EIC8596-8

UPDATED 08/21/2007

8.50-9.60GHz 8-Watt Internally-Matched Power FET

FEATURES

- **8.50 –9.60GHz Bandwidth**
- **Input/Output Impedance Matched to 50 Ohms**
- **+39.5 dBm Output Power at 1dB Compression**
- **7.5 dB Power Gain at 1dB Compression**
- **30% Power Added Efficiency**
- **-43 dBc IM3 at Po = 28.5 dBm SCL**
- **100% Tested for DC, RF, and R_{TH}**

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

Caution! ESD sensitive device.

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} ≈ 2200mA	38.5	39.5		dBm
G_{1dB}	Gain at 1dB Compression f = 8.50-9.60GHz V_{DS} = 10 V, I_{DSQ} ≈ 2200mA	6.5	7.5		dB
ΔG	Gain Flatness f = 8.50-9.60GHz V_{DS} = 10 V, I_{DSQ} ≈ 2200mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, I_{DSQ} ≈ 2200mA f = 8.50-9.60GHz		30		%
Id_{1dB}	Drain Current at 1dB Compression f = 8.50-9.60GHz		2200	2600	mA
IM3	Output 3rd Order Intermodulation Distortion Δf = 10 MHz 2-Tone Test; Pout = 28.5 dBm S.C.L[2] V_{DS} = 10 V, I_{DSQ} ≈ 65% IDSS f = 9.60GHz	-40	-43		dBc
I_{DSS}	Saturated Drain Current V_{DS} = 3 V, V_{GS} = 0 V		3700	4300	mA
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 40 mA		-2.5	-4.0	V
R_{TH}	Thermal Resistance[3]		2.5	3.5	°C/W

Note: 1. Tested with 100 Ohm gate resistor.
2. S.C.L. = Single Carrier Level.
3. Overall Rth depends on case mounting.

ABSOLUTE MAXIMUM RATING FOR EFE

SYMBOLS	PARAMETERS	ABSOLUTE[1]	CONTINUOUS[2]
Vds	Drain-Source Voltage	15V	10V
Vgs	Gate-Source Voltage	-5V	-4V
Igf	Forward Gate Current	96mA	28.8mA
Igr	Reverse Gate Current	-19.2mA	-4.8mA
Pin	Input Power	39.0dBm	@ 3dB Compression
Tch	Channel Temperature	175C	175C
Tstg	Storage Temperature	-65C to +175C	-65C to +175C
Pt	Total Power Dissipation	43W	43W

Note: 1. Exceeding any of the above ratings may result in permanent damage.
2. Exceeding any of the above ratings may reduce MTTF below design goals.

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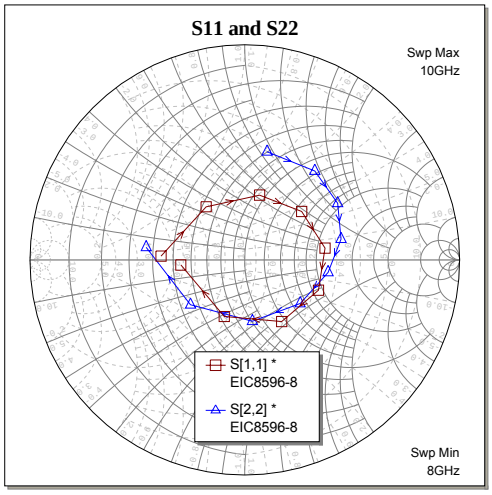
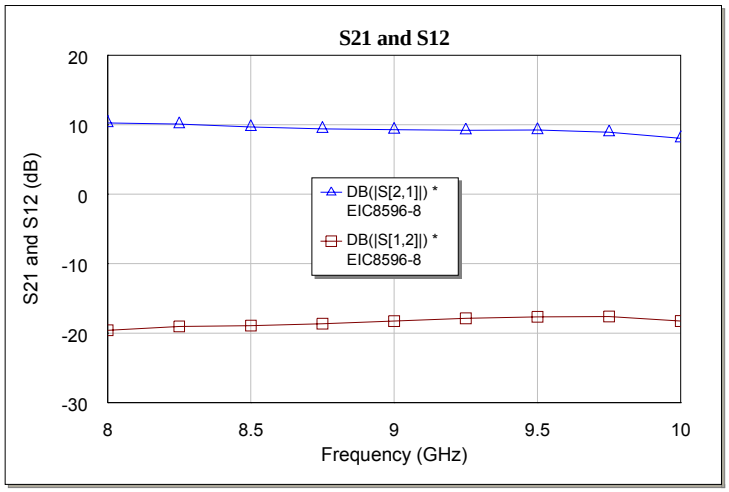
PERFORMANCE DATA

Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)
V_{DS} = 10 V, I_{DSQ} ≈ 2200mA





FREQ (GHz)	--- S11 --- MAG	ANG	--- S21 --- MAG	ANG	--- S12 --- MAG	ANG	--- S22 --- MAG	ANG
8.00	0.390	177.400	3.255	-57.380	0.105	-114.220	0.514	78.300
8.25	0.306	125.970	3.195	-88.570	0.112	-145.020	0.527	51.750
8.50	0.309	77.020	3.052	-116.850	0.113	-173.180	0.507	31.300
8.75	0.348	40.380	2.957	-144.300	0.117	161.600	0.459	12.160
9.00	0.378	8.330	2.917	-170.590	0.122	135.400	0.393	-8.460
9.25	0.371	-22.220	2.884	161.430	0.128	108.950	0.328	-38.080
9.50	0.334	-59.000	2.897	132.320	0.131	81.650	0.287	-82.820
9.75	0.280	-109.930	2.793	100.510	0.132	49.430	0.327	-140.430
10.00	0.299	-175.540	2.528	66.690	0.122	16.320	0.462	172.730
10.25	0.387	132.770	2.112	34.290	0.103	-16.260	0.614	140.720
10.50	0.490	98.340	1.672	5.950	0.081	-45.080	0.713	117.810

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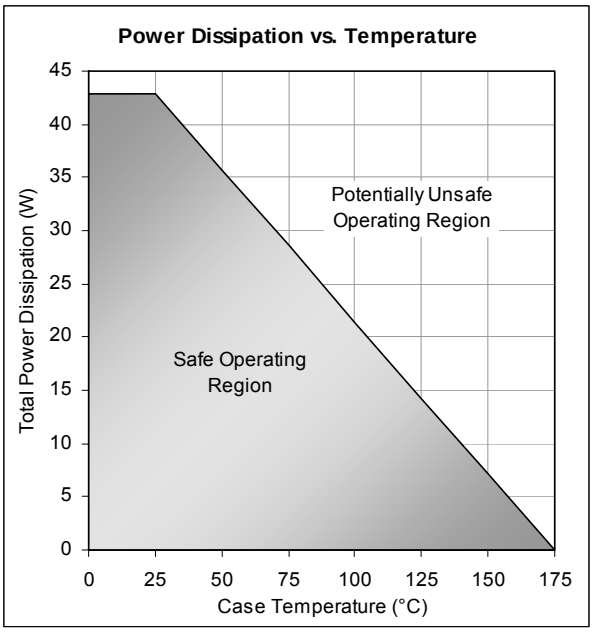
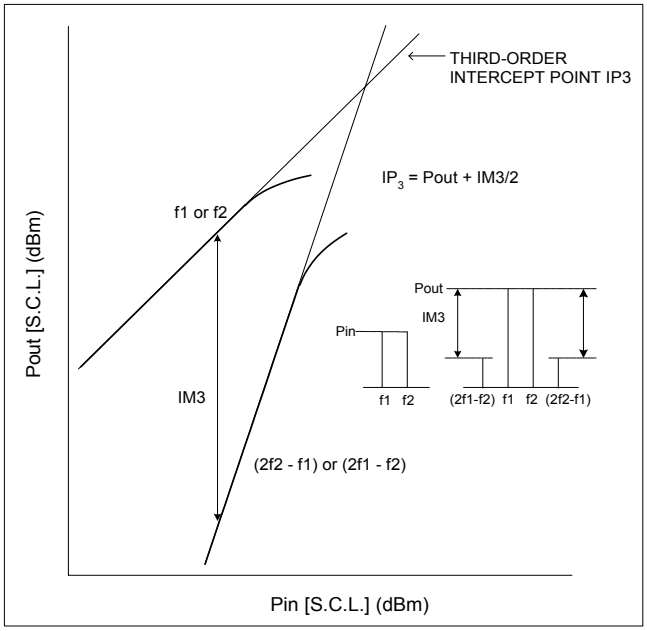
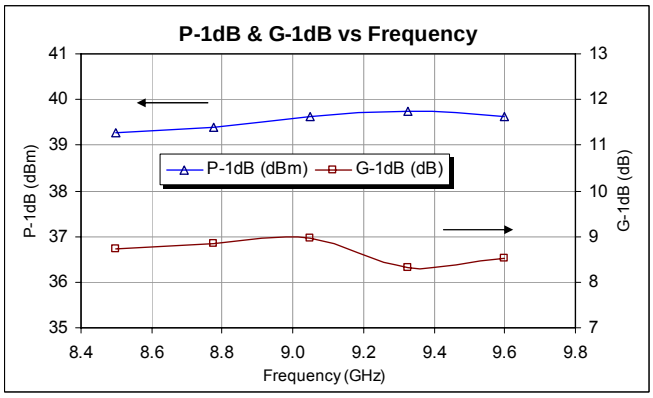
Power De-rating Curve and IM3 Definition

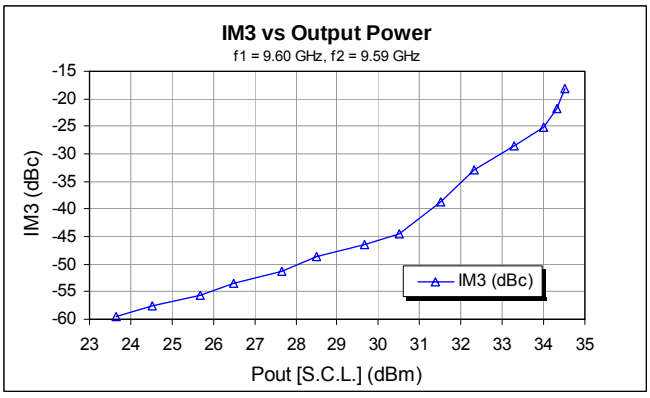




Typical Power Data (V_{DS} = 10 V, I_{DSQ} = 2200 mA)



Typical IM3 Data (V_{DS} = 10 V, I_{DSQ} ≈ 65% IDSS)



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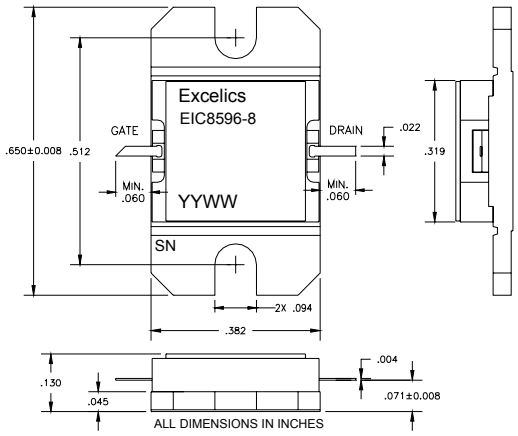
PACKAGES OUTLINE

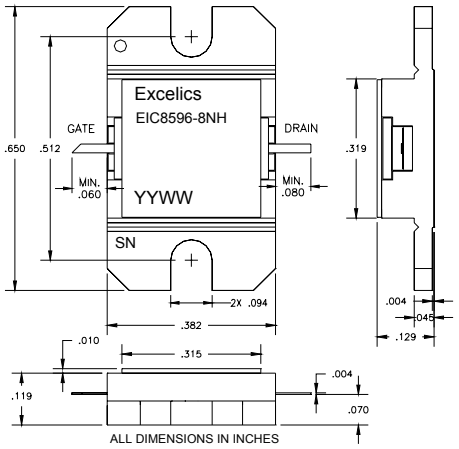
Dimensions in inches, Tolerance ± .005 unless otherwise specified

EIC8596-8 (Hermetic)



Caution! ESD sensitive device.

EIC8596-8NH (Non-Hermetic)



Caution! ESD sensitive device.

ORDERING INFORMATION

Part Number	Packages	Grade[1]	f_{Test} (GHz)	P_{1dB} (min)	IM_3 (min)[2]
EIC8596-8	Hermetic	Industrial	8.50-9.60GHz	38.5	-40
EIC8596-8NH	Non-Hermetic	Industrial	8.50-9.60GHz	38.5	-40

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

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2. 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