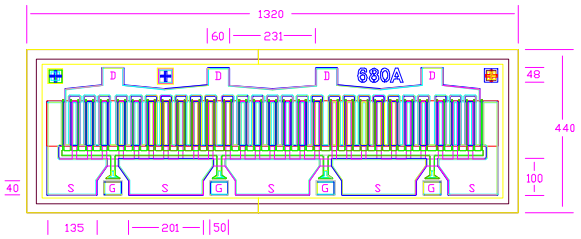
Excelics EPA680A

DATA SHEET
High Efficiency Heterojunction Power FET

- **+37.0dBm TYPICAL OUTPUT POWER**
- **7.0dB TYPICAL POWER GAIN AT 12GHz**
- **0.3 X 6800 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY**
- **Idss SORTED IN 180mA PER BIN RANGE**



Chip Thickness: 60 ± 15 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 f=12GHz Vds=8V, Ids=50% Idss	35.5	37.0		dBm
G_{1dB}	Gain at 1dB Compression f=12GHz Vds=8V, Ids=50% Idss	5.5	7.0		dB
PAE	Power Added Efficiency at 1dB Compression Vds=8V, Ids=50%Idss f=12GHz		40		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V	1230	2040	2670	mA
Gm	Transconductance Vds=3V, Vgs=0V	1360	2150		mS
Vp	Pinch-off Voltage Vds=3V, Ids=20mA		-1.0	-2.5	V
BVgd	Drain Breakdown Voltage Igd=6.8mA	-11	-15		V
BVgs	Source Breakdown Voltage Igs=6.8mA	-7	-14		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)		7		°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	2.2A
Igsf	Forward Gate Current	340mA	55mA
Pin	Input Power	34.5dBm	@ 3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	21 W	18 W

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	0.882	-162.1	5.927	100.9	0.013	2.6	0.705	-179.4
2.0	0.925	-172.0	2.903	81.8	0.011	4.0	0.742	-177.3
3.0	0.943	-176.5	1.836	71.8	0.013	25.8	0.772	-177.9
4.0	0.950	-179.7	1.320	65.2	0.013	35.1	0.792	-179.1
5.0	0.957	174.0	1.007	59.7	0.014	44.8	0.807	-176.5
6.0	0.959	172.0	0.829	54.9	0.018	52.7	0.813	-178.1
7.0	0.965	170.8	0.710	50.7	0.020	50.8	0.829	-179.5
8.0	0.957	169.6	0.615	46.2	0.021	55.6	0.843	177.3
9.0	0.955	168.5	0.536	41.6	0.023	55.7	0.854	175.1
10.0	0.955	167.0	0.469	40.8	0.025	59.6	0.879	179.5
11.0	0.961	165.8	0.426	34.2	0.027	60.2	0.852	173.9
12.0	0.967	164.4	0.384	30.3	0.028	57.0	0.848	172.9
14.0	0.949	159.7	0.314	25.0	0.029	57.6	0.885	175.9
16.0	0.945	154.7	0.263	16.9	0.030	55.0	0.900	174.2
18.0	0.945	152.9	0.234	10.7	0.034	51.1	0.887	172.7
20.0	0.934	151.1	0.216	3.1	0.039	49.2	0.907	165.8
22.0	1.290	145.9	0.194	0.8	0.045	51.9	0.709	163.7
24.0	1.256	141.5	0.165	-10.7	0.050	42.1	0.667	161.0
26.0	1.112	141.4	0.144	-14.0	0.056	38.3	0.696	157.6

Note: The data included 0.7 mils diameter Au bonding wires:
4 gate wires, 20 mils each; 4 drain wires, 12 mils each; 10 source wires, 7 mils each.