

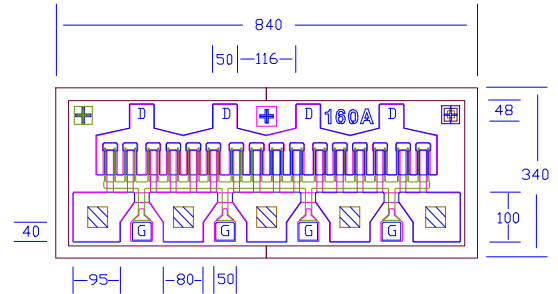


EPA160A/EPA160AV

DATA SHEET

High Efficiency Heterojunction Power FET

- +31.0dBm TYPICAL OUTPUT POWER
- 8.5dB TYPICAL POWER GAIN FOR EPA160A AND 10.0dB FOR EPA160AV AT 18GHz
- 0.3 X 1600 MICRON RECESSED "MUSHROOM" GATE
- Si₃N₄ PASSIVATION
- ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY
- EPA160AV 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 EPA160A

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOLS	PARAMETERS/TEST CONDITIONS	EPA160A			EPA160AV			UNIT
		MIN	TYP	MAX	MIN	TYP	MAX	
P _{1dB}	Output Power at 1dB Compression f=12GHz	29.0	31.0		29.0	31.0		dBm
	V _{ds} =8V, I _{ds} =50% I _{dss} f=18GHz		31.0			31.0		
G _{1dB}	Gain at 1dB Compression f=12GHz	9.5	11.5		10.0	12.0		dB
	V _{ds} =8V, I _{ds} =50% I _{dss} f=18GHz		8.5			10.0		
PAE	Gain at 1dB Compression V _{ds} =8V, I _{ds} =50% I _{dss} f=12GHz		45			46		%
I _{dss}	Saturated Drain Current V _{ds} =3V, V _{gs} =0V	290	480	660	290	480	660	mA
G _m	Transconductance V _{ds} =3V, V _{gs} =0V	320	500		320	500		mS
V _p	Pinch-off Voltage V _{ds} =3V, I _{ds} =4.5mA		-1.0	-2.5		-1.0	-2.5	V
BV _{gd}	Drain Breakdown Voltage I _{gd} =1.6mA	-11	-15		-11	-15		V
BV _{gs}	Source Breakdown Voltage I _{gs} =1.6mA	-7	-14		-7	-14		V
R _{th}	Thermal Resistance (Au-Sn Eutectic Attach)		30			22		°C/W

MAXIMUM RATINGS AT 25 °C

SYMBOLS	PARAMETERS	EPA160A		EPA160AV	
		ABSOLUTE ¹	CONTINUOUS ²	ABSOLUTE ¹	CONTINUOUS ²
V _{ds}	Drain-Source Voltage	12V	8V	12V	8V
V _{gs}	Gate-Source Voltage	-8V	-3V	-8V	-3V
I _{ds}	Drain Current	I _{dss}	475mA	I _{dss}	625mA
I _{gsf}	Forward Gate Current	80mA	14mA	80mA	14mA
P _{in}	Input Power	28dBm	@ 3dB Compression	28dBm	@ 3dB Compression
T _{ch}	Channel Temperature	175°C	150°C	175°C	150°C
T _{stg}	Storage Temperature	-65/175°C	-65/150°C	-65/175°C	-65/150°C
P _t	Total Power Dissipation	4.5W	3.8W	6.0W	5.0W

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

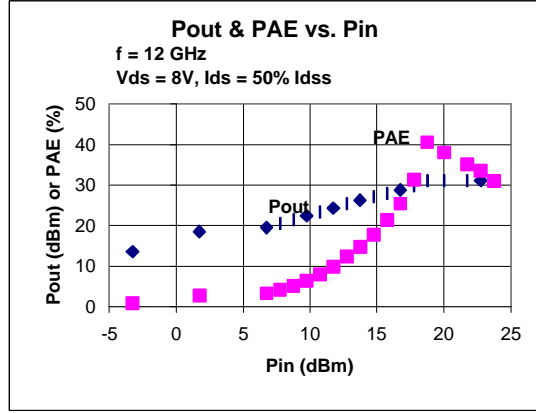
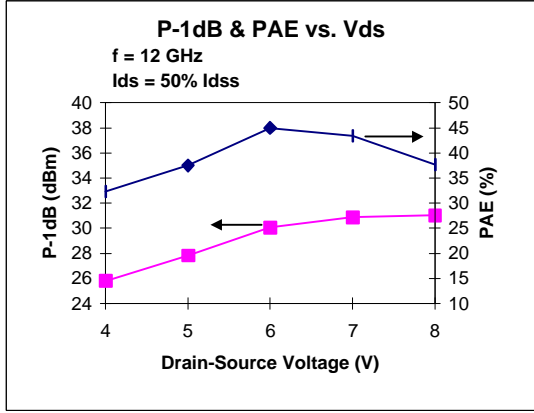
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EPA160A/EPA160AV

DATA SHEET

High Efficiency Heterojunction Power FET

EPA160A



S-PARAMETERS

EPA160A 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	0.915	-119.9	14.906	114.4	0.027	31.0	0.302	-128.9	21.0	0.932	155.6	0.642	-5.2	0.035	25.7	0.744	-175.4
2.0	0.907	-149.2	8.322	96.0	0.029	19.1	0.331	-146.1	22.0	0.932	150.8	0.601	-8.9	0.035	26.0	0.747	-174.5
4.0	0.907	-168.1	4.370	77.6	0.031	14.5	0.362	-151.0	24.0	0.932	143.6	0.526	-16.4	0.040	27.1	0.778	-175.2
6.0	0.908	-180.0	2.898	63.8	0.030	14.2	0.411	-150.0	26.0	0.928	139.3	0.460	-23.2	0.043	28.0	0.783	-179.1
8.0	0.912	174.7	2.172	52.5	0.030	16.0	0.448	-152.1	28.0	0.917	135.6	0.403	-31.9	0.049	25.7	0.820	170.8
10.0	0.918	170.0	1.693	41.7	0.028	17.0	0.498	-155.7	30.0	0.917	133.4	0.350	-39.1	0.051	20.1	0.834	164.0
12.0	0.923	165.9	1.349	31.4	0.028	21.7	0.549	-160.3	32.0	0.912	128.2	0.294	-46.1	0.048	19.9	0.865	162.3
14.0	0.931	162.9	1.084	22.4	0.028	23.4	0.601	-162.8	34.0	0.915	123.6	0.255	-50.3	0.048	23.0	0.876	163.9
16.0	0.936	160.3	0.896	13.7	0.028	25.0	0.658	-166.7	36.0	0.942	126.8	0.223	-52.3	0.048	22.2	0.869	162.9
18.0	0.941	159.3	0.761	5.9	0.029	25.3	0.697	-170.4	38.0	0.957	129.8	0.212	-53.8	0.055	17.0	0.872	158.9
20.0	0.936	158.5	0.675	-2.0	0.031	25.6	0.725	-175.6	40.0	0.952	138.3	0.205	-60.1	0.055	4.9	0.843	147.4

EPA160AV 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	0.922	-115.7	13.969	116.1	0.027	30.9	0.271	-114.5	21.0	0.957	163.3	0.582	-11.9	0.023	5.0	0.766	-179.4
2.0	0.914	-146.8	7.872	96.1	0.031	17.2	0.299	-134.2	22.0	0.956	162.5	0.536	-15.4	0.024	4.2	0.786	179.1
4.0	0.917	-165.9	4.057	76.9	0.030	7.9	0.341	-140.5	24.0	0.954	159.0	0.452	-22.5	0.024	8.6	0.821	176.3
6.0	0.923	-176.7	2.690	63.0	0.029	4.3	0.393	-140.1	26.0	0.953	158.6	0.384	-30.1	0.026	10.9	0.844	169.1
8.0	0.929	-177.6	2.027	51.5	0.027	4.6	0.430	-148.0	28.0	0.932	153.0	0.335	-37.8	0.026	11.9	0.880	165.4
10.0	0.930	-178.2	1.596	40.1	0.025	4.2	0.485	-157.8	30.0	0.918	146.4	0.295	-46.5	0.028	9.1	0.899	161.7
12.0	0.936	175.2	1.273	28.3	0.023	1.8	0.556	-161.5	32.0	0.877	145.0	0.262	-56.0	0.027	-0.3	0.949	153.2
14.0	0.941	171.3	1.025	17.7	0.021	1.5	0.626	-167.2	34.0	0.934	144.2	0.229	-63.9	0.024	-3.7	0.896	146.3
16.0	0.950	167.4	0.833	8.1	0.021	2.2	0.688	-170.1	36.0	0.968	144.4	0.214	-69.5	0.025	-6.0	0.916	141.6
18.0	0.953	168.3	0.695	0.3	0.022	3.2	0.732	-176.3	38.0	0.985	146.4	0.201	-74.3	0.028	-22.8	0.952	137.4
20.0	0.955	165.1	0.597	-7.2	0.022	3.0	0.768	-177.8	40.0	0.986	146.4	0.189	-77.5	0.035	-40.3	0.952	137.2

Note: The data included 0.7 mils diameter Au bonding wires; 3 gate wires, 15 mils each; 3 drain wires, 20 mils each; 10 source wires, 7 mils each; no source wires for EPA160AV.

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