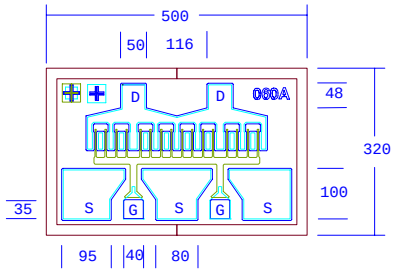
Excelics EPA060A

DATA SHEET
High Efficiency Heterojunction Power FET

- **+26.5dBm TYPICAL OUTPUT POWER**
- **10.5dB TYPICAL POWER GAIN AT 18GHz**
- **0.3 X 600 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY**
- **Idss SORTED IN 15mA 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	25.0	26.5 26.5		dBm
G_{1dB}	Gain at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz f=18GHz	11.5	13.0 10.5		dB
PAE	Power Added Efficiency at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz		45		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V		105	180	255	mA
Gm	Transconductance Vds=3V, Vgs=0V		120	190		mS
Vp	Pinch-off Voltage Vds=3V, Ids=2.0mA			-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)			65		°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	220mA
Igsf	Forward Gate Current	30mA	5mA
Pin	Input Power	24dBm	@3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	2.1W	1.7W

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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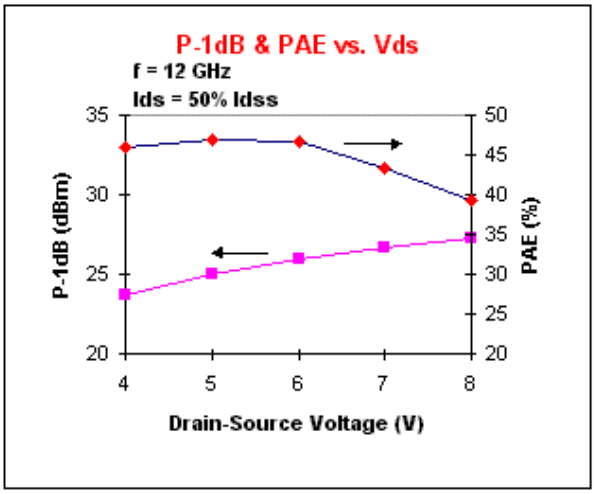

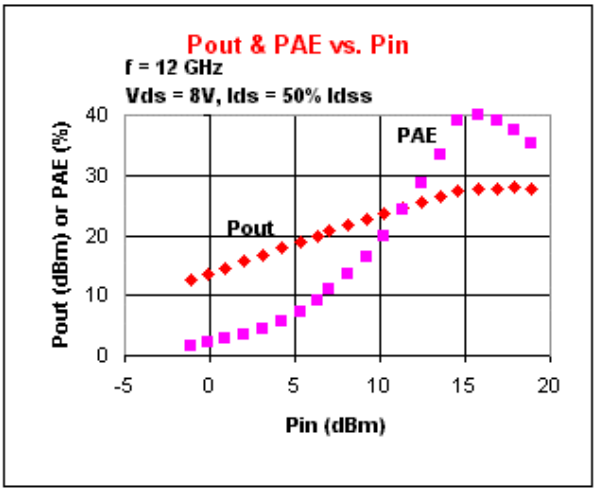

S-PARAMETERS

8V, 1/2 Idss

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.944	-49.2	12.673	148.9	0.027	63.8	0.506	-26.9
2.0	0.898	-85.9	10.129	127.1	0.043	44.6	0.428	-47.2
3.0	0.862	-110.2	8.004	111.6	0.051	33.7	0.364	-60.8
4.0	0.850	-126.7	6.507	100.2	0.054	26.2	0.329	-71.5
5.0	0.848	-138.3	5.426	91.1	0.055	22.0	0.306	-80.2
6.0	0.845	-146.8	4.644	83.5	0.057	17.1	0.301	-87.7
7.0	0.845	-153.7	4.056	76.5	0.057	14.6	0.306	-95.1
8.0	0.843	-159.5	3.585	70.2	0.057	12.3	0.315	-101.2
9.0	0.844	-164.5	3.205	64.3	0.056	9.4	0.327	-106.9
10.0	0.846	-168.3	2.897	59.2	0.053	6.7	0.342	-111.8
11.0	0.849	-172.2	2.638	53.5	0.053	5.8	0.359	-116.6
12.0	0.851	-175.6	2.416	48.4	0.052	4.9	0.379	-121.3
13.0	0.852	-179.3	2.234	43.2	0.051	2.5	0.396	-125.6
14.0	0.855	177.3	2.068	38.0	0.050	1.9	0.413	-129.8
15.0	0.859	173.7	1.931	32.7	0.050	1.0	0.431	-134.2
16.0	0.857	170.3	1.801	27.5	0.049	1.0	0.447	-138.3
17.0	0.855	166.4	1.685	22.0	0.049	-2.8	0.461	-142.9
18.0	0.856	162.7	1.576	16.9	0.050	-2.9	0.472	-146.6
19.0	0.854	159.4	1.486	11.8	0.049	-3.1	0.479	-151.6
20.0	0.854	156.5	1.404	7.1	0.048	-2.1	0.492	-155.7
21.0	0.863	154.4	1.284	3.3	0.049	-0.4	0.523	-161.7
22.0	0.866	152.6	1.207	-1.1	0.050	0.1	0.547	-166.3
23.0	0.872	151.2	1.140	-5.4	0.051	1.2	0.572	-170.4
24.0	0.877	149.9	1.078	-9.9	0.053	2.5	0.594	-174.5
25.0	0.885	148.7	1.023	-14.1	0.054	2.9	0.620	-178.5
26.0	0.893	148.0	0.987	-18.2	0.055	3.6	0.642	178.5
27.0	0.896	146.6	0.931	-22.1	0.058	3.5	0.657	175.3
28.0	0.902	144.8	0.895	-26.1	0.061	5.8	0.675	172.9
29.0	0.904	143.4	0.853	-29.8	0.062	6.2	0.684	170.5
30.0	0.898	141.4	0.817	-33.6	0.064	5.1	0.699	168.4
31.0	0.906	139.0	0.786	-37.2	0.065	4.0	0.708	166.3
32.0	0.898	136.0	0.752	-41.1	0.064	3.0	0.720	163.8
33.0	0.890	133.2	0.705	-45.4	0.065	0.7	0.733	161.2
34.0	0.891	129.2	0.671	-49.3	0.064	2.6	0.740	157.9
35.0	0.896	125.5	0.641	-53.4	0.066	-2.0	0.759	154.2
36.0	0.891	122.5	0.604	-58.2	0.066	-4.6	0.774	149.6
37.0	0.903	119.1	0.577	-62.3	0.066	-12.0	0.788	143.8
38.0	0.914	116.3	0.551	-67.0	0.069	-21.6	0.789	138.7
39.0	0.923	111.4	0.520	-72.6	0.070	-33.8	0.788	133.9
40.0	0.909	108.9	0.497	-79.1	0.073	-41.6	0.786	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; 6 source wires, 7 mils each.