



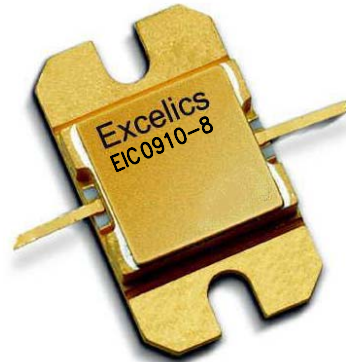
# EIC0910-8

UPDATED 08/21/2007

## 9.50-10.50GHz 8-Watt Internally Matched Power FET

### FEATURES

- 9.50–10.50GHz 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<sub>TH</sub>



### ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25°C)



Caution! ESD sensitive device.

SYMBOL	PARAMETERS/TEST CONDITIONS <sup>1</sup>	MIN	TYP	MAX	UNITS
P <sub>1dB</sub>	Output Power at 1dB Compression f = 9.5-10.5GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 2200mA	38.5	39.5		dBm
G <sub>1dB</sub>	Gain at 1dB Compression f = 9.5-10.5GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 2200mA	6.5	7.5		dB
ΔG	Gain Flatness f = 9.5-10.5GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 2200mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 2200mA f = 9.5-10.5GHz		30		%
I <sub>d1dB</sub>	Drain Current at 1dB Compression f = 9.5-10.5GHz		2200	2600	mA
IM3	Output 3rd Order Intermodulation Distortion Δf = 10 MHz 2-Tone Test; Pout = 28.5 dBm S.C.L <sup>2</sup> V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 65% IDSS f = 10.5GHz	-40	-43		dBc
I <sub>DSS</sub>	Saturated Drain Current V <sub>DS</sub> = 3 V, V <sub>GS</sub> = 0 V		3700	4300	mA
V <sub>P</sub>	Pinch-off Voltage V <sub>DS</sub> = 3 V, I <sub>DS</sub> = 40 mA		-2.5	-4.0	V
R <sub>TH</sub>	Thermal Resistance <sup>3</sup>		2.5	3.5	°C/W

Note: 1. Tested with 100 Ohm gate resistor.  
2. S.C.L. = Single Carrier Level.  
3. Overall R<sub>th</sub> depends on case mounting.

### ABSOLUTE MAXIMUM RATING FOR EFE

SYMBOLS	PARAMETERS	ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>
V <sub>ds</sub>	Drain-Source Voltage	15V	10V
V <sub>gs</sub>	Gate-Source Voltage	-5V	-4V
I <sub>gf</sub>	Forward Gate Current	96mA	28.8mA
I <sub>gr</sub>	Reverse Gate Current	-19.2mA	-4.8mA
P <sub>in</sub>	Input Power	39dBm	@ 3dB Compression
T <sub>ch</sub>	Channel Temperature	175C	175C
T <sub>stg</sub>	Storage Temperature	-65C to +175C	-65C to +175C
P <sub>t</sub>	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.

Specifications are subject to change without notice.

Excelics Semiconductor, Inc. 310 De Guigne Drive, Sunnyvale, CA 94085  
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Revised October 2007



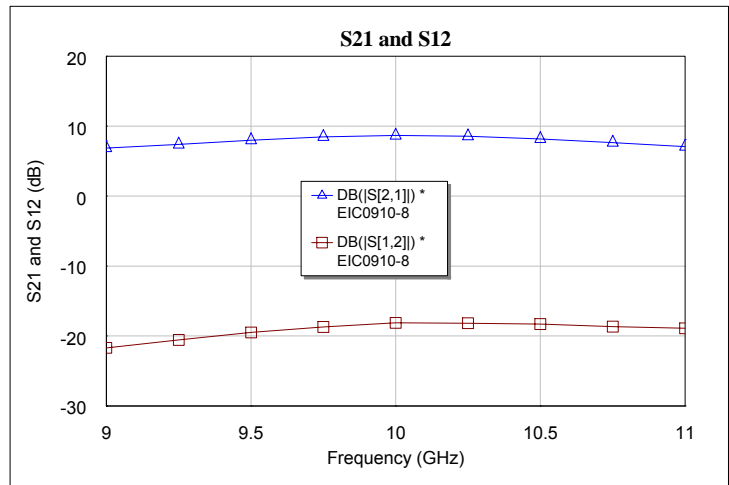
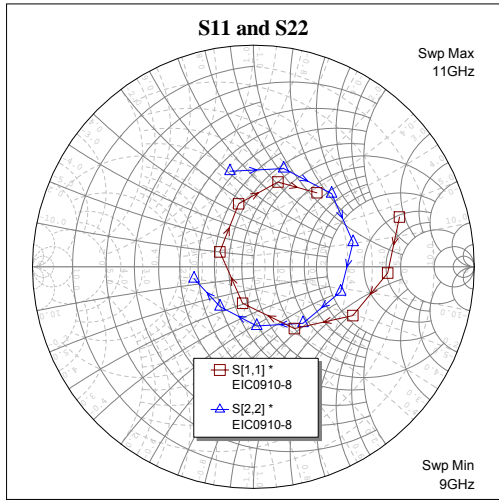
# EIC0910-8

UPDATED 08/21/2007

## 9.50-10.50GHz 8-Watt Internally Matched Power FET

### PERFORMANCE DATA

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



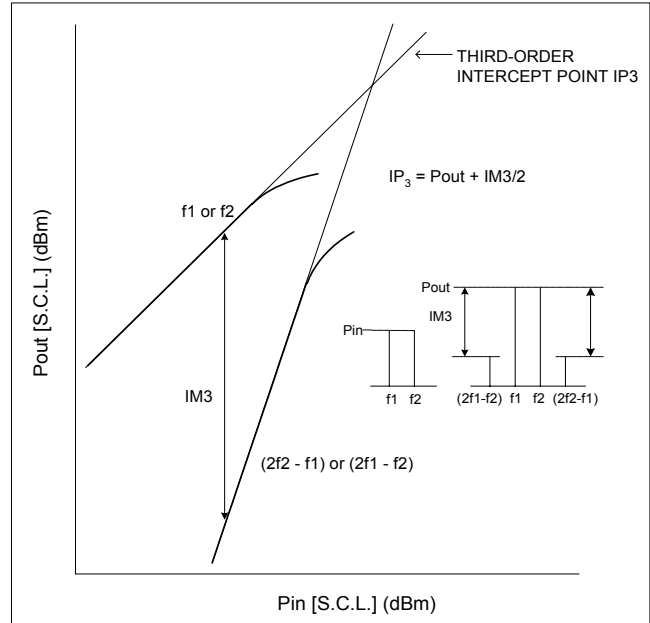
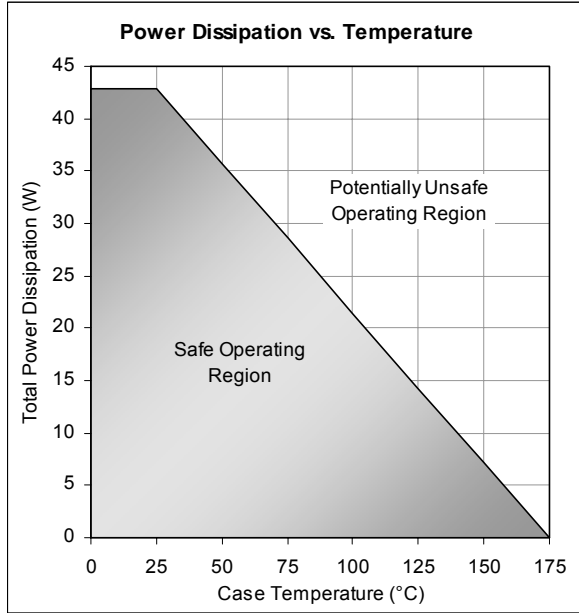
FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
8.75	0.762	39.140	2.089	-121.460	0.075	-169.770	0.429	137.700
9.00	0.698	18.780	2.205	-147.410	0.082	165.740	0.444	103.800
9.25	0.608	-2.610	2.339	-174.210	0.094	139.390	0.464	72.840
9.50	0.501	-26.030	2.511	158.700	0.106	113.610	0.484	42.960
9.75	0.335	-56.330	2.652	129.330	0.116	84.600	0.465	13.820
10.00	0.171	-106.570	2.711	98.910	0.124	54.940	0.411	-15.940
10.25	0.166	156.130	2.679	68.110	0.123	24.260	0.339	-48.490
10.50	0.292	103.200	2.561	38.070	0.122	-5.080	0.268	-86.620
10.75	0.399	73.790	2.414	9.130	0.117	-33.680	0.235	-130.070
11.00	0.441	49.230	2.258	-19.300	0.113	-61.740	0.274	-168.690
11.25	0.419	28.540	2.158	-47.480	0.113	-91.500	0.360	162.890

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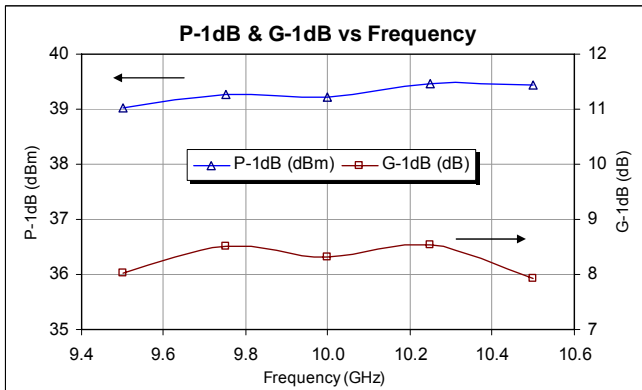
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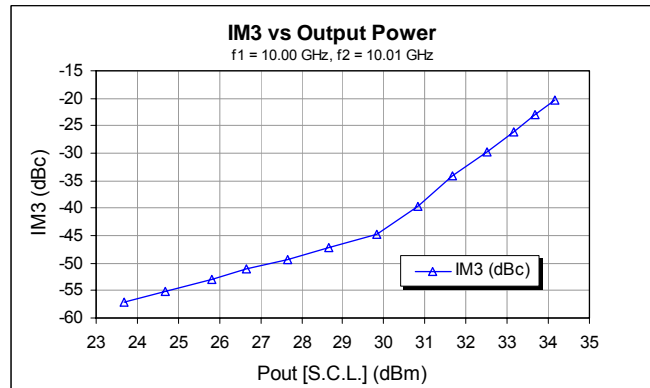
### Power De-rating Curve and IM3 Definition



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

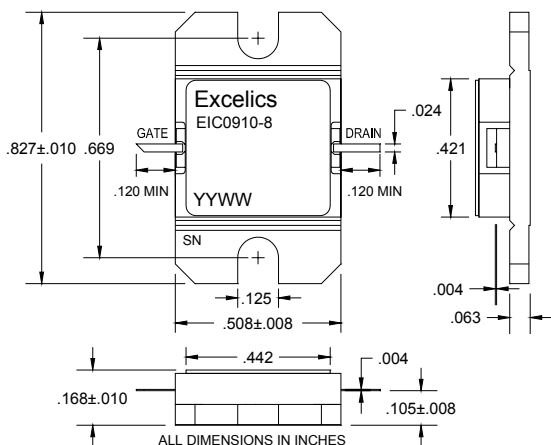
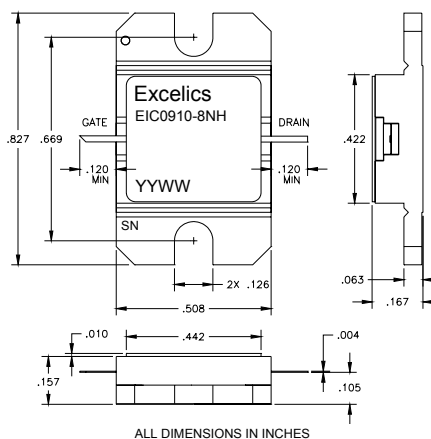


### Typical IM3 Data ( $V_{DS} = 10\text{ V}$ , $I_{DSQ} \approx 65\% IDSS$ )



### PACKAGES OUTLINE

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

**EIC0910-8 (Hermetic)**

**EIC0910-8NH (Non-Hermetic)**

**Caution! ESD sensitive device.**

**Caution! ESD sensitive device.**

### ORDERING INFORMATION

Part Number	Packages	Grade <sup>1</sup>	f <sub>Test</sub> (GHz)	P <sub>1dB</sub> (min)	IM <sub>3</sub> (min) <sup>2</sup>
EIC0910-8	Hermetic	Industrial	9.50-10.50GHz	38.5	-40
EIC0910-8NH	Non-Hermetic	Industrial	9.50-10.50GHz	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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- 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