

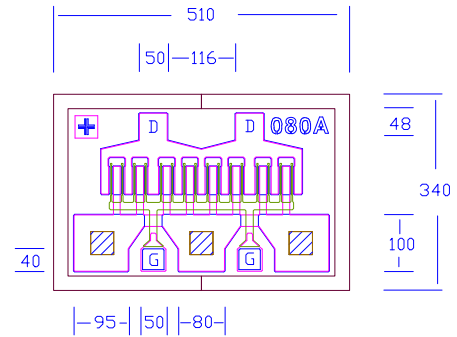
# Excelics

# EPA080A/EPA080AV

## DATA SHEET

### High Efficiency Heterojunction Power FET

- +27.5dBm TYPICAL OUTPUT POWER
- 9.5dB TYPICAL POWER GAIN FOR EPA080A AND 10.5dB FOR EPA080AV AT 18GHz
- 0.3 X 800 MICRON RECESSED "MUSHROOM" GATE
- Si<sub>3</sub>N<sub>4</sub> PASSIVATION
- ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY
- EPA080AV WITH VIA HOLE SOURCE GROUNDING
- Idss SORTED IN 20mA PER BIN RANGE



Chip Thickness: 75 ± 20 microns  
All Dimensions In Microns

☒ : Via Hole

**No Via Hole For EPA080A**

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

SYMBOLS	PARAMETERS/TEST CONDITIONS	EPA080A			EPA080AV			UNIT
		MIN	TYP	MAX	MIN	TYP	MAX	
P <sub>1dB</sub>	Output Power at 1dB Compression f=12GHz	26	27.5		26	27.5		dBm
	V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub> f=18GHz		27.5			27.5		
G <sub>1dB</sub>	Gain at 1dB Compression f=12GHz	10.5	12.5		11.0	13.0		dB
	V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub> f=18GHz		9.5			10.5		
PAE	Gain at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub> f=12GHz		45			46		%
I <sub>dss</sub>	Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	130	240	320	130	240	320	mA
G <sub>m</sub>	Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	160	260		160	260		mS
V <sub>p</sub>	Pinch-off Voltage V <sub>ds</sub> =3V, I <sub>ds</sub> =2.0mA		-1.0	-2.5		-1.0	-2.5	V
BV <sub>gd</sub>	Drain Breakdown Voltage I <sub>gd</sub> =1.0mA	-11	-15		-11	-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)		55			40		°C/W

### MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	EPA080A		EPA080AV	
		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>	260mA	I <sub>dss</sub>	I <sub>dss</sub>
I <sub>gsf</sub>	Forward Gate Current	40mA	7mA	40mA	7mA
P <sub>in</sub>	Input Power	25dBm	@ 3dB Compression	25dBm	@ 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	2.5W	2.1W	3.4W	2.8W

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**

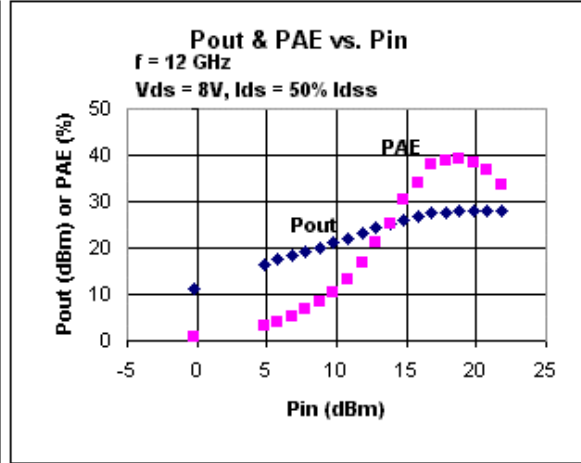
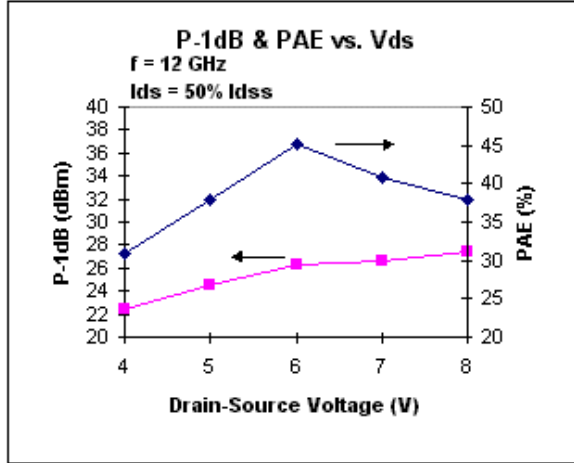
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# EPA080A/EPA080AV

## DATA SHEET

### High Efficiency Heterojunction Power FET

#### EPA080A



#### S-PARAMETERS

##### EPA080A 8V, 1/2 Idss

FREQ (GHz)	S11		S21		S12		S22		FREQ (GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.929	-63.0	13.172	141.6	0.035	56.2	0.478	-36.9	21.0	0.892	151.7	1.076	-6.7	0.060	1.8	0.546	-173.4
2.0	0.885	-102.9	9.639	117.9	0.051	36.9	0.380	-60.7	22.0	0.893	148.0	1.015	-11.2	0.060	1.7	0.566	-176.3
4.0	0.856	-140.4	5.741	91.7	0.058	20.1	0.290	-86.4	24.0	0.895	140.9	0.909	-21.0	0.062	1.6	0.606	176.9
6.0	0.843	-160.5	3.991	74.6	0.059	12.5	0.288	-102.3	26.0	0.905	136.3	0.814	-30.3	0.068	2.1	0.644	167.6
8.0	0.853	-171.0	3.045	61.6	0.059	8.2	0.304	-114.3	28.0	0.924	133.4	0.745	-39.2	0.074	2.6	0.687	158.0
10.0	0.866	-177.6	2.437	50.3	0.056	5.6	0.331	-125.3	30.0	0.928	133.6	0.675	-46.9	0.079	0.1	0.721	149.1
12.0	0.874	176.9	2.011	39.2	0.055	5.0	0.375	-136.0	32.0	0.931	133.2	0.616	-54.2	0.080	-0.5	0.749	141.4
14.0	0.883	171.6	1.698	29.1	0.053	3.6	0.423	-145.0	34.0	0.922	129.9	0.547	-61.2	0.081	-1.4	0.771	135.0
16.0	0.886	166.1	1.457	18.7	0.053	3.4	0.466	-152.1	36.0	0.935	125.9	0.494	-67.2	0.088	-6.5	0.784	129.7
18.0	0.885	160.2	1.287	8.8	0.055	2.3	0.501	-158.3	38.0	0.929	119.1	0.465	-75.0	0.094	-14.2	0.797	122.8
20.0	0.885	152.0	1.166	-2.2	0.059	0.6	0.524	-165.7	40.0	0.913	109.5	0.439	-83.8	0.096	-29.3	0.799	115.9

#### EPA080AV 8V, 1/2 Idss

FREQ (GHz)	S11		S21		S12		S22		FREQ (GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.942	-63.5	13.243	142.1	0.027	56.6	0.437	-32.4	21.0	0.903	146.0	1.031	-10.4	0.041	-6.5	0.587	-163.3
2.0	0.902	-104.4	9.769	118.0	0.039	36.7	0.357	-53.6	22.0	0.899	143.1	0.959	-15.5	0.040	-8.1	0.614	-168.3
4.0	0.873	-144.6	5.824	91.0	0.046	18.6	0.283	-76.5	24.0	0.897	135.6	0.815	-26.1	0.040	-7.9	0.672	-176.7
6.0	0.869	-167.2	4.016	73.2	0.046	9.9	0.283	-90.9	26.0	0.900	131.5	0.680	-36.3	0.040	-5.5	0.727	172.9
8.0	0.875	-175.8	3.068	60.2	0.044	5.5	0.288	-104.7	28.0	0.891	123.6	0.571	-45.3	0.039	-8.3	0.782	167.9
10.0	0.878	178.4	2.445	48.1	0.042	1.0	0.318	-120.2	30.0	0.882	116.2	0.475	-54.8	0.038	-8.6	0.818	164.5
12.0	0.885	168.6	1.970	35.5	0.038	-1.9	0.388	-129.0	32.0	0.845	115.4	0.408	-63.3	0.033	-11.4	0.873	156.4
14.0	0.894	162.9	1.624	24.8	0.037	-3.9	0.447	-137.8	34.0	0.906	116.7	0.361	-70.2	0.033	-15.1	0.831	149.0
16.0	0.907	157.7	1.361	14.6	0.036	-4.5	0.509	-144.0	36.0	0.940	118.7	0.336	-75.7	0.035	-20.7	0.855	142.1
18.0	0.908	156.8	1.187	5.7	0.036	-5.9	0.547	-154.3	38.0	0.954	120.1	0.332	-83.5	0.043	-37.4	0.895	134.0
20.0	0.905	150.5	1.056	-4.2	0.037	-7.1	0.586	-160.4	40.0	0.940	117.6	0.314	-90.8	0.050	-59.0	0.905	129.4

Note: The data included 0.7 mils diameter Au bonding wires; 2 gate wires, 15 mils each; 2 drain wires, 20 mils each; 8 source wires, 7 mils each; no source wires for EPA080AV.

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