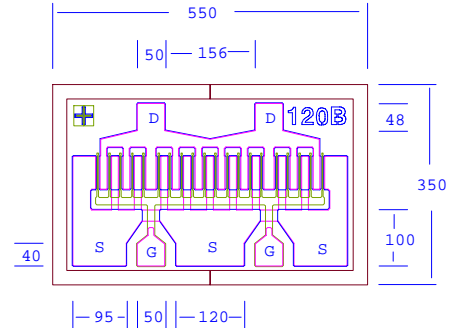


PRELIMINARY DATA SHEET
Low Distortion GaAs Power FET

- +28.0dBm TYPICAL OUTPUT POWER
- 9.5dB TYPICAL POWER GAIN AT 12GHz
- HIGH BV_{gd} FOR 10V BIAS
- 0.3 X 1200 MICRON RECESSED “MUSHROOM” GATE
- Si₃N₄ PASSIVATION
- ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY
- Id_{ss} SORTED IN 20mA PER BIN RANGE



Chip Thickness: 75 ± 13 microns
All Dimensions In Microns

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

| SYMBOLS | PARAMETERS/TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------|---|------|--------------|------|------|
| P_{1dB} | Output Power at 1dB Compression V _{ds} =10V, I _{ds} =50% I _{ds} | 26.0 | 28.0 28.0 | | dBm |
| G_{1dB} | Gain at 1dB Compression V _{ds} =10V, I _{ds} =50% I _{ds} | 7.5 | 9.5 7.0 | | dB |
| PAE | Power Added Efficiency at 1dB Compression V _{ds} =10V, I _{ds} =50% I _{ds} | | 33 | | % |
| I_{ds} | Saturated Drain Current V _{ds} =3V, V _{gs} =0V | 160 | 260 | 360 | mA |
| G_m | Transconductance V _{ds} =3V, V _{gs} =0V | 100 | 140 | | mS |
| V_p | Pinch-off Voltage V _{ds} =3V, I _{ds} =3.0 mA | | -2.5 | -4.0 | V |
| BV_{gd} | Drain Breakdown Voltage I _{gd} =1.2mA | -15 | -20 | | V |
| BV_{gs} | Source Breakdown Voltage I _{gs} =1.2mA | -10 | -17 | | V |
| R_{th} | Thermal Resistance (Au-Sn Eutectic Attach) | | 40 | | °C/W |

MAXIMUM RATINGS AT 25°C

| SYMBOLS | PARAMETERS | ABSOLUTE ¹ | CONTINUOUS ² |
|------------------------|-------------------------|-----------------------|-------------------------|
| V_{ds} | Drain-Source Voltage | 14V | 10V |
| V_{gs} | Gate-Source Voltage | -8V | -4.5V |
| I_{ds} | Drain Current | I _{ds} | 285mA |
| I_{gsf} | Forward Gate Current | 30mA | 5mA |
| P_{in} | Input Power | 26dBm | @ 3dB Compression |
| T_{ch} | Channel Temperature | 175°C | 150°C |
| T_{stg} | Storage Temperature | -65/175°C | -65/150°C |
| P_t | Total Power Dissipation | 3.4W | 2.8W |

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.

EFC120B

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 | 0.970 | -47.8 | 6.538 | 148.7 | 0.034 | 62.7 | 0.293 | -35.9 |
| 2.000 | 0.928 | -83.3 | 5.302 | 125.7 | 0.056 | 44.8 | 0.284 | -63.5 |
| 3.000 | 0.899 | -108.1 | 4.250 | 108.6 | 0.067 | 31.7 | 0.281 | -83.1 |
| 4.000 | 0.884 | -125.3 | 3.482 | 95.4 | 0.072 | 22.4 | 0.290 | -95.4 |
| 5.000 | 0.876 | -138.0 | 2.884 | 84.1 | 0.073 | 15.7 | 0.296 | -107.6 |
| 6.000 | 0.868 | -147.5 | 2.462 | 74.5 | 0.073 | 11.0 | 0.323 | -114.8 |
| 7.000 | 0.871 | -155.2 | 2.141 | 66.3 | 0.073 | 6.4 | 0.354 | -119.3 |
| 8.000 | 0.866 | -161.2 | 1.889 | 58.7 | 0.072 | 3.1 | 0.384 | -123.7 |
| 9.000 | 0.868 | -166.6 | 1.681 | 51.6 | 0.070 | 0.3 | 0.415 | -127.2 |
| 10.000 | 0.871 | -171.5 | 1.516 | 44.7 | 0.068 | -2.2 | 0.445 | -130.5 |
| 11.000 | 0.874 | -176.7 | 1.380 | 38.1 | 0.066 | -4.5 | 0.475 | -134.0 |
| 12.000 | 0.878 | 179.1 | 1.263 | 31.7 | 0.064 | -6.4 | 0.507 | -137.2 |
| 13.000 | 0.878 | 175.3 | 1.159 | 25.4 | 0.063 | -8.0 | 0.532 | -140.6 |
| 14.000 | 0.884 | 172.1 | 1.074 | 19.5 | 0.062 | -8.3 | 0.561 | -144.4 |
| 15.000 | 0.885 | 168.4 | 0.992 | 13.5 | 0.060 | -9.9 | 0.581 | -148.3 |
| 16.000 | 0.890 | 164.3 | 0.926 | 6.6 | 0.059 | -11.4 | 0.599 | -152.8 |
| 17.000 | 0.890 | 160.9 | 0.862 | 0.5 | 0.059 | -13.3 | 0.621 | -158.4 |
| 18.000 | 0.895 | 158.2 | 0.807 | -5.3 | 0.059 | -14.0 | 0.644 | -163.6 |
| 19.000 | 0.898 | 155.5 | 0.754 | -11.4 | 0.058 | -14.0 | 0.662 | -168.7 |
| 20.000 | 0.905 | 152.1 | 0.703 | -17.3 | 0.058 | -13.8 | 0.676 | -173.6 |
| 21.000 | 0.911 | 143.9 | 0.647 | -23.3 | 0.056 | -14.3 | 0.699 | -172.1 |
| 22.000 | 0.912 | 141.1 | 0.595 | -28.0 | 0.056 | -13.1 | 0.713 | -177.2 |
| 23.000 | 0.922 | 139.7 | 0.549 | -33.2 | 0.055 | -13.0 | 0.748 | 178.7 |
| 24.000 | 0.919 | 138.2 | 0.505 | -36.9 | 0.054 | -10.6 | 0.765 | 176.4 |
| 25.000 | 0.923 | 137.3 | 0.460 | -40.3 | 0.054 | -6.3 | 0.787 | 173.6 |
| 26.000 | 0.930 | 135.8 | 0.442 | -44.3 | 0.056 | -3.4 | 0.799 | 171.0 |

Note: The data included 0.7 mils diameter Au bonding wires:
2 gate wires, 15 mils each; 2 drain wires, 20 mils each; 6 source wires, 7 mils each.