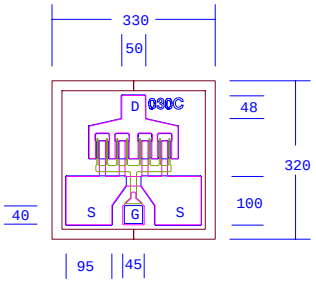
Excelics EPA030C

DATA SHEET
High Efficiency Heterojunction Power FET

- **+23.0dBm TYPICAL OUTPUT POWER**
- **11.0dB TYPICAL POWER GAIN AT 18GHz**
- **0.3 X 300 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY**
- **Idss SORTED IN 10mA 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	21.0	23.0 23.0		dBm
G_{1dB}	Gain at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz f=18GHz	12.0	13.5 11.0		dB
PAE	Power Added Efficiency at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz		45		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V		50	90	130	mA
Gm	Transconductance Vds=3V, Vgs=0V		60	95		mS
Vp	Pinch-off Voltage Vds=3V, Ids=1.0mA			-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)			125		°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	110mA
Igsf	Forward Gate Current	15mA	2.5mA
Pin	Input Power	21dBm	@3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	1.1W	900mW

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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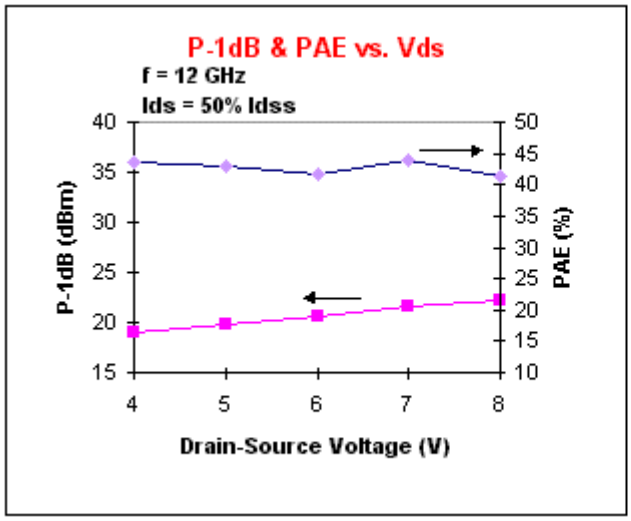

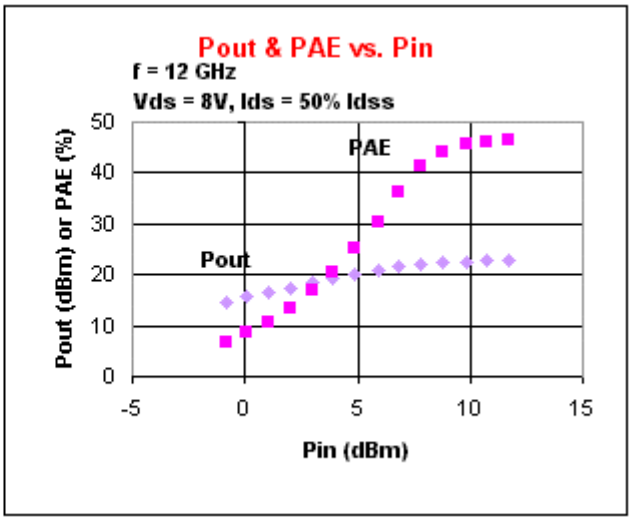

S-PARAMETERS

8V, 1/2 Idss

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.975	-23.9	7.888	162.4	0.017	76.0	0.750	-9.3
2.0	0.951	-46.7	7.419	147.5	0.032	63.5	0.726	-18.3
3.0	0.911	-67.1	6.800	133.6	0.044	53.5	0.682	-25.5
4.0	0.883	-85.5	6.169	121.3	0.053	44.0	0.643	-32.0
5.0	0.859	-101.4	5.542	110.4	0.059	36.3	0.605	-37.1
6.0	0.840	-114.7	4.993	100.9	0.063	30.0	0.577	-41.6
7.0	0.825	-126.5	4.526	92.2	0.065	25.0	0.554	-45.8
8.0	0.814	-136.9	4.125	84.2	0.067	19.6	0.535	-49.6
9.0	0.808	-146.1	3.780	76.9	0.067	15.1	0.517	-53.4
10.0	0.801	-154.1	3.495	70.1	0.068	11.2	0.504	-57.1
11.0	0.799	-162.0	3.255	63.3	0.067	7.9	0.491	-61.3
12.0	0.797	-169.5	3.041	56.7	0.067	4.5	0.479	-65.6
13.0	0.794	-176.9	2.862	50.2	0.068	1.6	0.466	-70.4
14.0	0.791	175.9	2.700	43.7	0.068	-1.9	0.453	-75.2
15.0	0.799	168.2	2.566	37.0	0.069	-4.3	0.442	-80.5
16.0	0.800	160.9	2.425	30.4	0.069	-7.5	0.434	-86.1
17.0	0.807	153.3	2.282	23.6	0.070	-10.9	0.421	-92.3
18.0	0.816	146.4	2.155	17.0	0.070	-12.1	0.411	-98.4
19.0	0.824	139.8	2.039	10.5	0.071	-15.2	0.402	-105.0
20.0	0.832	133.9	1.913	4.3	0.071	-17.8	0.400	-111.3
21.0	0.850	130.8	1.761	-0.7	0.069	-18.3	0.404	-121.6
22.0	0.854	128.3	1.647	-5.9	0.068	-18.6	0.416	-129.4
23.0	0.856	125.8	1.554	-11.0	0.067	-19.4	0.435	-136.1
24.0	0.858	123.8	1.466	-16.0	0.067	-19.4	0.449	-142.5
25.0	0.861	121.9	1.400	-21.0	0.067	-19.1	0.474	-148.3
26.0	0.857	120.7	1.336	-25.3	0.067	-16.9	0.489	-153.1
27.0	0.859	118.5	1.283	-30.2	0.068	-17.1	0.504	-158.7
28.0	0.860	116.0	1.241	-34.9	0.070	-17.2	0.515	-162.6
29.0	0.863	112.5	1.204	-40.3	0.072	-17.4	0.523	-167.9
30.0	0.861	108.2	1.160	-45.6	0.073	-19.5	0.533	-173.0
31.0	0.869	103.9	1.120	-51.1	0.072	-21.1	0.540	-178.8
32.0	0.871	98.2	1.071	-56.8	0.072	-23.7	0.552	175.1
33.0	0.876	93.5	1.013	-62.5	0.070	-26.9	0.563	168.2
34.0	0.895	88.7	0.959	-68.0	0.068	-28.5	0.579	161.5
35.0	0.926	84.1	0.910	-73.5	0.069	-31.3	0.610	153.7
36.0	0.952	81.3	0.858	-79.0	0.072	-36.4	0.642	146.1
37.0	0.984	77.8	0.815	-84.5	0.075	-43.8	0.677	137.7
38.0	1.015	74.8	0.765	-91.0	0.073	-51.4	0.702	130.2
39.0	1.032	71.4	0.702	-97.1	0.074	-65.3	0.712	123.9
40.0	1.002	70.1	0.650	-103.1	0.072	-70.2	0.725	119.1

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.