

FEATURES

- 7.70–8.50GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +37.5 dBm Output Power at 1dB Compression
- 8.5 dB Power Gain at 1dB Compression
- 34% Power Added Efficiency
- -49 dBc IM3 at PO = 26.5 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 V _{DS} = 10 V, I _{DSQ} ≈ 1600mA f = 7.70-8.50GHz	36.5	37.5		dBm
G_{1dB}	Gain at 1dB Compression V _{DS} = 10 V, I _{DSQ} ≈ 1600mA f = 7.70-8.50GHz	7.5	8.5		dB
ΔG	Gain Flatness V _{DS} = 10 V, I _{DSQ} ≈ 1600mA f = 7.70-8.50GHz			±0.6	dB
PAE	Power Added Efficiency at 1dB Compression V _{DS} = 10 V, I _{DSQ} ≈ 1600mA f = 7.70-8.50GHz		34		%
I_{d1dB}	Drain Current at 1dB Compression f = 7.70-8.50GHz		1600	1900	mA
IM3	Output 3rd Order Intermodulation Distortion Δf = 10 MHz 2-Tone Test; P _{out} = 26.5 dBm S.C.L. ² V _{DS} = 10 V, I _{DSQ} ≈ 65% IDSS f = 8.50GHz	Opt-01	-42	-45	dBc
		Opt-02	-46	-49	
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 R_{th} depends on case mounting.

ABSOLUTE MAXIMUM RATING FOR EFE

SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
V_{ds}	Drain-Source Voltage	15V	10V
V_{gs}	Gate-Source Voltage	-5V	-4V
I_{gf}	Forward Gate Current	68mA	20.4mA
I_{gr}	Reverse Gate Current	-13.6mA	-3.4mA
P_{in}	Input Power	37dBm	@ 3dB Compression
T_{ch}	Channel Temperature	175C	175C
T_{stg}	Storage Temperature	-65C to +175C	-65C to +175C
P_t	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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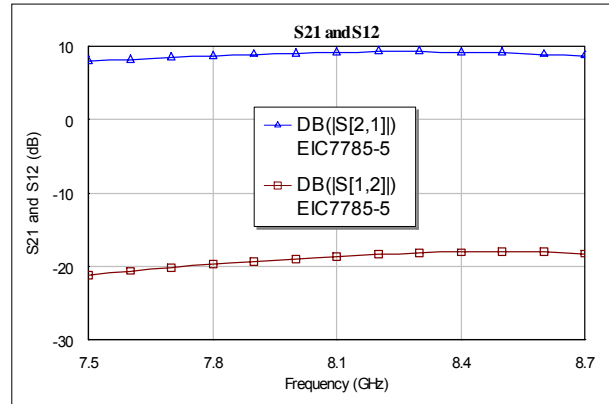
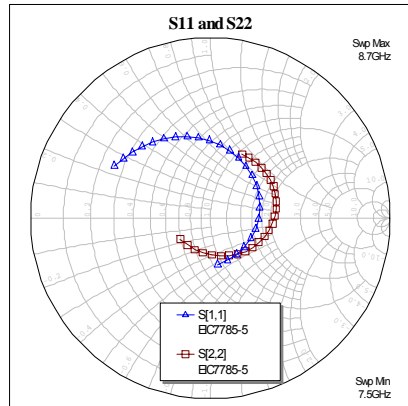
UPDATED 08/21/2007

7.70-8.50GHz 5-Watt Internally-Matched Power FET

PERFORMANCE DATA

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

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



FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
7.5	0.6072	151.65	2.4887	-96.64	0.0877	-140.79	0.3974	63.69
7.6	0.5668	139.93	2.5636	-108.26	0.0935	-152.21	0.399	51.15
7.7	0.5301	127.41	2.6446	-120.35	0.0984	-164.2	0.3981	38.7
7.8	0.4896	113.26	2.7096	-132.52	0.1039	-176.06	0.392	26.7
7.9	0.4497	98.49	2.7726	-145.04	0.1085	171.35	0.378	14.39
8	0.4085	82.47	2.8207	-157.79	0.1123	158.96	0.3592	1.76
8.1	0.3689	64.87	2.8563	-170.82	0.1168	146.5	0.3329	-11.65
8.2	0.331	45.51	2.8892	175.98	0.1211	133.84	0.3001	-26.37
8.3	0.2961	23.89	2.888	162.68	0.1237	121.11	0.2676	-43.46
8.4	0.2689	-0.24	2.8767	149.22	0.1251	107.74	0.2323	-63
8.5	0.2517	-26.44	2.8389	135.66	0.1254	94.86	0.2034	-87.46
8.6	0.2485	-54.31	2.7741	122.25	0.1254	81.38	0.1942	-116.35
8.7	0.2603	-81	2.7202	108.74	0.1226	67.75	0.2049	-145.47

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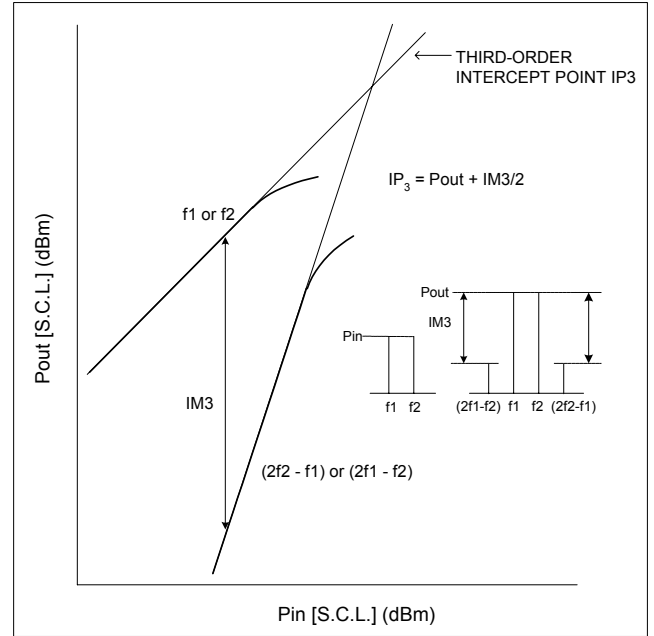
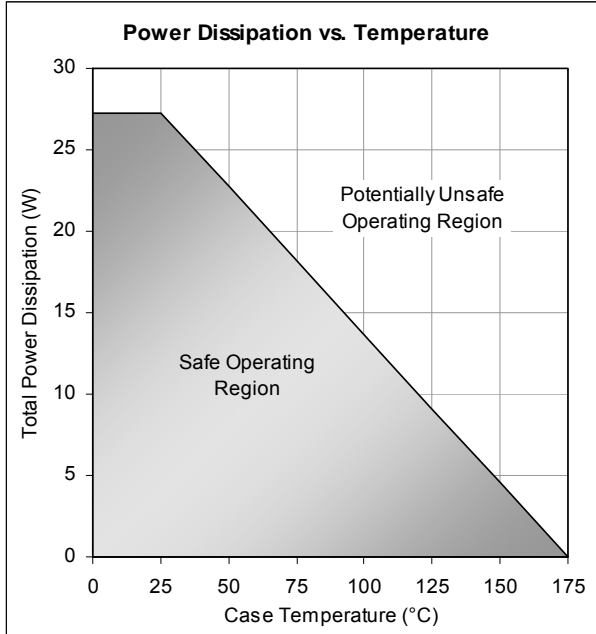


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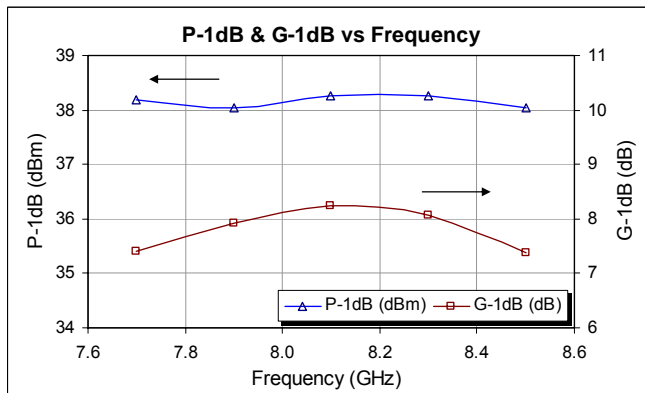
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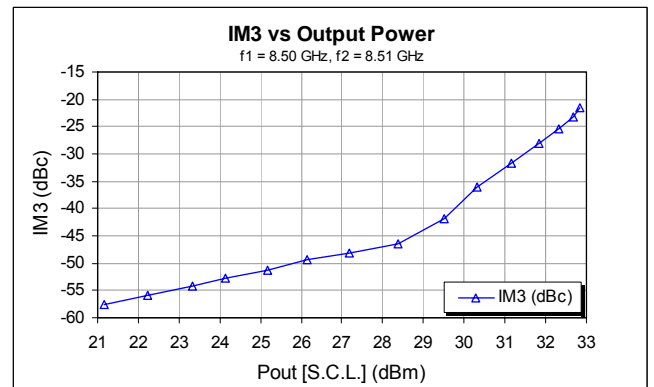
Power De-rating Curve and IM3 Definition



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



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



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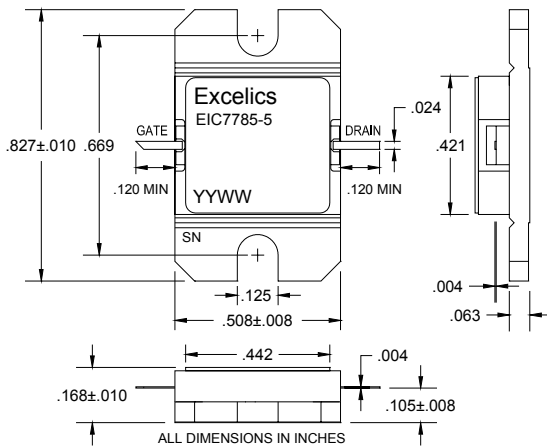
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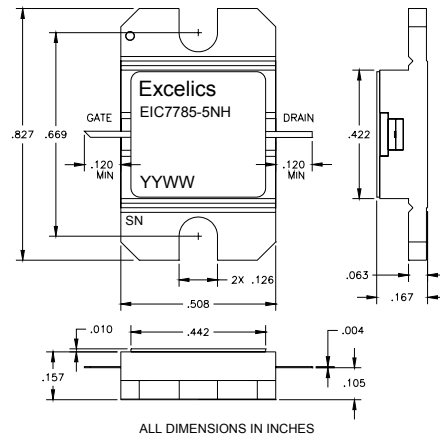
PACKAGES OUTLINE

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

EIC7785-5 (Hermetic)



EIC7785-5NH (Non-Hermetic)



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ORDERING INFORMATION

Part Number	Packages	Grade ¹	f _{Test} (GHz)	P _{1dB} (min)	IM ₃ (min) ²
EIC7785-5-01	Hermetic	Industrial	7.70-8.50GHz	36.5	-42
EIC7785-5NH-01	Non-Hermetic	Industrial	7.70-8.50GHz	36.5	-42
EIC7785-5-02	Hermetic	Industrial	7.70-8.50GHz	36.5	-46
EIC7785-5NH-02	Non-Hermetic	Industrial	7.70-8.50GHz	36.5	-46

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

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page 4 of 4
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