EIC7179-4

UPDATED 08/21/2007

7.10-7.90GHz 4-Watt Internally-Matched Power FET



FEATURES

- **7.10–7.90GHz Bandwidth**
- **Input/Output Impedance Matched to 50 Ohms**
- **+36.5 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} ≈ 1100mA	35.5	36.5		dBm
G_{1dB}	Gain at 1dB Compression f = 7.10-7.90GHz V_{DS} = 10 V, I_{DSQ} ≈ 1100mA	7.5	8.5		dB
ΔG	Gain Flatness f = 7.10-7.90GHz V_{DS} = 10 V, I_{DSQ} ≈ 1100mA			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V_{DS} = 10 V, I_{DSQ} ≈ 1100mA f = 7.10-7.90GHz		35		%
Id_{1dB}	Drain Current at 1dB Compression f = 7.10-7.90GHz		1200	1400	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		2000	2500	mA
V_P	Pinch-off Voltage V_{DS} = 3 V, I_{DS} = 20 mA		-2.5	-4.0	V
R_{TH}	Thermal Resistance[3]		5.5	6.0	°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	48mA	14.4mA
Igr	Reverse Gate Current	-9.6mA	-2.4mA
Pin	Input Power	36dBm	@ 3dB Compression
Tch	Channel Temperature	175C	175C
Tstg	Storage Temperature	-65C to +175C	-65C to +175C
Pt	Total Power Dissipation	25W	25W

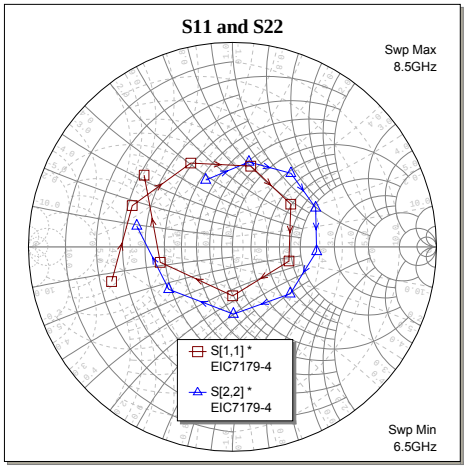
Note: 1. Exceeding any of the above ratings may result in permanent damage.
2. Exceeding any of the above ratings may reduce MTTF below design goals.

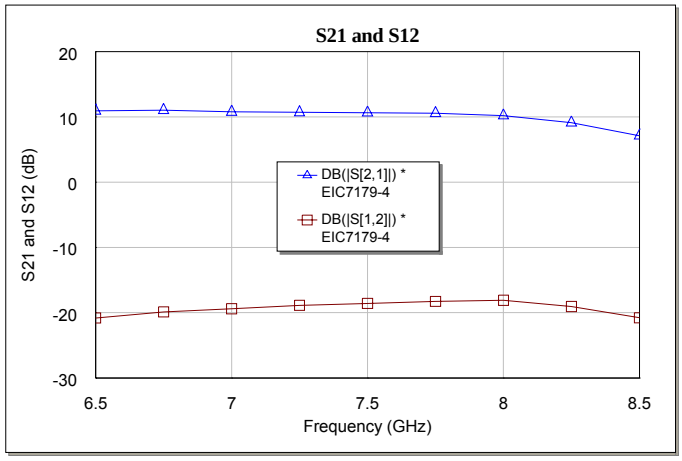
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PERFORMANCE DATA

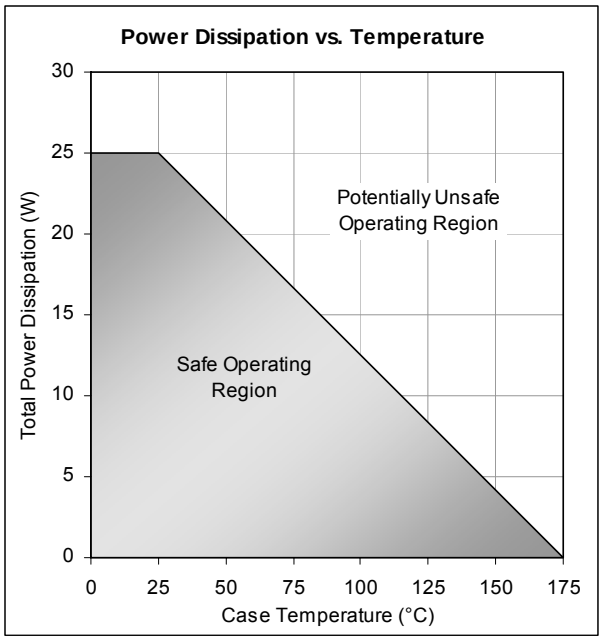
Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)
V_{DS} = 10 V, I_{DSQ} ≈ 1100mA

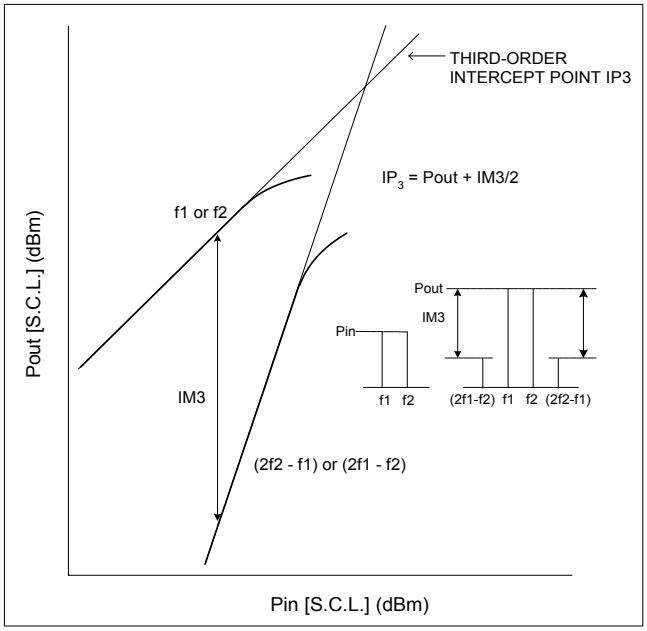




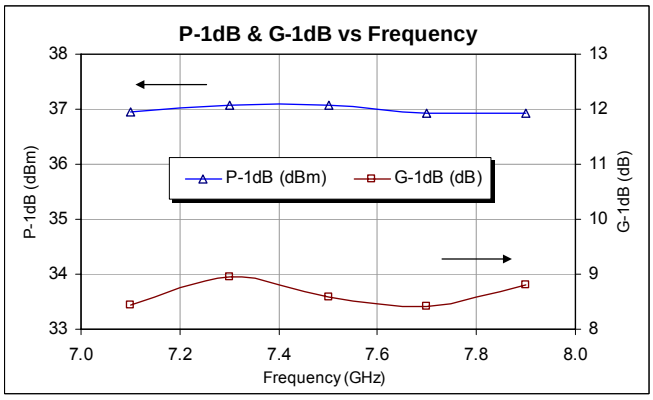
FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
6.25	0.717	-129.010	3.341	8.410	0.078	-50.550	0.258	158.370
6.50	0.616	-164.030	3.517	-25.170	0.091	-84.550	0.352	111.870
6.75	0.531	157.650	3.563	-58.820	0.101	-117.910	0.422	78.950
7.00	0.458	116.510	3.454	-90.850	0.107	-148.130	0.460	51.440
7.25	0.405	77.140	3.425	-121.930	0.114	-179.030	0.451	25.010
7.50	0.354	36.120	3.404	-154.300	0.118	149.090	0.413	-2.990
7.75	0.285	-14.050	3.372	171.750	0.122	117.150	0.365	-39.080
8.00	0.240	-89.650	3.238	134.430	0.125	81.280	0.329	-89.170
8.25	0.362	-167.970	2.854	95.090	0.111	42.800	0.375	-146.450
8.50	0.557	140.990	2.268	56.400	0.091	6.000	0.480	167.620
8.75	0.698	106.670	1.652	22.050	0.068	-26.910	0.568	137.060

Power De-rating Curve and IM3 Definition

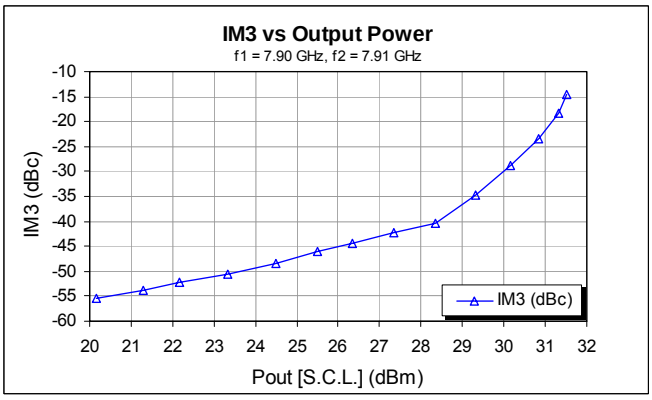




Typical Power Data (V_{DS} = 10 V, I_{DSQ} = 1100 mA)



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



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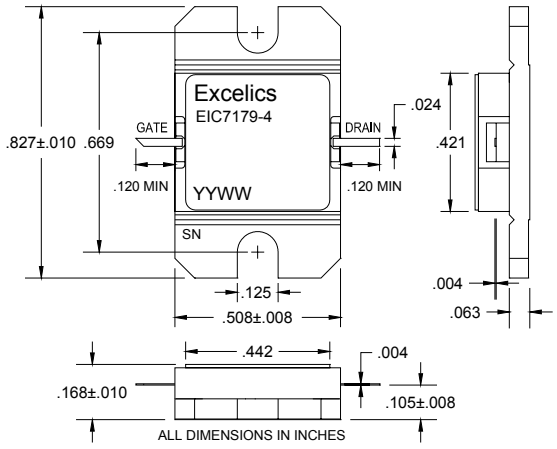
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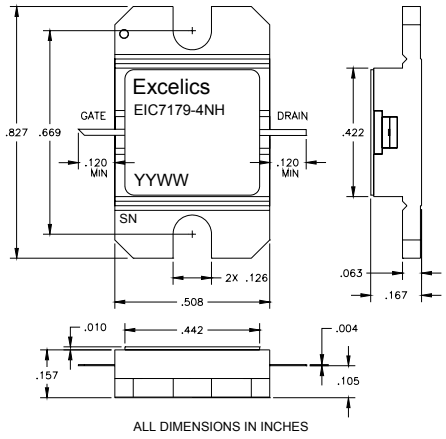
PACKAGES OUTLINE

Dimensions in inches, Tolerance ± .005 unless otherwise specified

EIC7179-4 (Hermetic)



EIC7179-4NH (Non-Hermetic)



Caution! ESD sensitive device.

Caution! ESD sensitive device.

ORDERING INFORMATION

Part Number	Packages	Grade[1]	f_{Test} (GHz)	P_{1dB} (min)	IM_3 (min)[2]
EIC7179-4	Hermetic	Industrial	7.10-7.90GHz	35.5	-43
EIC7179-4NH	Non-Hermetic	Industrial	7.10-7.90GHz	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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