

# EID1416A1-8

UPDATED 09/20/2007

## 14.0-16.0GHz 8-Watt Internally-Matched Power FET

### FEATURES

- 14.0-16.0GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +39.5 dBm Output Power at 1dB Compression
- 6.0 dB Power Gain at 1dB Compression
- 27% Power Added Efficiency
- 100% Tested for DC, RF, and  $R_{TH}$



### ELECTRICAL CHARACTERISTICS ( $T_a = 25^{\circ}\text{C}$ )



Caution! ESD sensitive device.

| SYMBOL     | PARAMETERS/TEST CONDITIONS <sup>1</sup>   | MIN  | TYP  | MAX       | UNITS                |
|------------|---|------|------|-----------|----------------------|
| $P_{1dB}$  | Output Power at 1dB Compression $f = 14.0\text{-}16.0\text{GHz}$<br>$V_{DS} = 10\text{V}$ , $I_{DSQ} \approx 2200\text{mA}$           | 38.5 | 39.5 |           | dBm                  |
| $G_{1dB}$  | Gain at 1dB Compression $f = 14.0\text{-}16.0\text{GHz}$<br>$V_{DS} = 10\text{V}$ , $I_{DSQ} \approx 2200\text{mA}$                   | 5.0  | 6.0  |           | dB                   |
| $\Delta G$ | Gain Flatness $f = 14.0\text{-}16.0\text{GHz}$<br>$V_{DS} = 10\text{V}$ , $I_{DSQ} \approx 2200\text{mA}$                             |      |      | $\pm 0.6$ | dB                   |
| PAE        | Power Added Efficiency at 1dB Compression<br>$V_{DS} = 10\text{V}$ , $I_{DSQ} \approx 2200\text{mA}$ $f = 14.0\text{-}16.0\text{GHz}$ |      | 27   |           | %                    |
| $I_{d1dB}$ | Drain Current at 1dB Compression $f = 14.0\text{-}16.0\text{GHz}$   |      | 2800 | 3600      | mA                   |
| $I_{DSS}$  | Saturated Drain Current $V_{DS} = 3\text{V}$ , $V_{GS} = 0\text{V}$   |      | 4200 | 5760      | mA                   |
| $V_P$      | Pinch-off Voltage $V_{DS} = 3\text{V}$ , $I_{DS} = 40\text{mA}$   |      | -1.2 | -2.5      | V                    |
| $R_{TH}$   | Thermal Resistance <sup>2</sup>   |      | 3.5  | 4.0       | $^{\circ}\text{C/W}$ |

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

### ABSOLUTE MAXIMUM RATING FOR EFE

| SYMBOLS   | PARAMETERS              | ABSOLUTE <sup>1</sup> | CONTINUOUS <sup>2</sup> |
|-----------|-------------------------|-----------------------|-------------------------|
| $V_{ds}$  | Drain-Source Voltage    | 15V                   | 10V                     |
| $V_{gs}$  | Gate-Source Voltage     | -5V                   | -4V                     |
| $I_{gf}$  | Forward Gate Current    | 96mA                  | 28.8mA                  |
| $I_{gr}$  | Reverse Gate Current    | -19.2mA               | -4.8mA                  |
| $P_{in}$  | Input Power             | 38.5dBm               | @ 3dB Compression       |
| $T_{ch}$  | Channel Temperature     | 175C                  | 175C                    |
| $T_{stg}$ | Storage Temperature     | -65C to +175C         | -65C to +175C           |
| $P_t$     | Total Power Dissipation | 38W                   | 38W                     |

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.

Excelics Semiconductor, Inc. 310 De Guigne Drive, Sunnyvale, CA 94085  
Phone: 408-737-1711 Fax: 408-737-1868 Web: [www.excelics.com](http://www.excelics.com)

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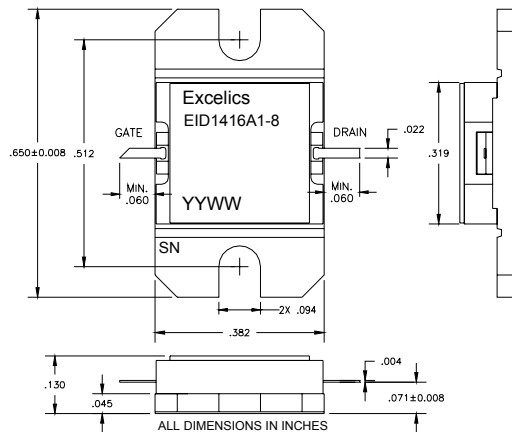
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## 14.0-16.0GHz 8-Watt Internally-Matched Power FET

### PACKAGES OUTLINE

Dimensions in inches, Tolerance  $\pm .005$  unless otherwise specified

#### EID1416A1-8 (Hermetic)

**Caution! ESD sensitive device.**

### ORDERING INFORMATION

| Part Number | Packages | Grade <sup>1</sup> | f <sub>Test</sub> (GHz) | P <sub>1dB</sub> (min) |
|-------------|----------|--------------------|-------------------------|------------------------|
| EID1416S1-8 | Hermetic | Industrial         | 14.0-16.0GHz            | 38.5                   |

Notes: 1. Contact factory for military and hi-rel grades.  
2. Exact test conditions are specified in "Electrical Characteristics" table.

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness

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