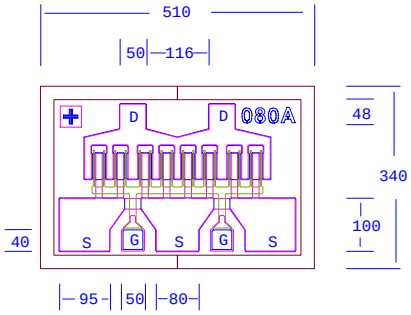
Excelics EPA080A

DATA SHEET
High Efficiency Heterojunction Power FET

- **+27.5dBm TYPICAL OUTPUT POWER**
- **9.5dB TYPICAL POWER GAIN AT 18GHz**
- **0.3 X 800 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY**
- **Idss SORTED IN 20 mA 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 Vds=8V, Ids=50% Idss	f=12GHz f=18GHz	26.0	27.5 27.5		dBm
G_{1dB}	Gain at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz f=18GHz	10.5	12.5 9.5		dB
PAE	Power Added Efficiency at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz		45		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V		130	240	320	mA
Gm	Transconductance Vds=3V, Vgs=0V		160	260		mS
Vp	Pinch-off Voltage Vds=3V, Ids=2.5mA			-1.0	-2.5	V
BVgd	Drain Breakdown Voltage Igd=1.0mA		-11	-15		V
BVgs	Source Breakdown Voltage Igs=1.0mA		-7	-14		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)			55		°C/W

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE[1]	CONTINUOUS[2]
Vds	Drain-Source Voltage	12V	8V
Vgs	Gate-Source Voltage	-8V	-3V
Ids	Drain Current	Idss	260mA
Igsf	Forward Gate Current	40mA	7mA
Pin	Input Power	25dBm	@3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	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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DATS SHEET

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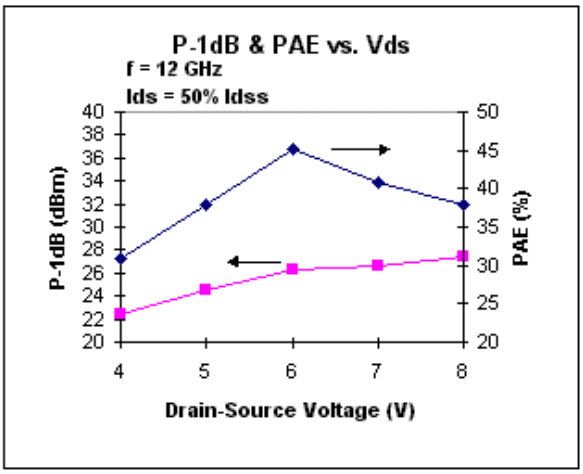

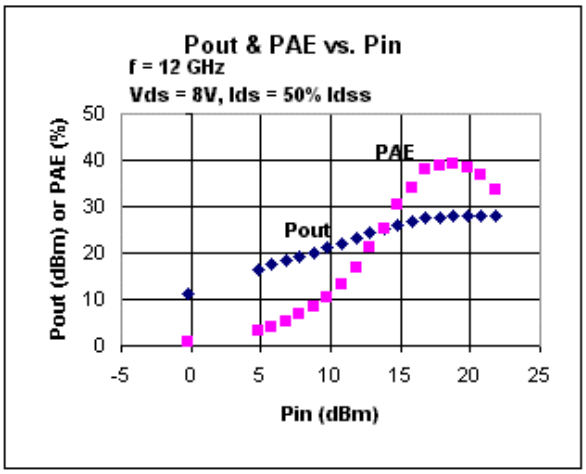

S-PARAMETERS

8V, 1/2 Idss

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	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
2.0	0.885	-102.9	9.639	117.9	0.051	36.9	0.380	-60.7
3.0	0.863	-125.7	7.251	102.8	0.056	26.6	0.319	-75.8
4.0	0.856	-140.4	5.741	91.7	0.058	20.1	0.290	-86.4
5.0	0.842	-153.1	4.704	82.3	0.059	15.5	0.288	-95.4
6.0	0.843	-160.5	3.991	74.6	0.059	12.5	0.288	-102.3
7.0	0.848	-166.4	3.455	67.8	0.059	10.2	0.293	-108.2
8.0	0.853	-171.0	3.045	61.6	0.059	8.2	0.304	-114.3
9.0	0.857	-174.5	2.701	55.8	0.058	7.2	0.315	-120.2
10.0	0.866	-177.6	2.437	50.3	0.056	5.6	0.331	-125.3
11.0	0.867	179.4	2.212	44.8	0.056	5.4	0.353	-130.8
12.0	0.874	176.9	2.011	39.2	0.055	5.0	0.375	-136.0
13.0	0.877	174.3	1.842	34.1	0.054	3.9	0.398	-140.7
14.0	0.883	171.6	1.698	29.1	0.053	3.6	0.423	-145.0
15.0	0.884	168.8	1.567	23.8	0.053	4.1	0.445	-148.4
16.0	0.886	166.1	1.457	18.7	0.053	3.4	0.466	-152.1
17.0	0.885	163.7	1.362	13.9	0.054	2.5	0.487	-155.5
18.0	0.885	160.2	1.287	8.8	0.055	2.3	0.501	-158.3
19.0	0.883	156.3	1.226	3.3	0.057	1.5	0.514	-161.9
20.0	0.885	152.0	1.166	-2.2	0.059	0.6	0.524	-165.7
21.0	0.892	151.7	1.076	-6.7	0.060	1.8	0.546	-173.4
22.0	0.893	148.0	1.015	-11.2	0.060	1.7	0.566	-176.3
23.0	0.898	144.4	0.958	-16.1	0.061	0.9	0.587	-179.8
24.0	0.895	140.9	0.909	-21.0	0.062	1.6	0.606	176.9
25.0	0.908	138.0	0.862	-25.6	0.065	2.7	0.626	172.3
26.0	0.905	136.3	0.814	-30.3	0.068	2.1	0.644	167.6
27.0	0.916	133.9	0.785	-34.5	0.070	2.1	0.665	163.6
28.0	0.924	133.4	0.745	-39.2	0.074	2.6	0.687	158.0
29.0	0.919	133.0	0.700	-42.7	0.075	0.6	0.704	153.5
30.0	0.928	133.6	0.675	-46.9	0.079	0.1	0.721	149.1
31.0	0.936	133.6	0.644	-50.4	0.079	0.4	0.736	145.4
32.0	0.931	133.2	0.616	-54.2	0.080	-0.5	0.749	141.4
33.0	0.918	130.9	0.574	-58.3	0.081	-1.4	0.753	137.7
34.0	0.922	129.9	0.547	-61.2	0.081	-1.4	0.771	135.0
35.0	0.925	127.6	0.518	-64.5	0.080	-2.1	0.779	132.2
36.0	0.935	125.9	0.494	-67.2	0.088	-6.5	0.784	129.7
37.0	0.929	122.6	0.478	-70.2	0.087	-7.8	0.790	126.3
38.0	0.929	119.1	0.465	-75.0	0.094	-14.2	0.797	122.8
39.0	0.919	114.3	0.446	-79.0	0.091	-21.0	0.797	119.5
40.0	0.913	109.5	0.439	-83.8	0.096	-29.3	0.799	115.9

Note: The data included 0.7 mils diameter Au bonding wires:
2 gate wires, 15 mils each; 2 drain wires, 20 mils each; 6 source wires, 7 mils each.