

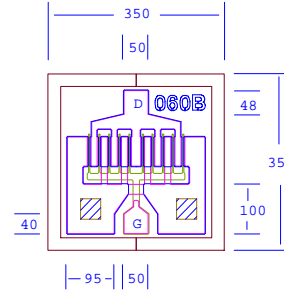


# EFA060B/EFA060BV

## DATA SHEET

### Low Distortion GaAs Power FET

- +25.0dBm TYPICAL OUTPUT POWER
- 10.5dB TYPICAL POWER GAIN FOR EFA060B AND 12.0dB FOR EFA060BV AT 12GHz
- 0.3 X 600 MICRON RECESSED "MUSHROOM" GATE
- Si<sub>3</sub>N<sub>4</sub> PASSIVATION
- ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY
- EFA060BV WITH VIA HOLE SOURCE GROUNDING
- Idss SORTED IN 10mA PER BIN RANGE



Chip Thickness: 75 ± 20 microns  
All Dimensions In Microns

☒ : Via Hole  
No Via Hole For EFA060B

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

SYMBOLS	PARAMETERS/TEST CONDITIONS	EFA060B			EFA060BV			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	23.0	25.0 25.0		23.0	25.0 25.0		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	9.0	10.5 8.0		10.5	12.0 10.0		dB
PAE	Gain at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub> f=12GHz		35			36		%
I <sub>dss</sub>	Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	100	170	240	100	170	240	mA
G <sub>m</sub>	Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	70	90		70	90		mS
V <sub>p</sub>	Pinch-off Voltage V <sub>ds</sub> =3V, I <sub>ds</sub> =1.5mA		-2.0	-3.5		-2.0	-3.5	V
BV <sub>gd</sub>	Drain Breakdown Voltage I <sub>gd</sub> =1.0mA	-12	-15		-12	-15		V
BV <sub>gs</sub>	Source Breakdown Voltage I <sub>gs</sub> =1.0mA	-7	-14		-7	-14		V
R <sub>th</sub>	Thermal Resistance (Au-Sn Eutectic Attach)		75			55		°C/W

### MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	EFA060B		EFA060BV	
		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>dss</sub>	190mA	I <sub>dss</sub>	I <sub>dss</sub>
I <sub>gsf</sub>	Forward Gate Current	15mA	2.5mA	15mA	2.5mA
P <sub>in</sub>	Input Power	23dBm	@ 3dB Compression	23dBm	@ 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	1.8W	1.5W	2.5W	2.1W

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.

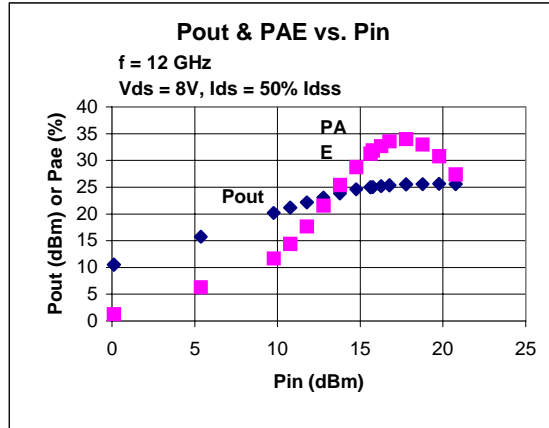
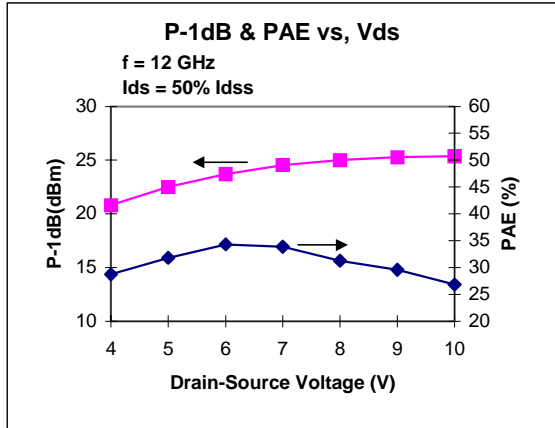
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# EFA060B/EFA060BV

## DATA SHEET

### Low Distortion GaAs Power FET

#### EFA060B



#### EFA060B S-PARAMETERS 8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.981	-31.1	6.867	158.9	0.020	73.0	0.540	-11.0
2.0	0.955	-58.2	6.229	140.5	0.037	60.1	0.500	-22.2
3.0	0.920	-80.1	5.422	125.4	0.048	48.3	0.457	-30.0
4.0	0.889	-97.0	4.722	112.7	0.054	39.5	0.421	-36.6
5.0	0.869	-110.8	4.163	101.8	0.058	33.4	0.396	-42.8
6.0	0.855	-121.8	3.692	92.3	0.060	28.1	0.373	-49.0
7.0	0.843	-130.5	3.322	83.9	0.061	24.4	0.361	-54.9
8.0	0.837	-139.1	3.033	75.6	0.062	19.3	0.352	-61.5
9.0	0.825	-146.9	2.769	67.7	0.062	15.3	0.344	-68.7
10.0	0.818	-153.2	2.566	60.9	0.061	12.0	0.338	-76.0
11.0	0.815	-160.1	2.419	53.4	0.062	9.2	0.336	-84.8
12.0	0.813	-168.3	2.278	45.5	0.062	5.6	0.335	-94.3
13.0	0.819	-175.0	2.135	37.8	0.062	2.3	0.332	-104.7
14.0	0.817	178.5	2.018	30.1	0.063	0.2	0.335	-115.4
15.0	0.816	171.4	1.887	22.1	0.063	-3.2	0.340	-127.6
16.0	0.824	164.7	1.755	13.9	0.063	-6.5	0.353	-139.9
17.0	0.835	160.1	1.619	6.6	0.064	-8.5	0.369	-152.7
18.0	0.847	156.0	1.505	-0.6	0.064	-10.1	0.391	-164.3
19.0	0.854	151.9	1.385	-8.1	0.064	-10.7	0.421	-175.1
20.0	0.856	150.2	1.256	-15.0	0.064	-12.0	0.455	175.1
21.0	0.852	148.9	1.137	-20.4	0.064	-11.5	0.487	166.1
22.0	0.863	149.8	1.040	-25.3	0.064	-10.4	0.522	158.2
23.0	0.871	150.5	0.976	-29.6	0.064	-7.2	0.551	151.6
24.0	0.879	149.1	0.913	-35.4	0.066	-4.5	0.579	145.6
25.0	0.878	147.4	0.862	-40.4	0.069	-1.7	0.604	141.7
26.0	0.876	147.5	0.803	-44.2	0.070	0.7	0.619	136.2

#### EFA060BV S-PARAMETERS 8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.969	-31.6	7.567	157.9	0.021	71.4	0.580	-14.0
2.0	0.939	-60.4	6.840	139.5	0.038	57.0	0.548	-27.1
3.0	0.900	-85.0	5.997	123.4	0.051	44.0	0.506	-37.2
4.0	0.879	-105.5	5.203	109.8	0.058	33.6	0.470	-45.4
5.0	0.866	-122.6	4.517	98.0	0.062	24.7	0.440	-52.1
6.0	0.859	-135.6	3.933	88.2	0.063	18.4	0.423	-57.8
7.0	0.860	-145.8	3.475	79.9	0.064	12.8	0.412	-62.8
8.0	0.860	-154.1	3.108	72.1	0.065	8.5	0.406	-68.0
9.0	0.861	-160.9	2.812	65.1	0.065	4.3	0.403	-73.3
10.0	0.861	-166.7	2.575	58.7	0.065	0.1	0.406	-78.6
11.0	0.859	-172.2	2.380	52.1	0.065	-3.1	0.408	-84.9
12.0	0.858	-177.9	2.225	45.4	0.065	-6.5	0.414	-91.0
13.0	0.853	176.4	2.083	38.7	0.066	-10.1	0.417	-97.5
14.0	0.846	169.8	1.963	31.6	0.066	-13.8	0.426	-104.1
15.0	0.845	163.0	1.847	24.3	0.067	-18.1	0.435	-110.6
16.0	0.843	156.0	1.724	17.0	0.067	-21.2	0.447	-117.0
17.0	0.844	148.9	1.610	9.6	0.068	-26.2	0.458	-123.4
18.0	0.849	141.9	1.497	2.5	0.066	-29.8	0.470	-129.3
19.0	0.856	135.8	1.384	-4.4	0.065	-33.0	0.483	-135.2
20.0	0.865	131.1	1.278	-10.7	0.065	-35.6	0.498	-140.7
21.0	0.882	130.5	1.175	-15.9	0.063	-38.7	0.518	-149.1
22.0	0.888	128.4	1.091	-21.1	0.062	-39.2	0.542	-155.0
23.0	0.898	127.4	1.016	-25.8	0.060	-40.2	0.565	-160.1
24.0	0.902	126.6	0.953	-30.5	0.059	-39.8	0.589	-165.2
25.0	0.905	126.3	0.911	-34.6	0.058	-40.5	0.613	-169.8
26.0	0.899	124.8	0.860	-39.1	0.058	-40.6	0.640	-172.6

Note: The data included 0.7 mils diameter Au bonding wires; 1 gate wires, 15 mils each; 1 drain wires, 20 mils each; 4 source wires, 7 mils each; no source wires for EFA060BV.

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