



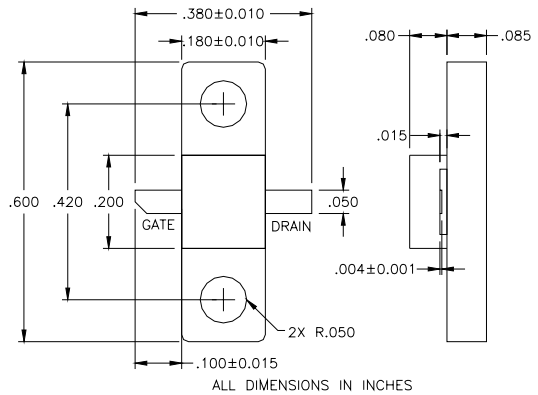
# EPA960CR-180F

ISSUED 02/06/2006

## High Efficiency Heterojunction Power FET

### FEATURES

- Non-Hermetic 180mil Metal Flange Package
- +38.5 dBm Typical Output Power
- 17.0 dB Typical Power Gain at 2GHz
- 0.4 x 9600 Micron Recessed "Mushroom" Gate
- Si<sub>3</sub>N<sub>4</sub> Passivation
- Advanced Epitaxial Heterojunction Profile Provides Extra High Power Efficiency and High Reliability



Caution! ESD sensitive device.

### ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25°C)

SYMBOL	PARAMETERS/TEST CONDITIONS <sup>1</sup>	MIN	TYP	MAX	UNITS	
P <sub>1dB</sub>	Output Power at 1dB Compression V <sub>DS</sub> = 8 V, I <sub>DS</sub> ≈ 50% I <sub>DSS</sub>	f = 2GHz	37.0	38.5		dBm
			f = 4GHz	38.5		
G <sub>1dB</sub>	Gain at 1dB Compression V <sub>DS</sub> = 8 V, I <sub>DS</sub> ≈ 50% I <sub>DSS</sub>	f = 2GHz	15.5	17.0		dB
		f = 4GHz		12.0		
PAE	Power Added Efficiency at 1dB Compression V <sub>DS</sub> = 8 V, I <sub>DS</sub> ≈ 50% I <sub>DSS</sub>		50			%
I <sub>DSS</sub>	Saturated Drain Current V <sub>DS</sub> = 3 V, V <sub>GS</sub> = 0 V	1760	2880	3760		mA
G <sub>M</sub>	Transconductance V <sub>DS</sub> = 3 V, V <sub>GS</sub> = 0 V	1920	3120			mS
V <sub>P</sub>	Pinch-off Voltage V <sub>DS</sub> = 3 V, I <sub>DS</sub> = 28 mA		-1.0	-2.5		V
BV <sub>GD</sub>	Drain Breakdown Voltage I <sub>GD</sub> = 9.6 mA	-11	-15			V
BV <sub>GS</sub>	Source Breakdown Voltage I <sub>GS</sub> = 9.6 mA	-7	-14			V
R <sub>TH</sub>	Thermal Resistance		6*			°C/W

\* Overall R<sub>th</sub> depends on case mounting.

### MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>
V <sub>ds</sub>	Drain-Source Voltage	12V	8V
V <sub>gs</sub>	Gate-Source Voltage	-8V	-3V
I <sub>gsf</sub>	Forward Gate Current	86.4 mA	28.8 mA
I <sub>gsr</sub>	Reversed Gate Current	14.4 mA	4.8 mA
P <sub>in</sub>	Input Power	36 dBm	@ 3dB Compression
T <sub>ch</sub>	Channel Temperature	175°C	175°C
T <sub>stg</sub>	Storage Temperature	-65/175°C	-65/175°C
P <sub>t</sub>	Total Power Dissipation	25 W	25 W

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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### S-PARAMETERS

8V, 1/2 Idss								
Freq	S11	S11	S21	S21	S12	S12	S22	S22
GHz	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
0.5	0.973	-169.2	7.952	86.3	0.007	24.8	0.811	179.0
1.0	0.972	179.0	4.054	73.5	0.009	28.1	0.793	175.4
1.5	0.936	169.7	3.585	66.3	0.015	36.9	0.740	170.5
2.0	0.935	164.6	2.826	58.0	0.018	39.3	0.721	167.5
2.5	0.925	160.7	2.458	49.8	0.022	37.2	0.697	164.3
3.0	0.903	155.7	2.294	40.7	0.028	33.1	0.662	160.8
3.5	0.886	147.0	2.264	29.2	0.035	26.6	0.611	156.2
4.0	0.860	134.6	2.266	14.7	0.044	17.1	0.549	148.8
4.5	0.841	119.4	2.262	-1.4	0.052	4.8	0.484	137.5
5.0	0.826	103.2	2.238	-19.5	0.061	-9.0	0.442	120.4
5.5	0.813	86.7	2.189	-37.5	0.069	-23.2	0.411	101.6
6.0	0.804	69.3	2.138	-56.2	0.079	-38.6	0.397	82.6
6.5	0.802	48.9	2.082	-74.3	0.085	-53.8	0.359	65.4
7.0	0.796	26.3	2.051	-96.5	0.092	-72.4	0.364	41.8
7.5	0.816	0.7	1.903	-120.1	0.093	-91.8	0.397	13.8
8.0	0.848	-22.4	1.649	-142.9	0.086	-109.8	0.449	-15.3
8.5	0.882	-41.2	1.390	-161.8	0.081	-125.1	0.536	-38.4
9.0	0.892	-60.0	1.186	-179.4	0.072	-135.0	0.635	-49.6
9.5	0.882	-76.5	1.016	166.2	0.076	-151.1	0.653	-55.3
10.0	0.889	-94.0	0.934	151.0	0.073	-168.0	0.675	-64.0

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