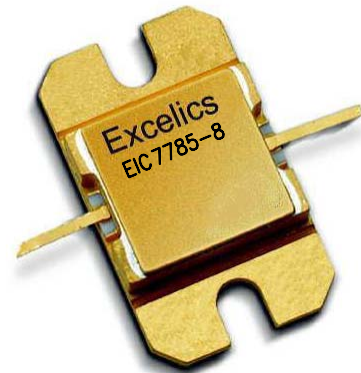


### FEATURES

- 7.70–8.50GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +39.5 dBm Output Power at 1dB Compression
- 8.5 dB Power Gain at 1dB Compression
- 34% Power Added Efficiency
- -46 dBc IM3 at PO = 28.5 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
<b>P<sub>1dB</sub></b>	Output Power at 1dB Compression f = 7.70-8.50GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 2200mA	38.5	39.5		dBm
<b>G<sub>1dB</sub></b>	Gain at 1dB Compression f = 7.70-8.50GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 2200mA	7.5	8.5		dB
<b>ΔG</b>	Gain Flatness f = 7.70-8.50GHz V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 2200mA			±0.6	dB
<b>PAE</b>	Power Added Efficiency at 1dB Compression V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 2200mA f = 7.70-8.50GHz		34		%
<b>I<sub>d1dB</sub></b>	Drain Current at 1dB Compression f = 7.70-8.50GHz		2200	2600	mA
<b>IM3</b>	Output 3rd Order Intermodulation Distortion Δf = 10 MHz 2-Tone Test; Pout = 28.5 dBm S.C.L. <sup>2</sup> V <sub>DS</sub> = 10 V, I <sub>DSQ</sub> ≈ 65% IDSS f = 8.50GHz	-43	-46		dBc
<b>I<sub>DSS</sub></b>	Saturated Drain Current V <sub>DS</sub> = 3 V, V <sub>GS</sub> = 0 V		4000	4500	mA
<b>V<sub>P</sub></b>	Pinch-off Voltage V <sub>DS</sub> = 3 V, I <sub>DS</sub> = 40 mA		-2.5	-4.0	V
<b>R<sub>TH</sub></b>	Thermal Resistance <sup>3</sup>		3.5	4.0	°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 <sup>1</sup>	CONTINUOUS <sup>2</sup>
<b>V<sub>ds</sub></b>	Drain-Source Voltage	15V	10V
<b>V<sub>gs</sub></b>	Gate-Source Voltage	-5V	-4V
<b>I<sub>gf</sub></b>	Forward Gate Current	96mA	28.8mA
<b>I<sub>gr</sub></b>	Reverse Gate Current	-19.2mA	-4.8mA
<b>P<sub>in</sub></b>	Input Power	39dBm	@ 3dB Compression
<b>T<sub>ch</sub></b>	Channel Temperature	175C	175C
<b>T<sub>stg</sub></b>	Storage Temperature	-65C to +175C	-65C to +175C
<b>P<sub>t</sub></b>	Total Power Dissipation	37.5W	37.5W

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.



# EIC7785-8

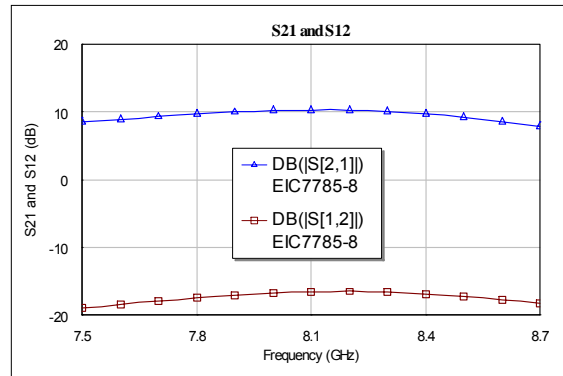
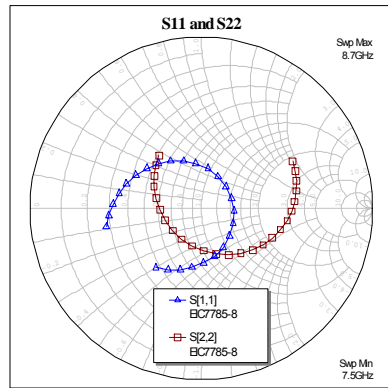
UPDATED 08/21/2007

## 7.70-8.50GHz 8-Watt Internally-Matched Power FET

### PERFORMANCE DATA

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

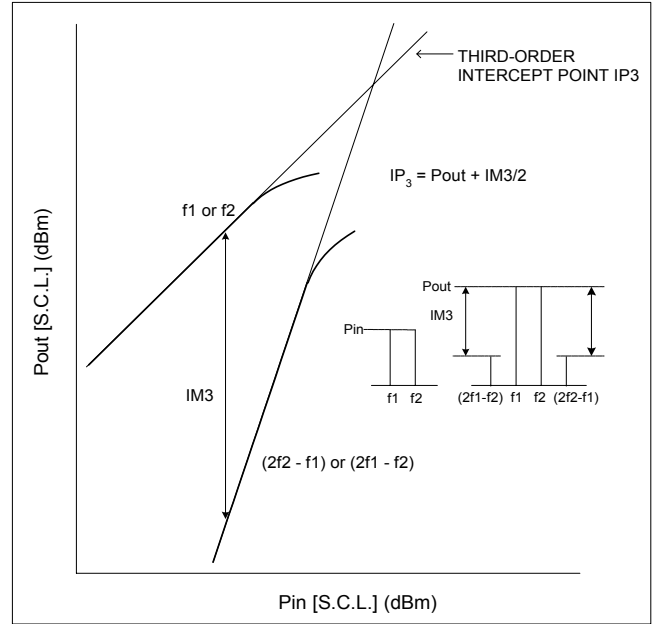
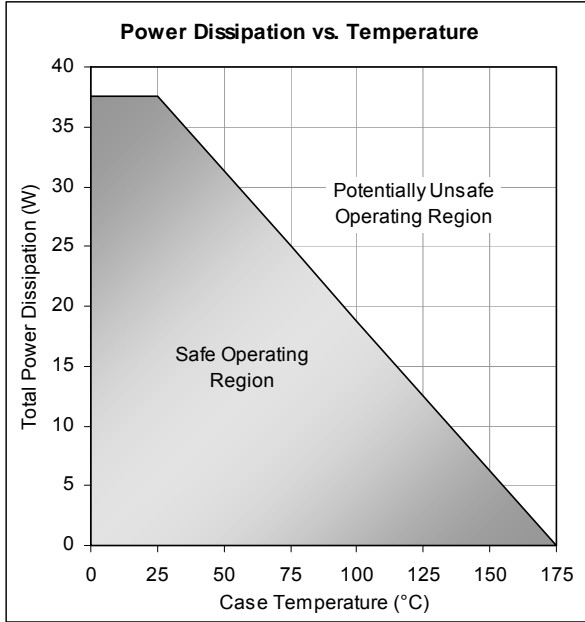
$V_{DS} = 10\text{ V}$ ,  $I_{DSQ} \approx 2200\text{mA}$



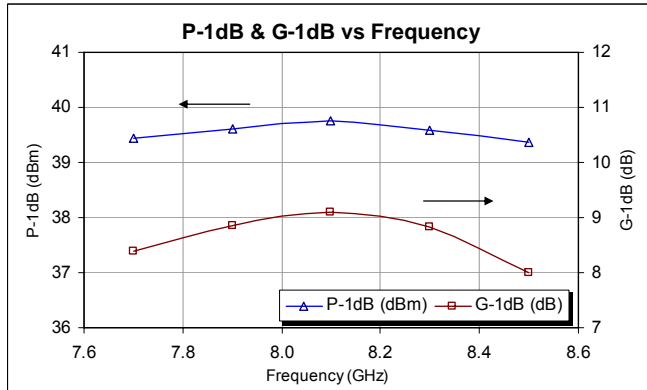
FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
7.5	0.5659	-169.06	2.653	-99.16	0.1125	-153.47	0.5992	27.25
7.6	0.5159	177.44	2.7741	-111.83	0.1208	-165.72	0.5788	16.12
7.7	0.4615	161.8	2.9098	-125.33	0.127	-178.82	0.5468	4.26
7.8	0.3953	143.64	3.0355	-139.33	0.1344	167.39	0.5069	-8.19
7.9	0.3292	123.15	3.1442	-153.81	0.1405	153.05	0.4486	-22.61
8	0.2633	96.94	3.2247	-169.11	0.1461	138.07	0.3863	-39.28
8.1	0.2092	62.41	3.2539	174.99	0.1485	122.37	0.3151	-59.64
8.2	0.1858	17.93	3.2534	158.73	0.1502	107.25	0.2486	-87.21
8.3	0.2058	-25.56	3.1658	142.39	0.1484	91.76	0.2147	-122.78
8.4	0.2616	-60.84	3.0487	126.26	0.143	76.38	0.2226	-161.62
8.5	0.3184	-87.64	2.8796	110.62	0.1378	60.95	0.27	167.25
8.6	0.3806	-108.87	2.6767	95.4	0.1301	46.15	0.3349	145.24
8.7	0.4359	-127.56	2.4875	81.13	0.1224	30.86	0.3959	128.51

Specifications are subject to change without notice.

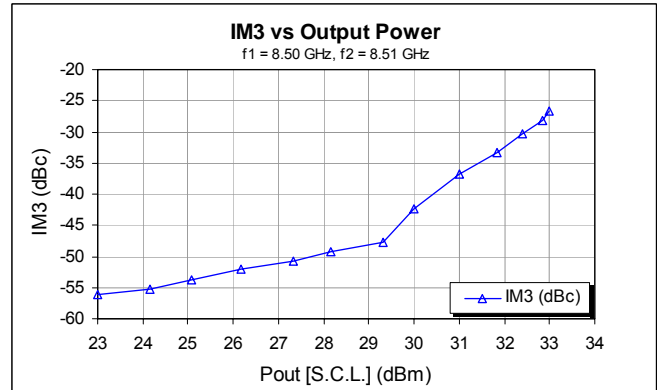
### Power De-rating Curve and IM3 Definition



### Typical Power Data ( $V_{DS} = 10\text{ V}$ , $I_{DSQ} = 2200\text{ mA}$ )



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





# EIC7785-8

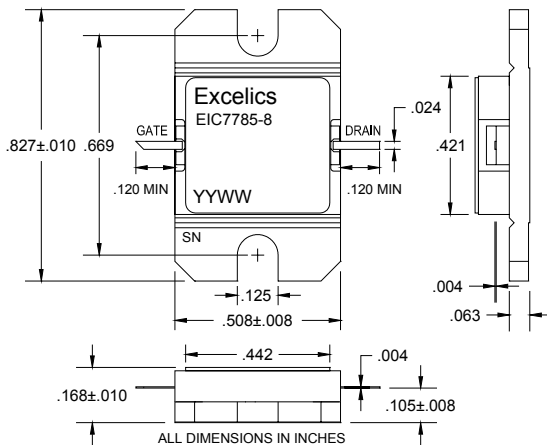
UPDATED 08/21/2007

## 7.70-8.50GHz 8-Watt Internally-Matched Power FET

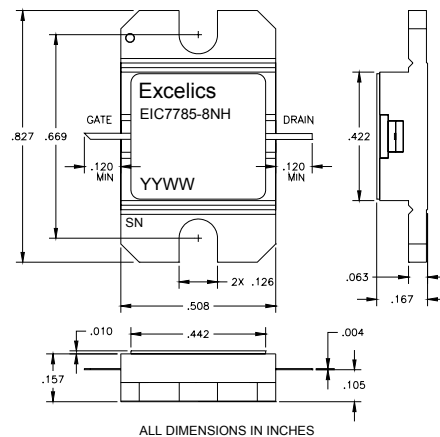
### PACKAGES OUTLINE

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

**EIC7785-8 (Hermetic)**



**EIC7785-8NH (Non-Hermetic)**



Caution! ESD sensitive device.



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>
EIC7785-8	Hermetic	Industrial	7.70-8.50GHz	38.5	-43
EIC7785-8NH	Non-Hermetic	Industrial	7.70-8.50GHz	38.5	-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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- 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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