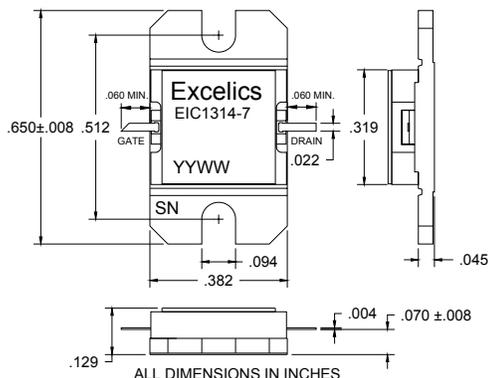


ISSUED 11/13/2008

13.75-14.50 GHz 7-Watt Internally Matched Power FET

FEATURES

- 13.75– 14.50GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +38.5 dBm Output Power at 1dB Compression
- 6.0 dB Power Gain at 1dB Compression
- 25% Power Added Efficiency
- Hermetic Metal Flange Package
- 100% Tested for DC, RF, and R_{TH}



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



Caution! ESD sensitive device.

SYMBOL	PARAMETERS/TEST CONDITIONS ¹	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression $f = 13.75-14.50\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2400\text{mA}$	38	38.5		dBm
G_{1dB}	Gain at 1dB Compression $f = 13.75-14.50\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2400\text{mA}$	5	6		dB
ΔG	Gain Flatness $f = 13.75-14.50\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2400\text{mA}$			± 0.6	dB
IMD3	Output 3rd Order Intermodulation Distortion $\Delta f = 10\text{ MHz 2-Tone Test; } P_{out} = 28.0\text{ dBm S.C.L.}^2$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 65\% IDSS$ $f = 14.50\text{ GHz}$	-41	-45		dBc
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2400\text{mA}$ $f = 13.75-14.50\text{GHz}$		25		%
I_{d1dB}	Drain Current at 1dB Compression $f = 13.75-14.50\text{GHz}$		2400	3000	mA
I_{DSS}	Saturated Drain Current $V_{DS} = 3\text{ V}, V_{GS} = 0\text{ V}$		4	6.5	A
V_P	Pinch-off Voltage $V_{DS} = 3\text{ V}, I_{DS} = 38\text{ mA}$		-2.5	-4.0	V
R_{TH}	Thermal Resistance ³		2.6	3	$^\circ\text{C/W}$

Note: 1) Tested with 50 Ohm gate resistor.

2) S.C.L. = Single Carrier Level.

 3) Overall R_{th} depends on case mounting.

MAXIMUM RATING AT 25°C ^{1,2}

SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
V_{ds}	Drain-Source Voltage	15	10V
V_{gs}	Gate-Source Voltage	-5	-4V
P_{in}	Input Power	35dBm	@ 3dB Compression
T_{ch}	Channel Temperature	175 $^\circ\text{C}$	175 $^\circ\text{C}$
T_{stg}	Storage Temperature	-65 to +175 $^\circ\text{C}$	-65 to +175 $^\circ\text{C}$
P_t	Total Power Dissipation	50W	50W

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.

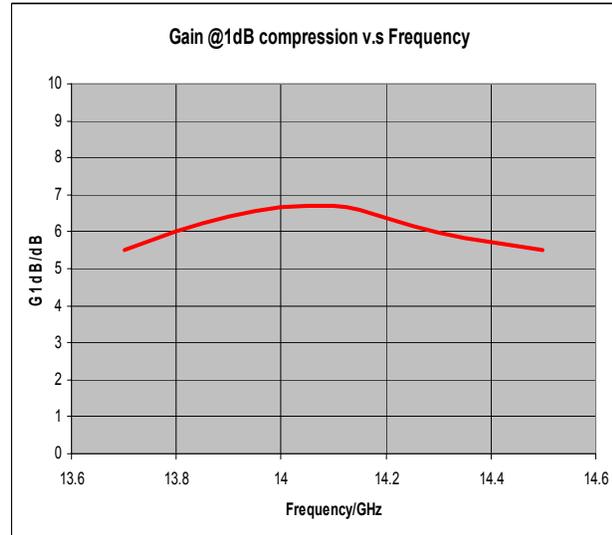
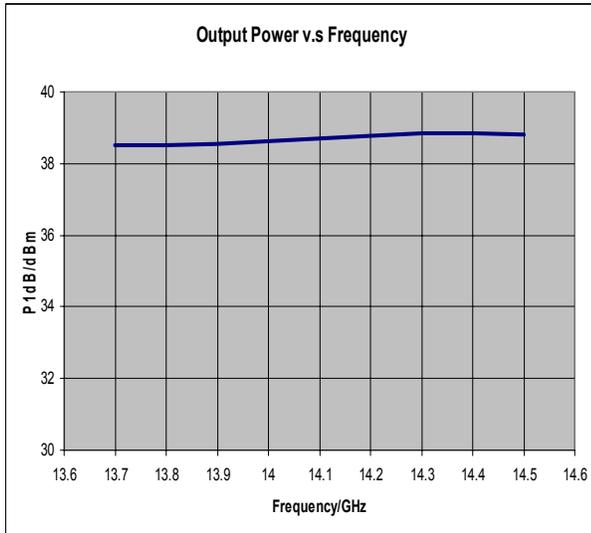
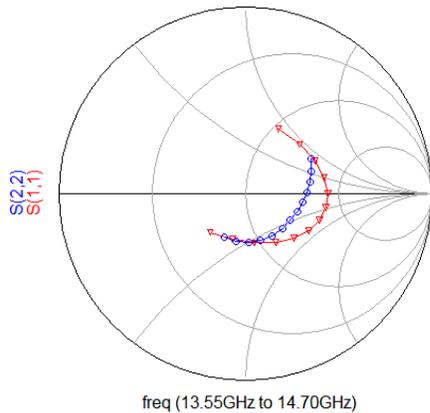
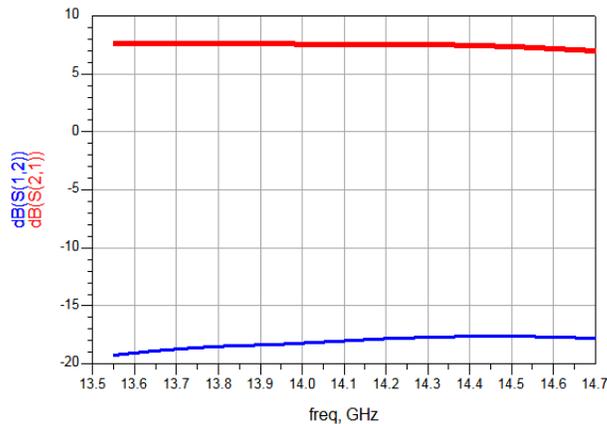
Specifications are subject to change without notice.

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P1dB v.s Frequency

G1dB v.s Frequency


freq	S			
	S(1,1)	S(1,2)	S(2,1)	S(2,2)
13.55GHz	0.390 / 62.905	0.109 / 166.430	2.399 / -166.775	0.400 / 28.140
13.65GHz	0.394 / 42.462	0.113 / 156.639	2.416 / -176.970	0.374 / 19.250
13.74GHz	0.412 / 25.322	0.117 / 147.027	2.413 / 173.203	0.350 / 10.434
13.84GHz	0.431 / 11.600	0.120 / 137.742	2.406 / 163.800	0.328 / 1.246
13.93GHz	0.442 / 0.277	0.121 / 128.880	2.403 / 154.760	0.309 / -8.397
14.03GHz	0.439 / -9.628	0.124 / 120.530	2.390 / 145.879	0.292 / -18.935
14.13GHz	0.423 / -19.253	0.126 / 111.480	2.387 / 136.912	0.280 / -30.613
14.22GHz	0.394 / -29.810	0.129 / 102.401	2.383 / 127.686	0.272 / -43.473
14.32GHz	0.353 / -42.015	0.130 / 93.312	2.377 / 118.420	0.266 / -57.638
14.41GHz	0.307 / -58.124	0.131 / 84.041	2.357 / 108.906	0.259 / -71.985
14.51GHz	0.266 / -79.873	0.132 / 74.619	2.334 / 99.207	0.258 / -86.613
14.60GHz	0.253 / -105.927	0.131 / 65.190	2.285 / 89.402	0.259 / -101.462
14.70GHz	0.281 / -132.760	0.129 / 55.990	2.223 / 79.560	0.257 / -115.760

Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)

V_{DS} = 10 V, I_{DSQ} = 2400mA

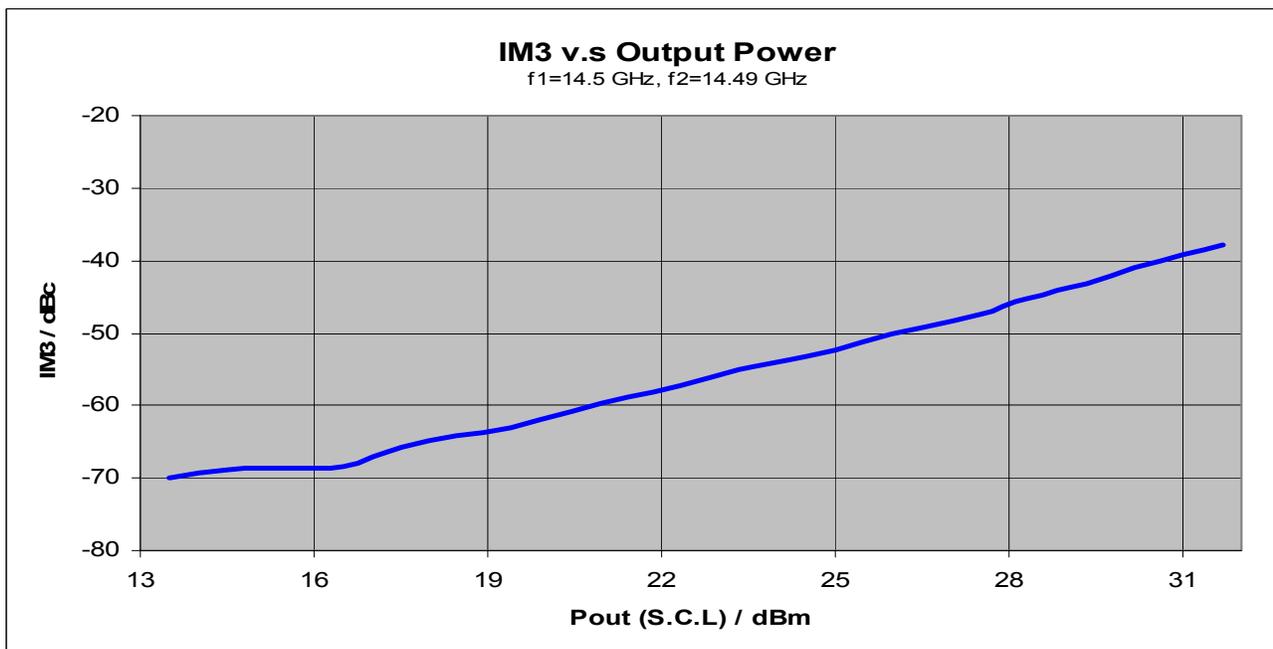
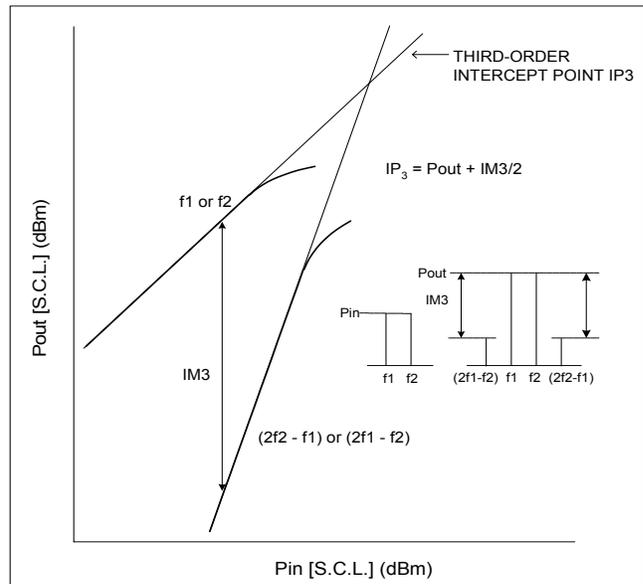
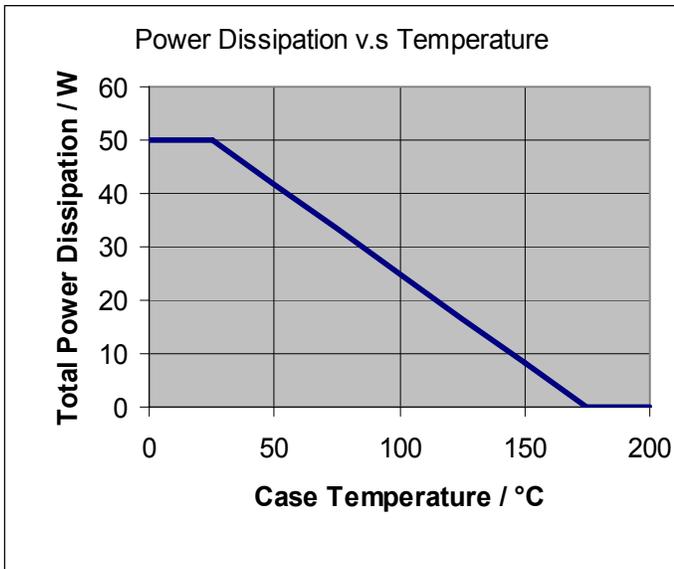
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Typical IMD3 Data (T= 25°C)

$V_{DS} = 10 \text{ V}$, $I_{DSQ} \approx 65\% I_{DSS}$



EIC1314-7

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13.75-14.50 GHz 7-Watt Internally Matched Power FET

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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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