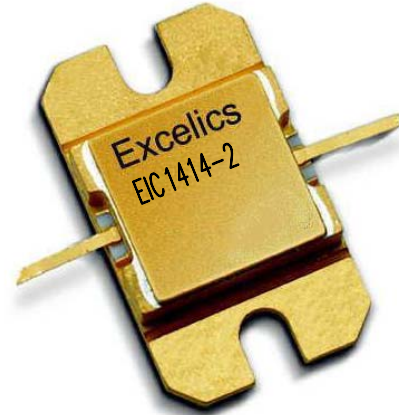


14.00-14.50 GHz 2-Watt Internally-Matched Power FET

Issued Date: 01-21-04

FEATURES

- 14.00-14.50 GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +33.5 dBm Output Power at 1dB Compression
- 6.5 dB Power Gain at 1dB Compression
- 30% Power Added Efficiency
- -42 dBc IM3 at $P_o = 22.5$ dBm SCL
- Hermetic Metal Flange Package
- 100% Tested for DC, RF, and R_{TH}



DESCRIPTION

The EIC1414-2 is a high power, highly linear, single stage MFET amplifier in a flange mount package. This amplifier features Excelics' unique PHEMT transistor technology.



Caution! ESD sensitive device.

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

SYMBOL	PARAMETERS/TEST CONDITIONS ¹	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression $f = 14.00-14.50\text{GHz}$ $V_{DS} = 10\text{ V}$, $I_{DSQ} = 550\text{mA}$	32.5	33.5		dBm
G_{1dB}	Gain at 1dB Compression $f = 14.00-14.50\text{GHz}$ $V_{DS} = 10\text{ V}$, $I_{DSQ} = 550\text{mA}$	5.5	6.5		dB
ΔG	Gain Flatness $f = 14.00-14.50\text{GHz}$ $V_{DS} = 10\text{ V}$, $I_{DSQ} = 550\text{mA}$			± 0.6	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}$, $I_{DSQ} = 550\text{mA}$ $f = 14.00-14.50\text{GHz}$		30		%
I_{d1dB}	Drain Current at 1dB Compression $f = 14.00-14.50\text{GHz}$		600	700	mA
IM3	Output 3rd Order Intermodulation Distortion $\Delta f = 10\text{ MHz}$ 2-Tone Test; $P_{out} = 22.5\text{ dBm S.C.L.}^2$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 65\% I_{DSS}$ $f = 14.50\text{GHz}$	-38	-42		dBc
I_{DSS}	Saturated Drain Current $V_{DS} = 3\text{ V}$, $V_{GS} = 0\text{ V}$		1040	1440	mA
V_P	Pinch-off Voltage $V_{DS} = 3\text{ V}$, $I_{DS} = 10\text{ mA}$		-2.5	-4	V
R_{TH}	Thermal Resistance ³		11	12	$^\circ\text{C/W}$

Notes:

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



EIC1414-2

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ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION^{1,2}

SYMBOL	CHARACTERISTIC	VALUE
V _{DS}	Drain to Source Voltage	10 V
V _{GS}	Gate to Source Voltage	-4.5 V
I _{DS}	Drain Current	IDSS
I _{GSF}	Forward Gate Current	20 mA
P _{IN}	Input Power	@ 3dB compression
P _T	Total Power Dissipation	10 W
T _{CH}	Channel Temperature	150°C
T _{STG}	Storage Temperature	-65/+150°C

Notes:

1. Operating the device beyond any of the above ratings may result in permanent damage or reduction of MTTF.
2. Bias conditions must also satisfy the following equation $P_T < (T_{CH} - T_{PKG})/R_{TH}$; where T_{PKG} = temperature of package, and $P_T = (V_{DS} * I_{DS}) - (P_{OUT} - P_{IN})$.

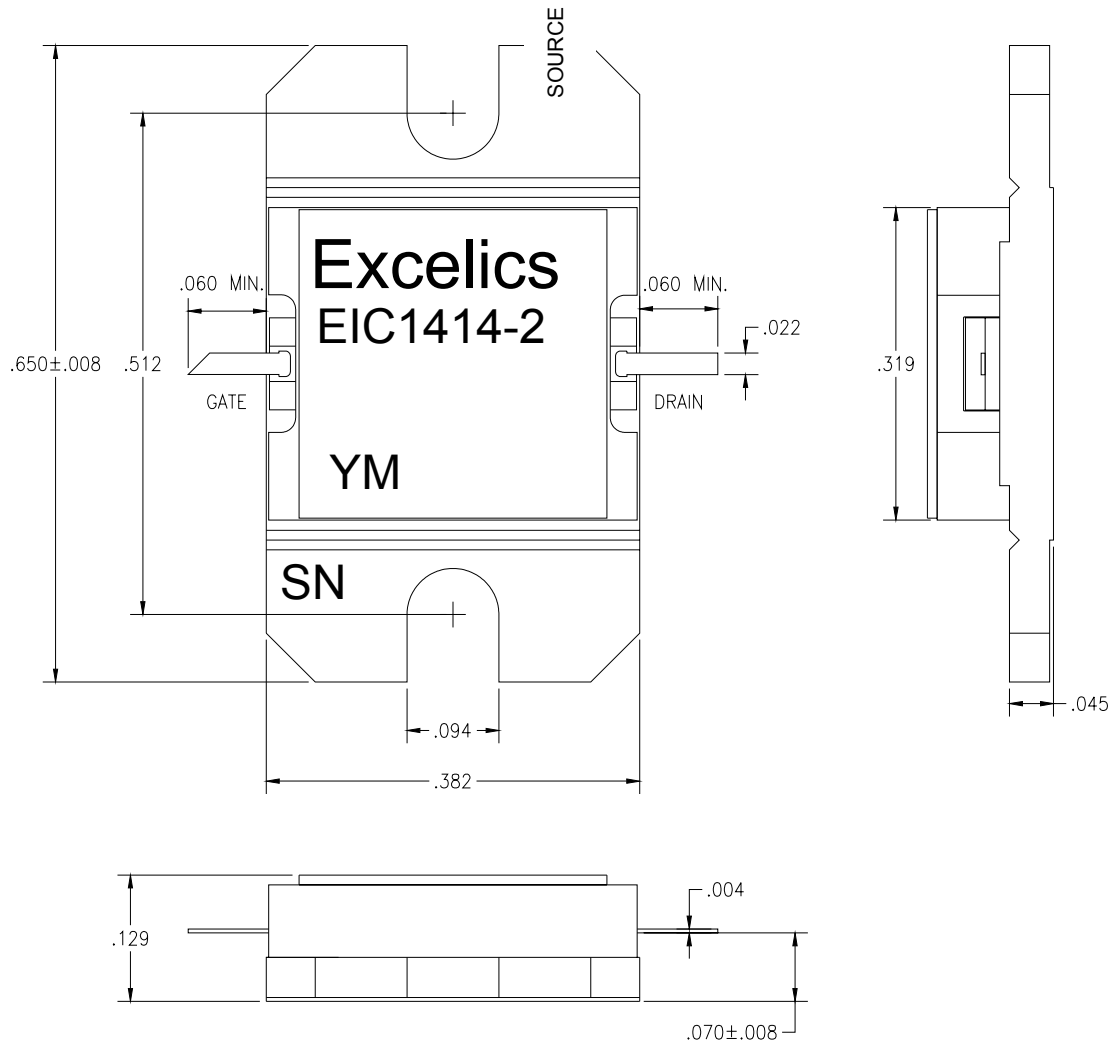
Specifications are subject to change without notice.

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

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PACKAGE OUTLINE

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



ORDERING INFORMATION

Part Number	Grade ¹	f _{Test} (GHz)	P _{1dB} (min)	IM ₃ (min) ²
EIC1414-2	Industrial	14.00-14.50 GHz	32.5	-38.0

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