



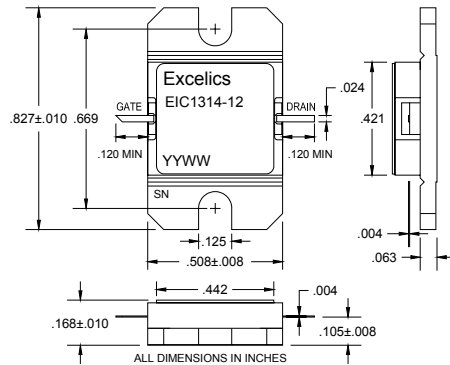
EIC1314-12

ISSUED 10/17/2008

13.75-14.50 GHz 12-Watt Internally Matched Power FET

FEATURES

- 13.75– 14.50GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +41 dBm Output Power at 1dB Compression
- 6.0 dB Power Gain at 1dB Compression
- 23% 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 $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 4200\text{mA}$ $f = 13.75\text{-}14.50\text{GHz}$	40.5	41		dBm
G_{1dB}	Gain at 1dB Compression $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 4200\text{mA}$ $f = 13.75\text{-}14.50\text{GHz}$	5	6		dB
ΔG	Gain Flatness $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 4200\text{mA}$ $f = 13.75\text{-}14.50\text{GHz}$			± 0.6	dB
IMD3	Output 3rd Order Intermodulation Distortion $\Delta f = 10\text{ MHz}$ 2-Tone Test; $P_{out} = 29.0\text{ dBm S.C.L.}^2$ $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 65\% IDSS$ $f = 14.50\text{ GHz}$	-42	-45		dBc
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}$, $I_{DSQ} \approx 4200\text{mA}$ $f = 13.75\text{-}14.50\text{GHz}$		23		%
I_{d1dB}	Drain Current at 1dB Compression $f = 13.75\text{-}14.50\text{GHz}$		4200	4800	mA
I_{DSS}	Saturated Drain Current $V_{DS} = 3\text{ V}$, $V_{GS} = 0\text{ V}$		8	10	A
V_P	Pinch-off Voltage $V_{DS} = 3\text{ V}$, $I_{DS} = 62\text{ mA}$		-2.5	-4.0	V
R_{TH}	Thermal Resistance ³		1.8	2.0	$^\circ\text{C/W}$

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}

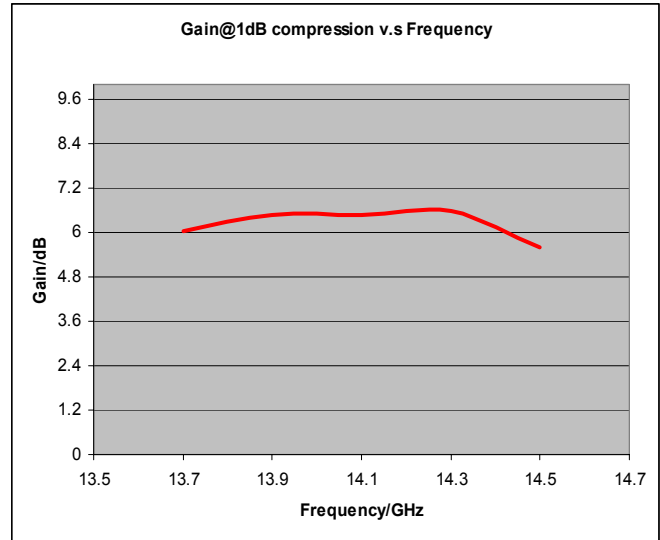
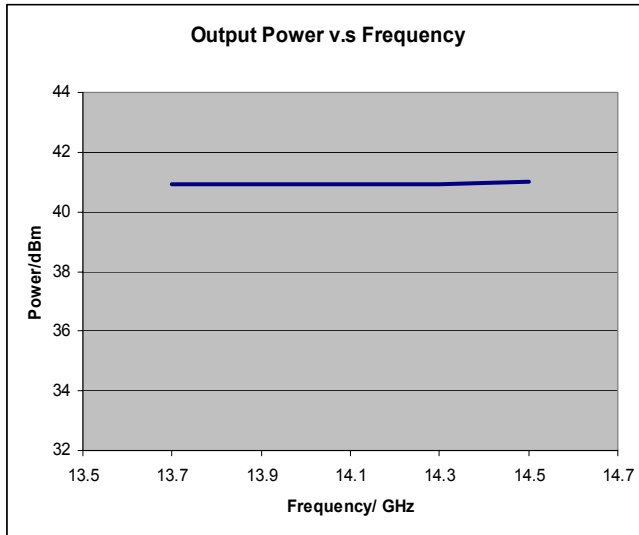
SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
V_{ds}	Drain-Source Voltage	15	10V
V_{gs}	Gate-Source Voltage	-5	-4V
P_{in}	Input Power	38dBm	@ 3dB Compression
T_{ch}	Channel Temperature	175 $^\circ\text{C}$	175 $^\circ\text{C}$
T_{stg}	Storage Temperature	-65 to +175 $^\circ\text{C}$	-65 to +175 $^\circ\text{C}$
P_t	Total Power Dissipation	75W	75W

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.

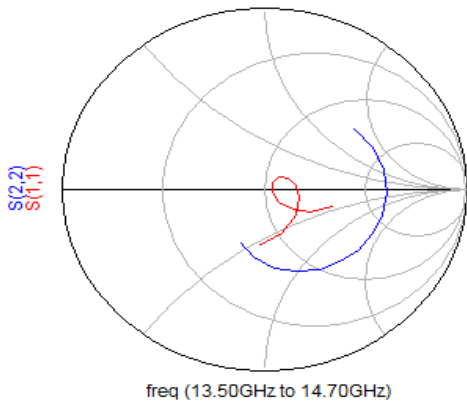
Specifications are subject to change without notice.

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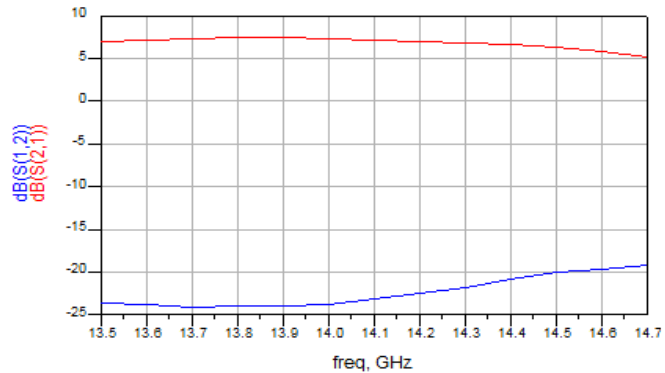
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Revised October 2008



P1dB v.s Frequency



G1dB v.s Frequency

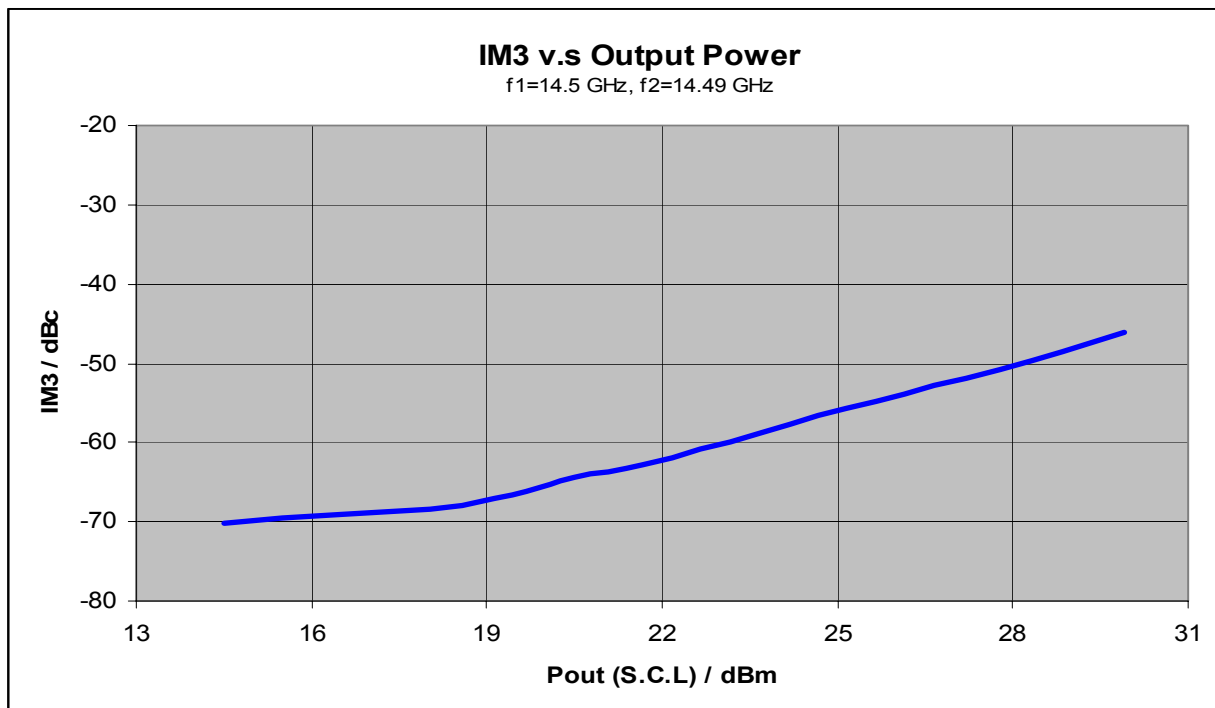
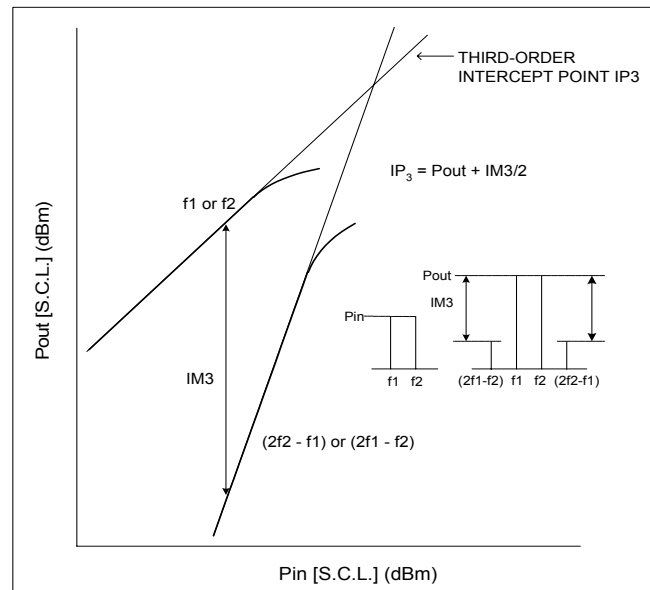
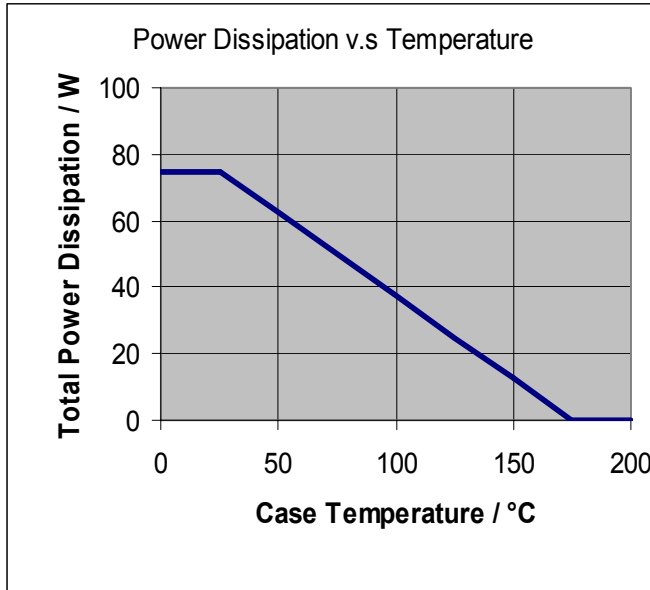


freq	S				
	S(1,1)	S(1,2)	S(2,1)	S(2,2)	
13.50GHz	0.345 / -15.380	0.066 / 136.860	2.234 / 132.490	0.557 / 36.980	
13.60GHz	0.259 / -27.650	0.064 / 118.590	2.282 / 115.630	0.582 / 23.490	
13.70GHz	0.175 / -37.400	0.062 / 95.890	2.327 / 98.990	0.598 / 10.820	
13.80GHz	0.097 / -41.170	0.063 / 73.080	2.338 / 82.110	0.605 / -1.330	
13.90GHz	0.042 / -17.500	0.063 / 51.130	2.348 / 65.660	0.598 / -13.190	
14.00GHz	0.058 / 43.970	0.064 / 26.500	2.314 / 48.910	0.589 / -23.830	
14.10GHz	0.099 / 44.710	0.070 / 6.260	2.288 / 32.410	0.571 / -35.640	
14.20GHz	0.134 / 29.490	0.075 / -14.640	2.229 / 15.720	0.543 / -46.720	
14.30GHz	0.160 / 9.020	0.081 / -37.020	2.191 / -1.090	0.517 / -58.450	
14.40GHz	0.182 / -15.270	0.090 / -56.030	2.132 / -17.860	0.473 / -70.720	
14.50GHz	0.210 / -41.810	0.100 / -74.100	2.050 / -34.950	0.432 / -83.750	
14.60GHz	0.250 / -69.860	0.103 / -90.970	1.948 / -52.060	0.369 / -97.690	
14.70GHz	0.312 / -95.780	0.109 / -108.400	1.816 / -69.490	0.307 / -113.180	

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

V_{DS} = 10 V, I_{DSQ} ≈ 4200mA

Specifications are subject to change without notice.



Typical IMD3 Data (T= 25°C)

V_{DS} = 10 V, I_{DSQ} ≈ 65% ID_{SS}