

FEATURES

- 14.40-15.35 GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +41.0 dBm Output Power at 1dB Compression
- 6.0 dB Power Gain at 1dB Compression
- 25% Power Added Efficiency
- Hermetic Metal Flange Package
- 100% Tested for DC, RF, and R_{TH}



DESCRIPTION

The EID1415A1-12 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 $f = 14.40-15.35\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 3200\text{mA}$	40.0	41.0		dBm
G_{1dB}	Gain at 1dB Compression $f = 14.40-15.35\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 3200\text{mA}$	5.0	6.0		dB
ΔG	Gain Flatness $f = 14.40-15.35\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 3200\text{mA}$			± 0.6	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}, I_{DSQ} \approx 3200\text{mA}$ $f = 14.40-15.35\text{GHz}$		25		%
I_{d1dB}	Drain Current at 1dB Compression $f = 14.40-15.35\text{GHz}$		3800	4800	mA
I_{DSS}	Saturated Drain Current $V_{DS} = 3\text{ V}, V_{GS} = 0\text{ V}$		6000	8000	mA
V_P	Pinch-off Voltage $V_{DS} = 3\text{ V}, I_{DS} = 60\text{ mA}$		-1.2	-2.5	V
R_{TH}	Thermal Resistance ²		2.2	2.5	$^\circ\text{C/W}$

Notes:

1. Tested with 50 Ohm gate resistor.
2. Overall R_{th} depends on case mounting.



EID1415A1-12

UPDATED 07/12/2007

14.40-15.35 GHz 12-Watt Internally-Matched Power FET

ABSOLUTE MAXIMUM RATING^{1,2}

SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
V _{ds}	Drain-Source Voltage	15V	10V
V _{gs}	Gate-Source Voltage	-5V	-4.5V
I _{gsf}	Forward Gate Current	135	45mA
I _{gsr}	Reverse Gate Current	-21	-7
P _{in}	Input Power	40dBm	@ 3dB Compression
T _{ch}	Channel Temperature	175 °C	175 °C
T _{stg}	Storage Temperature	-65 to +175 °C	-65 to +175 °C
P _t	Total Power Dissipation	60W	60W

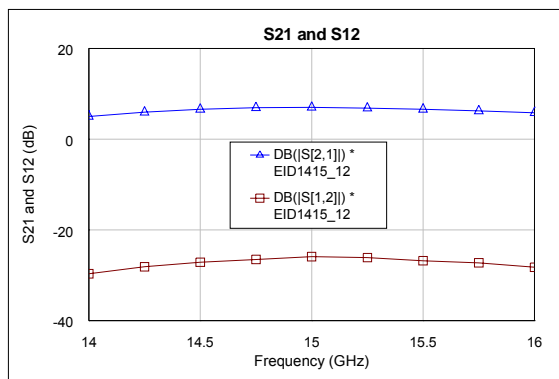
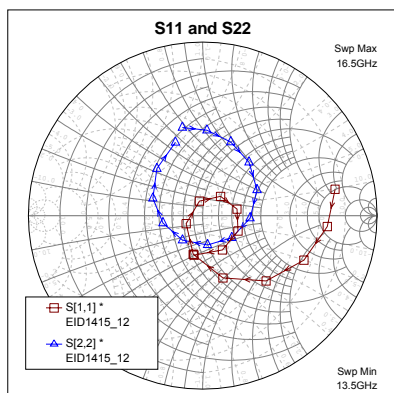
Notes:

- 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} ≈ 3200mA



FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13.50	0.775	11.290	1.415	9.610	0.025	35.410	0.521	102.860
13.75	0.717	-5.020	1.579	-10.630	0.028	6.450	0.492	87.150
14.00	0.635	-23.800	1.786	-33.500	0.033	-21.300	0.453	69.220
14.25	0.524	-45.990	1.985	-58.350	0.039	-52.540	0.407	49.100
14.50	0.378	-72.060	2.140	-85.100	0.044	-86.110	0.346	25.420
14.75	0.229	-103.790	2.226	-112.700	0.047	-117.710	0.273	-3.070
15.00	0.106	-153.980	2.248	-140.510	0.051	-146.950	0.210	-37.440
15.25	0.085	102.660	2.199	-167.310	0.050	-178.820	0.171	-80.600
15.50	0.151	47.090	2.140	166.000	0.046	150.110	0.183	-129.030
15.75	0.200	10.580	2.054	139.280	0.043	117.830	0.232	-169.440
16.00	0.222	-23.750	1.955	112.660	0.039	77.460	0.303	160.700

Specifications are subject to change without notice.

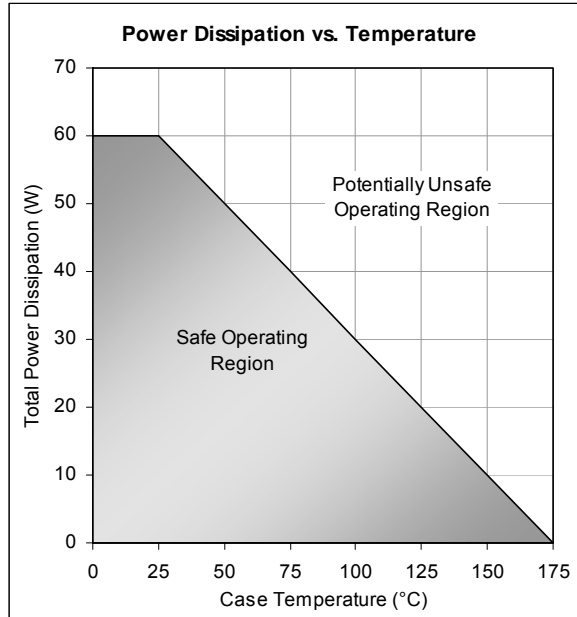
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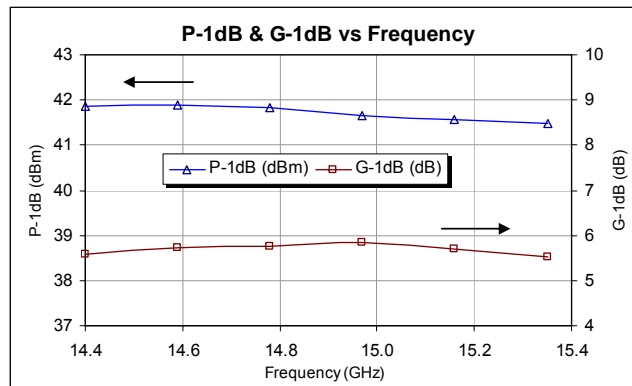
UPDATED 07/12/2007

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Power De-rating Curve



Typical Power Data ($V_{DS} = 10\text{ V}$, $I_{DSQ} = 3200\text{ mA}$)



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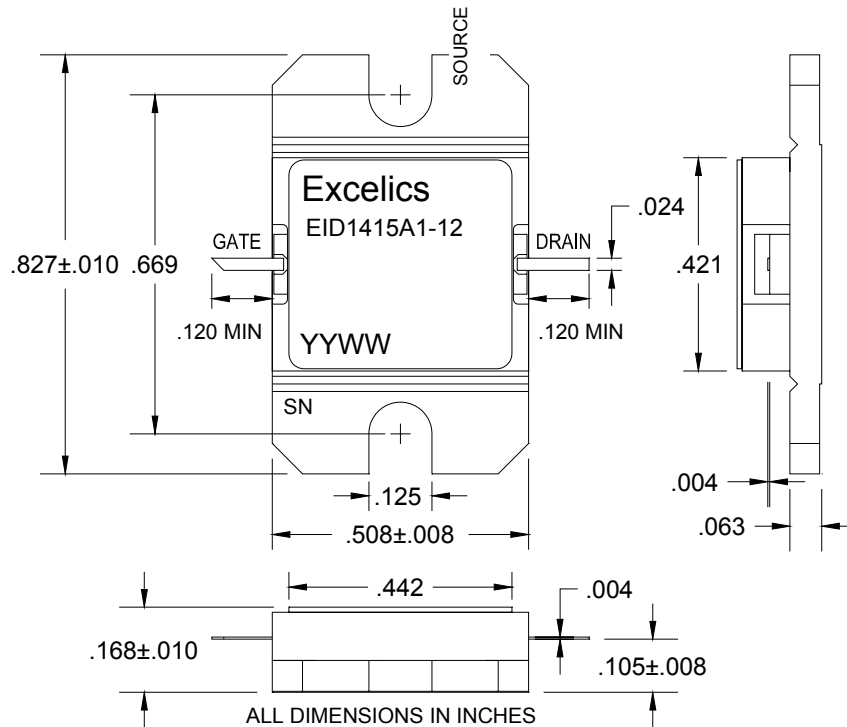
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PACKAGE OUTLINE

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



ORDERING INFORMATION

Part Number	Grade ¹	f _{Test} (GHz)	P _{1dB} (min)
EID1415A1-12	Industrial	14.40-15.35 GHz	40.0

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

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