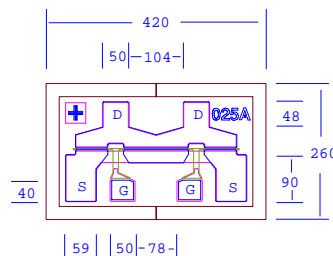


DATA SHEET
Low Noise High Gain Heterojunction FET

- **TYPICAL 0.8dB NOISE FIGURE AND 11.0dB ASSOCIATED GAIN AT 12GHz**
- **0.3 X 250 MICRON RECESSED “MUSHROOM” GATE**
- **Si₃N₄ 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_a = 25 °C)

SYMBOLS	PARAMETERS/TEST CONDITIONS	MIN	TYP	MAX	UNIT
NF	Noise Figure V _{ds} =2V, I _{ds} =15mA f = 12GHz		0.80	1.0	dB
Ga	Associated Gain V _{ds} =2V, I _{ds} =15mA f = 12GHz	10.0	11.0		dB
P_{1dB}	Output Power at 1dB Compression V _{ds} =3V, I _{ds} =25mA f=12GHz f=18GHz		15.0 15.0		dBm
G_{1dB}	Gain at 1dB Compression V _{ds} =3V, I _{ds} =25mA f=12GHz f=18GHz		13.0 11.0		dB
Idss	Saturated Drain Current V _{ds} =2V, V _{gs} =0V	20	50	80	mA
Gm	Transconductance V _{ds} =2V, V _{gs} =0V	50	80		mS
Vp	Pinch-off Voltage V _{ds} =2V, I _{ds} =1.0mA		-1.0	-2.5	V
BV_{gd}	Drain Breakdown Voltage I _{gd} =10uA	-3	-5		V
BV_{gs}	Source Breakdown Voltage I _{gs} =10uA	-3	-5		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)		155		°C/W

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
Vds	Drain-Source Voltage	5V	3V
Vgs	Gate-Source Voltage	-3V	-3V
Ids	Drain Current	Idss	Idss
Igsf	Forward Gate Current	2mA	0.3mA
Pin	Input Power	12dBm	@ 1dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	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.