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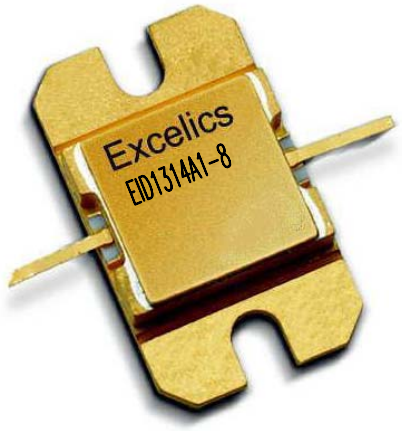
EID1314A1-8

UPDATED 07/12/2007

13.75-14.50 GHz 8-Watt Internally-Matched Power FET

FEATURES

- **13.75-14.50 GHz Bandwidth**
- **Input/Output Impedance Matched to 50 Ohms**
- **+39.5 dBm Output Power at 1dB Compression**
- **6.5 dB Power Gain at 1dB Compression**
- **27% Power Added Efficiency**
- **Hermetic Metal Flange Package**
- **100% Tested for DC, RF, and R_{TH}**



DESCRIPTION

The EID1314A1-8 is a high power, highly linear, single stage MFET amplifier in a flange mount package. This amplifier features Excelics' unique PHEMT transistor technology.

Caution! ESD sensitive device.

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

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} ≈ 2200mA	38.5	39.5		dBm
G_{1dB}	Gain at 1dB Compression f = 13.75-14.50GHz V_{DS} = 10 V, I_{DSQ} ≈ 2200mA	5.5	6.5		dB
ΔG	Gain Flatness f = 13.75-14.50GHz V_{DS} = 10 V, I_{DSQ} ≈ 2200mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, I_{DSQ} ≈ 2200mA f = 13.75-14.50GHz		27		%
Id_{1dB}	Drain Current at 1dB Compression f = 13.75-14.50GHz		2800	3600	mA
I_{DSS}	Saturated Drain Current V_{DS} = 3 V, V_{GS} = 0 V		4200	5760	mA
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 40 mA		-1.2	-2.5	V
R_{TH}	Thermal Resistance[2]		3.5	4.0	°C/W

Notes:
1. Tested with 100 Ohm gate resistor.
2. Overall Rth depends on case mounting.

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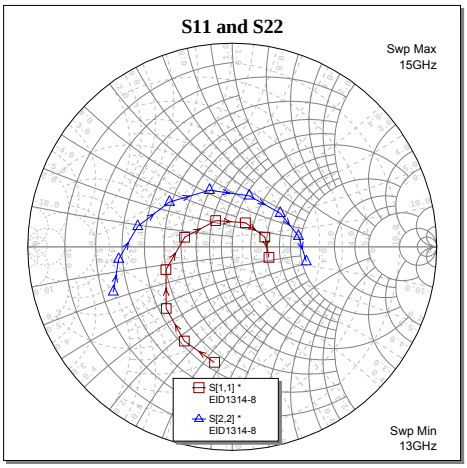
ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION[1,2]

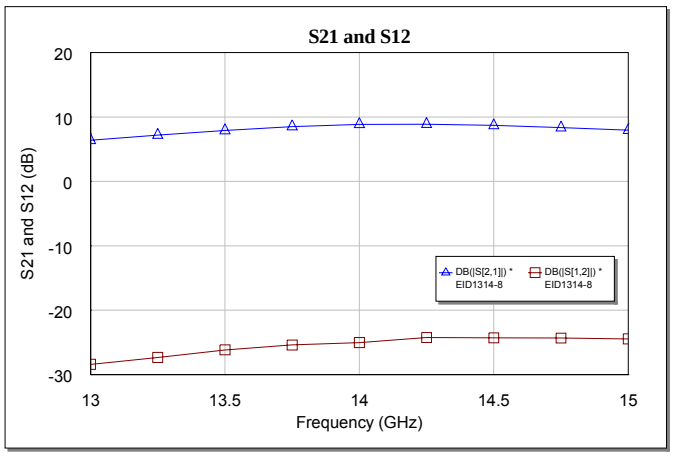
SYMBOL	CHARACTERISTIC	VALUE
V_{DS}	Drain to Source Voltage	10 V
V_{GS}	Gate to Source Voltage	-4.5 V
I_{DS}	Drain Current	IDSS
I_{GSF}	Forward Gate Current	80 mA
P_{IN}	Input Power	@ 3dB compression
P_T	Total Power Dissipation	35 W
T_{CH}	Channel Temperature	150°C
T_{STG}	Storage Temperature	-65/+150°C

Notes:
1. Operating the device beyond any of the above ratings may result in permanent damage or reduction of MTTF.
2. Bias conditions must also satisfy the following equation $P_T < (T_{CH} - T_{PKG})/R_{TH}$; where T_{PKG} = temperature of package, and $P_T = (V_{DS} * I_{DS}) - (P_{OUT} - P_{IN})$.

PERFORMANCE DATA

Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)
V_{DS} = 10 V, I_{DSQ} ≈ 2200mA





FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13.0	0.574	-98.65	2.0849	-178.44	0.038	168.62	0.622	-159.14
13.2	-0.5306	113.08	2.2429	166.32	0.0413	154.22	0.5702	-170.72
13.4	-0.4774	128.57	2.4099	150.05	0.0467	135.32	0.5086	175.71
13.6	-0.4077	145.55	2.5516	132.84	0.0504	118.29	0.4354	159.24
13.8	-0.3254	166.06	2.691	114.68	0.0542	97.21	0.3624	138.73
14.0	0.2373	168.69	2.7742	95.48	0.0561	76.29	0.299	111.82
14.2	0.1656	132.83	2.7922	76.3	0.061	55.52	0.2647	80.39
14.4	0.1325	86.1	2.747	57.12	0.0615	37.32	0.2747	48.13
14.6	0.1456	41.09	2.6903	38.72	0.061	15.7	0.3018	23.52
14.8	0.1724	9.26	2.5955	20.97	0.0602	-2.53	0.3389	4.09
15.0	0.1868	-16	2.498	3.35	0.0599	-21.47	0.3695	-11.37

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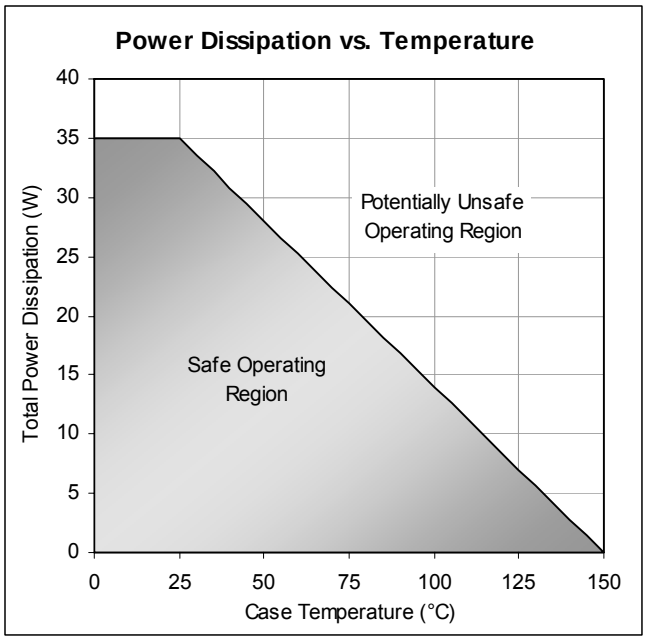
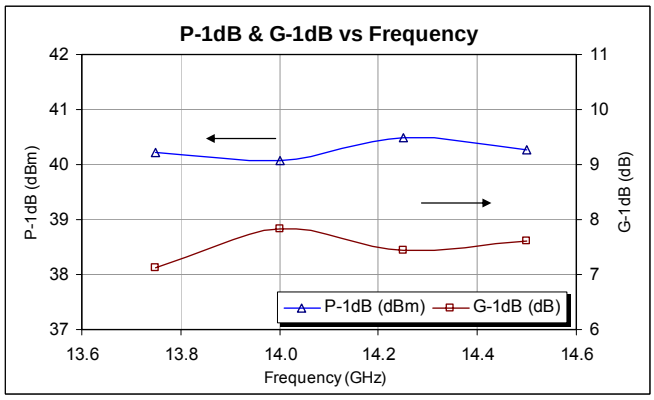
Power De-rating Curve



Typical Power Data (V_{DS} = 10 V, I_{DSQ} = 2200 mA)



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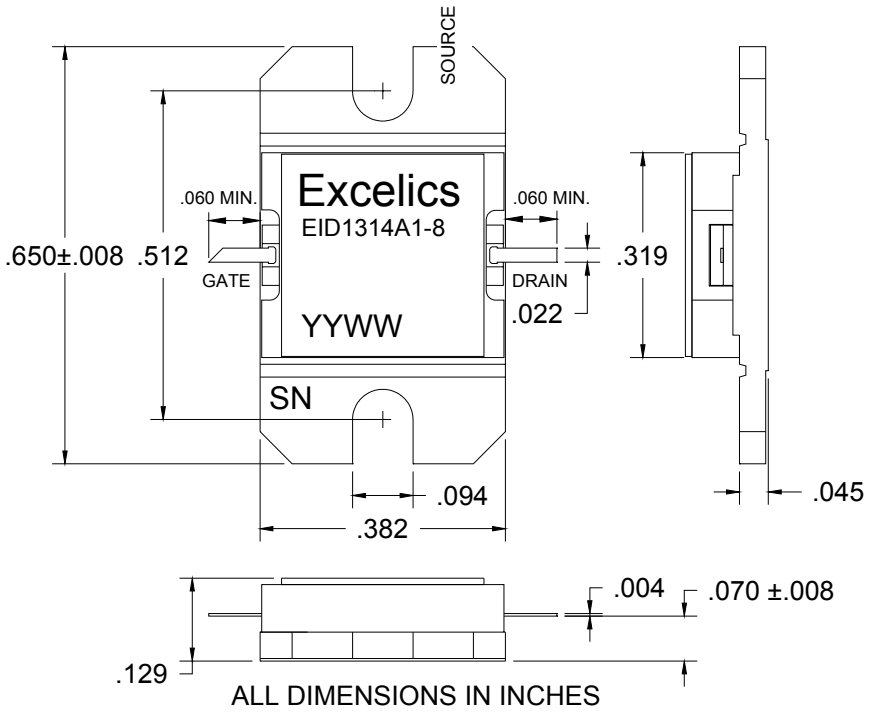
PACKAGE OUTLINE

Dimensions in inches, Tolerance ± .005 unless otherwise specified



ORDERING INFORMATION

Part Number	Grade[1]	f_{Test} (GHz)	P_{1dB} (min)
EID1314A1-8	Industrial	13.75-14.50 GHz	38.5

Notes: 1. Contact factory for military and hi-rel grades.
2. Exact test conditions are specified in "Electrical Characteristics" table.

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