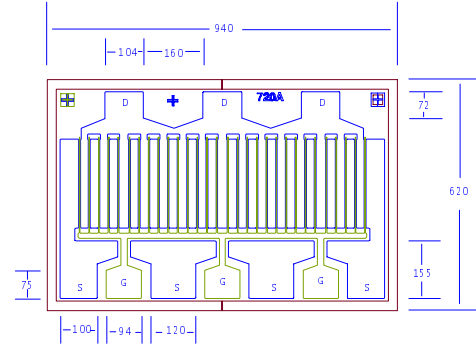


**DATA SHEET**
**Low Distortion GaAs Power FET**

- +35.5dBm TYPICAL OUTPUT POWER
- 17.5dB TYPICAL POWER GAIN AT 2GHz
- 0.5 X 7200 MICRON RECESSED “MUSHROOM” GATE
- Si<sub>3</sub>N<sub>4</sub> PASSIVATION AND PLATED HEAT SINK
- ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY
- Idss SORTED IN 120mA 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<br>V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub>           | f= 2GHz<br>33.5 | f= 2GHz<br>35.5 |      | dBm  |
| <b>G<sub>1dB</sub></b> | Gain at 1dB Compression<br>V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub>                   | f= 2GHz<br>16.0 | f= 2GHz<br>17.5 |      | dB   |
| <b>PAE</b>             | Power Added Efficiency at 1dB Compression<br>V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub> | f= 2GHz         | 36              |      | %    |
| <b>I<sub>dss</sub></b> | Saturated Drain Current<br>V <sub>ds</sub> =3V, V <sub>gs</sub> =0V                                     | 1200            | 2040            | 2640 | mA   |
| <b>G<sub>m</sub></b>   | Transconductance<br>V <sub>ds</sub> =3V, V <sub>gs</sub> =0V  | 840             | 1100            |      | mS   |
| <b>V<sub>p</sub></b>   | Pinch-off Voltage<br>V <sub>ds</sub> =3V, I <sub>ds</sub> =20mA   |                 | -2.0            | -3.5 | V    |
| <b>BV<sub>gd</sub></b> | Drain Breakdown Voltage<br>I <sub>gd</sub> =7.2mA   | -12             | -15             |      | V    |
| <b>BV<sub>gs</sub></b> | Source Breakdown Voltage<br>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                   | -4V                     |
| <b>I<sub>ds</sub></b>  | Drain Current           | I <sub>dss</sub>      | 2.4A                    |
| <b>I<sub>gsf</sub></b> | Forward Gate Current    | 180mA                 | 30mA                    |
| <b>P<sub>in</sub></b>  | Input Power             | 34dBm                 | @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.

# EFA720A

## DATA SHEET

### Low Distortion GaAs Power FET

#### S-PARAMETERS

8V, 1/2 Idss

| FREQ<br>(GHz) | --- S11 --- |        | --- S21 --- |       | --- S12 --- |      | --- S22 --- |        |
|---------------|-------------|--------|-------------|-------|-------------|------|-------------|--------|
|               | MAG         | ANG    | MAG         | ANG   | MAG         | ANG  | MAG         | ANG    |
| 0.500         | 0.954       | -139.8 | 7.651       | 105.9 | 0.018       | 25.1 | 0.664       | -173.7 |
| 1.000         | 0.950       | -160.3 | 4.004       | 92.2  | 0.019       | 20.5 | 0.680       | -176.3 |
| 1.500         | 0.949       | -168.0 | 2.694       | 84.8  | 0.020       | 22.1 | 0.685       | -177.2 |
| 2.000         | 0.949       | -172.3 | 2.027       | 79.1  | 0.020       | 25.1 | 0.689       | -177.6 |
| 2.500         | 0.949       | -175.1 | 1.624       | 74.1  | 0.021       | 28.5 | 0.692       | -177.7 |
| 3.000         | 0.949       | -177.3 | 1.354       | 69.5  | 0.022       | 32.1 | 0.696       | -177.8 |
| 3.500         | 0.950       | -179.1 | 1.161       | 65.2  | 0.023       | 35.5 | 0.700       | -177.8 |
| 4.000         | 0.950       | 179.4  | 1.016       | 61.0  | 0.024       | 38.8 | 0.704       | -177.9 |
| 4.500         | 0.951       | 178.1  | 0.903       | 57.0  | 0.025       | 41.8 | 0.709       | -177.9 |
| 5.000         | 0.951       | 176.9  | 0.812       | 53.1  | 0.026       | 44.6 | 0.715       | -178.0 |
| 5.500         | 0.952       | 175.7  | 0.737       | 49.3  | 0.028       | 47.2 | 0.720       | -178.1 |
| 6.000         | 0.953       | 174.7  | 0.675       | 45.6  | 0.029       | 49.5 | 0.726       | -178.2 |
| 6.500         | 0.953       | 173.6  | 0.621       | 42.0  | 0.031       | 51.6 | 0.733       | -178.4 |
| 7.000         | 0.954       | 172.7  | 0.575       | 38.5  | 0.033       | 53.5 | 0.739       | -178.6 |
| 7.500         | 0.955       | 171.7  | 0.535       | 35.1  | 0.034       | 55.2 | 0.746       | -178.8 |
| 8.000         | 0.956       | 170.7  | 0.499       | 31.8  | 0.036       | 56.7 | 0.753       | -179.0 |
| 8.500         | 0.957       | 169.8  | 0.468       | 28.6  | 0.038       | 58.0 | 0.760       | -179.3 |
| 9.000         | 0.957       | 168.9  | 0.439       | 25.5  | 0.040       | 59.1 | 0.767       | -179.6 |
| 9.500         | 0.958       | 168.0  | 0.413       | 22.6  | 0.042       | 60.1 | 0.774       | -180.0 |
| 10.000        | 0.959       | 167.1  | 0.389       | 19.7  | 0.044       | 61.0 | 0.782       | 179.6  |

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.