

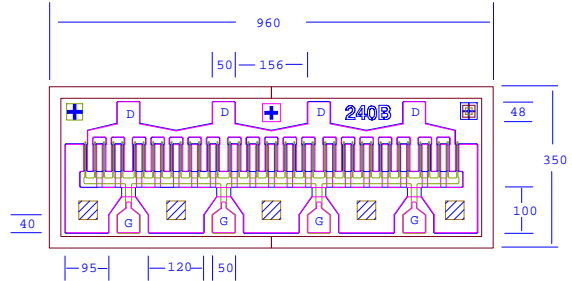


# EFA240B/EFA240BV

## DATA SHEET

### Low Distortion GaAs Power FET

- +31.0dBm TYPICAL OUTPUT POWER
- 8.5dB TYPICAL POWER GAIN FOR EFA240B AND 10.5dB FOR EFA240BV AT 12GHz
- 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
- EFA240BV WITH VIA HOLE SOURCE GROUNDING
- Idss SORTED IN 40mA PER BIN RANGE



Chip Thickness: 75 ± 20 microns

All Dimensions In Microns

⊞ : Via Hole

**No Via Hole For EFA240B**

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

SYMBOLS	PARAMETERS/TEST CONDITIONS	EFA240B			EFA240BV			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>ds</sub>	29.0	31.0		29.0	31.0		dBm
G <sub>1dB</sub>	Gain at 1dB Compression f=12GHz V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>ds</sub>	7.0	8.5		9.0	10.5		dB
PAE	Gain at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>ds</sub>		33			35		%
I <sub>ds</sub>	Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	400	680	880	400	680	880	mA
G <sub>m</sub>	Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	280	360		280	360		mS
V <sub>p</sub>	Pinch-off Voltage V <sub>ds</sub> =3V, I <sub>ds</sub> =6 mA		-2.0	-3.5		-2.0	-3.5	V
BV <sub>gd</sub>	Drain Breakdown Voltage I <sub>gd</sub> =2.4mA	-12	-15		-12	-15		V
BV <sub>gs</sub>	Source Breakdown Voltage I <sub>gs</sub> =2.4mA	-7	-14		-7	-14		V
R <sub>th</sub>	Thermal Resistance (Au-Sn Eutectic Attach)		20			15		°C/W

### MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	EFA240B		EFA240BV	
		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	-4V	-8V	-4V
I <sub>ds</sub>	Drain Current	I <sub>ds</sub>	710mA	I <sub>ds</sub>	I <sub>ds</sub>
I <sub>gsf</sub>	Forward Gate Current	60mA	10mA	60mA	10mA
P <sub>in</sub>	Input Power	29dBm	@ 3dB Compression	29dBm	@ 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	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.

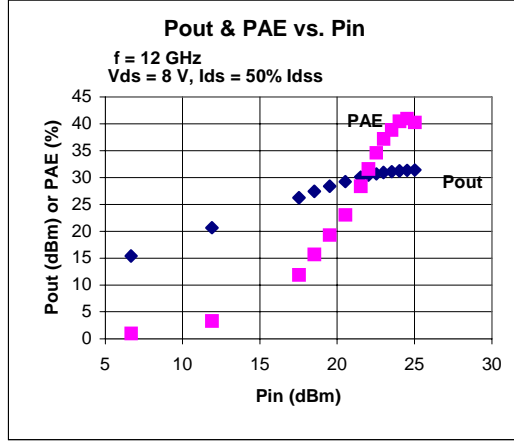
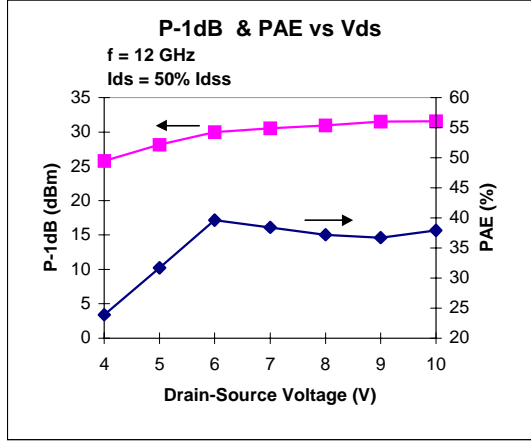
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# EFA240B/EFA240BV

## DATA SHEET

### Low Distortion GaAs Power FET

#### EFA240B



#### S-PARAMETERS

##### EFA240B 8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.924	-109.6	8.554	117.9	0.035	34.7	0.345	-151.2
2.0	0.910	-140.4	4.879	97.0	0.039	20.8	0.407	-161.6
4.0	0.905	-157.4	2.561	77.8	0.039	14.8	0.447	-166.5
6.0	0.904	-163.9	1.717	64.0	0.037	16.1	0.492	-165.7
8.0	0.907	-168.2	1.295	52.5	0.036	17.7	0.541	-163.7
10.0	0.909	-171.9	1.020	42.7	0.032	22.5	0.594	-162.2
12.0	0.917	-177.5	0.835	32.1	0.031	24.8	0.653	-162.4
14.0	0.924	-179.1	0.688	22.4	0.030	25.9	0.706	-165.7
16.0	0.927	-174.9	0.569	11.6	0.032	23.2	0.741	-171.9
18.0	0.944	-174.3	0.474	2.4	0.033	22.4	0.778	-179.5
20.0	0.953	-173.2	0.395	-7.7	0.035	24.0	0.813	-171.7
22.0	0.942	-175.2	0.326	-13.6	0.040	24.7	0.830	-164.7
24.0	0.960	-177.3	0.290	-17.6	0.044	30.3	0.848	-160.2
26.0	0.951	-177.1	0.257	-19.2	0.053	39.2	0.846	-160.0

#### S-PARAMETERS

##### EFA240BV 8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.907	-109.0	9.976	119.2	0.033	33.9	0.356	-145.6
2.0	0.905	-142.3	5.784	97.9	0.038	17.7	0.425	-157.1
4.0	0.907	-163.3	2.990	77.1	0.038	5.5	0.471	-161.2
6.0	0.915	-171.5	1.961	63.2	0.035	1.4	0.520	-161.0
8.0	0.923	-175.8	1.431	51.7	0.032	-1.2	0.574	-161.2
10.0	0.933	-178.0	1.106	41.8	0.029	-2.4	0.627	-162.0
12.0	0.940	-180.0	0.887	32.4	0.027	-3.0	0.677	-163.9
14.0	0.941	-177.8	0.731	23.3	0.025	-5.5	0.721	-166.5
16.0	0.947	-175.1	0.616	14.1	0.024	-8.8	0.756	-169.8
18.0	0.949	-171.5	0.531	4.7	0.025	-11.9	0.791	-173.7
20.0	0.954	-167.9	0.459	-4.5	0.024	-13.0	0.818	-177.9
22.0	0.967	-167.2	0.389	-12.4	0.023	-12.5	0.848	-175.9
24.0	0.970	-165.3	0.335	-19.6	0.024	-11.2	0.873	-172.2
26.0	0.971	-163.3	0.292	-25.8	0.024	-0.7	0.900	-170.7

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 EFA240BV.

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