PRELIMINARY

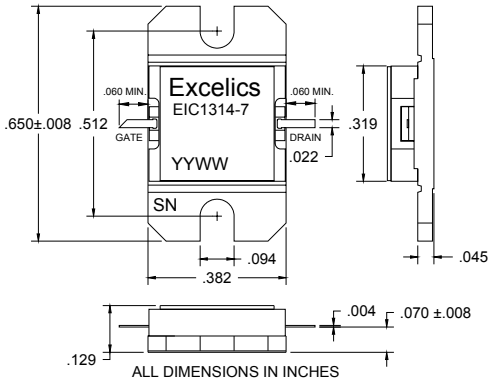
EIC1314-7

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°C)

Caution! ESD sensitive device.

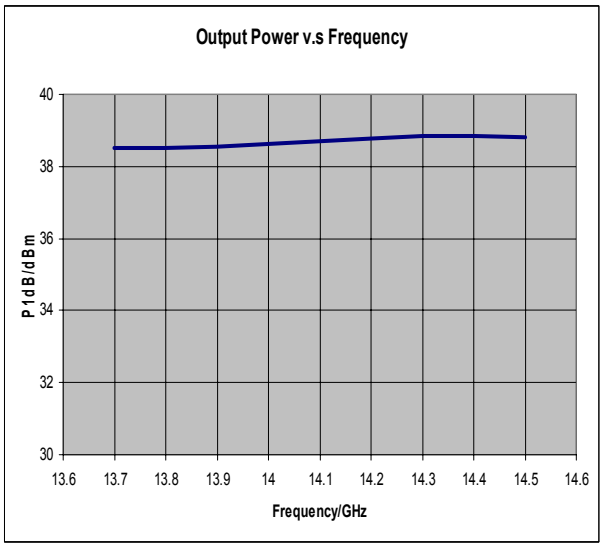
SYMBOL	PARAMETERS/TEST CONDITIONS[1]	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression f = 13.75-14.50GHz V_{DS} = 10 V, I_{DSQ} ≈ 2400mA	38	38.5		dBm
G_{1dB}	Gain at 1dB Compression f = 13.75-14.50GHz V_{DS} = 10 V, I_{DSQ} ≈ 2400mA	5	6		dB
ΔG	Gain Flatness f = 13.75-14.50GHz V_{DS} = 10 V,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

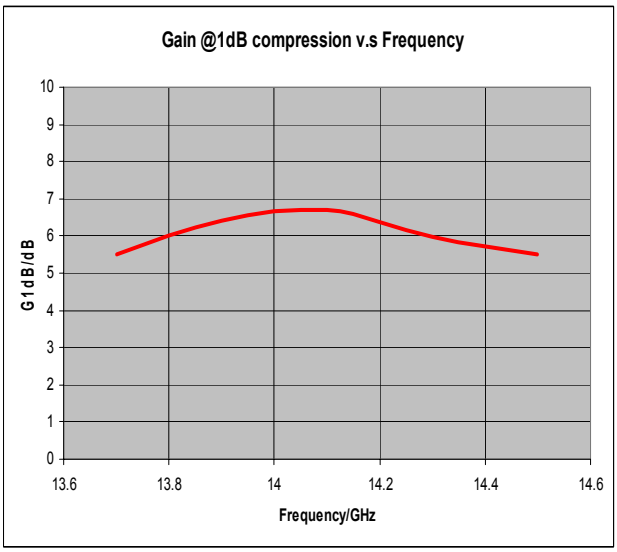
Note: 1) Tested with 50 Ohm gate resistor. 2) S.C.L. = Single Carrier Level. 3) Overall Rth depends on case mounting.

MAXIMUM RATING AT 25°C[1,2]

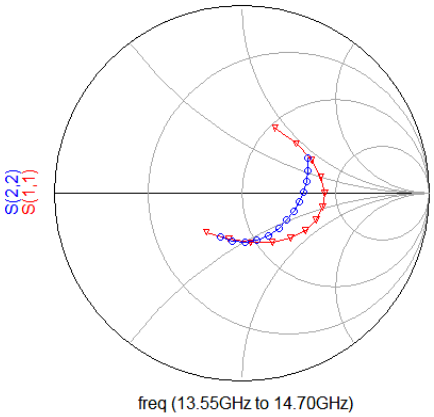
SYMBOLS	PARAMETERS	ABSOLUTE[1]	CONTINUOUS[2]
Vds	Drain-Source Voltage	15	10V
Vgs	Gate-Source Voltage	-5	-4V
Pin	Input Power	35dBm	@ 3dB Compression
Tch	Channel Temperature	175 °C	175 °C
Tstg	Storage Temperature	-65 to +175 °C	-65 to +175 °C
Pt	Total Power Dissipation	50W	50W

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.

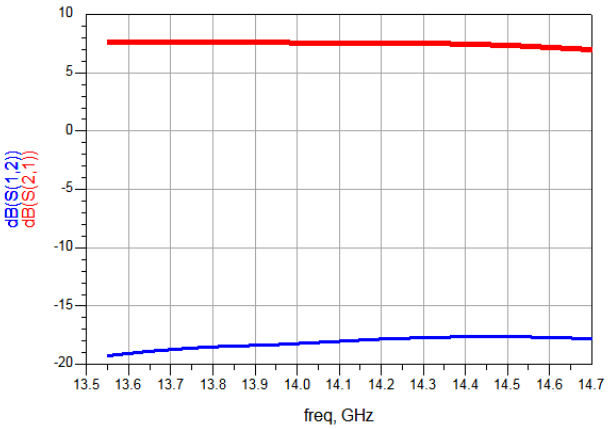




P1dB v.s Frequency



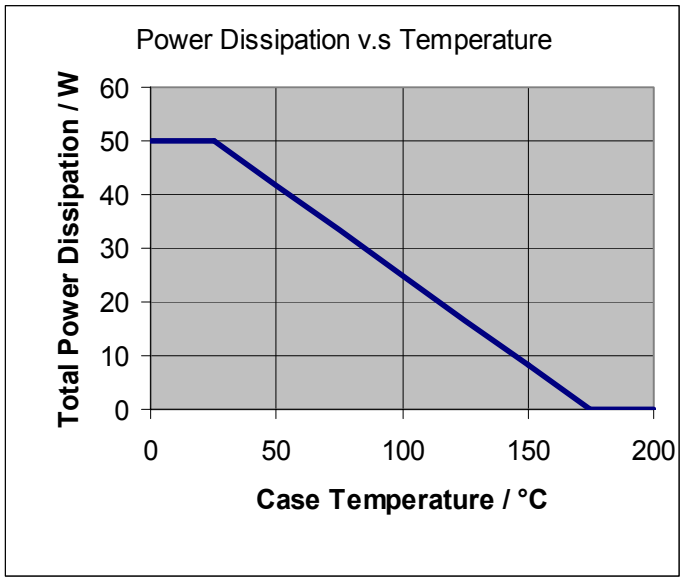
G1dB v.s Frequency

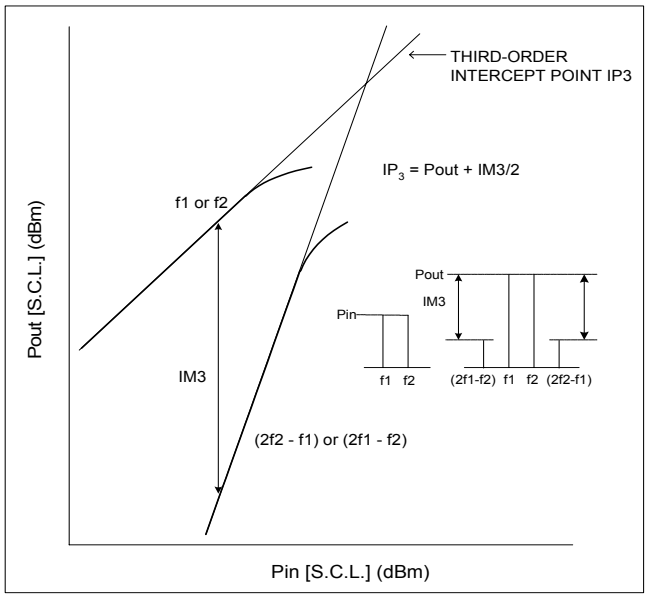


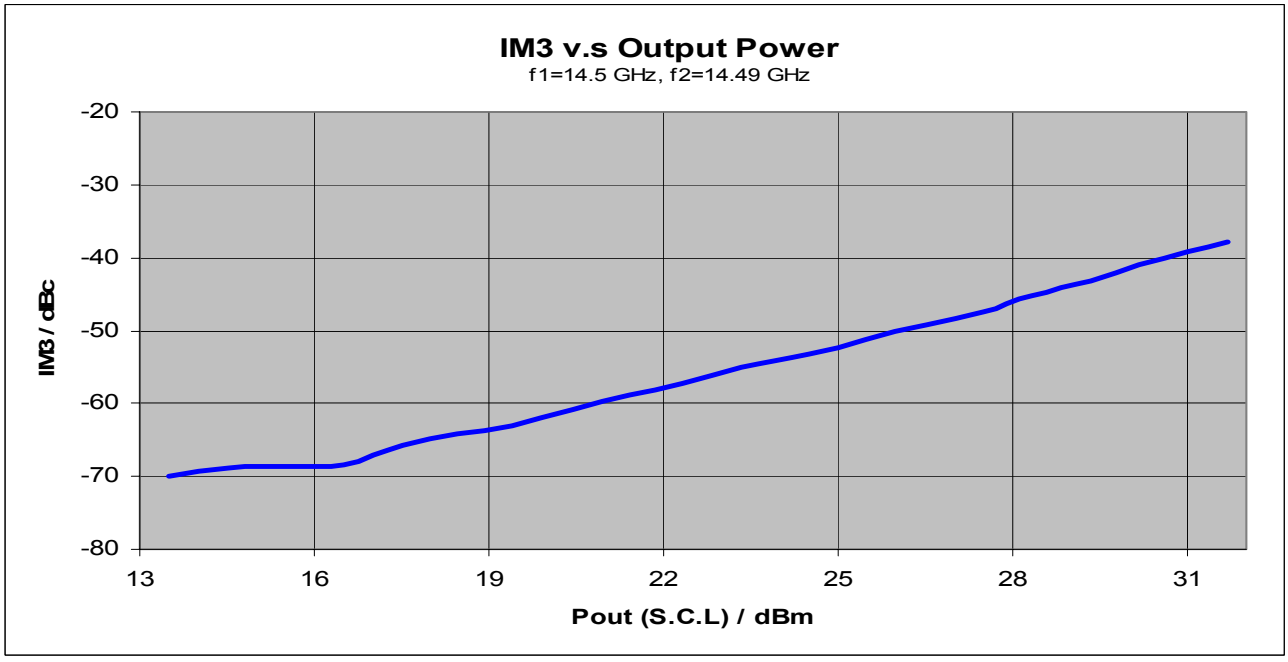
freq	S			
	S(1,1)	S(1,2)	S(2,1)	S(2,2)
13.55GHz	0.390 / 62.905	0.109 / 166.430	2.399 / -166.775	0.400 / 28.140
13.65GHz	0.394 / 42.462	0.113 / 156.639	2.416 / -176.970	0.374 / 19.250
13.74GHz	0.412 / 25.322	0.117 / 147.027	2.413 / 173.203	0.350 / 10.434
13.84GHz	0.431 / 11.600	0.120 / 137.742	2.406 / 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







Typical IMD3 Data (T= 25°C)

V_{DS} = 10 V, I_{DSQ} ≈ 65% IDss

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