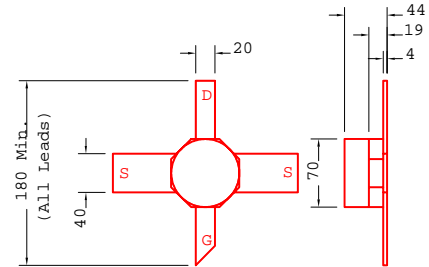


**DATA SHEET**
**High Efficiency Heterojunction Power FET**

- **NON-HERMETIC LOW COST CERAMIC 70mil PACKAGE**
- **+23.5dBm TYPICAL OUTPUT POWER**
- **7.0dB TYPICAL POWER GAIN AT 18GHz**
- **0.3 X 400 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 23.5 f=18GHz 23.5		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 10.5 f=18GHz 7.0		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>I<sub>dss</sub></b>	Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	70	120	160	mA
<b>G<sub>m</sub></b>	Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	80	130		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		250*		°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>	75mA
<b>I<sub>gsf</sub></b>	Forward Gate Current	20mA	3mA
<b>P<sub>in</sub></b>	Input Power	20dBm	@ 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	550mW	455mW

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.

# EPA040A-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	0.948	-35.2	9.101	150.6	0.021	70.0	0.643	-17.1
2.0	0.846	-66.9	7.892	124.5	0.035	55.8	0.585	-33.4
3.0	0.753	-93.4	6.667	103.2	0.043	44.7	0.538	-46.2
4.0	0.676	-118.2	5.797	84.5	0.049	36.8	0.503	-55.8
5.0	0.620	-140.9	5.131	67.6	0.053	30.8	0.459	-65.0
6.0	0.584	-158.2	4.584	52.4	0.056	27.7	0.417	-77.2
7.0	0.552	-177.3	4.133	37.4	0.059	23.8	0.401	-88.6
8.0	0.527	165.1	3.768	23.5	0.060	21.8	0.370	-97.7
9.0	0.540	139.6	3.473	8.3	0.066	20.1	0.363	-107.1
10.0	0.567	119.0	3.201	-7.1	0.072	13.6	0.348	-122.4
11.0	0.573	105.6	3.058	-21.8	0.080	7.2	0.338	-143.5
12.0	0.596	89.7	2.916	-37.2	0.088	-0.9	0.344	-163.9
13.0	0.668	73.3	2.662	-52.4	0.092	-10.0	0.329	176.9
14.0	0.717	58.9	2.395	-66.9	0.094	-19.8	0.337	157.9
15.0	0.731	44.4	2.248	-83.7	0.097	-32.4	0.382	134.6
16.0	0.748	28.6	2.067	-101.6	0.095	-46.9	0.411	110.5
17.0	0.744	18.0	1.835	-114.4	0.093	-52.3	0.405	96.9
18.0	0.772	8.9	1.768	-127.1	0.101	-70.2	0.471	85.8
19.0	0.784	-7.3	1.597	-143.9	0.086	-85.7	0.503	68.2
20.0	0.809	-20.0	1.484	-160.4	0.081	-101.5	0.551	52.0
21.0	0.788	-29.3	1.401	-175.3	0.081	-116.7	0.549	38.9
22.0	0.747	-41.8	1.337	170.2	0.082	-133.9	0.538	29.7
23.0	0.762	-59.5	1.218	152.4	0.083	-153.9	0.515	10.7
24.0	0.772	-73.4	1.100	133.5	0.088	-173.7	0.502	-11.8
25.0	0.693	-89.6	1.067	116.8	0.103	169.3	0.529	-25.6
26.0	0.679	-111.5	1.065	98.2	0.130	151.4	0.500	-42.5