

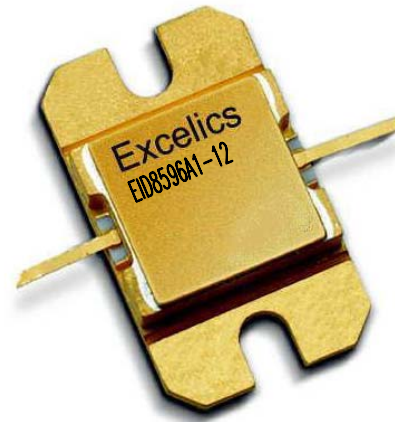
# EID8596A1-12

UPDATED 07/12/2007

## 8.50 – 9.60 GHz 12-Watt Internally-Matched Power FET

### FEATURES

- 8.50 – 9.60 GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +41.5 dBm Output Power at 1dB Compression
- 9.0 dB Power Gain at 1dB Compression
- 35% Power Added Efficiency
- Hermetic Metal Flange Package
- 100% Tested for DC, RF, and R<sub>TH</sub>



### DESCRIPTION

The EID8596A1-12 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<sub>a</sub> = 25°C)

SYMBOL	PARAMETERS/TEST CONDITIONS <sup>1</sup>	MIN	TYP	MAX	UNITS
P <sub>1dB</sub>	Output Power at 1dB Compression f = 8.50-9.60GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 3600mA	40.5	41.5		dBm
G <sub>1dB</sub>	Gain at 1dB Compression f = 8.50-9.60GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 3600mA	8.0	9.0		dB
ΔG	Gain Flatness f = 8.50-9.60GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 3600mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 3600mA f = 8.50-9.60GHz		35		%
I <sub>d1dB</sub>	Drain Current at 1dB Compression f = 8.50-9.60GHz		4000	4600	mA
I <sub>DSS</sub>	Saturated Drain Current V <sub>DS</sub> = 3 V, V <sub>GS</sub> = 0 V		6500	7500	mA
V <sub>P</sub>	Pinch-off Voltage V <sub>DS</sub> = 3 V, I <sub>DS</sub> = 60 mA		-1.2	-2.5	V
R <sub>TH</sub>	Thermal Resistance <sup>2</sup>		2.5	3.0	°C/W

Notes:

1. Tested with 50 Ohm gate resistor.
2. Overall R<sub>th</sub> depends on case mounting.

Specifications are subject to change without notice.

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### ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION<sup>1,2</sup>

SYMBOL	CHARACTERISTIC	VALUE
V <sub>DS</sub>	Drain to Source Voltage	10 V
V <sub>GS</sub>	Gate to Source Voltage	-3.0 V
I <sub>DS</sub>	Drain Current	IDSS
I <sub>GSF</sub>	Forward Gate Current	120 mA
P <sub>IN</sub>	Input Power	@ 3dB compression
P <sub>T</sub>	Total Power Dissipation	42 W
T <sub>CH</sub>	Channel Temperature	150°C
T <sub>STG</sub>	Storage Temperature	-65/+150°C

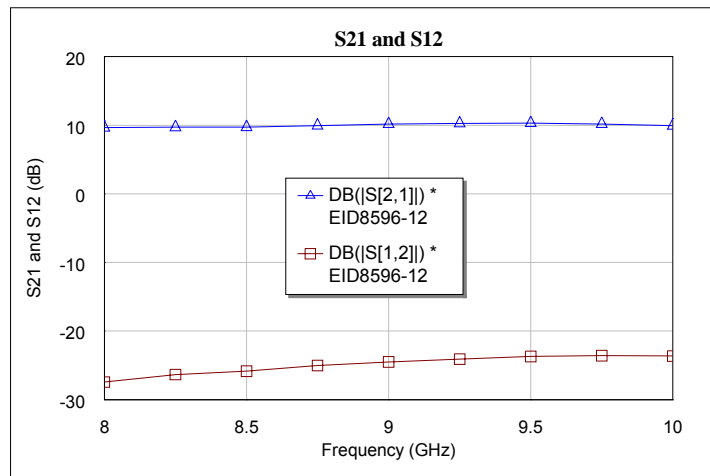
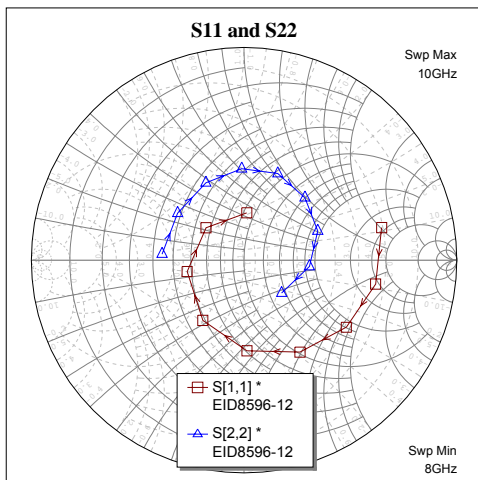
Notes:

- 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<sub>DS</sub> = 10 V, I<sub>DSO</sub> ≈ 3600mA



FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
8.00	0.665	13.310	3.042	-101.000	0.043	-143.450	0.386	175.740
8.25	0.628	-10.290	3.060	-126.890	0.048	-171.390	0.383	144.740
8.50	0.575	-33.260	3.064	-151.970	0.051	165.500	0.405	116.280
8.75	0.506	-58.660	3.146	-177.830	0.056	139.920	0.430	91.480
9.00	0.426	-88.220	3.230	154.710	0.060	114.480	0.437	68.710
9.25	0.343	-124.370	3.263	126.660	0.063	87.140	0.410	45.740
9.50	0.273	-168.710	3.280	97.610	0.065	59.430	0.373	21.620
9.75	0.235	139.600	3.232	67.230	0.066	28.560	0.309	-5.450
10.00	0.223	86.780	3.140	36.090	0.066	-1.380	0.235	-41.240
10.25	0.200	27.440	3.023	3.490	0.066	-36.490	0.210	-95.270
10.50	0.209	-47.720	2.818	-30.940	0.063	-72.920	0.291	-146.970

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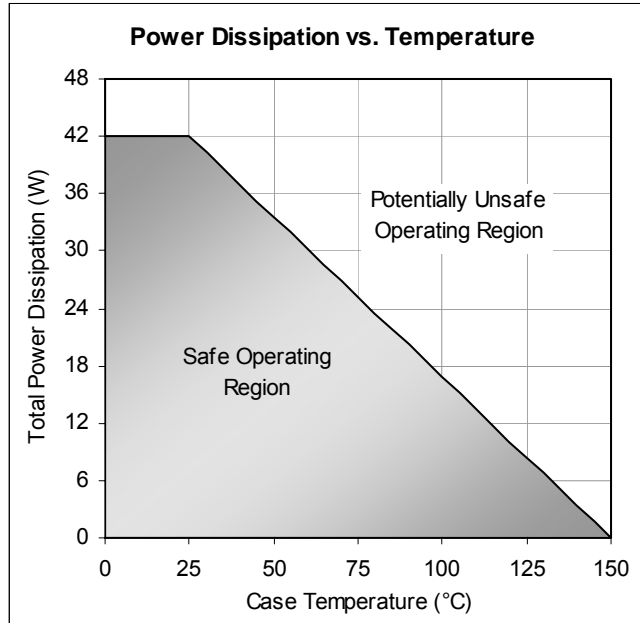
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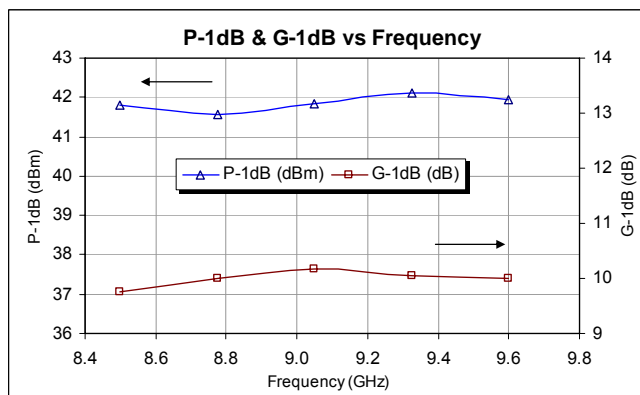
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### Power De-rating Curve



### Typical Power Data ( $V_{DS} = 10\text{ V}$ , $I_{DSQ} = 3600\text{ mA}$ )



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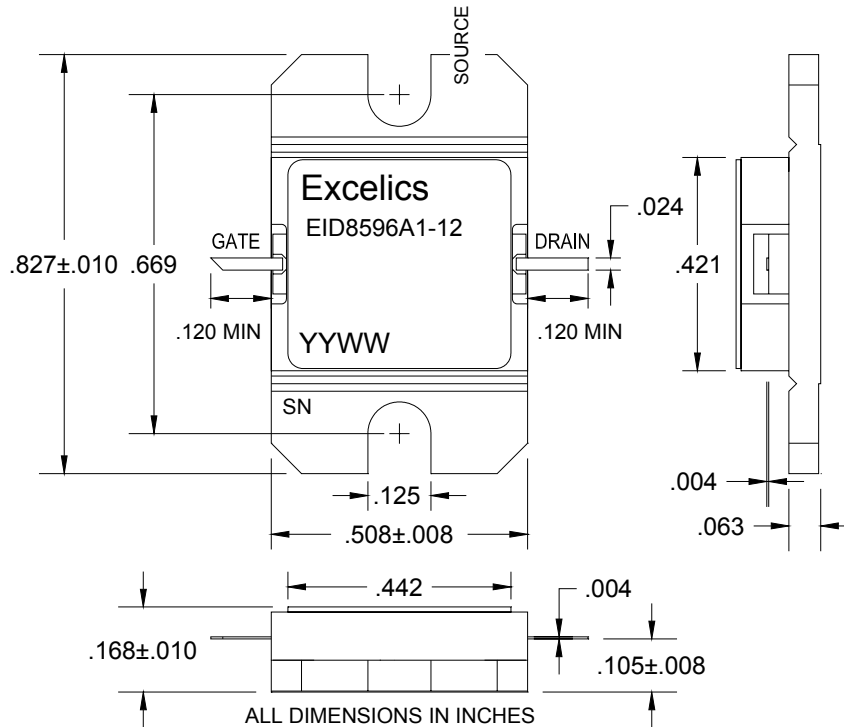
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### PACKAGE OUTLINE

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



### ORDERING INFORMATION

Part Number	Grade <sup>1</sup>	f <sub>Test</sub> (GHz)	P <sub>1dB</sub> (min)
EID8596A1-12	Industrial	8.50-9.60 GHz	40.5

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

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