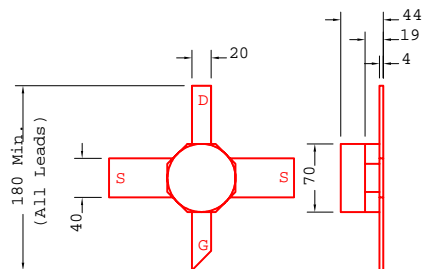


**DATA SHEET**
**High Efficiency Heterojunction Power FET**

- **NON-HERMETIC LOW COST CERAMIC 70mil PACKAGE**
- **+20.0dBm TYPICAL OUTPUT POWER**
- **11.0dB TYPICAL POWER GAIN AT 18GHz**
- **TYPICAL 0.75dB NOISE FIGURE AND 12.5dB ASSOCIATED GAIN AT 12GHz**
- **0.3 X 180 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**



All Dimensions In mils.

**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> =6V, I <sub>ds</sub> =50% I <sub>dss</sub>	f=12GHz 18.5	f=18GHz 20.0 20.0		dBm
<b>G<sub>1dB</sub></b>	Gain at 1dB Compression V <sub>ds</sub> =6V, I <sub>ds</sub> =50% I <sub>dss</sub>	f=12GHz 11.0	f=18GHz 13.5 11.0		dB
<b>PAE</b>	Power Added Efficiency at 1dB Compression V <sub>ds</sub> =6V, I <sub>ds</sub> =50% I <sub>dss</sub>	f=12GHz	45		%
<b>NF</b>	Noise Figure V <sub>ds</sub> =2V, I <sub>ds</sub> =15mA	f=12GHz	0.75		dB
<b>G<sub>a</sub></b>	Associated Gain V <sub>ds</sub> =2V, I <sub>ds</sub> =15mA	f=12GHz	12.5		dB
<b>I<sub>dss</sub></b>	Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	30	55	80	mA
<b>G<sub>m</sub></b>	Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	35	60		mS
<b>V<sub>p</sub></b>	Pinch-off Voltage V <sub>ds</sub> =3V, I <sub>ds</sub> =1.0mA		-1.0	-2.5	V
<b>BV<sub>gd</sub></b>	Drain Breakdown Voltage I <sub>gd</sub> =1.0mA	-9	-15		V
<b>BV<sub>gs</sub></b>	Source Breakdown Voltage I <sub>gs</sub> =1.0mA	-6	-14		V
<b>R<sub>th</sub></b>	Thermal Resistance		480*		°C/W

\* Overall R<sub>th</sub> depends on case mounting.

**MAXIMUM RATINGS AT 25°C**

SYMBOLS	PARAMETERS	ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>
<b>V<sub>ds</sub></b>	Drain-Source Voltage	10V	6V
<b>V<sub>gs</sub></b>	Gate-Source Voltage	-6V	-3V
<b>I<sub>ds</sub></b>	Drain Current	I <sub>dss</sub>	40mA
<b>I<sub>gsf</sub></b>	Forward Gate Current	9mA	1.5mA
<b>P<sub>in</sub></b>	Input Power	16dBm	@ 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	285mW	240mW

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.

# EPA018A-70

## DATA SHEET

### High Efficiency Heterojunction Power FET

#### S-PARAMETERS

6V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.984	-19.0	5.081	162.1	0.014	75.9	0.813	-11.1
2.0	0.950	-38.2	4.859	144.2	0.026	63.4	0.789	-23.7
3.0	0.906	-56.4	4.547	127.3	0.035	51.4	0.766	-35.3
4.0	0.863	-74.0	4.348	111.9	0.041	42.1	0.745	-44.6
5.0	0.813	-90.7	4.195	97.2	0.047	32.9	0.713	-53.3
6.0	0.764	-105.0	3.973	82.9	0.049	24.2	0.675	-64.4
7.0	0.715	-120.3	3.746	68.8	0.050	15.3	0.649	-74.6
8.0	0.663	-134.7	3.572	55.9	0.046	6.9	0.612	-82.6
9.0	0.614	-157.7	3.501	41.4	0.044	5.6	0.605	-87.5
10.0	0.587	-179.9	3.388	26.4	0.044	2.1	0.585	-97.0
11.0	0.561	168.8	3.307	13.4	0.044	0.2	0.562	-110.8
12.0	0.539	153.6	3.248	0.0	0.045	2.0	0.551	-122.8
13.0	0.573	127.2	3.097	-15.8	0.049	-0.6	0.527	-131.9
14.0	0.611	104.9	2.873	-31.1	0.050	-6.1	0.510	-143.2
15.0	0.613	90.9	2.805	-46.4	0.055	-13.0	0.513	-162.9
16.0	0.620	74.4	2.730	-62.7	0.059	-20.7	0.503	178.0
17.0	0.640	58.9	2.432	-76.4	0.056	-20.7	0.463	169.1
18.0	0.692	49.7	2.365	-87.1	0.075	-32.3	0.522	157.0
19.0	0.691	32.0	2.236	-104.4	0.064	-49.1	0.540	133.7
20.0	0.731	16.7	2.163	-120.6	0.064	-59.8	0.591	117.3
21.0	0.783	7.8	2.061	-134.9	0.065	-70.3	0.578	106.6
22.0	0.771	-2.6	1.923	-148.7	0.062	-85.6	0.592	95.6
23.0	0.752	-20.8	1.800	-166.5	0.058	-103.2	0.592	76.9
24.0	0.776	-37.7	1.693	174.8	0.054	-123.0	0.584	59.7
25.0	0.756	-48.6	1.690	160.0	0.055	-139.5	0.568	45.9
26.0	0.742	-62.4	1.710	144.5	0.060	-154.9	0.555	33.7