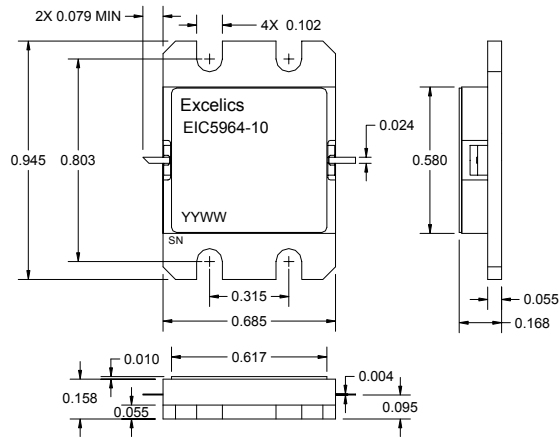


## 5.90-6.40 GHz 10-Watt Internally Matched Power FET

### FEATURES

- 5.90–6.40GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +40.5 dBm Output Power at 1dB Compression
- 10.0 dB Power Gain at 1dB Compression
- 37% Power Added Efficiency
- -46 dBc IM3 at PO = 29.5 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 = 5.90-6.40GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 3200mA	39.5	40.5		dBm
G <sub>1dB</sub>	Gain at 1dB Compression f = 5.90-6.40GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 3200mA	9.0	10.0		dB
ΔG	Gain Flatness f = 5.90-6.40GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 3200mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 3200mA f = 5.90-6.40GHz		37		%
I <sub>d1dB</sub>	Drain Current at 1dB Compression f = 5.90-6.40GHz		3200	3600	mA
IM3	Output 3rd Order Intermodulation Distortion Δf = 10 MHz 2-Tone Test; P <sub>out</sub> = 29.5 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		5800	6400	mA
V <sub>P</sub>	Pinch-off Voltage V <sub>DS</sub> = 3 V, I <sub>DS</sub> = 60 mA		-2.5	-4.0	V
R <sub>TH</sub>	Thermal Resistance <sup>3</sup>		2.5	3.0	°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	136mA	40.8mA
I <sub>gr</sub>	Reverse Gate Current	-27.2mA	-6.8mA
P <sub>in</sub>	Input Power	40dBm	@ 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	50W	50W

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.



# EIC5964-10

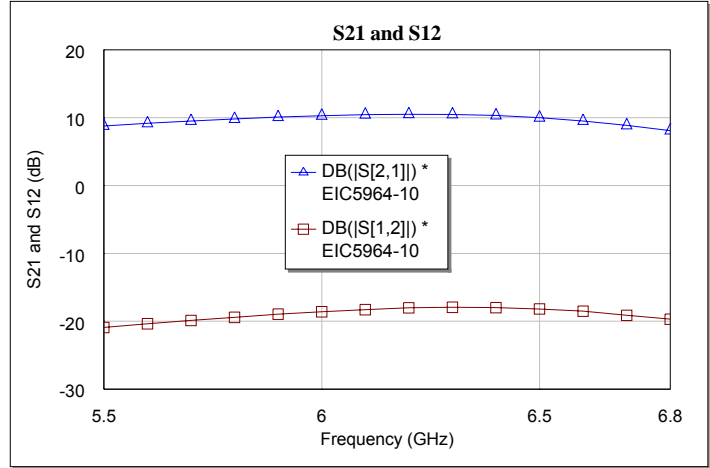
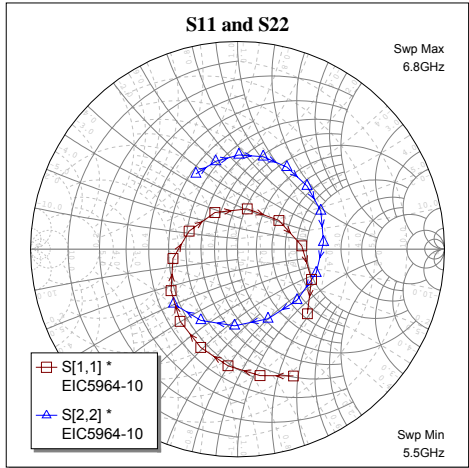
UPDATED 08/21/2007

## 5.90-6.40 GHz 10-Watt Internally Matched Power FET

### PERFORMANCE DATA

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

$V_{DS} = 10\text{ V}$ ,  $I_{DSQ} \approx 3200\text{mA}$



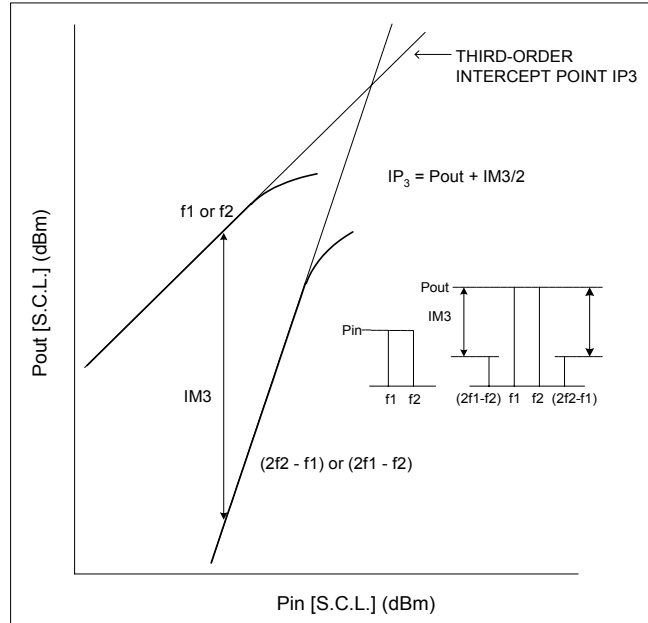
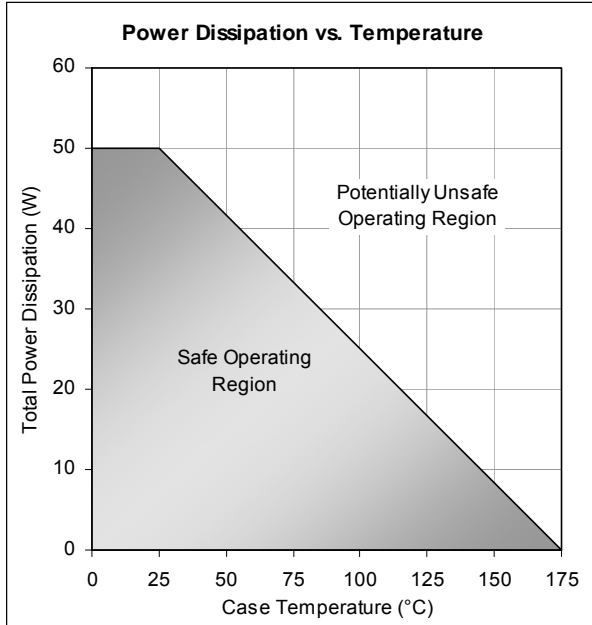
FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5.00	0.842	-10.380	2.138	85.680	0.066	23.190	0.279	-146.210
5.25	0.770	-36.270	2.452	52.620	0.075	-8.650	0.338	160.980
5.50	0.668	-66.150	2.749	17.860	0.090	-42.660	0.414	119.050
5.75	0.535	-102.210	3.044	-18.590	0.104	-77.630	0.459	82.070
6.00	0.378	-148.060	3.268	-57.830	0.118	-116.340	0.453	42.110
6.25	0.226	142.100	3.354	-99.660	0.126	-157.830	0.407	-5.740
6.50	0.243	34.670	3.165	-144.200	0.123	159.460	0.366	-66.250
6.75	0.423	-32.680	2.662	171.730	0.107	116.550	0.395	-128.840
7.00	0.573	-76.790	2.037	131.380	0.084	77.710	0.470	-176.150
7.25	0.675	-110.330	1.498	95.780	0.066	45.490	0.549	151.630
7.50	0.750	-137.290	1.090	64.300	0.050	12.690	0.624	128.540

Specifications are subject to change without notice.

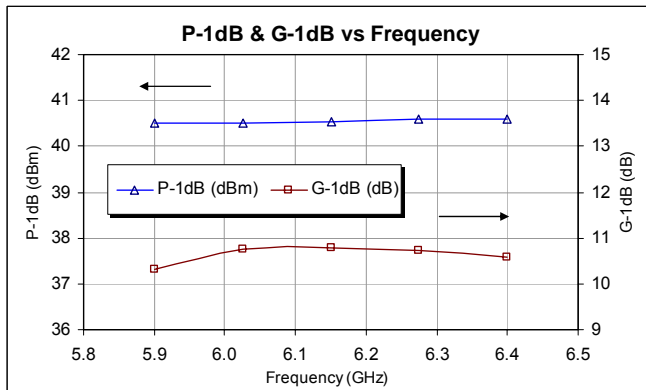
Excelics Semiconductor, Inc. 310 De Guigne Drive, Sunnyvale, CA 94085  
 Phone: 408-737-1711 Fax: 408-737-1868 Web: [www.excelics.com](http://www.excelics.com)

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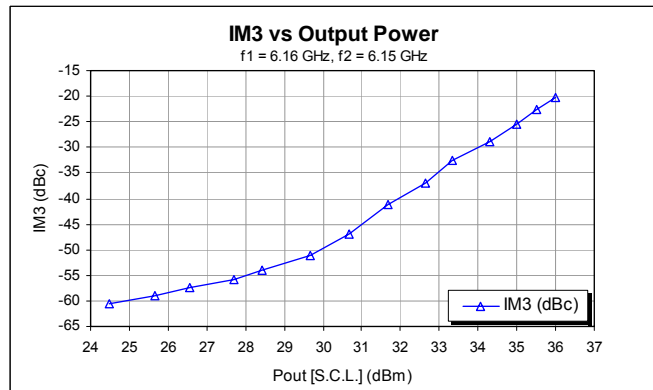
### Power De-rating Curve and IM3 Definition



### Typical Power Data (V<sub>DS</sub> = 10 V, I<sub>DSQ</sub> = 3200 mA)



### Typical IM3 Data (V<sub>DS</sub> = 10 V, I<sub>DSQ</sub> ≈ 65% IDSS)





# EIC5964-10

UPDATED 08/21/2007

## 5.90-6.40 GHz 10-Watt Internally Matched Power FET

### 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>
EIC5964-10	Hermetic	Industrial	5.90-6.40GHz	39.5	-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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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

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