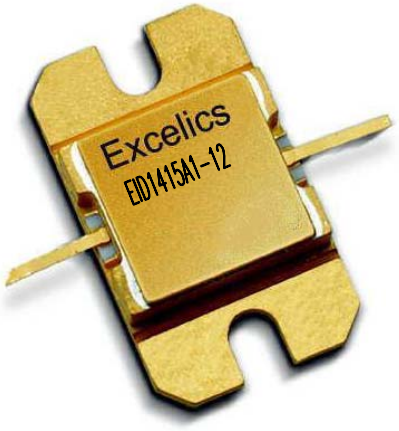
EID1415A1-12

UPDATED 07/12/2007

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

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}**



Caution! ESD sensitive device.

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.

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

SYMBOL	PARAMETERS/TEST CONDITIONS[1]	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression f = 14.40-15.35GHz V_{DS} = 10 V, I_{DSQ} ≈ 3200mA	40.0	41.0		dBm
G_{1dB}	Gain at 1dB Compression f = 14.40-15.35GHz V_{DS} = 10 V, I_{DSQ} ≈ 3200mA	5.0	6.0		dB
ΔG	Gain Flatness f = 14.40-15.35GHz V_{DS} = 10 V, I_{DSQ} ≈ 3200mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, I_{DSQ} ≈ 3200mA f = 14.40-15.35GHz		25		%
Id_{1dB}	Drain Current at 1dB Compression f = 14.40-15.35GHz		3800	4800	mA
I_{DSS}	Saturated Drain Current V_{DS} = 3 V, V_{GS} = 0 V		6000	8000	mA
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 60 mA		-1.2	-2.5	V
R_{TH}	Thermal Resistance[2]		2.2	2.5	°C/W

Notes:
1. Tested with 50 Ohm gate resistor.
2. Overall Rth depends on case mounting.

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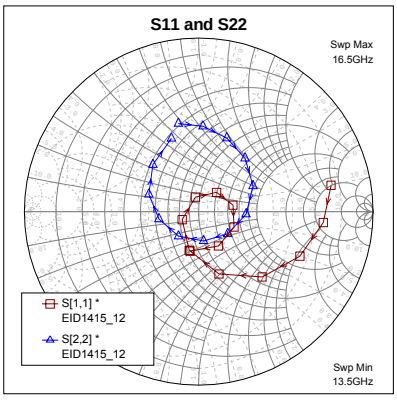
ABSOLUTE MAXIMUM RATING[1,2]

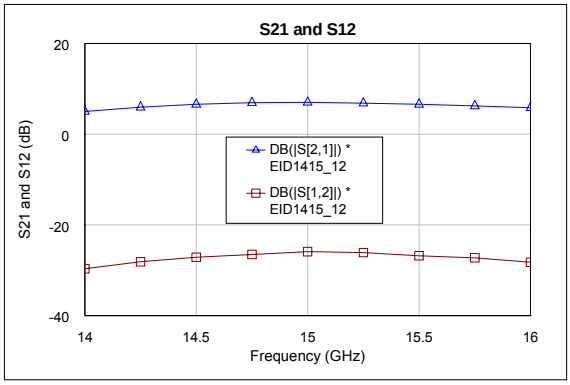
SYMBOLS	PARAMETERS	ABSOLUTE[1]	CONTINUOUS[2]
Vds	Drain-Source Voltage	15V	10V
Vgs	Gate-Source Voltage	-5V	-4.5V
Igsf	Forward Gate Current	135	45mA
Igsr	Reverse Gate Current	-21	-7
Pin	Input Power	40dBm	@ 3dB Compression
Tch	Channel Temperature	175 °C	175 °C
Tstg	Storage Temperature	-65 to +175 °C	-65 to +175 °C
Pt	Total Power Dissipation	60W	60W

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

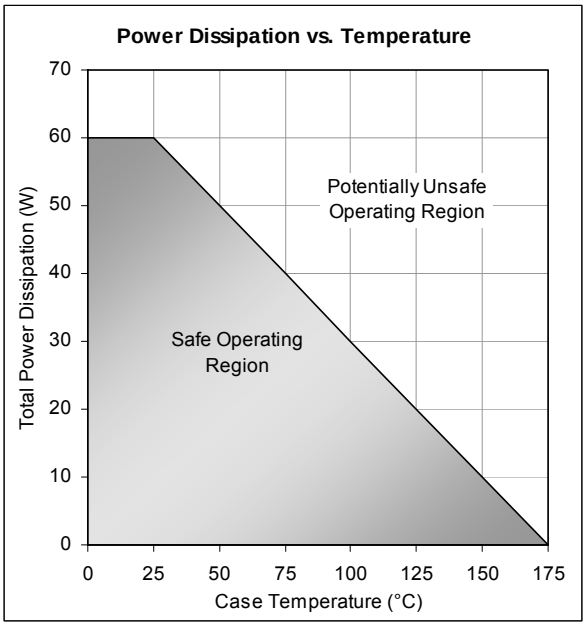
Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)
V_{DS} = 10 V, I_{DSQ} ≈ 3200mA



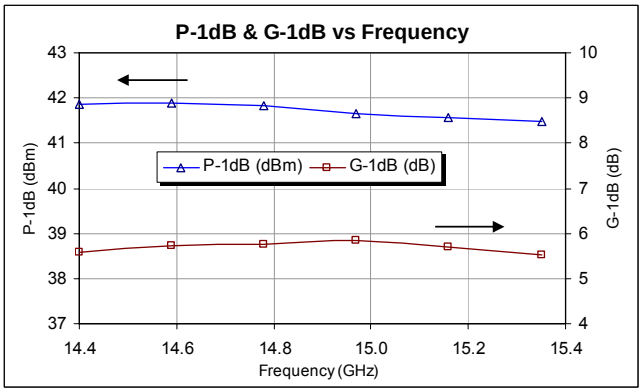


FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13.50	0.775	11.290	1.415	9.610	0.025	35.410	0.521	102.860
13.75	0.717	-5.020	1.579	-10.630	0.028	6.450	0.492	87.150
14.00	0.635	-23.800	1.786	-33.500	0.033	-21.300	0.453	69.220
14.25	0.524	-45.990	1.985	-58.350	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

Power De-rating Curve



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



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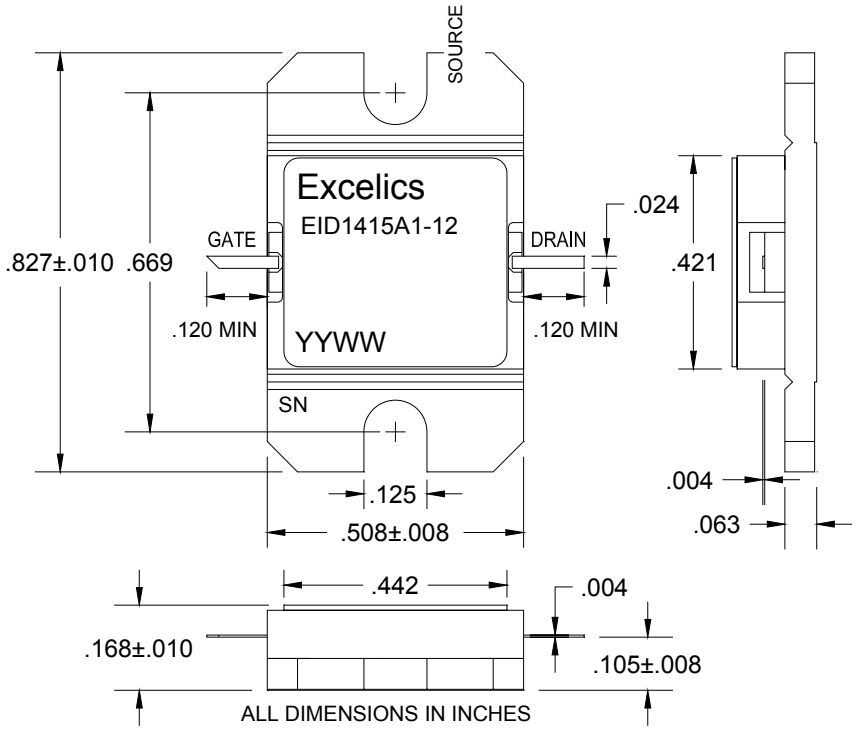
PACKAGE OUTLINE

Dimensions in inches, Tolerance ± .005 unless otherwise specified



ORDERING INFORMATION

Part Number	Grade[1]	f_{Test} (GHz)	P_{1dB} (min)
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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