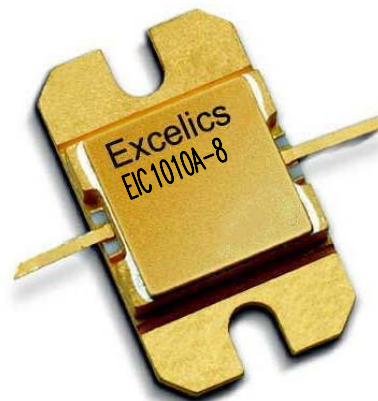


UPDATED 07/20/2005

10.00-10.25 GHz 8-Watt Internally Matched Power FET

FEATURES

- 10.00– 10.25GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +39.0 dBm Output Power at 1dB Compression
- 7.0 dB Power Gain at 1dB Compression
- 31% Power Added Efficiency
- -46 dBc IM3 at $P_o = 28$ dBm SCL
- Hermetic Metal Flange Package
- 100% Tested for DC, RF, and R_{TH}



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



Caution! ESD sensitive device.

SYMBOL	PARAMETERS/TEST CONDITIONS ¹	MIN	TYP	MAX	UNITS
P_{1dB}	Output Power at 1dB Compression $f = 10.00-10.25\text{GHz}$ $V_{DS} = 9\text{ V}$, $I_{DSQ} \approx 2200\text{mA}$	38.0	39.0		dBm
G_{1dB}	Gain at 1dB Compression $f = 10.00-10.25\text{GHz}$ $V_{DS} = 9\text{ V}$, $I_{DSQ} \approx 2200\text{mA}$	6.5	7.5		dB
ΔG	Gain Flatness $f = 10.00-10.25\text{GHz}$ $V_{DS} = 9\text{ V}$, $I_{DSQ} \approx 2200\text{mA}$			± 0.5	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 9\text{ V}$, $I_{DSQ} \approx 2200\text{mA}$ $f = 10.00-10.25\text{GHz}$		31		%
I_{d1dB}	Drain Current at 1dB Compression $f = 10.00-10.25\text{GHz}$		2300	2600	mA
IM3	Output 3rd Order Intermodulation Distortion $\Delta f = 10\text{ MHz}$ 2-Tone Test; $P_{out} = 28\text{ dBm S.C.L.}^2$ $V_{DS} = 9\text{ V}$, $I_{DSQ} \approx 65\% IDSS$ $f = 10.25\text{ GHz}$	-43	-46		dBc
I_{DSS}	Saturated Drain Current $V_{DS} = 3\text{ V}$, $V_{GS} = 0\text{ V}$		4000	5000	mA
V_P	Pinch-off Voltage $V_{DS} = 3\text{ V}$, $I_{DS} = 40\text{ mA}$		-2.5	-4.0	V
R_{TH}	Thermal Resistance ³		3.5	4.0	$^\circ\text{C/W}$

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^{1,2}

SYMBOL	CHARACTERISTIC	VALUE
V_{DS}	Drain to Source Voltage	10 V
V_{GS}	Gate to Source Voltage	-4.5 V
I_{DS}	Drain Current	$IDSS$
I_{GSF}	Forward Gate Current	80 mA
P_{IN}	Input Power	@ 3dB compression
P_T	Total Power Dissipation	38 W
T_{CH}	Channel Temperature	175 $^\circ\text{C}$
T_{STG}	Storage Temperature	-65/+175 $^\circ\text{C}$

Notes: 1. Operating the device beyond any of the above ratings may result in permanent damage or reduction of MTTF.

2. Bias conditions must also satisfy the following equation $P_T < (T_{CH} - T_{PKG})/R_{TH}$; where T_{PKG} = temperature of package, and $P_T = (V_{DS} \cdot I_{DS}) - (P_{OUT} - P_{IN})$.

Specifications are subject to change without notice.

Excelics Semiconductor, Inc. 310 De Guigne Drive, Sunnyvale, CA 94085

Phone: 408-737-1711 Fax: 408-737-1868 Web: www.excelics.com

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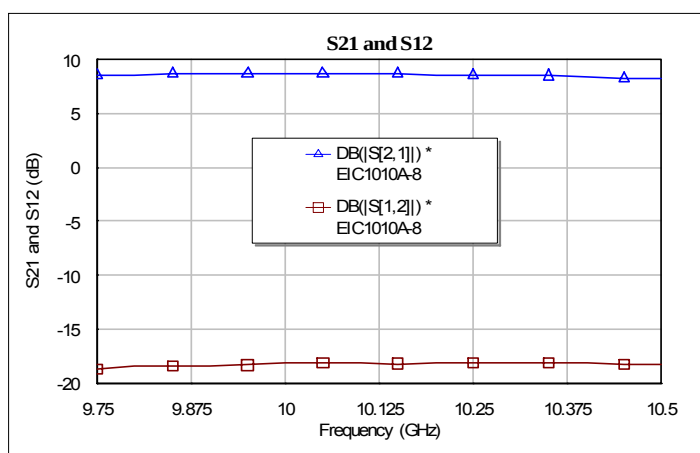
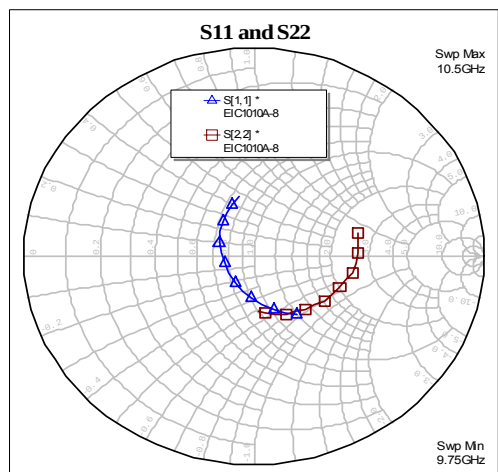
UPDATED 07/20/2005

10.00-10.25 GHz 8-Watt Internally Matched Power FET

PERFORMANCE DATA

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

$V_{DS} = 9\text{ V}$, $I_{DSQ} \approx 2200\text{mA}$



FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
9.750	0.335	-56.33	2.652	129.33	0.116	84.60	0.465	13.82
9.875	0.252	-76.92	2.697	114.11	0.120	70.15	0.450	-0.78
10.000	0.171	-106.57	2.711	98.91	0.124	54.94	0.411	-15.94
10.125	0.133	-155.37	2.715	83.63	0.124	39.56	0.379	-31.58
10.250	0.166	156.13	2.679	68.11	0.123	24.26	0.339	-48.49
10.375	0.228	124.27	2.631	52.77	0.124	10.00	0.301	-67.38
10.500	0.292	103.20	2.561	38.07	0.122	-5.08	0.268	-86.62

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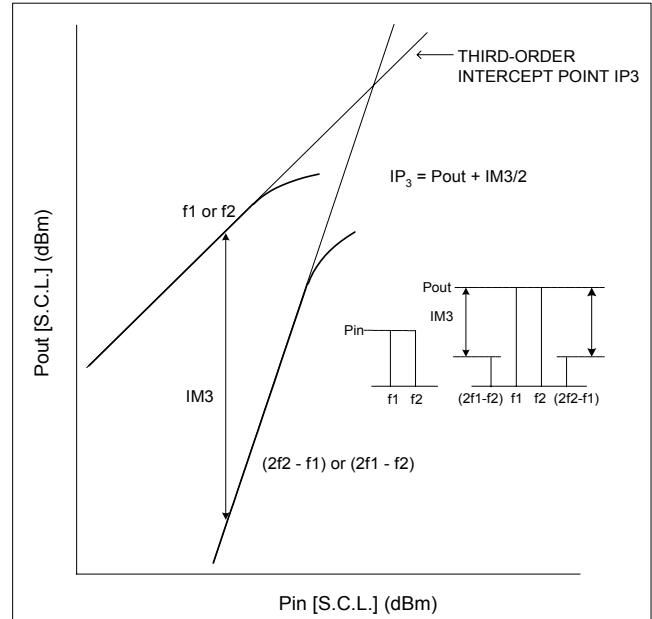
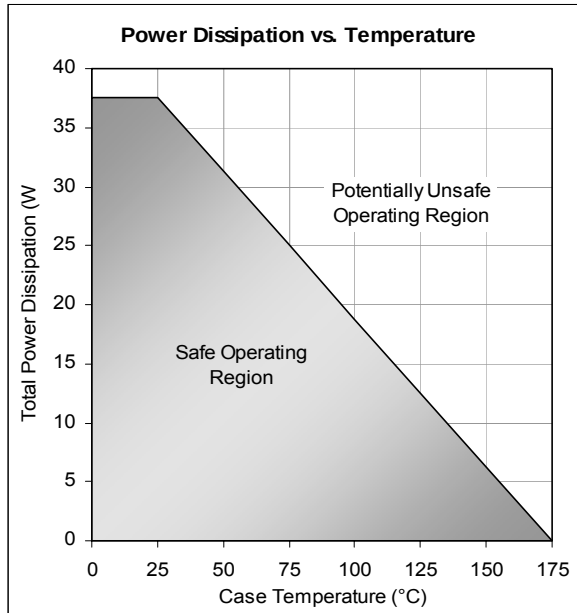
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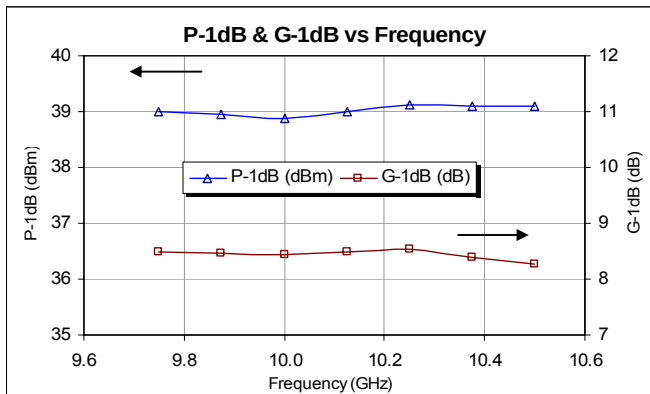
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10.00-10.25 GHz 8-Watt Internally Matched Power FET

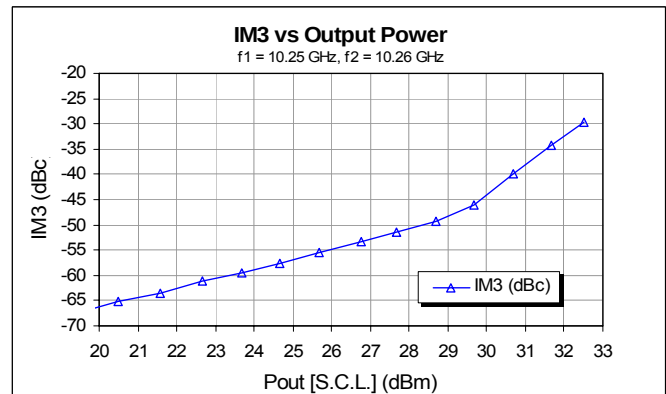
Power De-rating Curve and IM3 Definition



Typical Power Data (V_{DS} = 9 V, I_{DSQ} = 2200 mA)



Typical IM3 Data (V_{DS} = 9 V, I_{DSQ} ≈ 65% IDSS)



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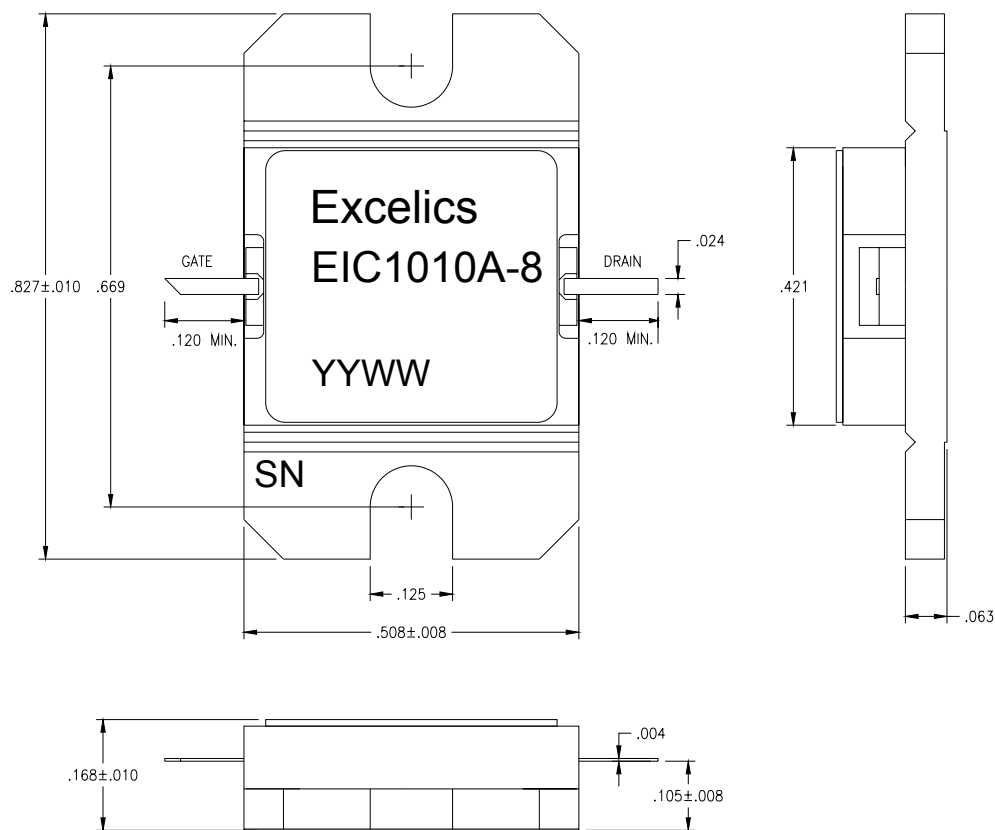
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10.00-10.25 GHz 8-Watt Internally Matched Power FET

PACKAGE OUTLINE

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



ORDERING INFORMATION

Part Number	Grade ¹	f _{Test} (GHz)	P _{1dB} (min)	IM ₃ (min) ²
EIC1010A-8	Industrial	10.00-10.25 GHz	38.0	-43

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