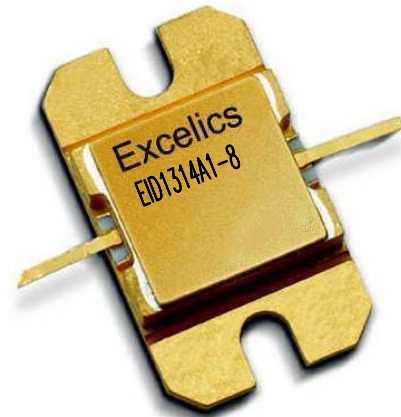


FEATURES

- 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 ($T_a = 25^\circ\text{C}$)

SYMBOL	PARAMETERS/TEST CONDITIONS ¹	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression $f = 13.75\text{-}14.50\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$	38.5	39.5		dBm
G_{1dB}	Gain at 1dB Compression $f = 13.75\text{-}14.50\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$	5.5	6.5		dB
ΔG	Gain Flatness $f = 13.75\text{-}14.50\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$			± 0.6	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}, I_{DSQ} \approx 2200\text{mA}$ $f = 13.75\text{-}14.50\text{GHz}$		27		%
I_{d1dB}	Drain Current at 1dB Compression $f = 13.75\text{-}14.50\text{GHz}$		2800	3600	mA
I_{DSS}	Saturated Drain Current $V_{DS} = 3\text{ V}, V_{GS} = 0\text{ V}$		4200	5760	mA
V_P	Pinch-off Voltage $V_{DS} = 3\text{ V}, I_{DS} = 40\text{ mA}$		-1.2	-2.5	V
R_{TH}	Thermal Resistance ²		3.5	4.0	$^\circ\text{C/W}$

Notes:

1. Tested with 100 Ohm gate resistor.
2. Overall R_{th} depends on case mounting.



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

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

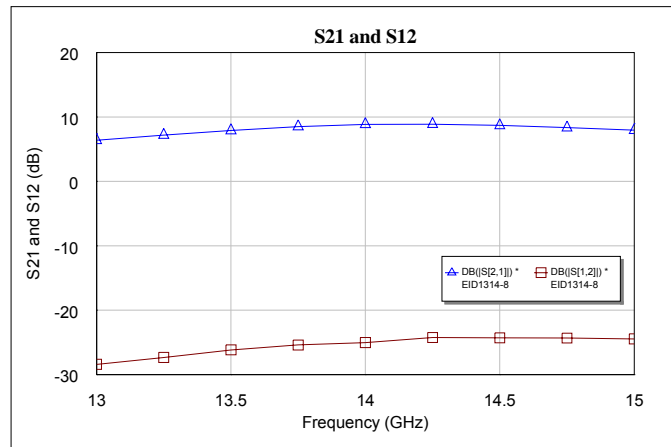
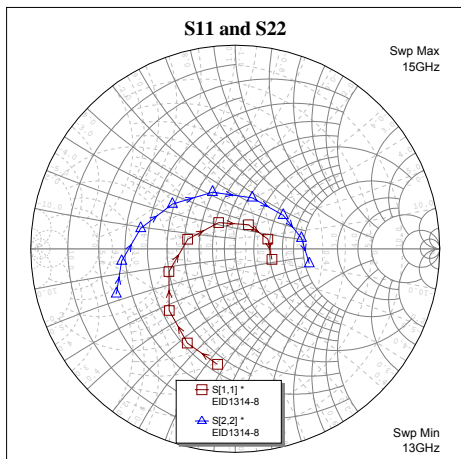
Notes:

- Operating the device beyond any of the above ratings may result in permanent damage or reduction of MTTF.
- 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)

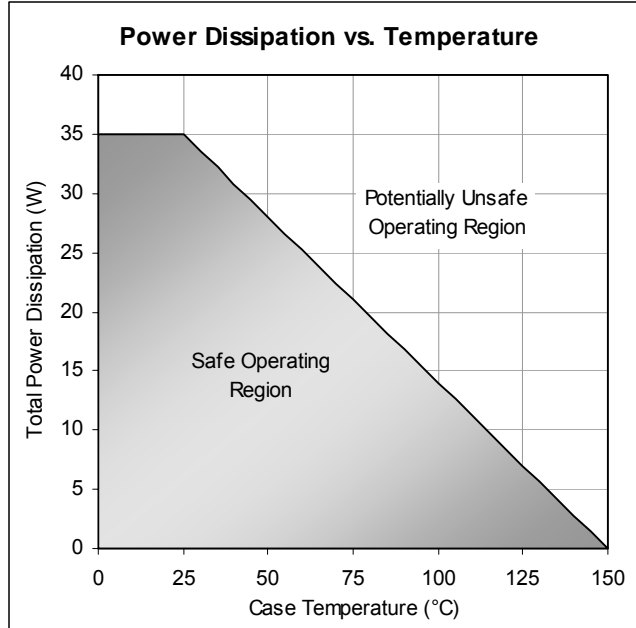
V_{DS} = 10 V, I_{DSQ} ≈ 2200mA



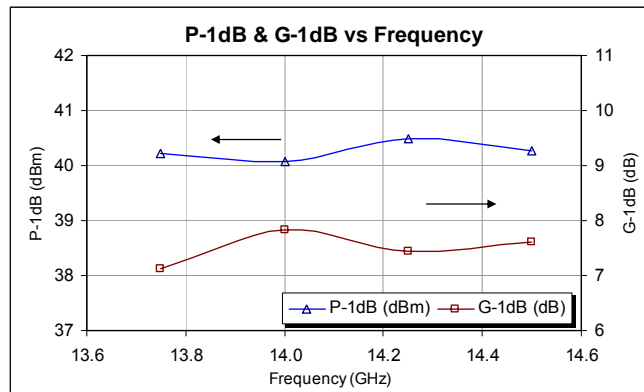
FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13.0	0.574	-98.65	2.0849	-178.44	0.038	168.62	0.622	-159.14
13.2	-0.5306	113.08	2.2429	166.32	0.0413	154.22	0.5702	-170.72
13.4	-0.4774	128.57	2.4099	150.05	0.0467	135.32	0.5086	175.71
13.6	-0.4077	145.55	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

Specifications are subject to change without notice.

Power De-rating Curve



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





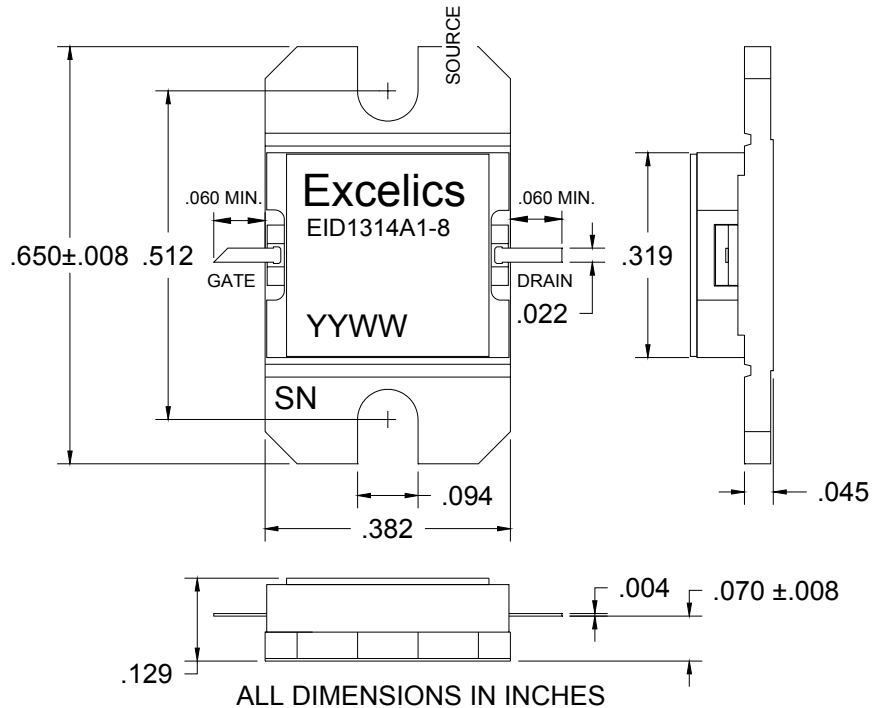
EID1314A1-8

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

PACKAGE OUTLINE

Dimensions in inches, Tolerance $\pm .005$ 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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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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