



# EIC7179-5

UPDATED 08/21/2007

## 7.10-7.90GHz 5-Watt Internally-Matched Power FET

### FEATURES

- 7.10–7.90GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +37.5 dBm Output Power at 1dB Compression
- 8.5 dB Power Gain at 1dB Compression
- 35% 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 = 7.10-7.90GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 1600mA	36.5	37.5		dBm
G <sub>1dB</sub>	Gain at 1dB Compression f = 7.10-7.90GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 1600mA	7.5	8.5		dB
ΔG	Gain Flatness f = 7.10-7.90GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 1600mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 1600mA f = 7.10-7.90GHz		35		%
I <sub>d1dB</sub>	Drain Current at 1dB Compression f = 7.10-7.90GHz		1600	2000	mA
IM3	Output 3rd Order Intermodulation Distortion Δf = 10 MHz 2-Tone Test; Pout = 25.5 dBm S.C.L. <sup>2</sup> V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 65% IDSS f = 7.90GHz	-43	-46		dBc
I <sub>DSS</sub>	Saturated Drain Current V <sub>DS</sub> = 3 V, V <sub>GS</sub> = 0 V		2900	3500	mA
V <sub>P</sub>	Pinch-off Voltage V <sub>DS</sub> = 3 V, I <sub>DS</sub> = 30 mA		-2.5	-4.0	V
R <sub>TH</sub>	Thermal Resistance <sup>3</sup>		5.0	5.5	°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	68mA	20.4mA
I <sub>gr</sub>	Reverse Gate Current	-13.6mA	-3.4mA
P <sub>in</sub>	Input Power	37dBm	@ 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	27W	27W

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.

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Revised October 2007  
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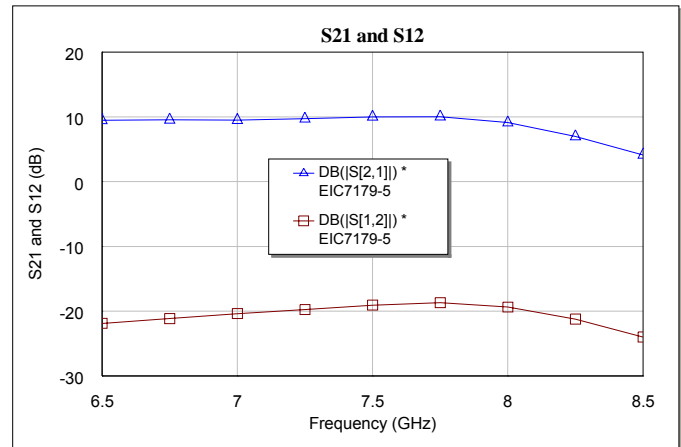
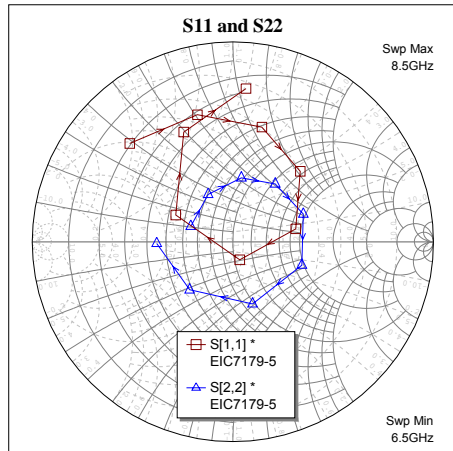
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### PERFORMANCE DATA

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

$V_{DS} = 10\text{ V}$ ,  $I_{DSQ} \approx 1600\text{mA}$



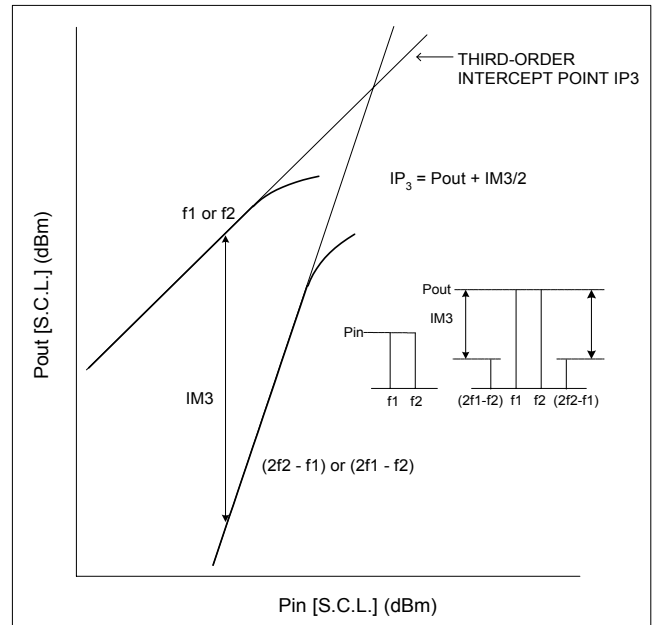
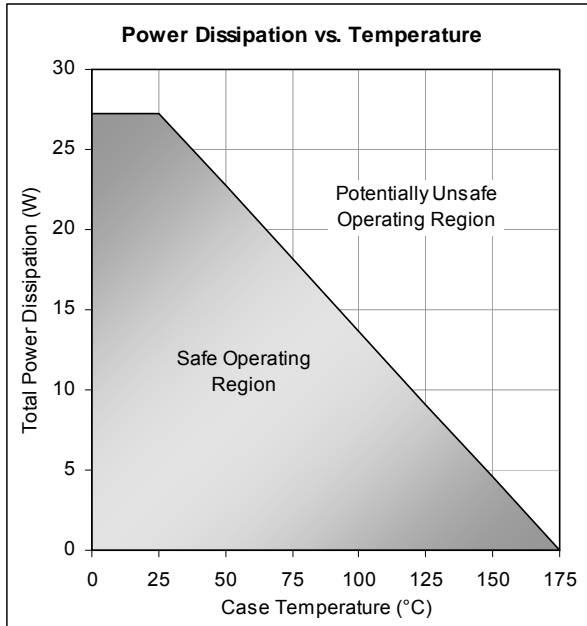
FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
6.25	0.752	168.140	2.901	-7.820	0.073	-64.840	0.232	-147.530
6.50	0.711	136.260	2.974	-39.130	0.081	-97.090	0.224	159.760
6.75	0.659	105.510	3.004	-70.350	0.088	-127.140	0.267	117.460
7.00	0.591	75.820	2.986	-100.630	0.096	-156.850	0.322	82.450
7.25	0.487	46.300	3.063	-131.620	0.103	172.760	0.358	53.770
7.50	0.320	11.650	3.161	-165.600	0.111	140.350	0.377	21.450
7.75	0.097	-69.360	3.168	156.190	0.116	103.520	0.364	-18.780
8.00	0.315	154.860	2.860	113.990	0.108	62.710	0.326	-72.420
8.25	0.600	114.000	2.233	73.400	0.087	23.160	0.323	-131.860
8.50	0.769	85.120	1.607	38.360	0.063	-9.110	0.379	-178.690
8.75	0.843	64.260	1.123	9.490	0.046	-36.130	0.455	151.440

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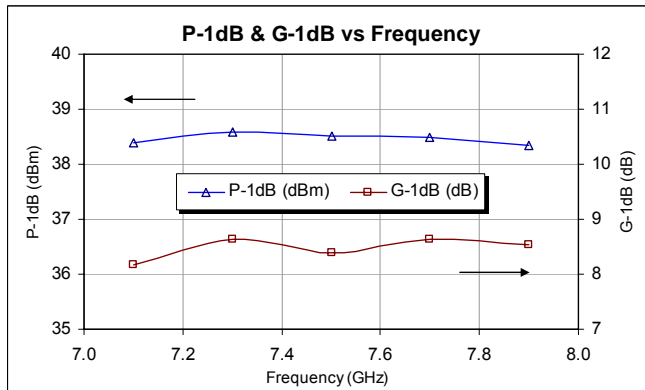
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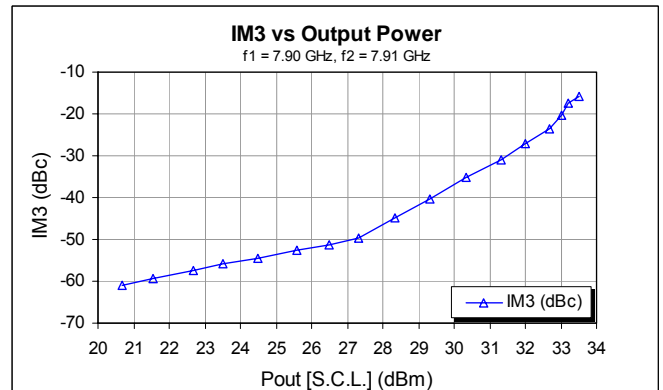
### Power De-rating Curve and IM3 Definition



### Typical Power Data ( $V_{DS} = 10\text{ V}$ , $I_{DSQ} = 1600\text{ mA}$ )



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





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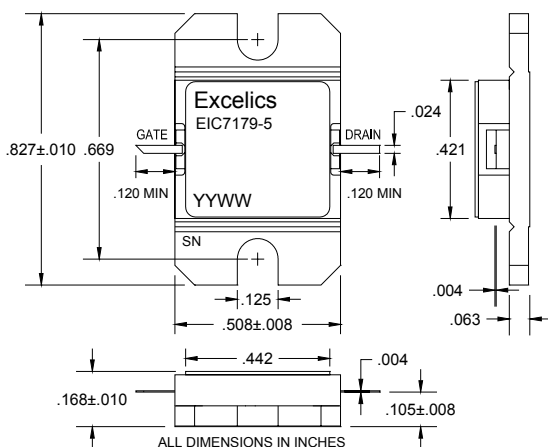
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### PACKAGES OUTLINE

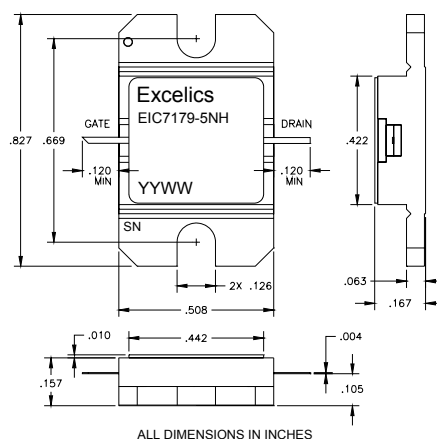
Dimensions in inches, Tolerance  $\pm .005$  unless otherwise specified

**EIC7179-5 (Hermetic)**



Caution! ESD sensitive device.

**EIC7179-5NH (Non-Hermetic)**



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>
EIC7179-5	Hermetic	Industrial	7.10-7.90GHz	36.5	-43
EIC7179-5NH	Non-Hermetic	Industrial	7.10-7.90GHz	36.5	-43

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

### DISCLAIMER

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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

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