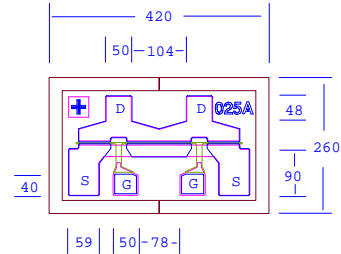


**DATA SHEET**
**Low Noise High Gain Heterojunction FET**

- **TYPICAL 0.8dB NOISE FIGURE AND 11.0dB ASSOCIATED GAIN AT 12GHz**
- **0.3 X 250 MICRON RECESSED “MUSHROOM” GATE**
- **Si<sub>3</sub>N<sub>4</sub> PASSIVATION**
- **ADVANCED EPITAXIAL DOPING PROFILE PROVIDES SUPER LOW NOISE, HIGH GAIN AND HIGH RELIABILITY**
- **Idss SORTED IN 5mA PER BIN RANGE**



Chip Thickness: 75 ± 13 microns  
All Dimensions In Microns

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25 °C)**

SYMBOLS	PARAMETERS/TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>NF</b>	Noise Figure V <sub>ds</sub> =2V, I <sub>ds</sub> =15mA f = 12GHz		0.80	1.0	dB
<b>Ga</b>	Associated Gain V <sub>ds</sub> =2V, I <sub>ds</sub> =15mA f = 12GHz	10.0	11.0		dB
<b>P<sub>1dB</sub></b>	Output Power at 1dB Compression V <sub>ds</sub> =3V, I <sub>ds</sub> =25mA f=12GHz f=18GHz		15.0 15.0		dBm
<b>G<sub>1dB</sub></b>	Gain at 1dB Compression V <sub>ds</sub> =3V, I <sub>ds</sub> =25mA f=12GHz f=18GHz		13.0 11.0		dB
<b>I<sub>dss</sub></b>	Saturated Drain Current V <sub>ds</sub> =2V, V <sub>gs</sub> =0V	20	50	80	mA
<b>G<sub>m</sub></b>	Transconductance V <sub>ds</sub> =2V, V <sub>gs</sub> =0V	50	80		mS
<b>V<sub>p</sub></b>	Pinch-off Voltage V <sub>ds</sub> =2V, I <sub>ds</sub> =1.0mA		-1.0	-2.5	V
<b>BV<sub>gd</sub></b>	Drain Breakdown Voltage I <sub>gd</sub> =10uA	-3	-5		V
<b>BV<sub>gs</sub></b>	Source Breakdown Voltage I <sub>gs</sub> =10uA	-3	-5		V
<b>R<sub>th</sub></b>	Thermal Resistance (Au-Sn Eutectic Attach)		155		°C/W

**MAXIMUM RATINGS AT 25°C**

SYMBOLS	PARAMETERS	ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>
<b>V<sub>ds</sub></b>	Drain-Source Voltage	5V	3V
<b>V<sub>gs</sub></b>	Gate-Source Voltage	-3V	-3V
<b>I<sub>ds</sub></b>	Drain Current	I <sub>dss</sub>	I <sub>dss</sub>
<b>I<sub>gsf</sub></b>	Forward Gate Current	2mA	0.3mA
<b>P<sub>in</sub></b>	Input Power	12dBm	@ 1dB Compression
<b>T<sub>ch</sub></b>	Channel Temperature	175°C	150°C
<b>T<sub>stg</sub></b>	Storage Temperature	-65/175°C	-65/150°C
<b>P<sub>t</sub></b>	Total Power Dissipation	880mW	730mW

Note: 1. Exceeding any of the above ratings may result in permanent damage.

2. Exceeding any of the above ratings may reduce MTTF below design goals.

# EPB025A

## DATA SHEET

### Low Noise High Gain Heterojunction FET

#### S-PARAMETERS

2V, 15mA

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.996	-16.0	6.346	166.8	0.028	79.1	0.653	-11.5
2.0	0.968	-31.7	6.153	155.3	0.054	71.3	0.633	-23.4
3.0	0.928	-47.3	5.875	143.9	0.076	61.7	0.604	-35.0
4.0	0.884	-62.7	5.535	132.9	0.095	53.2	0.568	-46.3
5.0	0.836	-78.0	5.137	122.0	0.109	44.4	0.517	-57.9
6.0	0.800	-91.3	4.714	112.8	0.118	37.8	0.485	-67.7
7.0	0.775	-102.9	4.315	104.5	0.125	32.1	0.457	-76.6
8.0	0.749	-113.2	3.933	97.1	0.129	26.8	0.437	-84.2
9.0	0.732	-121.7	3.615	90.5	0.131	22.1	0.419	-90.4
10.0	0.714	-128.3	3.325	85.0	0.131	18.4	0.407	-94.7
11.0	0.701	-134.6	3.112	79.5	0.133	15.2	0.403	-98.8
12.0	0.694	-140.2	2.928	74.6	0.135	12.3	0.400	-102.2
13.0	0.680	-146.4	2.780	69.3	0.137	8.9	0.392	-105.8
14.0	0.666	-153.4	2.660	64.5	0.139	5.8	0.385	-109.1
15.0	0.659	-161.2	2.582	59.0	0.143	2.3	0.377	-112.9
16.0	0.654	-170.0	2.500	52.9	0.147	-1.0	0.367	-118.7
17.0	0.652	179.4	2.408	46.3	0.151	-5.3	0.352	-125.3
18.0	0.662	168.5	2.313	39.5	0.154	-9.7	0.333	-133.9
19.0	0.672	157.8	2.196	32.6	0.155	-14.0	0.319	-142.6
20.0	0.690	147.9	2.072	25.4	0.155	-18.4	0.312	-153.7
21.0	0.716	144.2	1.873	20.3	0.149	-21.0	0.336	-166.1
22.0	0.729	138.6	1.741	15.2	0.145	-23.6	0.347	-173.4
23.0	0.758	134.9	1.629	10.2	0.144	-25.9	0.372	-178.6
24.0	0.760	133.3	1.524	6.1	0.140	-26.5	0.389	178.0
25.0	0.775	131.2	1.456	2.4	0.137	-27.7	0.415	176.2
26.0	0.786	131.9	1.403	-0.9	0.137	-27.1	0.431	176.0
27.0	0.768	131.4	1.345	-3.6	0.139	-27.2	0.449	176.4
28.0	0.766	132.0	1.307	-6.2	0.140	-27.0	0.455	177.4
29.0	0.755	131.6	1.302	-9.7	0.143	-27.0	0.471	177.2
30.0	0.740	129.3	1.292	-13.1	0.147	-27.8	0.470	178.1
31.0	0.717	125.8	1.280	-17.2	0.150	-29.8	0.472	177.2
32.0	0.695	119.5	1.274	-22.5	0.150	-33.0	0.467	175.7
33.0	0.668	111.8	1.236	-28.2	0.148	-37.2	0.447	171.3
34.0	0.663	101.3	1.203	-34.3	0.144	-43.3	0.428	166.4
35.0	0.672	91.2	1.157	-40.4	0.139	-48.5	0.406	157.1
36.0	0.717	79.6	1.108	-46.5	0.134	-56.5	0.405	146.8
37.0	0.762	71.7	1.039	-53.2	0.128	-63.5	0.410	133.6
38.0	0.807	64.5	0.975	-59.6	0.121	-72.3	0.432	122.7
39.0	0.847	60.0	0.898	-65.7	0.112	-81.9	0.462	112.1
40.0	0.858	57.7	0.793	-70.7	0.107	-89.8	0.503	106.4

Note: The data included 0.7 mils diameter Au bonding wires:  
2 gate wires, 15 mils each; 2 drain wires, 20 mils each; 4 source wires, 7 mils each.