

EID1415A1-5

UPDATED 07/12/2007

14.40-15.35 GHz 5-Watt Internally-Matched Power FET

FEATURES

- 14.40-15.35 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}



DESCRIPTION

The EID1415A1-5 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 $f = 14.40\text{-}15.35\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 1200\text{mA}$	37.0	37.5		dBm
G_{1dB}	Gain at 1dB Compression $f = 14.40\text{-}15.35\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 1200\text{mA}$	6.5	7.5		dB
ΔG	Gain Flatness $f = 14.40\text{-}15.35\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 1200\text{mA}$			± 0.6	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}, I_{DSQ} \approx 1200\text{mA}$ $f = 14.40\text{-}15.35\text{GHz}$		35		%
I_{d1dB}	Drain Current at 1dB Compression $f = 14.40\text{-}15.35\text{GHz}$		1400	1800	mA
I_{DSS}	Saturated Drain Current $V_{DS} = 3\text{ V}, V_{GS} = 0\text{ V}$		2080	2880	mA
V_P	Pinch-off Voltage $V_{DS} = 3\text{ V}, I_{DS} = 20\text{ mA}$		-2.5	-4.0	V
R_{TH}	Thermal Resistance ³		4.5	5.5	$^{\circ}\text{C/W}$

Notes:

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

Specifications are subject to change without notice.

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 page 1 of 4
 Revised July 2007
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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

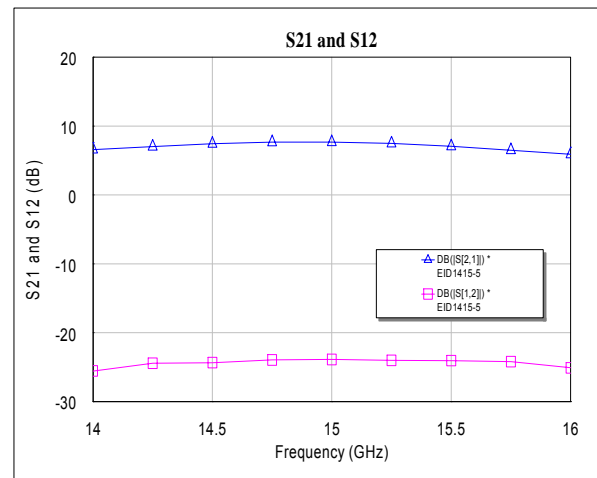
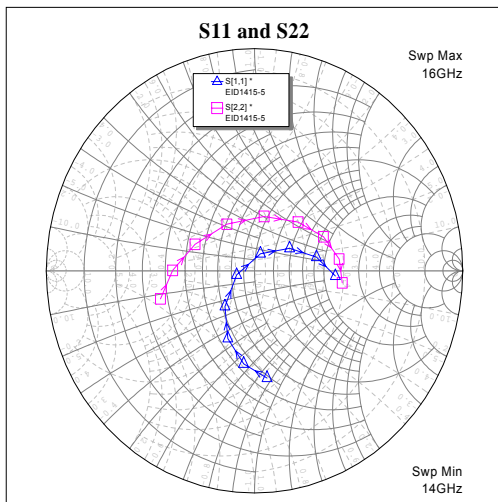
Notes:

- 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} ≈ 1200mA



FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
14.00	0.486	-82.890	2.134	-168.830	0.053	-178.670	0.469	-164.400
14.20	0.438	-93.780	2.225	177.610	0.054	167.150	0.410	-177.270
14.40	0.369	-106.050	2.312	163.060	0.060	151.050	0.343	167.160
14.60	0.285	-119.390	2.380	147.370	0.062	136.610	0.277	144.230
14.80	0.188	-137.440	2.417	131.260	0.065	120.170	0.238	113.450
15.00	0.088	-167.830	2.417	114.830	0.064	102.290	0.249	79.350
15.20	0.061	87.400	2.375	98.420	0.066	87.850	0.290	52.140
15.40	0.151	41.970	2.306	82.120	0.061	69.710	0.340	32.490
15.60	0.245	22.850	2.200	66.090	0.061	55.880	0.383	17.290
15.80	0.322	8.370	2.087	50.830	0.060	40.490	0.411	4.630
16.00	0.389	-3.480	1.973	36.210	0.056	25.780	0.424	-7.330

Issued Date: 04-27-04

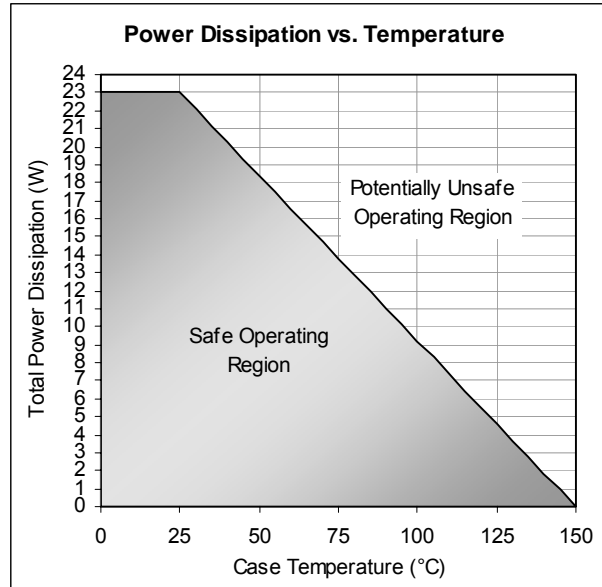
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EID1415A1-5

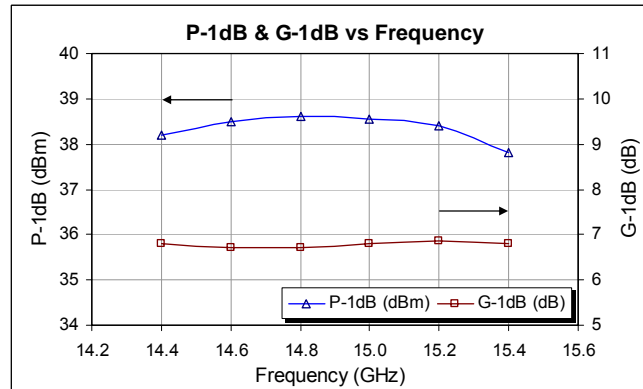
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Power De-rating Curve



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



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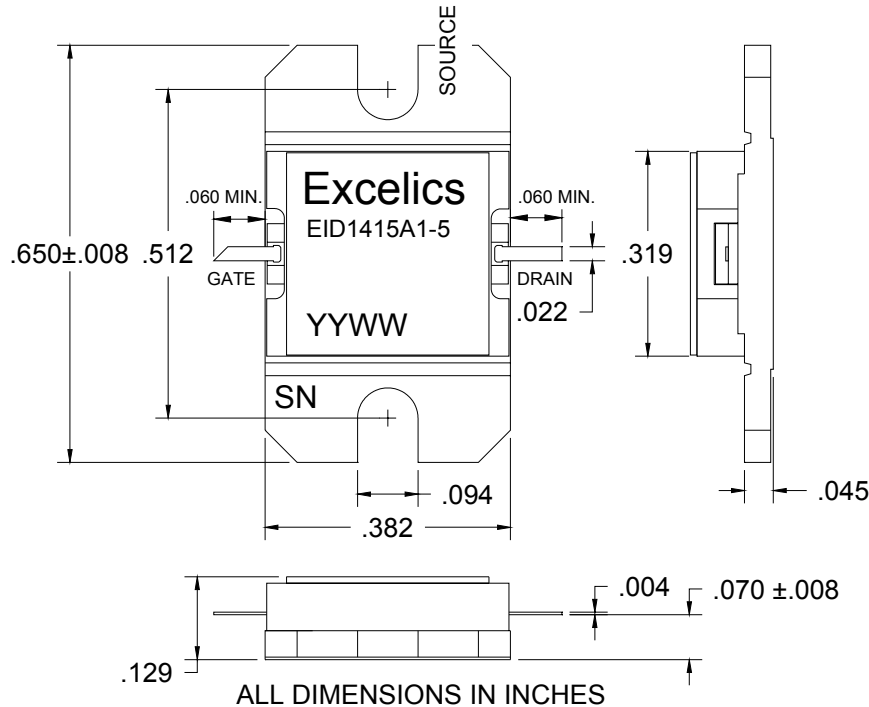
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PACKAGE OUTLINE

Dimensions in inches, Tolerance $\pm .005$ unless otherwise specified



ORDERING INFORMATION

Part Number	Grade ¹	f _{Test} (GHz)	P _{1dB} (min)
EID1415A1-5	Industrial	14.40-15.35 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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