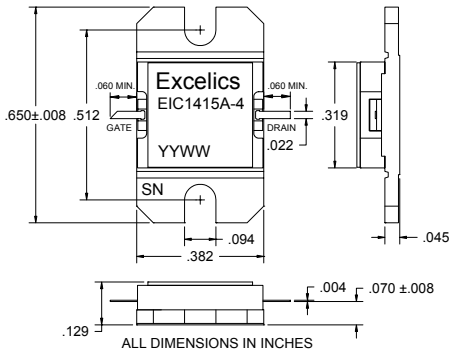
# EIC1415A-4

ISSUED 08/21/2007

## 14.40-15.40GHz 4-Watt Internally Matched Power FET

### FEATURES

- **14.40– 15.40GHz Bandwidth**
- **Input/Output Impedance Matched to 50 Ohms**
- **+36.0 dBm Output Power at 1dB Compression**
- **5.0 dB Power Gain at 1dB Compression**
- **25% Power Added Efficiency**
- **-43 dBc IM3 at Po = 25.0 dBm SCL**
- **Hermetic Metal Flange Package**
- **100% Tested for DC, RF, and $R_{TH}$**




### ELECTRICAL CHARACTERISTICS ($T_a$ = 25°C)

**Caution! ESD sensitive device.**

| SYMBOL | PARAMETERS/TEST CONDITIONS[1] | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|
| $P_{1dB}$ | Output Power at 1dB Compression f = 14.40-15.40GHz<br>$V_{DS}$ = 10 V, $I_{DSQ}$ ≈ 1100mA | 35.5 | 36.0 | | dBm |
| $G_{1dB}$ | Gain at 1dB Compression f = 14.40-15.40GHz<br>$V_{DS}$ = 10 V, $I_{DSQ}$ ≈ 1100mA | 4.5 | 5.0 | | dB |
| ΔG | Gain Flatness f = 14.40-15.40GHz<br>$V_{DS}$ = 10 V, $I_{DSQ}$ ≈ 1100mA | | | ±0.6 | dB |
| PAE | Power Added Efficiency at 1dB Compression<br>$V_{DS}$ = 10 V, $I_{DSQ}$ ≈ 1100mA f = 14.40-15.40GHz | | 25 | | % |
| $Id_{1dB}$ | Drain Current at 1dB Compression f = 14.40-15.40GHz | | 1100 | 1400 | mA |
| IM3 | Output 3rd Order Intermodulation Distortion<br>Δf = 10 MHz 2-Tone Test; Pout = 25.0 dBm S.C.L[2]<br>$V_{DS}$ = 10 V, $I_{DSQ}$ ≈ 65% IDSS f = 15.40GHz | -40 | -43 | | dBc |
| $I_{DSS}$ | Saturated Drain Current $V_{DS}$ = 3 V, $V_{GS}$ = 0 V | | 2080 | 2880 | mA |
| $V_P$ | Pinch-off Voltage $V_{DS}$ = 3 V, $I_{DS}$ = 20 mA | | -2.5 | -4.0 | V |
| $R_{TH}$ | Thermal Resistance[3] | | 5.5 | 6.0 | °C/W |

Note: 1. Tested with 100 Ohm gate resistor.
2. S.C.L. = Single Carrier Level.
3. Overall Rth depends on case mounting.

### ABSOLUTE MAXIMUM RATING

| SYMBOLS | PARAMETERS | ABSOLUTE | CONTINUOUS |
|---|---|---|---|
| **Vds** | Drain-Source Voltage | 15V | 10V |
| **Vgs** | Gate-Source Voltage | -5V | -4V |
| **Igf** | Forward Gate Current | 48mA | 14.4mA |
| **Igr** | Reverse Gate Current | -7.2mA | -2.4mA |
| **Pin** | Input Power | 35.5dBm | @ 3dB Compression |
| **Tch** | Channel Temperature | 175C | 175C |
| **Tstg** | Storage Temperature | -65C to +175C | -65C to +175C |
| **Pt** | Total Power Dissipation | 25W | 25W |

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.