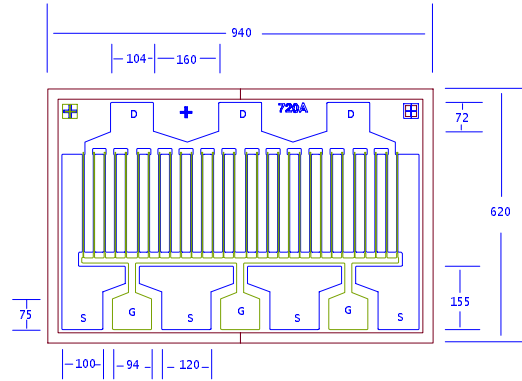


**DATA SHEET**
**High Efficiency Heterojunction Power FET**

- **+37.5dBm TYPICAL OUTPUT POWER**
- **19.0dB TYPICAL POWER GAIN AT 2GHz**
- **0.4 X 7200 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 180mA PER BIN RANGE**



Chip Thickness: 50 ± 10 microns  
 (with > 20 microns Gold Plated Heat Sink (PHS) )  
 All Dimensions In Microns

**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= 2GHz 36.0	f= 2GHz 37.5		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= 2GHz 17.5	f= 2GHz 19.0		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=2GHz	52		%
<b>I<sub>dss</sub></b>	Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	1320	2160	2820	mA
<b>G<sub>m</sub></b>	Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	1440	2280		mS
<b>V<sub>p</sub></b>	Pinch-off Voltage V <sub>ds</sub> =3V, I <sub>ds</sub> =22mA		-1.0	-2.5	V
<b>BV<sub>gd</sub></b>	Drain Breakdown Voltage I <sub>gd</sub> =7.2mA	-11	-15		V
<b>BV<sub>gs</sub></b>	Source Breakdown Voltage I <sub>gs</sub> =7.2mA	-7	-14		V
<b>R<sub>th</sub></b>	Thermal Resistance (Au-Sn Eutectic Attach)		6		°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>	1.6A
<b>I<sub>gsf</sub></b>	Forward Gate Current	360mA	60mA
<b>P<sub>in</sub></b>	Input Power	35dBm	@ 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	23 W	19 W

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.

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# EPA720A

## 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
0.500	0.947	-146.8	11.090	102.6	0.016	22.4	0.501	-168.2
1.000	0.944	-164.2	5.705	90.6	0.017	20.3	0.520	-172.3
1.500	0.944	-170.7	3.808	83.9	0.017	23.5	0.531	-173.1
2.000	0.944	-174.4	2.844	78.6	0.018	28.1	0.542	-173.3
2.500	0.945	-176.9	2.259	74.0	0.019	33.2	0.555	-173.4
3.000	0.945	-178.8	1.865	69.7	0.020	38.3	0.570	-173.5
3.500	0.946	179.5	1.582	65.7	0.021	43.3	0.586	-173.7
4.000	0.947	178.1	1.367	61.9	0.022	47.9	0.603	-174.2
4.500	0.948	176.8	1.199	58.3	0.024	52.1	0.621	-174.8
5.000	0.949	175.6	1.064	54.9	0.026	55.6	0.639	-175.6
5.500	0.951	174.5	0.952	51.6	0.028	58.6	0.657	-176.6
6.000	0.952	173.4	0.859	48.5	0.031	61.1	0.674	-177.7
6.500	0.953	172.3	0.780	45.5	0.033	63.0	0.691	-178.9
7.000	0.954	171.3	0.712	42.7	0.036	64.5	0.708	179.8
7.500	0.955	170.3	0.653	40.1	0.039	65.5	0.724	178.4
8.000	0.956	169.3	0.601	37.6	0.042	66.3	0.739	176.9
8.500	0.957	168.3	0.556	35.3	0.045	66.8	0.753	175.4
9.000	0.958	167.3	0.516	33.2	0.048	67.0	0.767	173.9
9.500	0.959	166.3	0.481	31.2	0.052	67.0	0.780	172.3
10.000	0.960	165.4	0.449	29.3	0.055	66.8	0.792	170.7

Note: The data included 0.7 mils diameter Au bonding wires:  
3 gate wires, 20 mils each; 3 drain wires, 12 mils each; 8 source wires, 7 mils each.