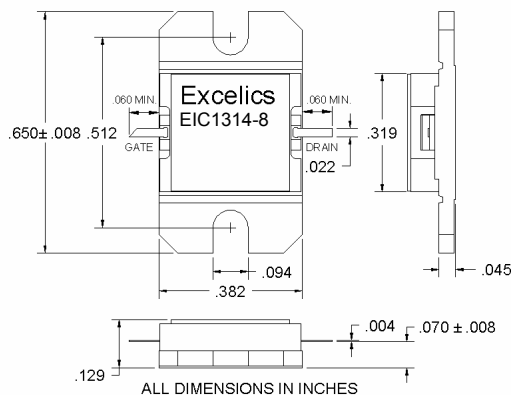


ISSUED 2/06/2009

13.75-14.5 GHz 8-Watt Internally Matched Power FET

FEATURES

- 13.75– 14.5GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +39.0 dBm Output Power at 1dB Compression
- 6.0 dB Power Gain at 1dB Compression
- 24% Power Added Efficiency
- Hermetic Metal Flange Package



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 $f = 13.75\text{-}14.5\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2400\text{mA}$	38.5	39.0		dBm
G_{1dB}	Gain at 1dB Compression $f = 13.75\text{-}14.5\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2400\text{mA}$	5.0	6.0		dB
ΔG	Gain Flatness $f = 13.75\text{-}14.5\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2400\text{mA}$			± 0.6	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2400\text{mA}$ $f = 13.75\text{-}14.5\text{GHz}$		24		%
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 $f = 14.50\text{ GHz}$	-44	-47		dBc
I_{d1dB}	Drain Current at 1dB Compression $f = 13.75\text{-}14.5\text{GHz}$		2500	2800	mA
I_{DSS}	Saturated Drain Current $V_{DS} = 3\text{ V}, V_{GS} = 0\text{ V}$		4000	6000	mA
V_p	Pinch-off Voltage $V_{DS} = 3\text{ V}, I_{DS} = 40\text{ mA}$		-2.5	-4.0	V
R_{TH}	Thermal Resistance ³		3.5	4.0	$^\circ\text{C/W}$

Note: 1) Tested with 15 Ohm gate resistor. 2) S.C.L. = Single Carrier Level. 3) Overall Rth depends on case mounting.

ABSOLUTE MAXIMUM RATING^{1,2}

SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
Vds	Drain-Source Voltage	15	10V
Vgs	Gate-Source Voltage	-5	-4V
Igsf	Forward Gate Current	86.4mA	28.8mA
Igsr	Reverse Gate Current	-14.4mA	-4.8mA
Pin	Input Power	37 dBm	@ 3dB Compression
Tch	Channel Temperature	175 $^\circ\text{C}$	175 $^\circ\text{C}$
Tstg	Storage Temperature	-65 to +175 $^\circ\text{C}$	-65 to +175 $^\circ\text{C}$
Pt	Total Power Dissipation	37.5W	37.5W

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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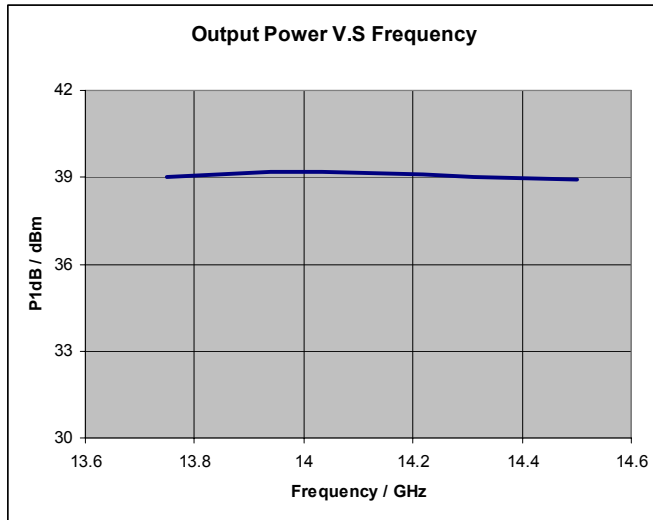
Revised February 2009



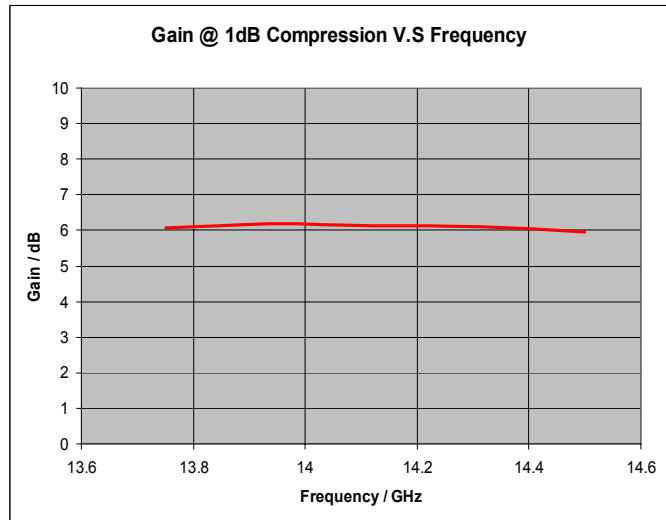
EIC1314-8

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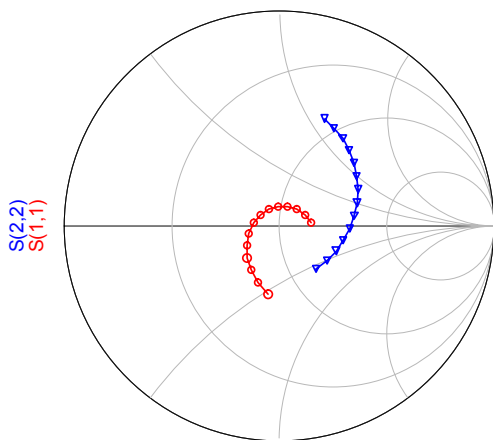
13.75-14.5 GHz 8-Watt Internally Matched Power FET



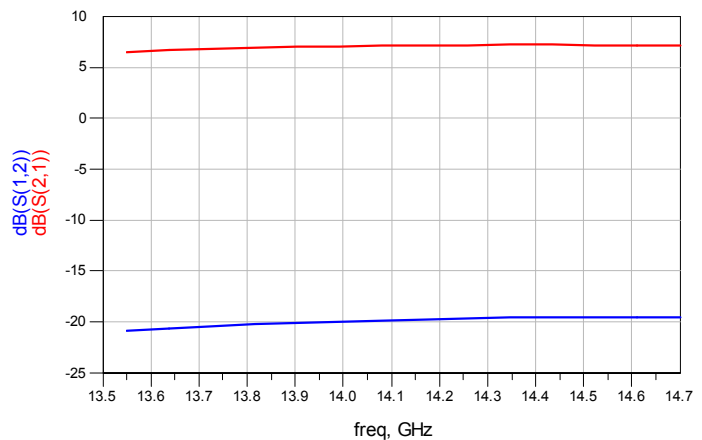
P1dB v.s Frequency



G1dB v.s Frequency



freq (13.55GHz to 14.70GHz)



freq	S			
	S(1,1)	S(1,2)	S(2,1)	S(2,2)
13.55GHz	0.318 / -99.635	0.091 / 83.555	2.127 / 105.940	0.542 / 67.220
13.64GHz	0.280 / -110.611	0.093 / 74.732	2.158 / 97.551	0.522 / 60.828
13.73GHz	0.243 / -122.815	0.095 / 66.548	2.187 / 89.114	0.502 / 54.065
13.82GHz	0.209 / -135.832	0.097 / 58.383	2.221 / 80.625	0.479 / 47.347
13.90GHz	0.175 / -149.745	0.099 / 49.523	2.245 / 71.874	0.454 / 40.295
13.99GHz	0.146 / -167.110	0.100 / 40.173	2.257 / 63.452	0.430 / 32.829
14.08GHz	0.120 / 172.763	0.102 / 32.163	2.272 / 54.877	0.404 / 25.080
14.17GHz	0.102 / 149.063	0.103 / 23.382	2.285 / 46.163	0.377 / 16.820
14.26GHz	0.093 / 122.419	0.104 / 14.730	2.289 / 37.466	0.352 / 7.883
14.35GHz	0.093 / 94.109	0.105 / 6.052	2.294 / 28.755	0.328 / -1.916
14.43GHz	0.099 / 67.353	0.105 / -2.801	2.295 / 20.041	0.305 / -12.402
14.52GHz	0.112 / 44.513	0.105 / -11.762	2.286 / 11.332	0.287 / -23.532
14.61GHz	0.130 / 24.077	0.105 / -21.138	2.282 / 2.498	0.273 / -35.903
14.70GHz	0.149 / 7.110	0.105 / -30.090	2.270 / -6.260	0.260 / -49.190

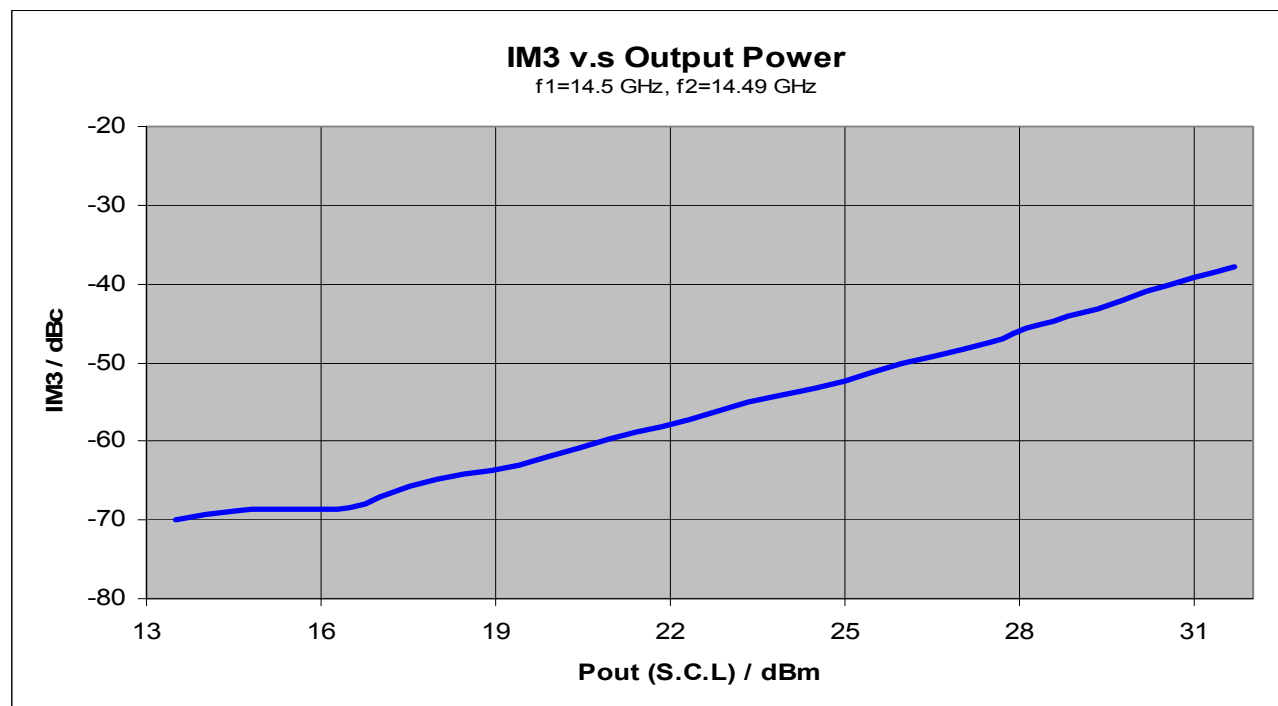
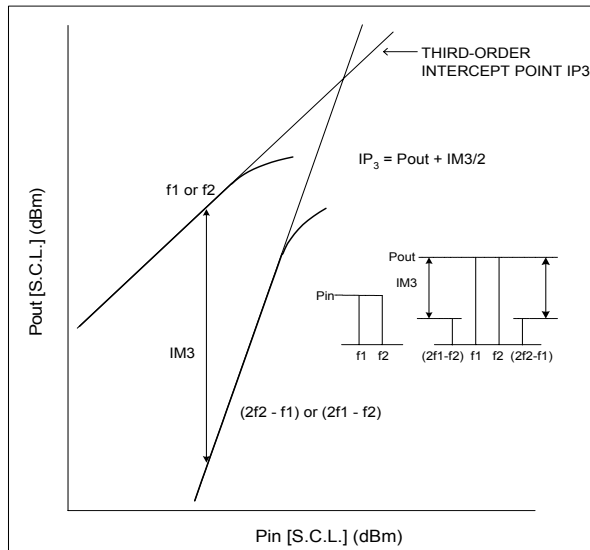
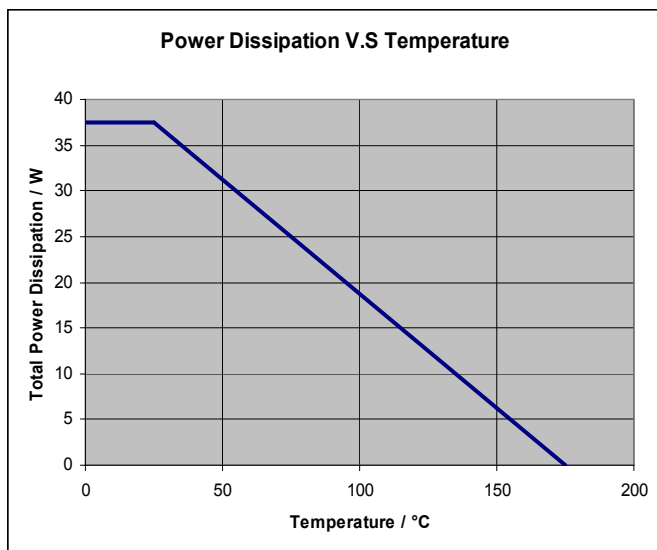
Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)

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

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Typical IMD3 Data (T= 25°C)

V_{DS} = 10 V, I_{DSQ} ≈ 2400 mA

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EIC1314-8

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13.75-14.5 GHz 8-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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