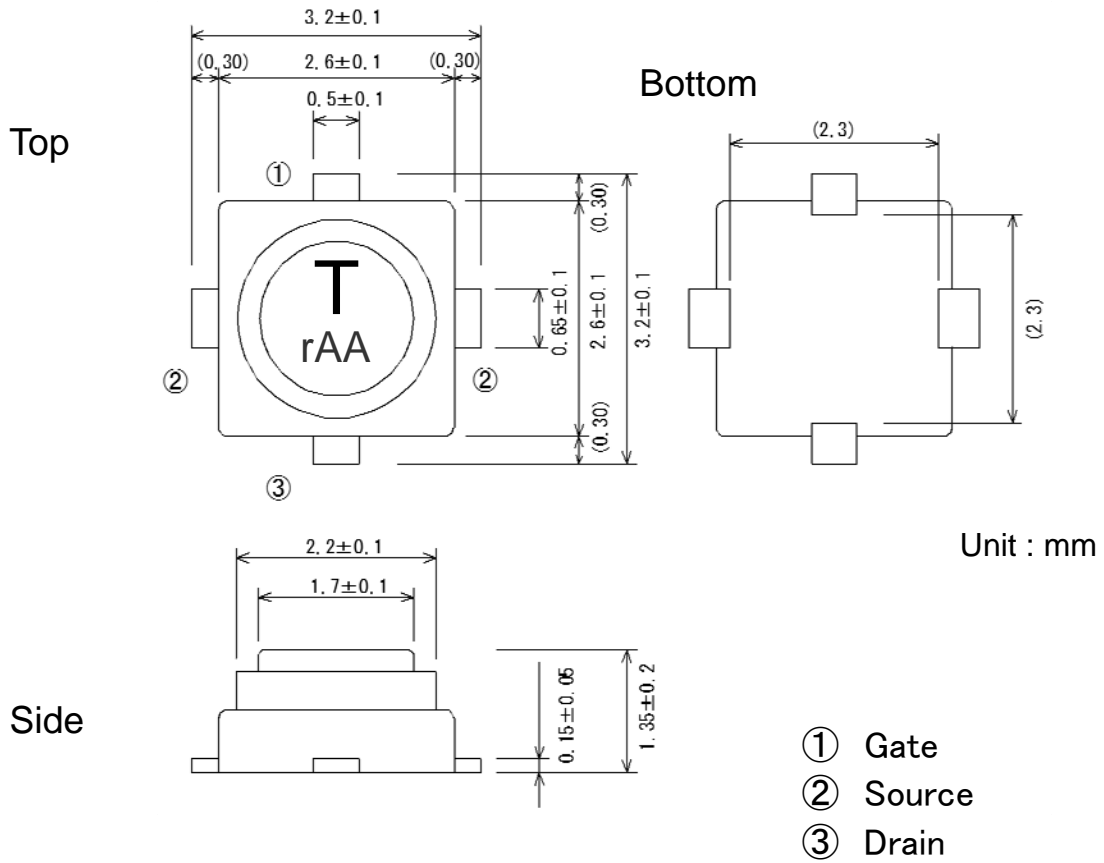
Outline Drawing

Fig.1

MITSUBISHI Proprietary

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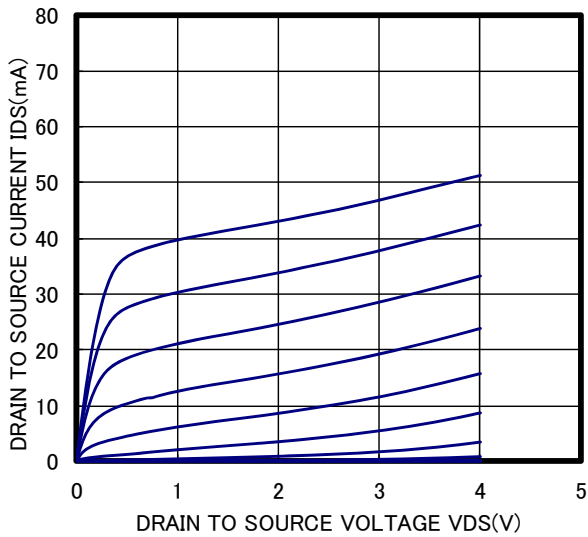
Fig.1



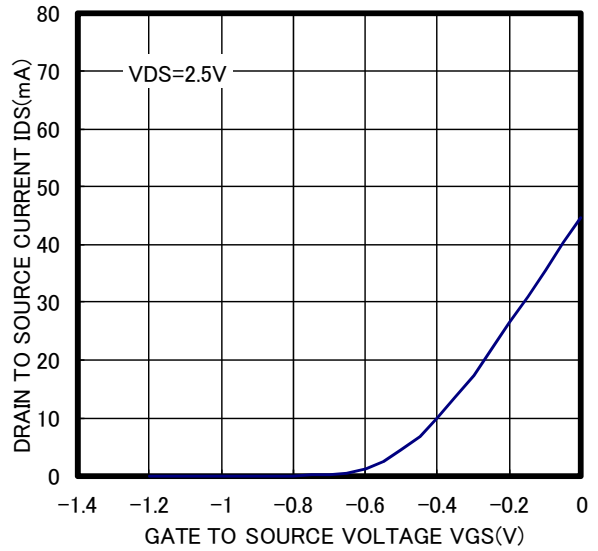
(GD-32)

TYPICAL CHARACTERISTICS (Ta=25°C)

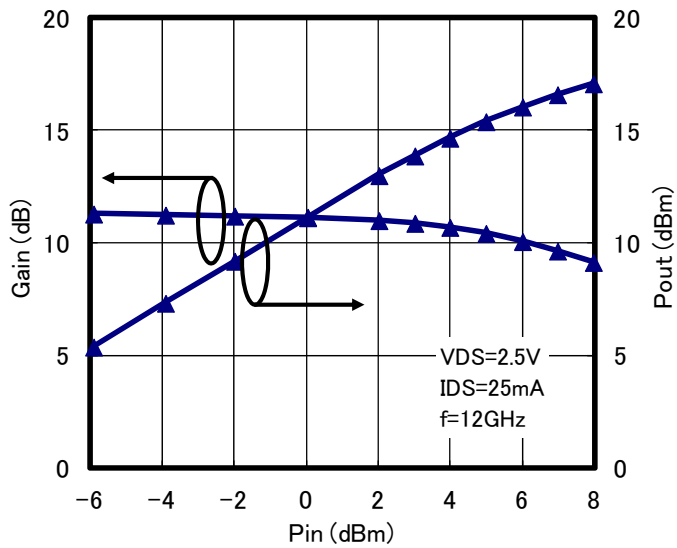
ID vs. VDS



ID vs. VGS

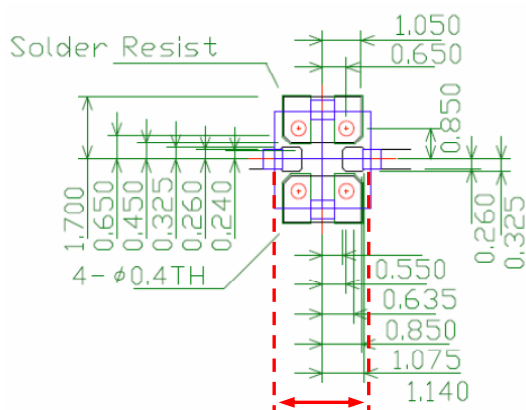


Pin vs. Pout



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

Freq. (GHz)	S11		S21		S12		S22	
	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)
1	0.994	-17.9	6.570	161.6	0.012	76.8	0.578	-13.3
2	0.964	-35.4	6.346	144.3	0.024	65.1	0.566	-26.3
3	0.923	-52.0	6.061	127.7	0.034	54.4	0.550	-38.7
4	0.880	-67.4	5.750	112.4	0.043	44.4	0.542	-49.6
5	0.833	-82.6	5.469	97.4	0.051	34.9	0.526	-60.3
6	0.785	-97.1	5.197	82.8	0.058	26.0	0.509	-70.3
7	0.739	-111.4	4.940	68.6	0.065	17.3	0.491	-80.1
8	0.689	-125.4	4.698	54.8	0.070	8.4	0.470	-89.5
9	0.638	-138.6	4.461	41.5	0.075	0.1	0.449	-97.9
10	0.585	-151.3	4.268	29.0	0.078	-7.9	0.431	-105.2
11	0.541	-164.1	4.134	16.3	0.082	-15.1	0.415	-112.7
12	0.499	-177.8	4.028	3.4	0.087	-22.4	0.399	-120.8
13	0.460	166.3	3.934	-9.7	0.093	-30.2	0.377	-128.9
14	0.420	149.2	3.873	-22.9	0.097	-37.7	0.360	-136.4
15	0.383	128.8	3.816	-36.7	0.103	-46.6	0.335	-145.2
16	0.371	105.2	3.741	-51.3	0.110	-55.0	0.299	-156.7
17	0.375	80.1	3.654	-66.3	0.117	-64.0	0.252	-168.0
18	0.417	54.2	3.536	-81.5	0.125	-74.2	0.189	179.1
19	0.483	30.5	3.396	-97.1	0.132	-85.5	0.109	161.4
20	0.562	10.1	3.233	-113.2	0.139	-98.6	0.027	104.8
21	0.650	-8.5	3.021	-129.7	0.140	-111.8	0.089	-15.4
22	0.722	-24.9	2.748	-145.5	0.139	-124.3	0.187	-33.9
23	0.784	-39.6	2.469	-160.9	0.135	-136.3	0.282	-46.6
24	0.836	-52.1	2.201	-175.5	0.128	-148.7	0.377	-58.1
25	0.859	-63.5	1.952	-171.0	0.122	-157.7	0.458	-68.2
26	0.888	-74.4	1.711	-158.2	0.113	-167.8	0.513	-78.7



Measurement plane (2.6mm)

- Recommended foot pattern;
 RO4350B/ROGERS(er=3.48, t=0.254mm)

Note:

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

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