

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_{TH}



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 ($T_a = 25^\circ\text{C}$)

SYMBOL	PARAMETERS/TEST CONDITIONS ¹	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression $f = 8.50\text{-}9.60\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 3600\text{mA}$	40.5	41.5		dBm
G_{1dB}	Gain at 1dB Compression $f = 8.50\text{-}9.60\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 3600\text{mA}$	8.0	9.0		dB
ΔG	Gain Flatness $f = 8.50\text{-}9.60\text{GHz}$ $V_{DS} = 10\text{ V}, I_{DSQ} \approx 3600\text{mA}$			± 0.6	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}, I_{DSQ} \approx 3600\text{mA}$ $f = 8.50\text{-}9.60\text{GHz}$		35		%
I_{d1dB}	Drain Current at 1dB Compression $f = 8.50\text{-}9.60\text{GHz}$		4000	4600	mA
I_{DSS}	Saturated Drain Current $V_{DS} = 3\text{ V}, V_{GS} = 0\text{ V}$		6500	7500	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		2.5	3.0	$^\circ\text{C/W}$

Notes:

1. Tested with 50 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	-3.0 V
I _{DS}	Drain Current	IDSS
I _{GSF}	Forward Gate Current	120 mA
P _{IN}	Input Power	@ 3dB compression
P _T	Total Power Dissipation	42 W
T _{CH}	Channel Temperature	150°C
T _{STG}	Storage Temperature	-65/+150°C

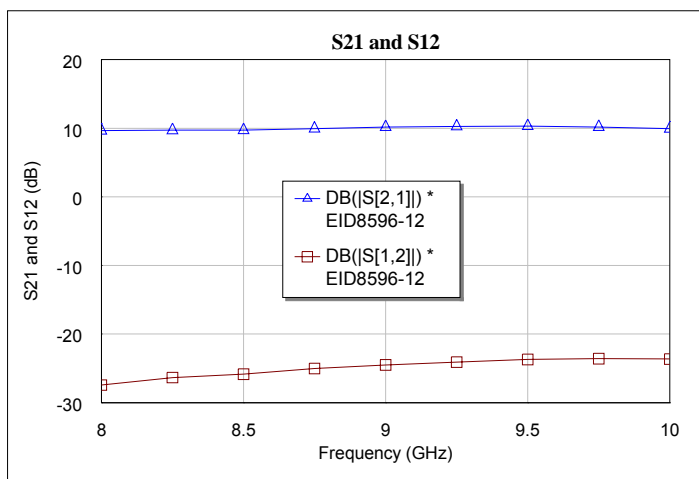
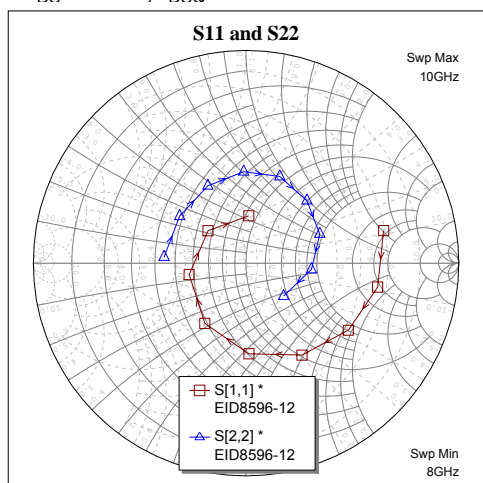
Notes:

- Operating the device beyond any of the above ratings may result in permanent damage or reduction of MTF.
- 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_{DSO} ≈ 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

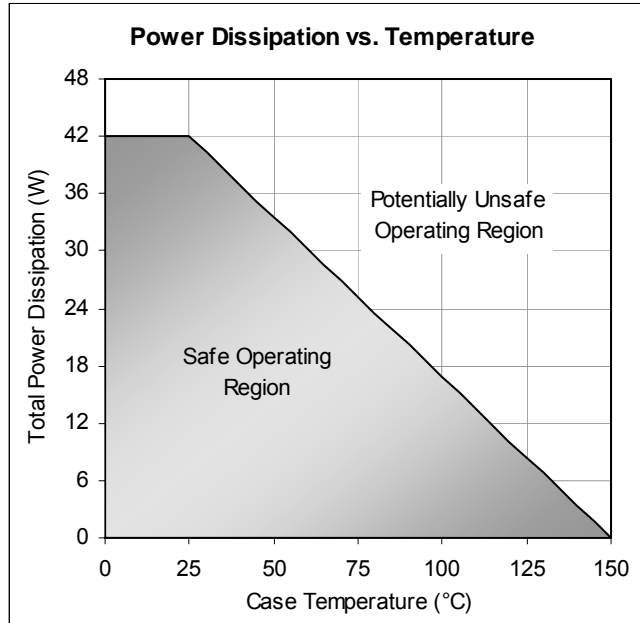
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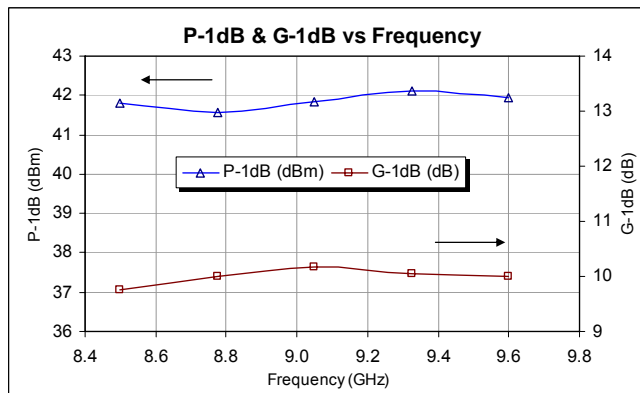
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page 2 of 4
 Revised July 2007

Power De-rating Curve



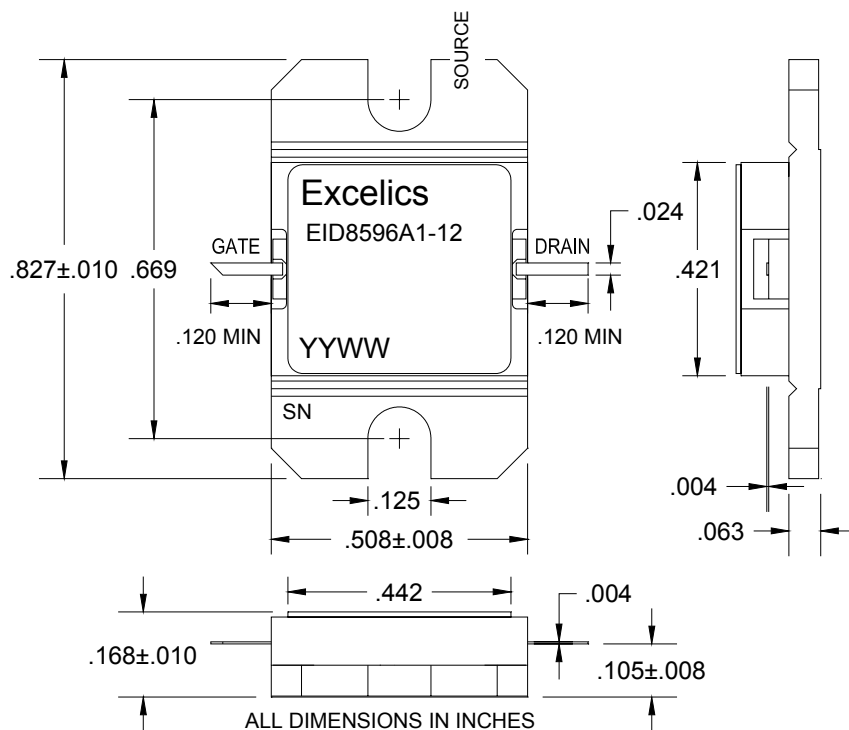
Typical Power Data ($V_{DS} = 10\text{ V}$, $I_{DSQ} = 3600\text{ mA}$)



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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)
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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- A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness

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 page 4 of 4
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