

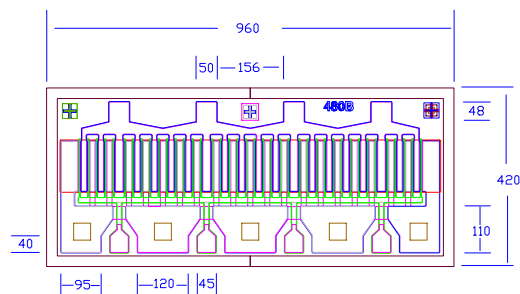


# EPA480B/EPA480BV

## High Efficiency Heterojunction Power FET

UPDATED: 09/27/2007

- +35.5dBm TYPICAL OUTPUT POWER
- 7.5dB TYPICAL POWER GAIN FOR EPA480B AND 9.0dB FOR EPA480BV AT 12GHz
- 0.3X 4800 MICRON RECESSED "MUSHROOM" GATE
- Si<sub>3</sub>N<sub>4</sub> PASSIVATION
- ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY
- EPA480BV WITH VIA HOLE SOURCE GROUNDING
- Idss SORTED IN 120mA PER BIN RANGE



Chip Thickness: 45 ± 13 microns

All Dimensions In Microns

**No Via Hole For EPA480B**

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

SYMBOLS	PARAMETERS/TEST CONDITIONS	EPA480B			EPA480BV			UNIT
		MIN	TYP	MAX	MIN	TYP	MAX	
P <sub>1dB</sub>	Output Power at 1dB Compression f=12GHz V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub> f=18GHz	34.0	35.5		34.0	35.5		dBm
G <sub>1dB</sub>	Gain at 1dB Compression f=12GHz V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub>	6.0	7.5		7.5	9.0		dB
PAE	Gain at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub> f=12GHz		40			45		%
I <sub>dss</sub>	Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	880	1440	1880	880	1440	1880	mA
G <sub>m</sub>	Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	960	1520		960	1520		mS
V <sub>p</sub>	Pinch-off Voltage V <sub>ds</sub> =3V, I <sub>ds</sub> =14mA		-1.0	-2.5		-1.0	-2.5	V
BV <sub>gd</sub>	Drain Breakdown Voltage I <sub>gd</sub> =4.8mA	-13	-15		-13	-15		V
BV <sub>gs</sub>	Source Breakdown Voltage I <sub>gs</sub> =4.8mA	-7	-14		-7	-14		V
R <sub>th</sub>	Thermal Resistance (Au-Sn Eutectic Attach)		10			8		°C/W

### MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	EPA480B		EPA480BV	
		ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>	ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>
V <sub>ds</sub>	Drain-Source Voltage	12V	8V	12V	8V
V <sub>gs</sub>	Gate-Source Voltage	-8V	-3V	-8V	-3V
I <sub>ds</sub>	Drain Current	I <sub>dss</sub>	1.4A	I <sub>dss</sub>	1.75A
I <sub>gsf</sub>	Forward Gate Current	240mA	40mA	240mA	40mA
P <sub>in</sub>	Input Power	33dBm	@ 3dB Compression	33dBm	@ 3dB Compression
T <sub>ch</sub>	Channel Temperature	175°C	150°C	175°C	150°C
stg	Storage Temperature	-65/175°C	-65/150°C	-65/175°C	-65/150°C
P <sub>t</sub>	Total Power Dissipation	14W	11W	17W	14W

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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# EPA480B/EPA480BV

## High Efficiency Heterojunction Power FET

UPDATED: 09/27/2007

### S-PARAMETERS

EPA480B 8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.867	-152.8	7.224	106.4	0.014	11.8	0.644	-177.4
2.0	0.921	-168.1	3.791	87.7	0.015	16.8	0.664	-176.3
3.0	0.950	-177.0	2.900	78.1	0.015	26.6	0.680	-175.8
4.0	0.950	179.6	2.175	71.6	0.017	30.4	0.691	-176.0
5.0	0.959	172.9	1.718	65.2	0.015	43.3	0.703	-172.9
6.0	0.959	171.5	1.440	59.7	0.017	49.3	0.709	-174.7
7.0	0.961	170.9	1.235	54.5	0.020	47.9	0.721	-176.5
8.0	0.952	170.5	1.074	49.4	0.023	48.5	0.742	-179.7
9.0	0.948	170.2	0.942	44.3	0.023	48.5	0.760	178.1
10.0	0.952	169.4	0.812	41.8	0.024	57.4	0.769	-178.5
11.0	0.958	169.2	0.743	35.5	0.028	52.8	0.759	175.6
12.0	0.968	168.5	0.667	31.8	0.004	-8.8	0.775	175.6
14.0	0.946	163.9	0.539	24.5	0.029	52.9	0.821	176.2
16.0	0.945	158.4	0.450	15.7	0.031	48.5	0.850	175.8
18.0	0.958	157.6	0.391	9.0	0.030	45.0	0.845	173.5
20.0	0.935	155.7	0.352	1.8	0.040	48.2	0.865	167.2
22.0	1.304	150.7	0.319	-0.2	0.046	49.0	0.677	163.8
24.0	1.265	145.2	0.274	-12.4	0.049	39.8	0.652	163.5
26.0	1.116	142.9	0.238	-20.4	0.053	39.2	0.692	162.8

EPA480BV 8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.941	-156.9	8.989	96.7	0.013	18.0	0.666	-174.6
2.0	0.948	-170.0	4.575	84.1	0.014	15.0	0.675	-176.9
3.0	0.952	-176.1	3.030	75.8	0.013	14.9	0.686	-176.2
4.0	0.951	-179.7	2.237	68.8	0.013	18.3	0.699	-175.1
5.0	0.956	176.7	1.718	63.1	0.013	22.1	0.722	-172.7
6.0	0.962	175.6	1.390	57.8	0.012	27.2	0.736	-171.5
7.0	0.965	176.1	1.163	53.3	0.012	31.5	0.755	-171.0
8.0	0.966	177.9	0.992	49.3	0.012	37.6	0.772	-171.9
9.0	0.972	179.6	0.863	45.6	0.012	41.0	0.789	-172.3
10.0	0.967	-179.0	0.760	42.0	0.011	45.2	0.805	-172.8
11.0	0.969	-177.8	0.682	38.8	0.012	47.5	0.816	-173.1
12.0	0.969	-177.3	0.613	35.3	0.012	51.2	0.818	-173.6
14.0	0.965	178.4	0.511	27.6	0.014	52.8	0.827	-172.3
16.0	0.970	169.2	0.438	18.0	0.014	46.9	0.854	-170.5
18.0	0.972	158.8	0.367	7.9	0.013	37.8	0.870	-170.6
20.0	0.979	152.1	0.299	-1.2	0.013	41.1	0.877	-172.8
22.0	0.969	163.2	0.233	-6.9	0.014	32.2	0.922	171.4
24.0	0.978	158.9	0.192	-10.9	0.015	39.3	0.923	175.7
26.0	0.977	158.9	0.169	-11.6	0.018	44.7	0.934	180.0

Note: The data included 0.7 mils diameter Au bonding wires; 4 gate wires, 15 mils each; 4 drain wires, 20 mils each; 10 source wires, 7 mils each; no source wires for EPA480BV.

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