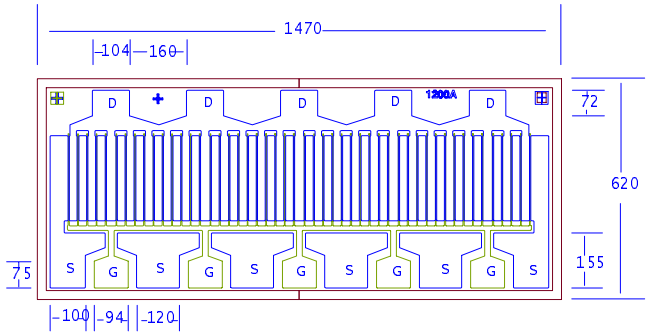
Excelics EPA1200A

DATA SHEET
High Efficiency Heterojunction Power FET

- **+39.5dBm TYPICAL OUTPUT POWER**
- **18.0dB TYPICAL POWER GAIN AT 2GHz**
- **0.4 X 12,000 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY**
- **Idss SORTED IN 300mA PER BIN RANGE**



Chip Thickness: 50 ± 10 microns
(with > 20 microns Gold Plated Heat Sink (PHS))
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= 2GHz f= 4GHz	38.0	39.5 39.5		dBm
G_{1dB}	Gain at 1dB Compression Vds=8V, Ids=50% Idss	f= 2GHz f= 4GHz	16.5	18.0 13.0		dB
PAE	Power Added Efficiency at 1dB Compression Vds=8V, Ids=50% Idss	f=2GHz		43		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V		2200	3600	4700	mA
Gm	Transconductance Vds=3V, Vgs=0V		2400	3800		mS
Vp	Pinch-off Voltage Vds=3V, Ids=36mA			-1.0	-2.5	V
BVgd	Drain Breakdown Voltage Igd=12mA		-11	-15		V
BVgs	Source Breakdown Voltage Igs=12mA		-7	-14		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)			4		°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	3.5A
Igsf	Forward Gate Current	600mA	100mA
Pin	Input Power	37dBm	@ 3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	34 W	28 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
0.500	0.966	-161.3	7.649	95.5	0.011	16.3	0.675	-175.7
1.000	0.966	-171.3	3.849	86.9	0.012	18.6	0.683	-176.9
1.500	0.966	-175.0	2.555	81.4	0.012	23.8	0.690	-177.0
2.000	0.966	-177.1	1.901	76.8	0.012	29.7	0.698	-176.9
2.500	0.967	-178.5	1.505	72.7	0.013	35.7	0.707	-176.8
3.000	0.967	-179.6	1.239	68.7	0.014	41.4	0.718	-176.8
3.500	0.968	179.4	1.047	65.1	0.015	46.7	0.729	-176.8
4.000	0.969	178.6	0.902	61.6	0.016	51.5	0.742	-177.1
4.500	0.969	177.8	0.788	58.3	0.017	55.6	0.754	-177.4
5.000	0.970	177.1	0.697	55.2	0.019	59.2	0.767	-177.8
5.500	0.971	176.4	0.622	52.2	0.020	62.2	0.779	-178.4
6.000	0.971	175.7	0.559	49.5	0.022	64.6	0.791	-179.0
6.500	0.972	175.0	0.506	46.9	0.024	66.6	0.803	-179.7
7.000	0.973	174.4	0.461	44.6	0.026	68.2	0.814	179.5
7.500	0.973	173.8	0.422	42.4	0.028	69.4	0.825	178.7
8.000	0.974	173.2	0.388	40.4	0.030	70.4	0.835	177.8
8.500	0.974	172.6	0.358	38.6	0.032	71.1	0.845	176.9
9.000	0.975	172.0	0.332	36.9	0.035	71.6	0.854	175.9
9.500	0.975	171.4	0.309	35.4	0.037	71.9	0.862	175.0
10.000	0.976	170.8	0.288	34.1	0.039	72.1	0.870	174.0

Note: The data included 0.7 mils diameter Au bonding wires:
5 gate wires, 20 mils each; 5 drain wires, 12 mils each; 12 source wires, 7 mils each.