

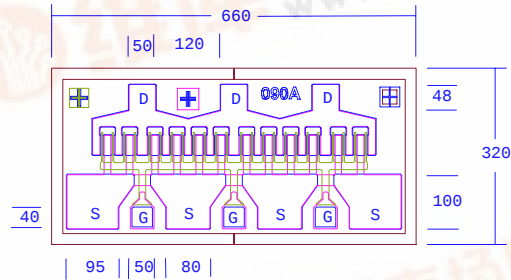


EPA090A

DATA SHEET

High Efficiency Heterojunction Power FET

- +28.0dBm TYPICAL OUTPUT POWER
- 10.0dB TYPICAL POWER GAIN AT 18GHz
- 0.3 X 900 MICRON RECESSED “MUSHROOM” GATE
- Si₃N₄ PASSIVATION
- ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY
- Idss SORTED IN 20mA PER BIN RANGE



Chip Thickness: 75 ± 13 microns
All Dimensions In Microns

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOLS	PARAMETERS/TEST CONDITIONS	MIN	TYP	MAX	UNIT
P_{1dB}	Output Power at 1dB Compression V _{ds} =8V, I _{ds} =50% I _{dss} f=12GHz f=18GHz	26.5	28.0 28.0		dBm
G_{1dB}	Gain at 1dB Compression V _{ds} =8V, I _{ds} =50% I _{dss} f=12GHz f=18GHz	11.5	13.0 10.0		dB
PAE	Power Added Efficiency at 1dB Compression V _{ds} =8V, I _{ds} =50% I _{dss} f=12GHz		45		%
I_{dss}	Saturated Drain Current V _{ds} =3V, V _{gs} =0V	160	270	380	mA
G_m	Transconductance V _{ds} =3V, V _{gs} =0V	180	290		mS
V_p	Pinch-off Voltage V _{ds} =3V, I _{ds} =3.0mA		-1.0	-2.5	V
BV_{gd}	Drain Breakdown Voltage I _{gd} =1.0mA	-11	-15		V
BV_{gs}	Source Breakdown Voltage I _{gs} =1.0mA	-7	-14		V
R_{th}	Thermal Resistance (Au-Sn Eutectic Attach)		45		°C/W

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
V_{ds}	Drain-Source Voltage	12V	8V
V_{gs}	Gate-Source Voltage	-8V	-3V
I_{ds}	Drain Current	I _{dss}	315mA
I_{gsf}	Forward Gate Current	45mA	7.5mA
P_{in}	Input Power	26dBm	@3dB Compression
T_{ch}	Channel Temperature	175°C	150°C
T_{stg}	Storage Temperature	-65/175°C	-65/150°C
P_t	Total Power Dissipation	3.0 W	2.5W

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

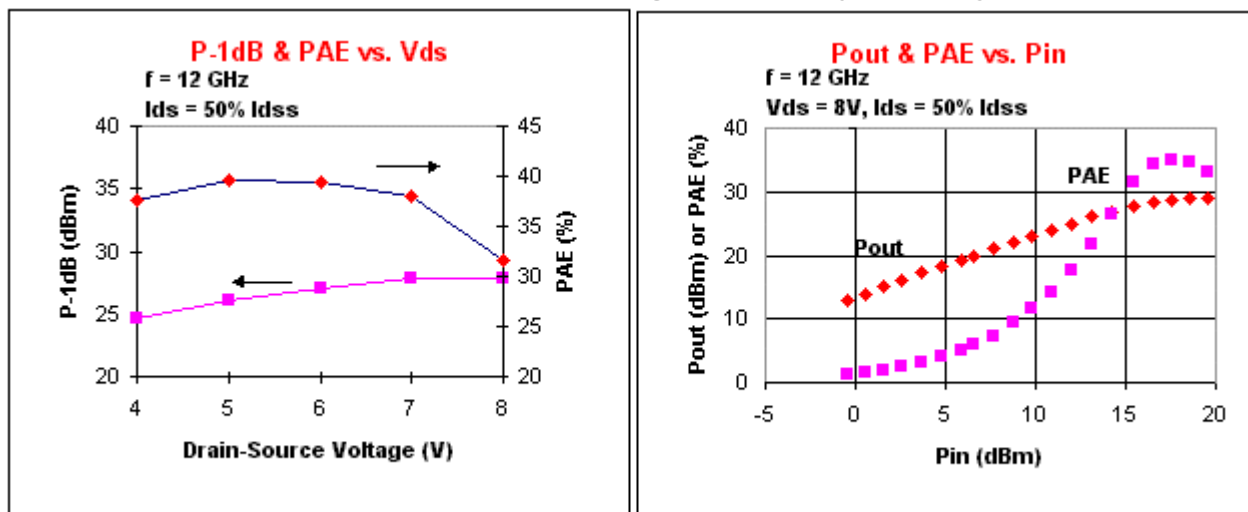
Phone: (408) 970-8664 Fax: (408) 970-8998 Web Site: www.excelics.com



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S-PARAMETERS

8V, 1/2 Idss

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---		FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.913	-76.1	14.462	135.6	0.033	50.3	0.347	-57.3	21.0	0.915	160.0	0.971	2.0	0.042	4.5	0.631	-173.0
2.0	0.884	-115.9	9.815	112.5	0.044	31.1	0.295	-90.6	22.0	0.917	159.2	0.907	-2.5	0.043	5.1	0.660	-176.7
3.0	0.869	-135.9	7.119	98.8	0.048	21.9	0.279	-108.1	23.0	0.912	158.0	0.851	-6.7	0.043	5.6	0.687	-179.7
4.0	0.869	-147.8	5.534	89.0	0.048	16.9	0.284	-118.8	24.0	0.912	156.7	0.800	-10.7	0.044	7.0	0.713	178.1
5.0	0.873	-155.3	4.499	81.4	0.049	13.0	0.294	-125.7	25.0	0.918	155.2	0.754	-14.6	0.047	8.4	0.735	176.2
6.0	0.872	-160.8	3.792	74.7	0.048	11.3	0.315	-129.8	26.0	0.914	154.4	0.713	-17.5	0.046	10.8	0.761	175.6
7.0	0.871	-165.4	3.265	68.6	0.048	9.2	0.341	-132.7	27.0	0.912	152.8	0.672	-20.4	0.049	12.8	0.768	175.1
8.0	0.871	-169.3	2.856	63.0	0.047	7.4	0.367	-134.7	28.0	0.914	151.6	0.643	-23.0	0.052	13.7	0.771	175.3
9.0	0.872	-172.6	2.525	57.7	0.045	6.8	0.392	-136.4	29.0	0.919	149.8	0.617	-25.6	0.055	15.1	0.781	175.9
10.0	0.875	-175.4	2.267	52.8	0.044	6.3	0.418	-137.6	30.0	0.917	147.5	0.591	-28.5	0.057	12.5	0.782	175.6
11.0	0.880	-178.2	2.046	47.9	0.044	5.5	0.440	-139.3	31.0	0.933	146.1	0.567	-31.1	0.058	14.1	0.779	175.5
12.0	0.884	179.5	1.861	43.2	0.042	5.1	0.462	-141.2	32.0	0.932	144.1	0.545	-33.7	0.057	14.0	0.781	174.3
13.0	0.888	177.3	1.698	38.7	0.041	4.9	0.481	-143.3	33.0	0.931	142.9	0.523	-36.9	0.058	13.6	0.778	171.9
14.0	0.890	175.2	1.563	34.1	0.041	5.5	0.497	-145.7	34.0	0.937	140.9	0.502	-40.4	0.057	13.3	0.777	168.7
15.0	0.899	172.8	1.457	29.5	0.041	5.7	0.513	-148.5	35.0	0.951	139.6	0.482	-43.7	0.058	14.9	0.783	163.5
16.0	0.901	170.7	1.357	24.8	0.040	2.9	0.528	-151.9	36.0	0.953	139.1	0.464	-47.4	0.060	12.2	0.792	157.1
17.0	0.906	168.4	1.269	19.9	0.040	2.9	0.543	-155.9	37.0	0.969	138.2	0.449	-51.3	0.063	7.4	0.808	150.0
18.0	0.912	166.4	1.193	15.4	0.041	3.9	0.557	-159.7	38.0	0.982	136.7	0.435	-55.6	0.065	-2.0	0.810	142.8
19.0	0.912	164.3	1.131	10.4	0.042	2.6	0.573	-164.5	39.0	0.998	134.0	0.417	-61.8	0.067	-11.4	0.810	136.7
20.0	0.913	162.0	1.068	5.6	0.044	1.8	0.591	-168.6	40.0	0.977	132.3	0.402	-67.4	0.069	-20.3	0.810	131.8

Note: The data included 0.7 mils diameter Au bonding wires:
3 gate wires, 15 mils each; 3 drain wires, 20 mils each; 8 source wires, 7 mils each.