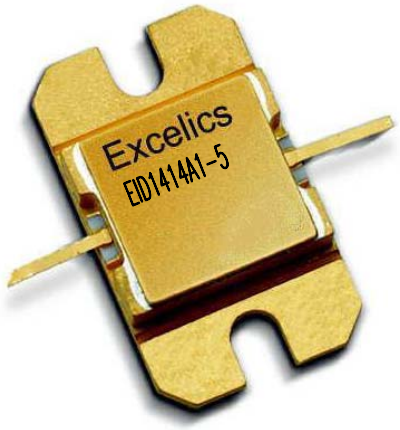
EID1414A1-5

UPDATED 07/12/2007

14.00-14.50 GHz 5-Watt Internally-Matched Power FET

FEATURES

- **14.00-14.50 GHz Bandwidth**
- **Input/Output Impedance Matched to 50 Ohms**
- **+37.5 dBm Output Power at 1dB Compression**
- **7.5 dB Power Gain at 1dB Compression**
- **35% Power Added Efficiency**
- **Hermetic Metal Flange Package**
- **100% Tested for DC, RF, and R_{TH}**



Caution! ESD sensitive device.

DESCRIPTION

The EID1414A1-5 is a high power, highly linear, single stage MFET amplifier in a flange mount package. This amplifier features Excelics' unique PHEMT transistor technology.

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

SYMBOL	PARAMETERS/TEST CONDITIONS[1]	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression f = 14.00-14.50GHz V_{DS} = 10 V, I_{DSQ} = 1200mA	37.0	37.5		dBm
G_{1dB}	Gain at 1dB Compression f = 14.00-14.50GHz V_{DS} = 10 V, I_{DSQ} = 1200mA	6.5	7.5		dB
ΔG	Gain Flatness f = 14.00-14.50GHz V_{DS} = 10 V, I_{DSQ} = 1200mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, I_{DSQ} = 1200mA f = 14.00-14.50GHz		35		%
Id_{1dB}	Drain Current at 1dB Compression f = 14.00-14.50GHz		1400	1800	mA
I_{DSS}	Saturated Drain Current V_{DS} = 3 V, V_{GS} = 0 V		2080	2880	mA
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 20 mA		-2.5	-4.0	V
R_{TH}	Thermal Resistance[2]		5.5	6.0	°C/W

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

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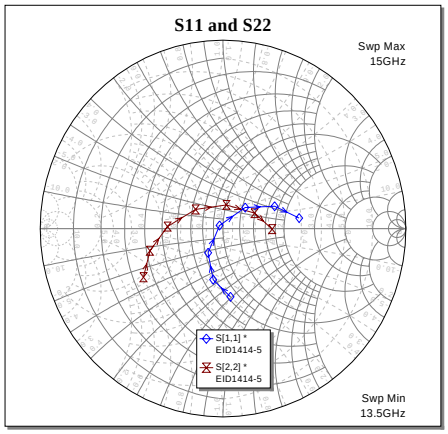
ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION[1,2]

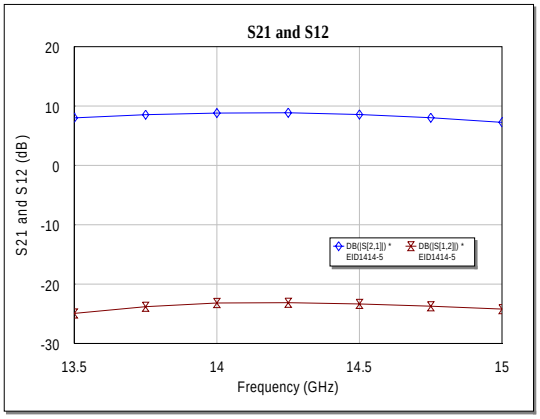
SYMBOL	CHARACTERISTIC	VALUE
V_{DS}	Drain to Source Voltage	10 V
V_{GS}	Gate to Source Voltage	-4.5 V
I_{DS}	Drain Current	IDSS
I_{GSF}	Forward Gate Current	40 mA
P_{IN}	Input Power	@ 3dB compression
P_T	Total Power Dissipation	23 W
T_{CH}	Channel Temperature	150°C
T_{STG}	Storage Temperature	-65/+150°C

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} = 1200mA





FREQ (GHz)	--- S11 --- MAG	ANG	--- S21 --- MAG	ANG	--- S12 --- MAG	ANG	--- S22 --- MAG	ANG
13.60	0.3380	-90.79	2.5944	-176.44	0.0603	170.24	0.4755	-153.89
13.70	0.2971	-97.44	2.6490	175.75	0.0609	161.63	0.4390	-160.10
13.80	0.2552	-105.20	2.6962	167.96	0.0630	153.33	0.3950	-166.55
13.90	0.2045	-112.85	2.7481	159.02	0.0655	145.93	0.3527	-173.84
14.00	0.1524	-122.48	2.7628	151.12	0.0694	136.76	0.3036	177.97
14.10	0.0956	-135.11	2.7767	142.28	0.0683	128.89	0.2507	166.52
14.20	0.0411	-169.43	2.7844	133.47	0.0703	119.55	0.2036	152.97
14.30	0.0435	81.13	2.7578	124.71	0.0701	111.32	0.1626	134.59
14.40	0.1025	54.46	2.7359	115.60	0.0691	101.22	0.1352	109.08
14.50	0.1651	42.41	2.6853	106.41	0.0682	91.51	0.1272	81.88
14.60	0.2214	33.93	2.6150	98.28	0.0693	84.19	0.1428	53.54
14.70	0.2802	26.00	2.5646	89.44	0.0673	75.38	0.1711	33.11
14.80	0.3322	20.00	2.4814	81.16	0.0659	66.29	0.2059	19.24
14.90	0.3800	13.06	2.3964	72.99	0.0653	58.58	0.2374	7.89

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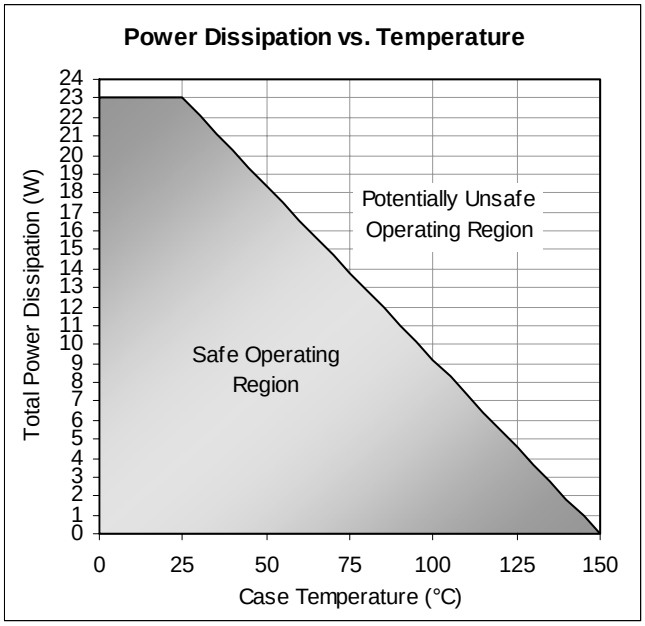
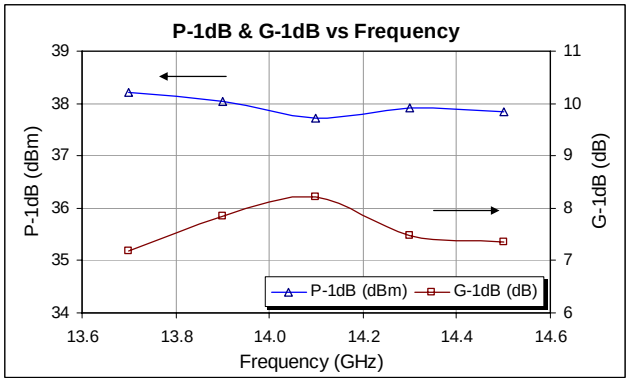
Power De-rating Curve



Typical Power Data (V_{DS} = 10 V, I_{DSQ} = 1200 mA)



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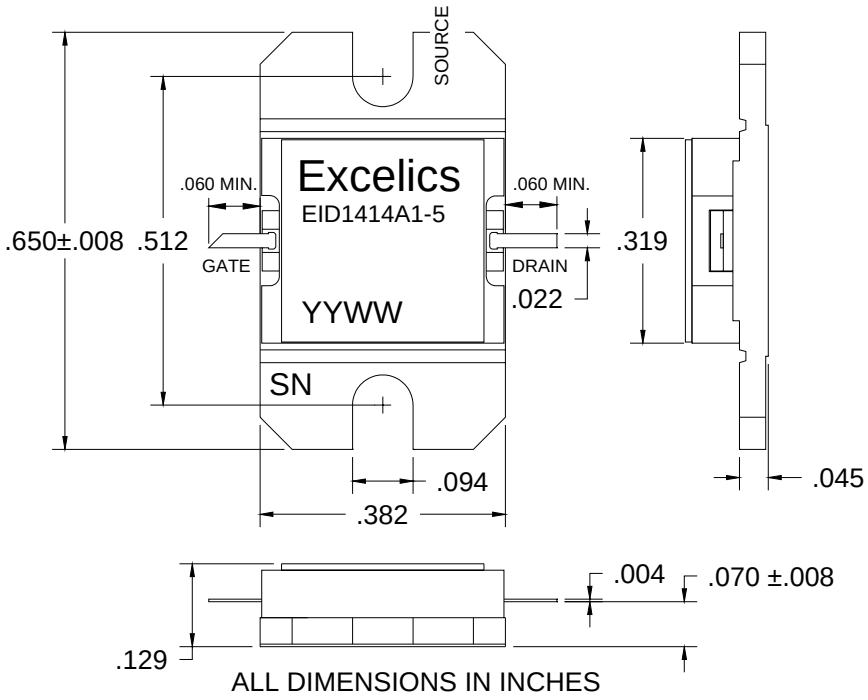
PACKAGE OUTLINE

Dimensions in inches, Tolerance ± .005 unless otherwise specified



ALL DIMENSIONS IN INCHES

ORDERING INFORMATION

Part Number	Grade[1]	f_{Test} (GHz)	P_{1dB} (min)
EID1414A1-5	Industrial	14.00-14.50 GHz	37.0

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

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