

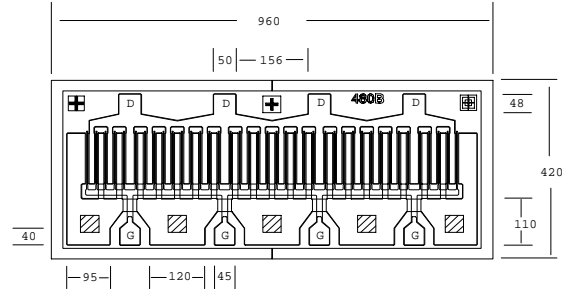


# EPA480B/EPA480BV

## PRELIMINARY DATA SHEET

### High Efficiency Heterojunction Power FET

- +35.5dBm TYPICAL OUTPUT POWER
- 7.5dB TYPICAL POWER GAIN FOR EPA480B AND 12.0dB FOR EPA480BV AT 12GHz
- 0.4X 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: 50 ± 10 microns  
(with >20microns Gold Plated Heat Sink (PHS))  
All Dimensions In Microns

☒ : Via Hole 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 V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub> f=12GHz f=18GHz	34.0	35.5		34.0	35.5 35.5		dBm
G <sub>1dB</sub>	Gain at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub> f=12GHz f=18GHz	6.0	7.5		10.0	12.0 9.5		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	-11	-15		-11	-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
T <sub>stg</sub>	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.

**Excelics Semiconductor, Inc., 2908 Scott Blvd., Santa Clara, CA 95054**  
Phone: (408) 970-8664 Fax: (408) 970-8998 Web Site: [www.excelics.com](http://www.excelics.com)

# EPA480B/EPA480BV

## PRELIMINARY DATA SHEET

### High Efficiency Heterojunction Power FET

#### S-PARAMETERS

**EPA480B** 8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.500	0.923	-153.6	13.123	99.4	0.019	17.3	0.557	-165.5
1.000	0.920	-167.7	6.682	89.5	0.019	15.1	0.570	-170.6
2.000	0.919	-176.1	3.342	79.1	0.020	20.4	0.581	-171.4
3.000	0.920	-179.8	2.214	71.0	0.020	27.7	0.594	-170.2
4.000	0.922	177.5	1.644	63.7	0.022	35.3	0.611	-168.8
5.000	0.923	175.3	1.298	56.8	0.023	42.5	0.631	-167.6
6.000	0.925	173.3	1.065	50.2	0.025	49.0	0.653	-166.7
7.000	0.927	171.4	0.896	44.0	0.028	54.6	0.675	-166.1
8.000	0.930	169.6	0.768	38.2	0.031	59.3	0.698	-165.8
9.000	0.932	167.9	0.667	32.7	0.035	63.0	0.721	-165.7
10.000	0.934	166.1	0.585	27.6	0.038	65.8	0.742	-165.8

#### S-PARAMETERS

**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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电话：0755-82884100 83397033 83396822 83398585

传真：0755-83376182 (0) 13823648918 MSN: SUNS8888@hotmail.com

邮编：518033 E-mail:szss20@163.com QQ: 195847376

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西安分公司：西安高新开发区 20 所(中国电子科技集团导航技术研究所)

西安劳动南路 88 号电子商城二楼 D23 号

TEL: 029-81022619 13072977981 FAX:029-88789382