

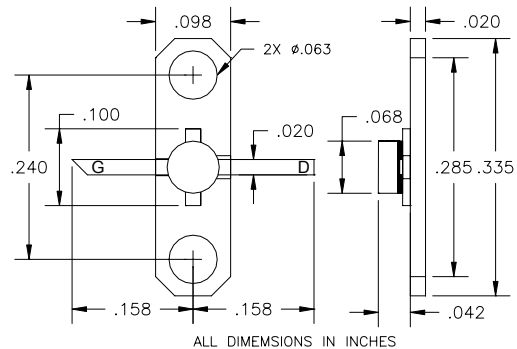


EPA120B-100P

UPDATED 10/30/2006

High Efficiency Heterojunction Power FET

- NON-HERMETIC 100MIL METAL FLANGE PACKAGE
- +29.0dBm TYPICAL OUTPUT POWER
- 11.5dB TYPICAL POWER GAIN AT 12GHZ
- 0.3 X 1200 MICRON RECESSED "MUSHROOM" GATE
- Si₃N₄ PASSIVATION
- ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY AND HIGH RELIABILITY



ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

| SYMBOLS | PARAMETERS/TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------|---|------------------|--------------------------|------|------|
| P_{1dB} | Output Power at 1dB Compression V _{DS} = 8V, I _{DS} ≈ 50% I _{DSS} | f= 12GHz 27.5 | f= 18GHz 29.0 29.0 | | dBm |
| G_{1dB} | Gain at 1dB Compression V _{DS} = 8V, I _{DS} ≈ 50% I _{DSS} | f= 12GHz 8.5 | f= 18GHz 10.0 7.5 | | dB |
| PAE | Power Added Efficiency at 1dB Compression V _{DS} = 8V, I _{DS} ≈ 50% I _{DSS} | | f=12GHz 41 | | % |
| I_{DSS} | Saturated Drain Current V _{DS} = 3 V, V _{GS} = 0 V | 220 | 360 | 500 | mA |
| G_M | Transconductance V _{DS} = 3 V, V _{GS} = 0 V | 240 | 380 | | mS |
| V_P | Pinch-off Voltage V _{DS} = 3 V, I _{DS} = 3.0 mA | | -1.0 | -2.5 | V |
| BV_{GD} | Drain Breakdown Voltage I _{GD} = 1.2mA | -13 | -15 | | V |
| BV_{GS} | Source Breakdown Voltage I _{GS} = 1.2mA | -7 | -14 | | V |
| R_{TH} | Thermal Resistance (Au-Sn Eutectic Attach) | | 45* | | °C/W |

Note: * Overall R_{th} depends on case mounting.

MAXIMUM RATINGS AT 25°C

| SYMBOLS | PARAMETERS | ABSOLUTE ¹ | CONTINUOUS ² |
|------------------------|-------------------------|-----------------------|-------------------------|
| V_{DS} | Drain-Source Voltage | 12V | 8V |
| V_{GS} | Gate-Source Voltage | -5V | -3V |
| I_{gf} | Forward Gate Current | 5.4 mA | 1.8 mA |
| I_{gr} | Reverse Gate Current | 0.9 mA | 0.3 mA |
| P_{in} | Input Power | 26 dBm | @ 3dB Compression |
| T_{ch} | Channel Temperature | 175°C | 175°C |
| T_{stg} | Storage Temperature | -65/175°C | -65/175°C |
| P_t | Total Power Dissipation | 3.0 W | 3.0 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.

Specifications are subject to change without notice.

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S-PARAMETERS

$V_{DS} = 8V, I_{DS} \approx \frac{1}{2} I_{DSS}$

| FREQ (GHz) | --- S11 --- | | --- S21 --- | | --- S12 --- | | --- S22 --- | |
|---------------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|
| | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 1 | 0.886 | -87.71 | 14.3124 | 123.85 | 0.0268 | 44.96 | 0.3521 | -61.9 |
| 2 | 0.8246 | -131.05 | 9.0738 | 94.04 | 0.034 | 23.34 | 0.3151 | -95.01 |
| 3 | 0.8044 | -153.2 | 6.4658 | 75.36 | 0.0349 | 12.44 | 0.3309 | -108.22 |
| 4 | 0.799 | -171.41 | 5.1003 | 59.46 | 0.0359 | 5.76 | 0.3655 | -113.63 |
| 5 | 0.7893 | 172.57 | 4.2435 | 43.62 | 0.0379 | -2.01 | 0.3895 | -124.84 |
| 6 | 0.7909 | 161.76 | 3.6494 | 28.44 | 0.0406 | -8.79 | 0.3918 | -143.43 |
| 7 | 0.8063 | 140.89 | 2.8637 | 9.93 | 0.0355 | -19.41 | 0.4602 | -139.7 |
| 8 | 0.8116 | 136.41 | 2.6036 | 2.29 | 0.0368 | -15.21 | 0.4581 | -158.63 |
| 9 | 0.8801 | 122.73 | 2.377 | -5.45 | 0.0367 | -10.55 | 0.5078 | -168.41 |
| 10 | 0.7926 | 101.16 | 2.2349 | -30.7 | 0.0431 | -25.49 | 0.4443 | 176.98 |
| 11 | 0.812 | 91.02 | 1.8419 | -42.24 | 0.0413 | -33.63 | 0.4565 | 175.3 |
| 12 | 0.8336 | 87.7 | 1.6794 | -51.45 | 0.0401 | -38.6 | 0.4877 | 165.85 |
| 13 | 0.8641 | 77.96 | 1.5652 | -64.06 | 0.0419 | -43.75 | 0.4987 | 152.79 |
| 14 | 0.8396 | 65.1 | 1.3631 | -78.87 | 0.0384 | -56.18 | 0.4603 | 138.32 |
| 15 | 0.8301 | 63.19 | 1.3211 | -91.22 | 0.0445 | -60.12 | 0.4783 | 126.33 |
| 16 | 0.7396 | 51.8 | 1.2456 | -109.53 | 0.0468 | -75.93 | 0.4736 | 111.28 |
| 17 | 0.5725 | 14.55 | 0.8638 | -120.63 | 0.0354 | -88.27 | 0.4301 | 107.19 |
| 18 | 0.7069 | 36.37 | 1.248 | -115.65 | 0.0638 | -73.92 | 0.4973 | 102.65 |
| 19 | 0.8117 | 26.29 | 0.9867 | -135.45 | 0.0589 | -89.54 | 0.4262 | 102.14 |
| 20 | 0.7054 | 31.13 | 1.2335 | -144.82 | 0.0785 | -91.84 | 0.4747 | 108.44 |
| 21 | 0.5985 | 17.39 | 1.1556 | -170.66 | 0.0846 | -113.27 | 0.4305 | 78.98 |
| 22 | 0.7824 | -20.53 | 1.0851 | 176.01 | 0.0789 | -119.91 | 0.3756 | 41.47 |
| 23 | 0.8254 | -26.89 | 1.1022 | 165.7 | 0.0915 | -129.87 | 0.3377 | 33.6 |
| 24 | 0.695 | -58.7 | 1.2817 | 139.97 | 0.121 | -155.16 | 0.2897 | 22.05 |
| 25 | 0.7224 | -96.71 | 1.1194 | 111.93 | 0.1192 | 177.47 | 0.2786 | -38.09 |
| 26 | 0.8361 | -85.49 | 0.9954 | 98.91 | 0.1157 | 166.16 | 0.3616 | -77.2 |

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