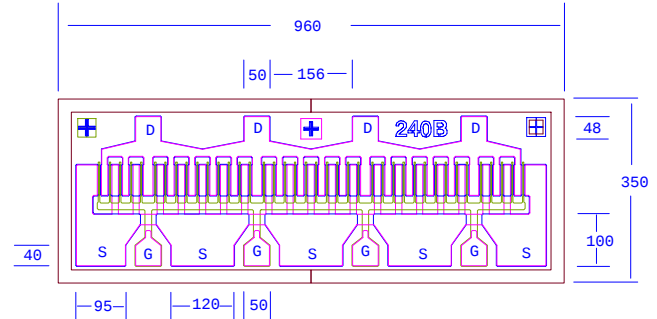


**PRELIMINARY DATA SHEET**
**Low Distortion GaAs Power FET**

- +31.0dBm TYPICAL OUTPUT POWER
- 8.5dB TYPICAL POWER GAIN AT 12GHz
- HIGH BV<sub>gd</sub> FOR 10V BIAS
- 0.3 X 2400 MICRON RECESSED “MUSHROOM” GATE
- Si<sub>3</sub>N<sub>4</sub> PASSIVATION
- ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY
- Id<sub>ss</sub> SORTED IN 40mA PER BIN RANGE



Chip Thickness: 75 ± 13 microns  
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> =10V, Id <sub>s</sub> =50% Id <sub>ss</sub><br>f=12GHz<br>f=18GHz | 29.0 | 31.0<br>31.0 |      | dBm  |
| <b>G<sub>1dB</sub></b> | Gain at 1dB Compression<br>V <sub>ds</sub> =10V, Id <sub>s</sub> =50% Id <sub>ss</sub><br>f=12GHz<br>f=18GHz         | 7.0  | 8.5<br>6.0   |      | dB   |
| <b>PAE</b>             | Power Added Efficiency at 1dB compression<br>V <sub>ds</sub> =10V, Id <sub>s</sub> =50% Id <sub>ss</sub><br>f=12GHz  |      | 33           |      | %    |
| <b>Id<sub>ss</sub></b> | Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V                                                     | 320  | 520          | 720  | mA   |
| <b>G<sub>m</sub></b>   | Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V                                                            | 200  | 280          |      | mS   |
| <b>V<sub>p</sub></b>   | Pinch-off Voltage V <sub>ds</sub> =3V, Id <sub>s</sub> =6mA                                                          |      | -2.5         | -4.0 | V    |
| <b>BV<sub>gd</sub></b> | Drain Breakdown Voltage I <sub>gd</sub> =2.4mA                                                                       | -15  | -20          |      | V    |
| <b>BV<sub>gs</sub></b> | Source Breakdown Voltage I <sub>gs</sub> =2.4mA                                                                      | -10  | -17          |      | V    |
| <b>R<sub>th</sub></b>  | Thermal Resistance (Au-Sn Eutectic Attach)                                                                           |      | 20           |      | °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    | 14V                   | 10V                     |
| <b>V<sub>gs</sub></b>  | Gate-Source Voltage     | -8V                   | -4.5V                   |
| <b>Id<sub>s</sub></b>  | Drain Current           | Id <sub>ss</sub>      | 570mA                   |
| <b>I<sub>gsf</sub></b> | Forward Gate Current    | 60mA                  | 10mA                    |
| <b>P<sub>in</sub></b>  | Input Power             | 29dBm                 | @ 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 | 6.8 W                 | 5.7 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.

# EFC240B

## PRELIMINARY DATA SHEET

### Low Distortion GaAs Power FET

#### S-PARAMETERS

10V, 1/2 Idss

| Freq   | S11   | S11    | S21   | S21   | S12   | S12  | S22   | S22    |
|--------|-------|--------|-------|-------|-------|------|-------|--------|
| GHz    | Mag   | Ang    | Mag   | Ang   | Mag   | Ang  | Mag   | Ang    |
| 1.000  | 0.944 | -86.7  | 7.064 | 130.8 | 0.041 | 41.9 | 0.296 | -132.9 |
| 2.000  | 0.915 | -125.9 | 4.551 | 104.6 | 0.052 | 22.7 | 0.374 | -146.8 |
| 3.000  | 0.907 | -144.8 | 3.217 | 89.3  | 0.055 | 13.2 | 0.409 | -152.2 |
| 4.000  | 0.907 | -155.6 | 2.450 | 78.1  | 0.054 | 6.7  | 0.433 | -154.1 |
| 5.000  | 0.912 | -161.6 | 1.929 | 69.0  | 0.052 | 2.7  | 0.460 | -157.6 |
| 6.000  | 0.911 | -166.1 | 1.596 | 60.9  | 0.050 | 0.1  | 0.487 | -158.3 |
| 7.000  | 0.920 | -169.0 | 1.362 | 54.1  | 0.049 | -2.2 | 0.512 | -159.2 |
| 8.000  | 0.915 | -171.1 | 1.181 | 47.7  | 0.047 | -3.4 | 0.549 | -161.0 |
| 9.000  | 0.919 | -173.3 | 1.040 | 41.7  | 0.045 | -4.5 | 0.586 | -161.9 |
| 10.000 | 0.922 | -176.1 | 0.922 | 35.7  | 0.041 | -5.2 | 0.620 | -162.0 |
| 11.000 | 0.925 | -179.2 | 0.826 | 30.0  | 0.041 | -6.2 | 0.647 | -162.2 |
| 12.000 | 0.932 | 178.8  | 0.747 | 24.7  | 0.039 | -7.5 | 0.673 | -163.2 |
| 13.000 | 0.933 | 177.0  | 0.681 | 19.1  | 0.037 | -7.5 | 0.690 | -165.6 |
| 14.000 | 0.939 | 175.4  | 0.622 | 13.8  | 0.035 | -7.7 | 0.716 | -168.5 |
| 15.000 | 0.941 | 172.9  | 0.569 | 8.5   | 0.035 | -7.0 | 0.739 | -170.1 |
| 16.000 | 0.945 | 170.6  | 0.522 | 3.0   | 0.035 | -6.4 | 0.752 | -172.8 |
| 17.000 | 0.946 | 169.7  | 0.483 | -2.1  | 0.035 | -7.5 | 0.764 | -177.3 |
| 18.000 | 0.952 | 170.3  | 0.452 | -7.0  | 0.034 | -6.2 | 0.776 | 176.4  |
| 19.000 | 0.955 | 170.4  | 0.421 | -12.7 | 0.034 | -6.5 | 0.791 | 169.8  |
| 20.000 | 0.955 | 168.7  | 0.387 | -18.0 | 0.035 | -3.8 | 0.813 | 164.9  |
| 21.000 | 0.954 | 160.5  | 0.359 | -23.1 | 0.034 | -5.3 | 0.835 | 168.3  |
| 22.000 | 0.948 | 158.1  | 0.327 | -26.7 | 0.035 | -2.1 | 0.847 | 166.2  |
| 23.000 | 0.958 | 157.0  | 0.303 | -30.7 | 0.035 | 0.6  | 0.870 | 163.7  |
| 24.000 | 0.956 | 156.1  | 0.275 | -33.9 | 0.036 | 2.9  | 0.876 | 162.1  |
| 25.000 | 0.961 | 155.3  | 0.251 | -36.4 | 0.038 | 7.7  | 0.887 | 160.5  |
| 26.000 | 0.954 | 153.5  | 0.232 | -39.0 | 0.036 | 10.4 | 0.897 | 160.1  |

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.