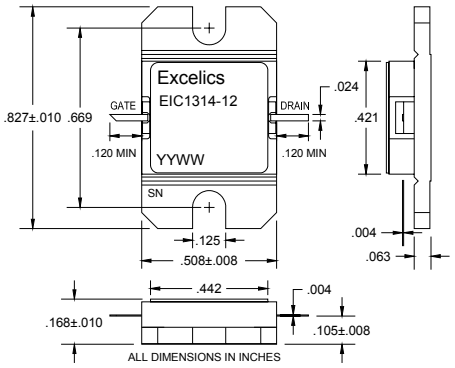
EIC1314-12

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°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} ≈ 4200mA	40.5	41		dBm
G_{1dB}	Gain at 1dB Compression f = 13.75-14.50GHz V_{DS} = 10 V, I_{DSQ} ≈ 4200mA	5	6		dB
ΔG	Gain Flatness f = 13.75-14.50GHz V_{DS} = 10 V, I_{DSQ} ≈4200mA			±0.6	dB
IMD3	Output 3rd Order Intermodulation Distortion Δf = 10 MHz 2-Tone Test; Pout = 29.0 dBm S.C.L[2] V_{DS} = 10 V, I_{DSQ} ≈ 65% IDSS f = 14.50 GHz	-42	-45		dBc
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, I_{DSQ} ≈ 4200mA f = 13.75-14.50GHz		23		%
Id_{1dB}	Drain Current at 1dB Compression f = 13.75-14.50GHz		4200	4800	mA
I_{DSS}	Saturated Drain Current V_{DS} = 3 V, V_{GS} = 0 V		8	10	A
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 62 mA		-2.5	-4.0	V
R_{TH}	Thermal Resistance[3]		1.8	2.0	°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	38dBm	@ 3dB Compression
Tch	Channel Temperature	175 °C	175 °C
Tstg	Storage Temperature	-65 to +175 °C	-65 to +175 °C
Pt	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.

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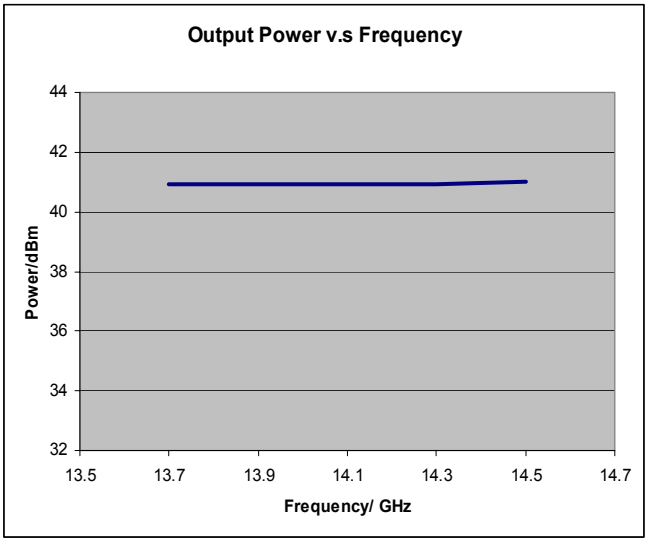
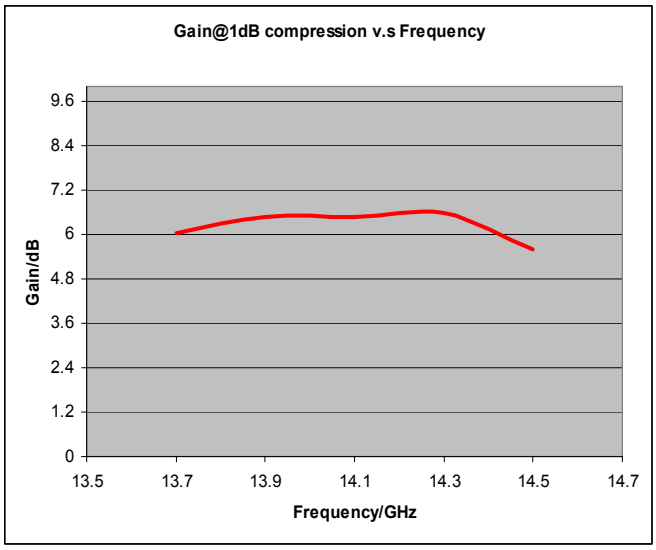
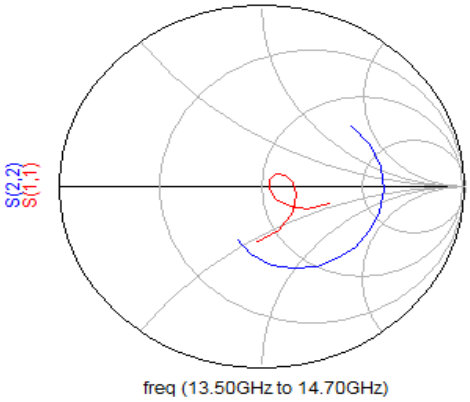
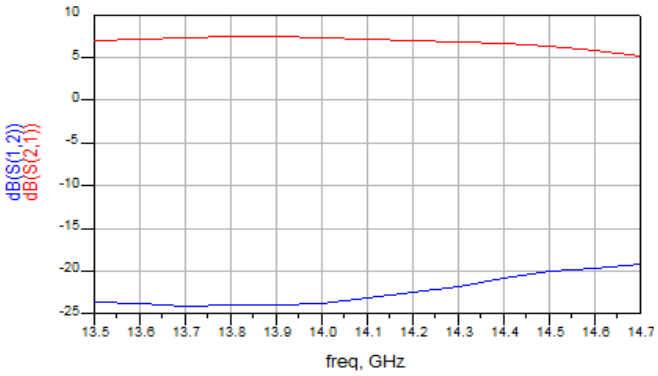




P1dB v.s Frequency



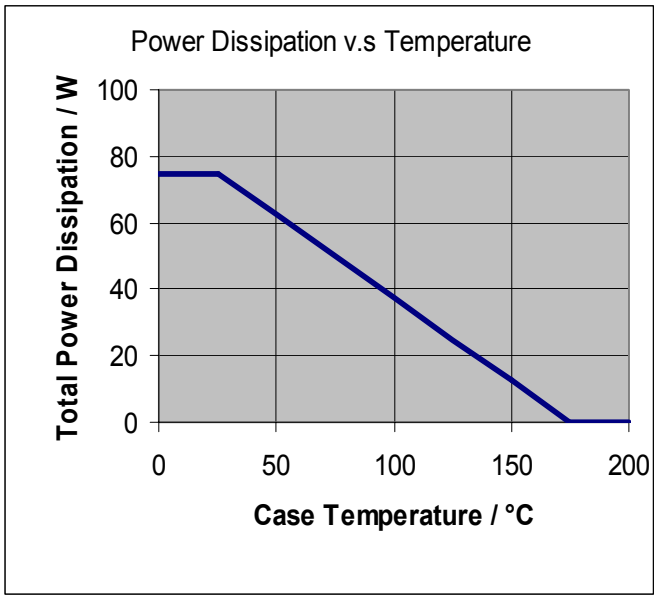
G1dB v.s Frequency

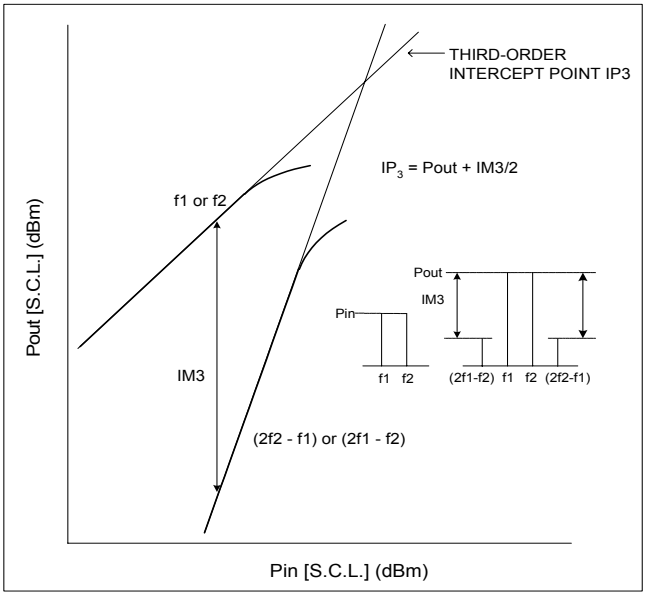


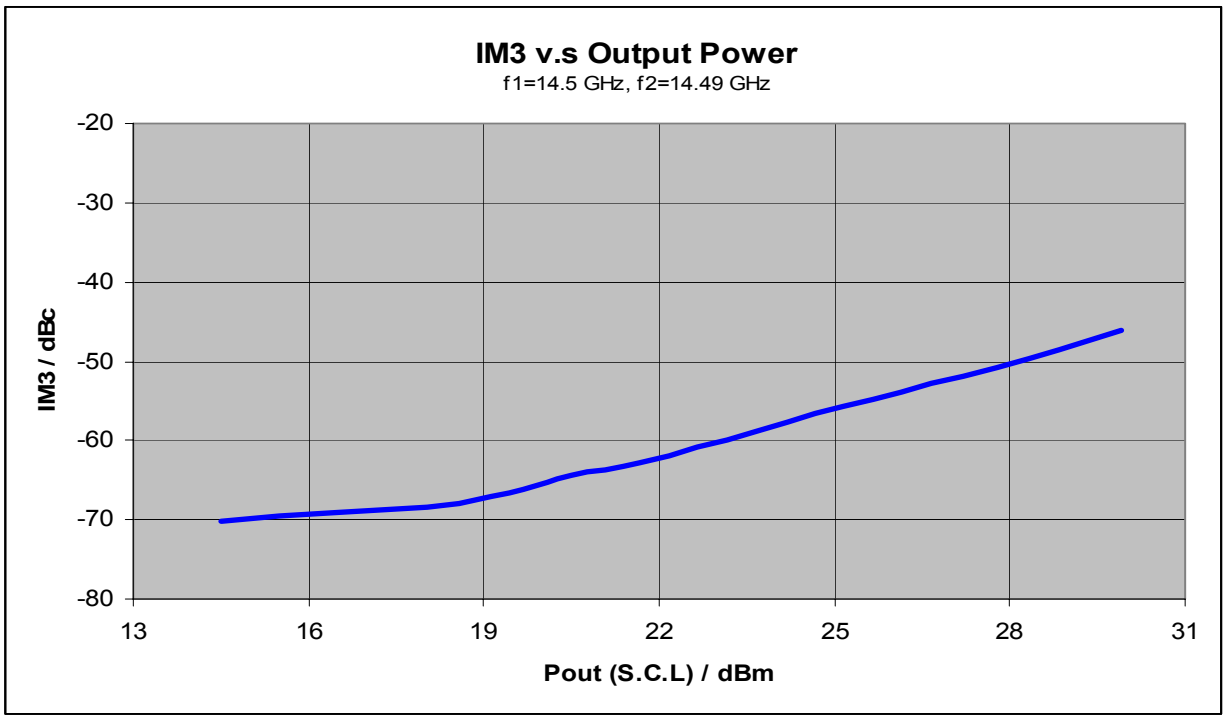
freq	S			
	S(1,1)	S(1,2)	S(2,1)	S(2,2)
13.50GHz	0.345 / -15.380	0.066 / 136.860	2.234 / 132.490	0.557 / 36.980
13.60GHz	0.259 / -27.650	0.064 / 118.590	2.282 / 115.630	0.582 / 23.490
13.70GHz	0.175 / -37.400	0.062 / 95.890	2.327 / 98.990	0.598 / 10.820
13.80GHz	0.097 / -41.170	0.063 / 73.080	2.338 / 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







Typical IMD3 Data (T= 25°C)

V_{DS} = 10 V, I_{DSQ} ≈ 65% IDss