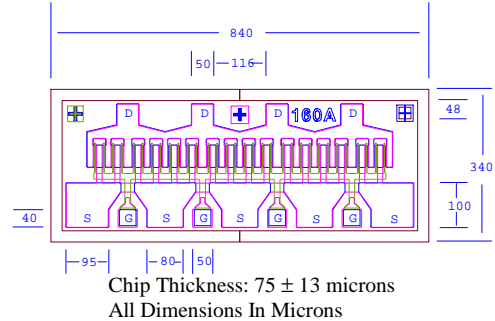


**DATA SHEET**
**High Efficiency Heterojunction Power FET**

- +31.0dBm TYPICAL OUTPUT POWER
- 8.5dB TYPICAL POWER GAIN AT 18GHz
- 0.3 X 1600 MICRON RECESSED “MUSHROOM” GATE
- Si<sub>3</sub>N<sub>4</sub> PASSIVATION
- ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY
- Idss SORTED IN 40mA PER BIN RANGE


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

SYMBOLS	PARAMETERS/TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>P<sub>1dB</sub></b>	Output Power at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub>		f=12GHz 29.0 f=18GHz 31.0		dBm
<b>G<sub>1dB</sub></b>	Gain at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub>		f=12GHz 9.5 f=18GHz 8.5		dB
<b>PAE</b>	Power Added Efficiency at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub>		f=12GHz 45		%
<b>I<sub>dss</sub></b>	Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	290	480	660	mA
<b>G<sub>m</sub></b>	Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	320	500		mS
<b>V<sub>p</sub></b>	Pinch-off Voltage V <sub>ds</sub> =3V, I <sub>ds</sub> =4.5mA		-1.0	-2.5	V
<b>BV<sub>gd</sub></b>	Drain Breakdown Voltage I <sub>gd</sub> =1.6mA	-11	-15		V
<b>BV<sub>gs</sub></b>	Source Breakdown Voltage I <sub>gs</sub> =1.6mA	-7	-14		V
<b>R<sub>th</sub></b>	Thermal Resistance (Au-Sn Eutectic Attach)		30		°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	12V	8V
<b>V<sub>gs</sub></b>	Gate-Source Voltage	-8V	-3V
<b>I<sub>ds</sub></b>	Drain Current	I <sub>dss</sub>	475mA
<b>I<sub>gsf</sub></b>	Forward Gate Current	80mA	14mA
<b>P<sub>in</sub></b>	Input Power	28dBm	@3dB 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	4.5W	3.8W

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.

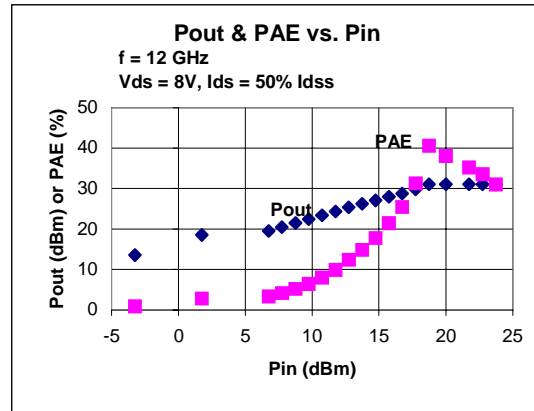
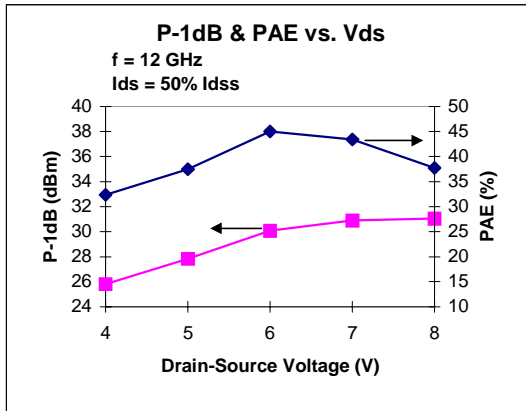
**Excelics Semiconductor, Inc., 2908 Scott Blvd., Santa Clara, CA 95054**

**Phone: (408) 970-8664 Fax: (408) 970-8998 Web Site: www.excelics.com**

# EPA160A

## DATA SHEET

### High Efficiency Heterojunction Power FET



### S-PARAMETERS

8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.891	-118.3	14.073	114.9	0.028	32.7	0.344	-141.1
2.0	0.890	-146.2	7.912	96.6	0.031	22.3	0.385	-156.6
3.0	0.889	-157.7	5.382	86.8	0.031	20.5	0.401	-162.4
4.0	0.892	-163.6	4.093	79.3	0.032	19.1	0.416	-164.1
5.0	0.887	-167.5	3.275	73.1	0.031	21.8	0.431	-164.8
6.0	0.893	-170.0	2.741	67.3	0.031	24.5	0.449	-164.8
7.0	0.898	-171.6	2.341	62.4	0.031	26.6	0.467	-164.9
8.0	0.901	-173.3	2.036	57.4	0.031	27.6	0.485	-164.8
9.0	0.901	-174.1	1.793	53.2	0.029	28.8	0.496	-165.0
10.0	0.906	-174.9	1.604	49.2	0.029	33.3	0.511	-165.2
11.0	0.912	-175.3	1.449	45.1	0.028	35.6	0.526	-166.2
12.0	0.921	-175.9	1.316	40.9	0.029	36.4	0.538	-168.1
13.0	0.929	-176.3	1.202	36.6	0.029	36.0	0.553	-170.8
14.0	0.929	-176.6	1.096	32.2	0.030	36.4	0.564	-174.4
15.0	0.934	-176.7	1.010	27.8	0.030	37.1	0.578	-179.0
16.0	0.929	-176.6	0.920	23.2	0.031	33.7	0.597	175.9
17.0	0.933	-175.9	0.849	19.1	0.031	32.2	0.623	171.0
18.0	0.943	-176.0	0.790	14.4	0.033	30.4	0.652	165.8
19.0	0.943	-176.3	0.731	9.7	0.034	31.5	0.684	161.2
20.0	0.941	-176.7	0.672	5.2	0.036	31.0	0.710	157.2
21.0	0.930	-176.9	0.616	1.7	0.039	31.3	0.734	155.0
22.0	0.925	-177.3	0.578	-1.6	0.042	31.5	0.764	153.3
23.0	0.926	-177.9	0.545	-4.1	0.047	32.0	0.790	152.4
24.0	0.926	-179.1	0.518	-6.9	0.051	33.7	0.807	152.1
25.0	0.906	179.0	0.492	-8.9	0.057	34.8	0.817	152.4
26.0	0.906	178.1	0.471	-10.2	0.064	36.7	0.811	154.7

Note: The data included 0.7 mils diameter Au bonding wires:  
 4 gate wires, 15 mils each; 4 drain wires, 20 mils each; 10 source wires, 7 mils each.