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_{TH}**

Caution! ESD sensitive device.

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

SYMBOL	PARAMETERS/TEST CONDITIONS[1]	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression f = 7.10-7.90GHz V_{DS} = 10 V, I_{DSQ} ≈ 1600mA	36.5	37.5		dBm
G_{1dB}	Gain at 1dB Compression f = 7.10-7.90GHz V_{DS} = 10 V, I_{DSQ} ≈ 1600mA	7.5	8.5		dB
ΔG	Gain Flatness f = 7.10-7.90GHz V_{DS} = 10 V, I_{DSQ} ≈ 1600mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, I_{DSQ} ≈ 1600mA f = 7.10-7.90GHz		35		%
Id_{1dB}	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[2] V_{DS} = 10 V, I_{DSQ} ≈ 65% IDSS f = 7.90GHz	-43	-46		dBc
I_{DSS}	Saturated Drain Current V_{DS} = 3 V, V_{GS} = 0 V		2900	3500	mA
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 30 mA		-2.5	-4.0	V
R_{TH}	Thermal Resistance[3]		5.0	5.5	°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	68mA	20.4mA
Igr	Reverse Gate Current	-13.6mA	-3.4mA
Pin	Input Power	37dBm	@ 3dB Compression
Tch	Channel Temperature	175C	175C
Tstg	Storage Temperature	-65C to +175C	-65C to +175C
Pt	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.

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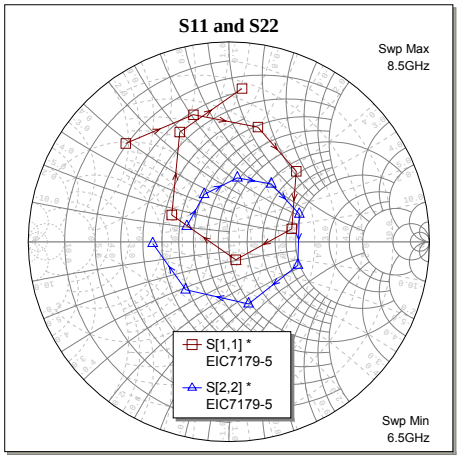
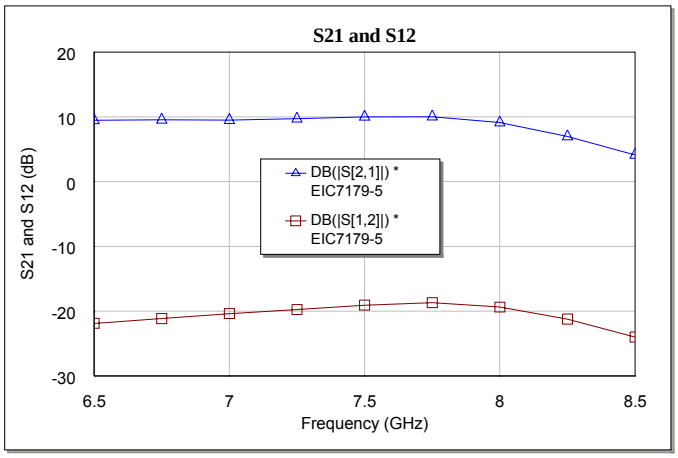
PERFORMANCE DATA

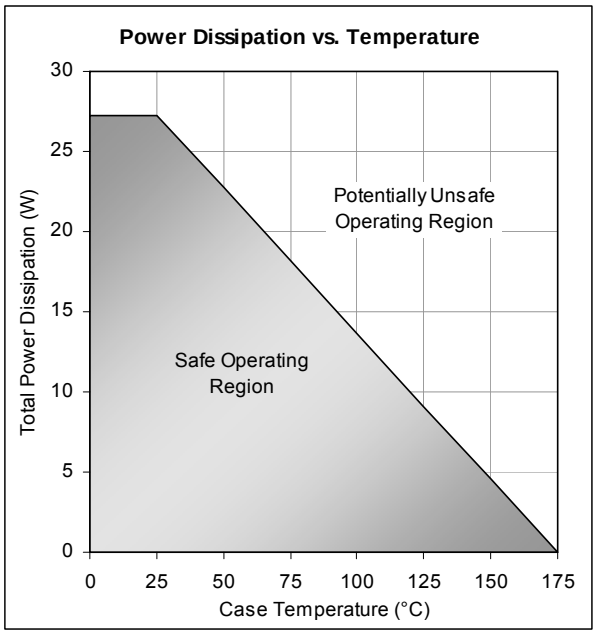
Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)
V_{DS} = 10 V, I_{DSQ} ≈ 1600mA

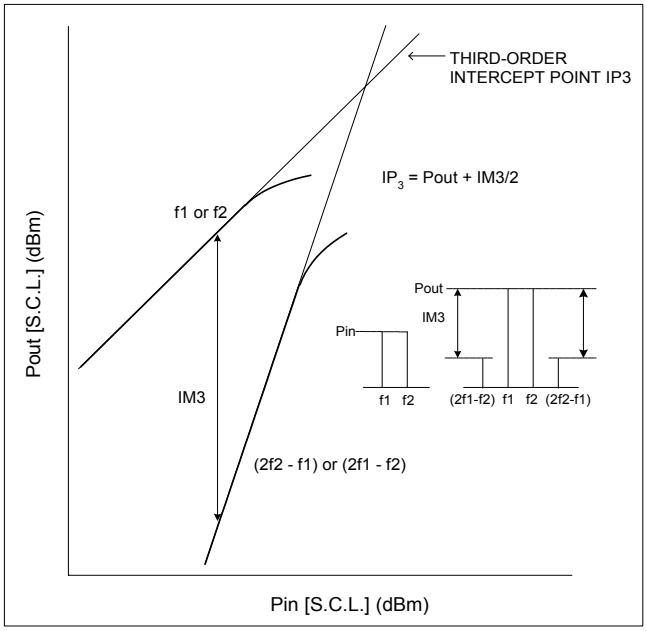




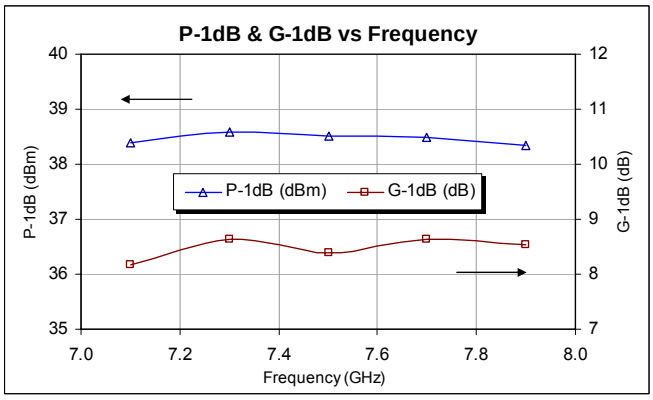
FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
6.25	0.752	168.140	2.901	-7.820	0.073	-64.840	0.232	-147.530
6.50	0.711	136.260	2.974	-39.130	0.081	-97.090	0.224	159.760
6.75	0.659	105.510	3.004	-70.350	0.088	-127.140	0.267	117.460
7.00	0.591	75.820	2.986	-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

Power De-rating Curve and IM3 Definition

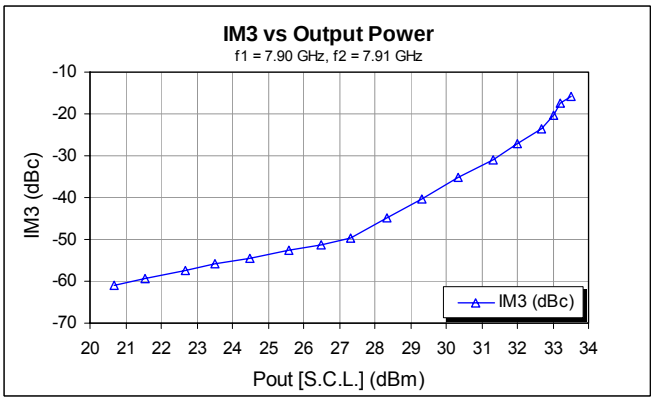




Typical Power Data (V_{DS} = 10 V, I_{DSQ} = 1600 mA)



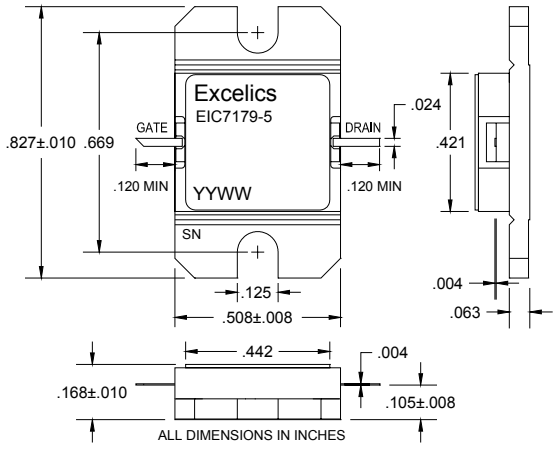
Typical IM3 Data (V_{DS} = 10 V, I_{DSQ} ≈ 65% IDSS)



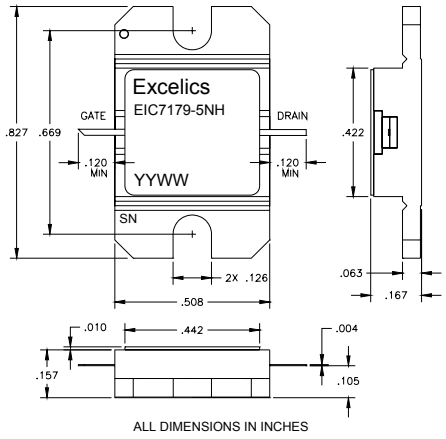
PACKAGES OUTLINE

Dimensions in inches, Tolerance ± .005 unless otherwise specified

EIC7179-5 (Hermetic)



EIC7179-5NH (Non-Hermetic)



Caution! ESD sensitive device.

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ORDERING INFORMATION

Part Number	Packages	Grade[1]	f_{Test} (GHz)	P_{1dB} (min)	IM_3 (min)[2]
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.

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