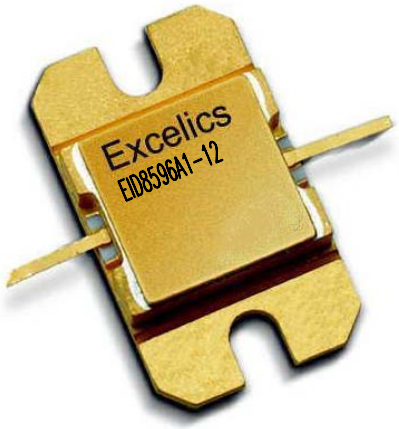
EID8596A1-12

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_{TH}**



Caution! ESD sensitive device.

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.

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

SYMBOL	PARAMETERS/TEST CONDITIONS[1]	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression f = 8.50-9.60GHz V_{DS} = 10 V, I_{DSQ} ≈ 3600mA	40.5	41.5		dBm
G_{1dB}	Gain at 1dB Compression f = 8.50-9.60GHz V_{DS} = 10 V, I_{DSQ} ≈ 3600mA	8.0	9.0		dB
ΔG	Gain Flatness f = 8.50-9.60GHz V_{DS} = 10 V, I_{DSQ} ≈ 3600mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, I_{DSQ} ≈ 3600mA f = 8.50-9.60GHz		35		%
Id_{1dB}	Drain Current at 1dB Compression f = 8.50-9.60GHz		4000	4600	mA
I_{DSS}	Saturated Drain Current V_{DS} = 3 V, V_{GS} = 0 V		6500	7500	mA
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 60 mA		-1.2	-2.5	V
R_{TH}	Thermal Resistance[2]		2.5	3.0	°C/W

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

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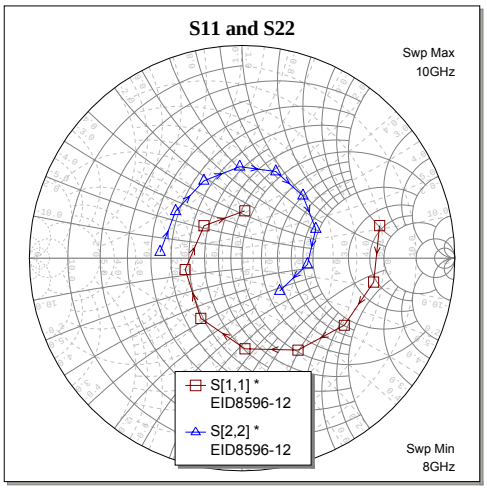
ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION[1,2]

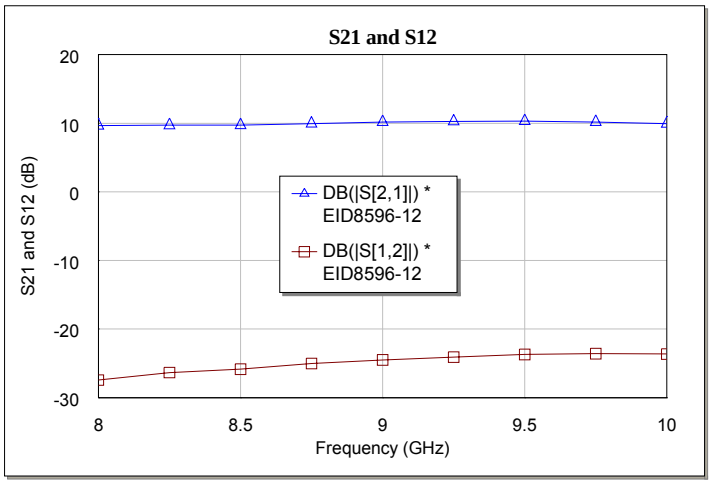
SYMBOL	CHARACTERISTIC	VALUE
V_{DS}	Drain to Source Voltage	10 V
V_{GS}	Gate to Source Voltage	-3.0 V
I_{DS}	Drain Current	IDSS
I_{GSF}	Forward Gate Current	120 mA
P_{IN}	Input Power	@ 3dB compression
P_T	Total Power Dissipation	42 W
T_{CH}	Channel Temperature	150°C
T_{STG}	Storage Temperature	-65/+150°C

Notes:
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

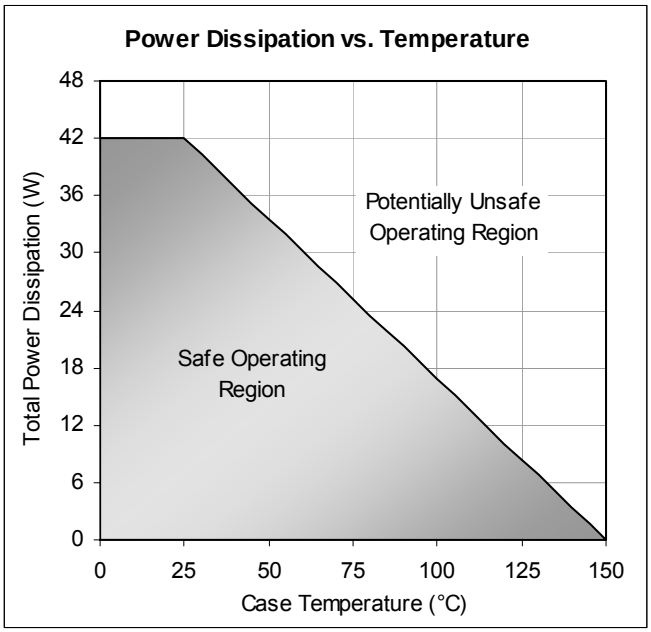
Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)
V_{DS} = 10 V, I_{DSQ} ≈ 3600mA



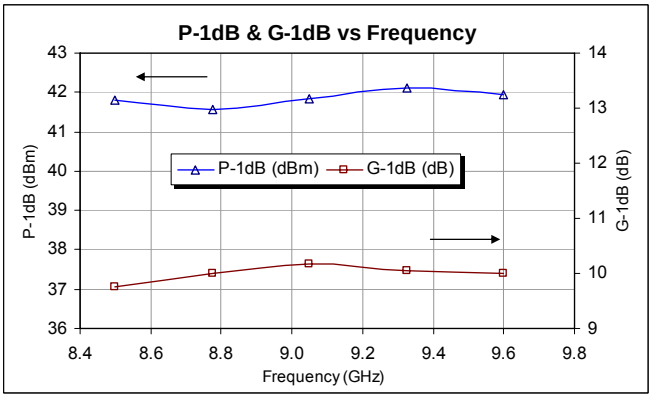


FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
8.00	0.665	13.310	3.042	-101.000	0.043	-143.450	0.386	175.740
8.25	0.628	-10.290	3.060	-126.890	0.048	-171.390	0.383	144.740
8.50	0.575	-33.260	3.064	-151.970	0.051	165.500	0.405	116.280
8.75	0.506	-58.660	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

Power De-rating Curve



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



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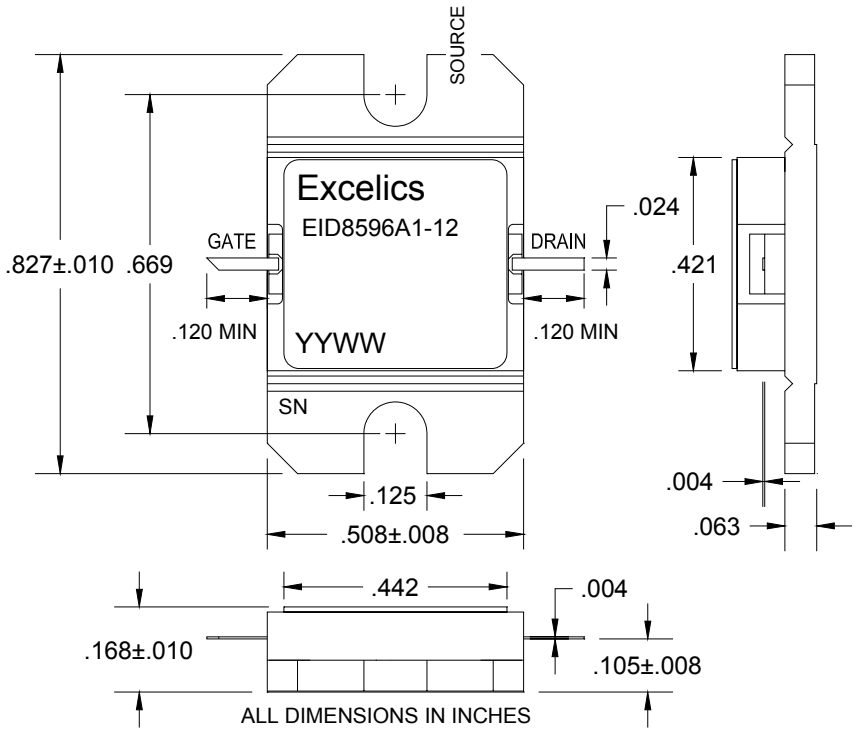
PACKAGE OUTLINE

Dimensions in inches, Tolerance ± .005 unless otherwise specified



ORDERING INFORMATION

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