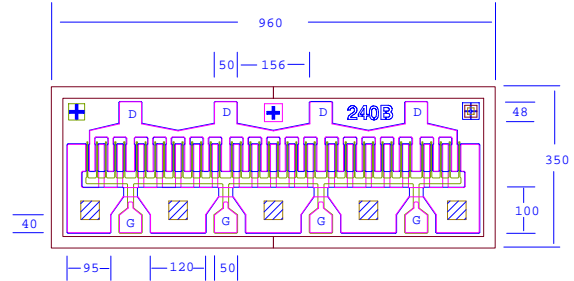


## DATA SHEET

### High Efficiency Heterojunction Power FET

- +32.5dBm TYPICAL OUTPUT POWER
- 8.0dB TYPICAL POWER GAIN FOR EPA240B AND 9.5dB FOR EPA240BV AT 18GHz
- 0.3 X 2400 MICRON RECESSED “MUSHROOM” GATE
- Si<sub>3</sub>N<sub>4</sub> PASSIVATION
- ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY
- EPA240BV WITH VIA HOLE SOURCE GROUNDING
- Idss SORTED IN 60mA PER BIN RANGE



Chip Thickness: 75 ± 20 microns  
All Dimensions In Microns

▨ : Via Hole

**No Via Hole For EPA240B**

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

SYMBOLS	PARAMETERS/TEST CONDITIONS	EPA240B			EPA240BV			UNIT
		MIN	TYP	MAX	MIN	TYP	MAX	
<b>P<sub>1dB</sub></b>	Output Power at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>ds</sub> f=12GHz f=18GHz	31.0	32.5 32.5		31.0	32.5 32.5		dBm
<b>G<sub>1dB</sub></b>	Gain at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>ds</sub> f=12GHz f=18GHz	9.0	10.5 8.0		10.5	12.0 9.5		dB
<b>PAE</b>	Gain at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>ds</sub> f=12GHz		44			45		%
<b>I<sub>ds</sub></b>	Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	440	720	940	440	720	940	mA
<b>G<sub>m</sub></b>	Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	480	760		480	760		mS
<b>V<sub>p</sub></b>	Pinch-off Voltage V <sub>ds</sub> =3V, I <sub>ds</sub> =6mA		-1.0	-2.5		-1.0	-2.5	V
<b>BV<sub>gd</sub></b>	Drain Breakdown Voltage I <sub>gd</sub> =2.4 mA	-11	-15		-11	-15		V
<b>BV<sub>gs</sub></b>	Source Breakdown Voltage I <sub>gs</sub> =2.4mA	-7	-14		-7	-14		V
<b>R<sub>th</sub></b>	Thermal Resistance (Au-Sn Eutectic Attach)		20			15		°C/W

### MAXIMUM RATINGS AT 25 °C

SYMBOLS	PARAMETERS	EPA240B		EPA240BV	
		ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>	ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>
<b>V<sub>ds</sub></b>	Drain-Source Voltage	12V	8V	12V	8V
<b>V<sub>gs</sub></b>	Gate-Source Voltage	-8V	-3V	-8V	-3V
<b>I<sub>ds</sub></b>	Drain Current	I <sub>ds</sub>	710mA	I <sub>ds</sub>	I <sub>ds</sub>
<b>I<sub>gsf</sub></b>	Forward Gate Current	120mA	20mA	120mA	20mA
<b>P<sub>in</sub></b>	Input Power	30dBm	@ 3dB Compression	30dBm	@ 3dB Compression
<b>T<sub>ch</sub></b>	Channel Temperature	175°C	150°C	175°C	150°C
<b>T<sub>stg</sub></b>	Storage Temperature	-65/175°C	-65/150°C	-65/175°C	-65/150°C
<b>P<sub>t</sub></b>	Total Power Dissipation	6.8W	5.7W	9.1W	7.6W

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.

# EPA240B/EPA240BV

## DATA SHEET High Efficiency Heterojunction Power FET

### S-PARAMETERS

EPA240B 8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.893	-140.0	11.254	105.9	0.024	23.9	0.487	-164.0
2.0	0.905	-158.8	6.029	91.1	0.026	20.1	0.511	-170.6
4.0	0.915	-170.0	3.095	76.0	0.026	24.7	0.533	-173.3
6.0	0.915	-174.7	2.080	64.4	0.027	32.0	0.555	-173.0
8.0	0.922	-177.7	1.559	54.4	0.028	35.9	0.583	-172.9
10.0	0.926	-179.9	1.235	45.7	0.028	44.5	0.606	-173.2
12.0	0.936	178.1	1.008	36.8	0.030	46.5	0.630	-175.8
14.0	0.942	176.3	0.832	27.6	0.030	44.1	0.653	178.4
16.0	0.940	175.3	0.690	18.2	0.031	41.9	0.688	170.7
18.0	0.955	175.0	0.583	9.5	0.033	39.1	0.734	162.8
20.0	0.950	174.1	0.487	1.1	0.035	37.8	0.776	155.7
22.0	0.931	173.7	0.415	-4.4	0.042	42.4	0.809	152.7
24.0	0.942	172.1	0.381	-8.1	0.057	39.6	0.847	151.7
26.0	0.915	169.2	0.351	-11.3	0.068	39.9	0.850	153.6

### S-PARAMETERS

EPA240BV 8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.886	-130.3	12.345	110.8	0.025	26.9	0.439	-157.5
2.0	0.905	-156.0	6.735	93.3	0.027	16.9	0.487	-166.8
4.0	0.919	-170.7	3.380	75.6	0.026	14.4	0.521	-170.5
6.0	0.932	-174.6	2.197	64.0	0.024	18.4	0.555	-171.8
8.0	0.938	-176.0	1.591	54.4	0.022	21.2	0.603	-171.4
10.0	0.945	-175.5	1.235	46.8	0.019	27.5	0.646	-171.4
12.0	0.950	-175.2	0.999	39.2	0.019	35.1	0.690	-172.5
14.0	0.952	-176.4	0.840	31.2	0.019	33.8	0.723	-174.9
16.0	0.957	-180.0	0.732	21.5	0.019	27.3	0.757	-179.0
18.0	0.962	173.9	0.637	10.2	0.020	17.1	0.783	175.1
20.0	0.963	166.8	0.551	-1.7	0.022	11.4	0.808	167.8
22.0	0.965	162.0	0.445	-10.8	0.022	8.5	0.858	162.0
24.0	0.963	160.4	0.365	-18.8	0.024	8.3	0.882	157.0
26.0	0.963	161.9	0.307	-23.0	0.028	17.8	0.905	153.5

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 EPA240BV.