



# EIC1415A-8

ISSUED DATE: 09/06/2007

## 14.40-15.40GHz 8-Watt Internally-Matched Power FET

### FEATURES

- 14.40–15.40GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +39.0 dBm Output Power at 1dB Compression
- 5.5 dB Power Gain at 1dB Compression
- 26% Power Added Efficiency
- -42 dBc IM3 at  $P_o = 28.5$  dBm SCL
- 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 $f = 14.4\text{-}15.4\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$	38.0	39.0		dBm
$G_{1dB}$	Gain at 1dB Compression $f = 14.4\text{-}15.4\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$	4.5	5.5		dB
$\Delta G$	Gain Flatness $f = 14.4\text{-}15.4\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$			$\pm 0.6$	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$ $f = 14.4\text{-}15.4\text{GHz}$		26		%
$I_{d1dB}$	Drain Current at 1dB Compression $f = 14.4\text{-}15.4\text{GHz}$		2300	2600	mA
IM3	Output 3rd Order Intermodulation Distortion $\Delta f = 10\text{ MHz}$ 2-Tone Test; $P_{out} = 28.5\text{ dBm S.C.L.}^2$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 65\% IDSS$ $f = 15.4\text{GHz}$	-38	-42		dBc
$I_{DSS}$	Saturated Drain Current $V_{DS} = 3\text{ V}, V_{GS} = 0\text{ V}$		4000	5000	mA
$V_P$	Pinch-off Voltage $V_{DS} = 3\text{ V}, I_{DS} = 40\text{ mA}$		-2.5	-4.0	V
$R_{TH}$	Thermal Resistance <sup>3</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	86.4mA	28.8mA
$I_{gr}$	Reverse Gate Current	-14.4mA	-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.

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# EIC1415A-8

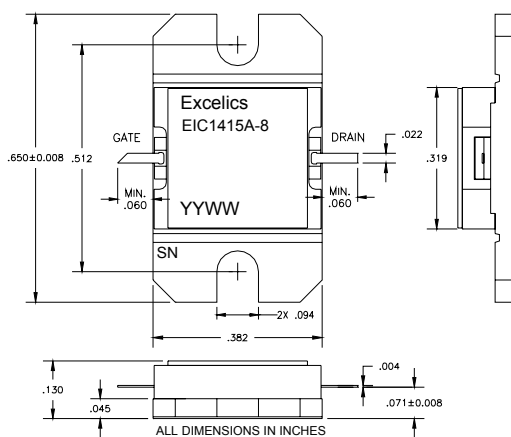
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### PACKAGES OUTLINE

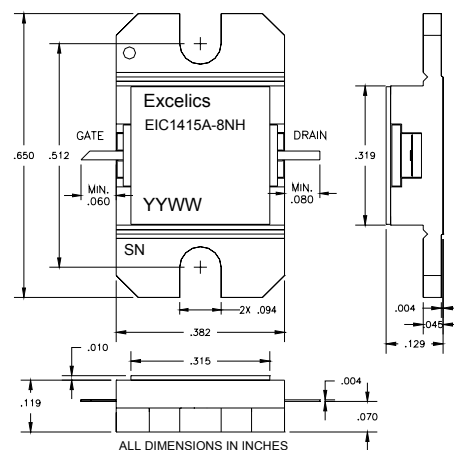
Dimensions in inches, Tolerance  $\pm .005$  unless otherwise specified

EIC1415A-8 (Hermetic)



Caution! ESD sensitive device.

EIC1415A-8NH (Non-Hermetic)



Caution! ESD sensitive device.

### ORDERING INFORMATION

Part Number	Packages	Grade <sup>1</sup>	f <sub>Test</sub> (GHz)	P <sub>1dB</sub> (min)	IM <sub>3</sub> (min) <sup>2</sup>
EIC1415A-8	Hermetic	Industrial	14.40-15.40GHz	38.0	-38
EIC1415A-8NH	Non-Hermetic	Industrial	14.40-15.40GHz	38.0	-38

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

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