



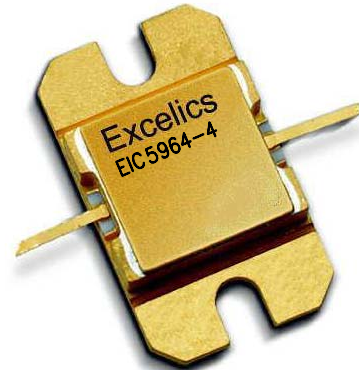
# EIC5964-4

UPDATED 08/21/2007

## 5.90-6.40 GHz 4-Watt Internally Matched Power FET

### FEATURES

- 5.90–6.40GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +36.5 dBm Output Power at 1dB Compression
- 10.0 dB Power Gain at 1dB Compression
- 37% Power Added Efficiency
- -46 dBc IM3 at PO = 25.5 dBm SCL
- 100% Tested for DC, RF, and R<sub>TH</sub>



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 = 5.90-6.40GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 1100mA	35.5	36.5		dBm
G <sub>1dB</sub>	Gain at 1dB Compression f = 5.90-6.40GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 1100mA	9.0	10.0		dB
ΔG	Gain Flatness f = 5.90-6.40GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 1100mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 1100mA f = 5.90-6.40GHz		37		%
I <sub>d1dB</sub>	Drain Current at 1dB Compression f = 5.90-6.40GHz		1100	1300	mA
IM3	Output 3rd Order Intermodulation Distortion Δf = 10 MHz 2-Tone Test; P <sub>out</sub> = 25.5 dBm S.C.L. <sup>2</sup> V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 65% IDSS f = 6.40GHz	-43	-46		dBc
I <sub>DSS</sub>	Saturated Drain Current V <sub>DS</sub> = 3 V, V <sub>GS</sub> = 0 V		2000	2500	mA
V <sub>P</sub>	Pinch-off Voltage V <sub>DS</sub> = 3 V, I <sub>DS</sub> = 20 mA		-2.5	-4.0	V
R <sub>TH</sub>	Thermal Resistance <sup>3</sup>		5.5	6.0	°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	48mA	14.4mA
I <sub>gr</sub>	Reverse Gate Current	-9.6mA	-2.4mA
P <sub>in</sub>	Input Power	36dBm	@ 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	25W	25W

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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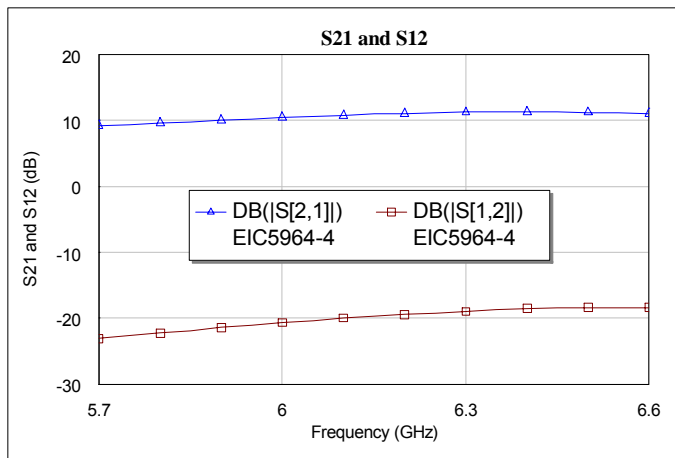
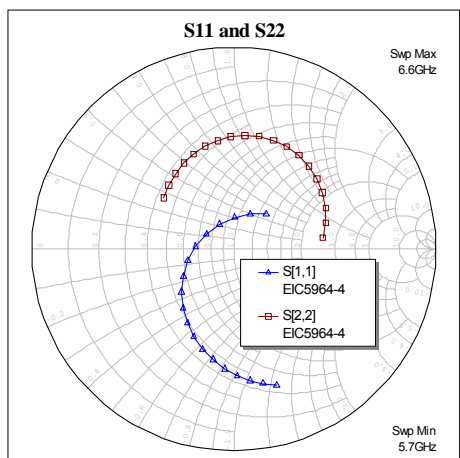
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## 5.90-6.40 GHz 4-Watt Internally Matched Power FET

### PERFORMANCE DATA

Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)

$V_{DS} = 10\text{ V}$ ,  $I_{DSQ} \approx 1100\text{mA}$



FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5.7	0.708	-72.6	2.878	22.3	0.070	-35.4	0.429	143.7
5.8	0.657	-82.8	3.031	9.4	0.077	-49.8	0.471	127.6
5.9	0.596	-94.2	3.191	-4.3	0.085	-62.3	0.512	112.8
6.0	0.521	-107.1	3.328	-18.3	0.093	-76.6	0.543	98.4
6.1	0.433	-122.1	3.465	-33.0	0.101	-91.6	0.565	84.4
6.2	0.336	-140.5	3.584	-48.4	0.107	-106.3	0.574	70.0
6.3	0.234	-166.0	3.658	-64.1	0.113	-121.2	0.565	55.4
6.4	0.155	151.6	3.675	-80.0	0.119	-138.1	0.540	40.2
6.5	0.156	88.5	3.648	-96.2	0.120	-154.0	0.500	24.2
6.6	0.236	47.4	3.543	-112.3	0.121	-169.8	0.444	7.4

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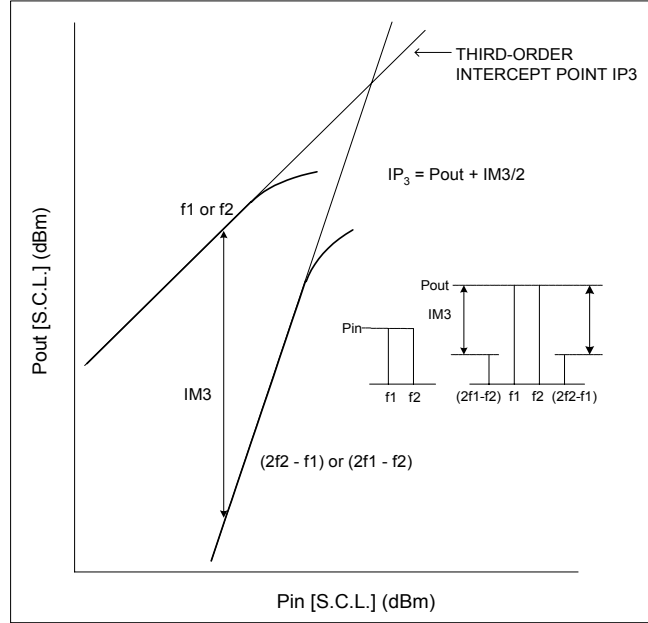
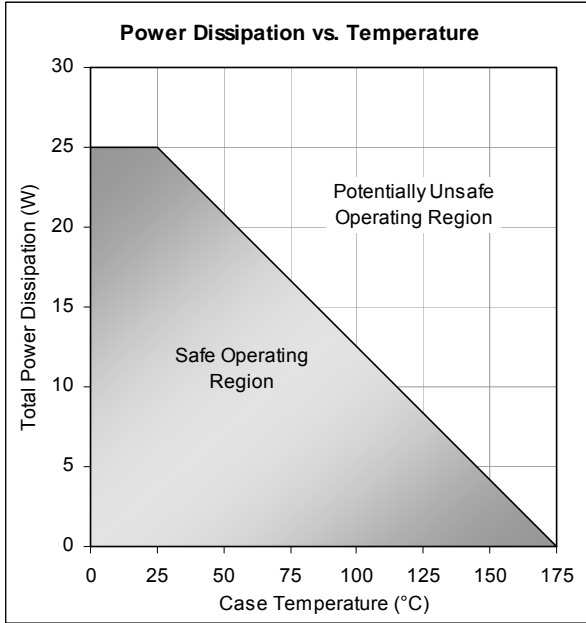


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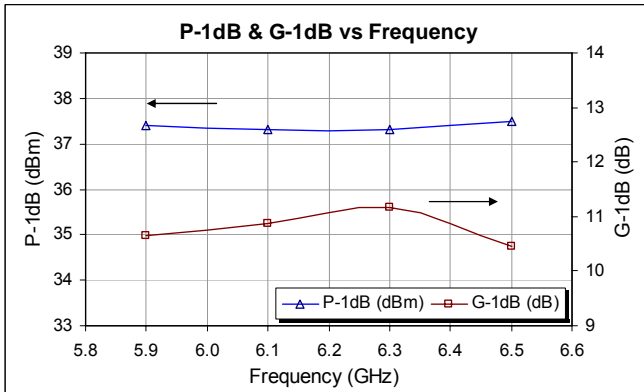
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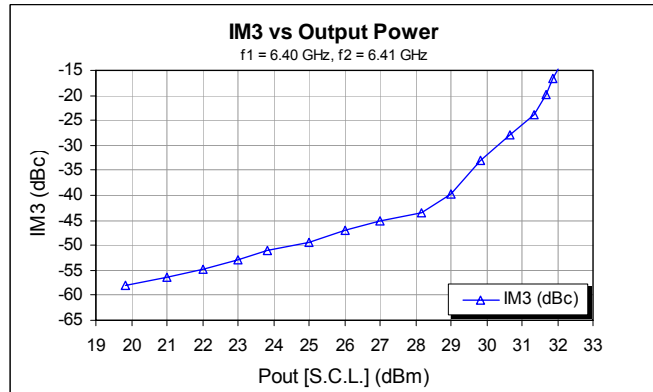
### Power De-rating Curve and IM3 Definition



### Typical Power Data ( $V_{DS} = 10\text{ V}$ , $I_{DSQ} = 1100\text{ mA}$ )



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



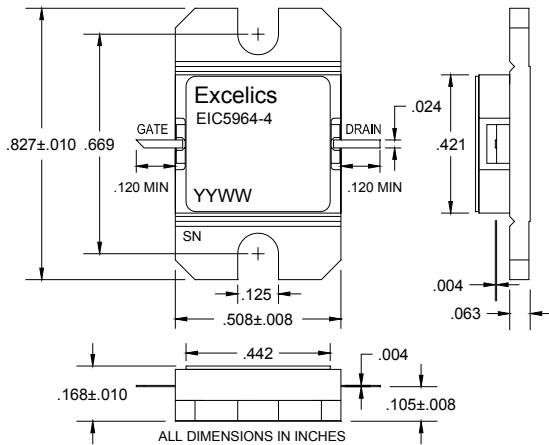
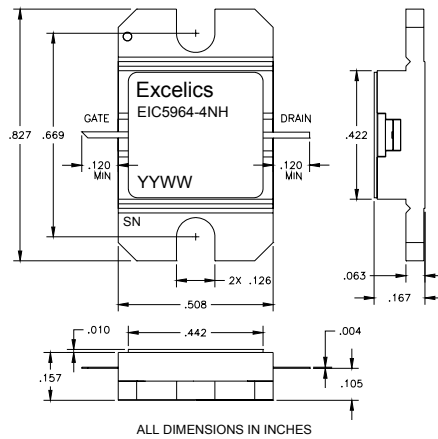
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## 5.90-6.40 GHz 4-Watt Internally Matched Power FET

### PACKAGES OUTLINE

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

**EIC5964-4 (Hermetic)**

**EIC5964-4NH (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>
EIC5964-4	Hermetic	Industrial	5.90-6.40GHz	35.5	-43
EIC5964-4NH	Non-Hermetic	Industrial	5.90-6.40GHz	35.5	-43

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

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