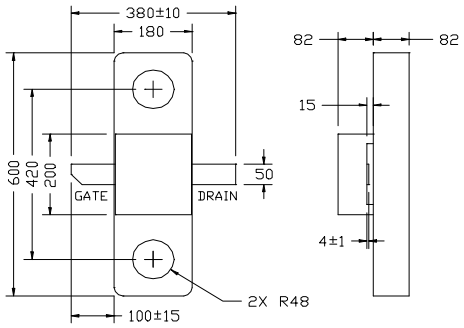
Excelics EPA680A-180F

PRELIMINARY DATA SHEET

High Efficiency Heterojunction Power FET

- **NON-HERMETIC 180MIL METAL FLANGE PACKAGE**
- **+37.5dBm TYPICAL OUTPUT POWER**
- **17.5dB TYPICAL POWER GAIN AT 2GHz**
- **0.4 X 6800 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY**



All Dimensions In Mils

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	36.0	37.5 37.5		dBm
G_{1dB}	Gain at 1dB Compression Vds=8V, Ids=50% Idss	f= 2GHz f= 4GHz	16.0	17.5 12.5		dB
PAE	Power Added Efficiency at 1dB Compression Vds=8V, Ids=50% Idss	f=2GHz		52		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V		1250	2040	2660	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

***** Overall Rth depends on case mounting.

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	360mA	60mA
Pin	Input Power	35dBm	@ 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 GHz	S11 Mag	S11 Ang	S21 Mag	S21 Ang	S12 Mag	S12 Ang	S22 Mag	S22 Ang
0.5	0.971	-161.4	9.366	91.2	0.009	23.7	0.791	177.8
1.0	0.972	-175.9	4.849	76.2	0.010	29.1	0.773	172.5
1.5	0.926	175.9	4.293	68.2	0.016	31.8	0.713	163.9
2.0	0.925	170.9	3.416	59.2	0.020	32.5	0.688	158.3
2.5	0.913	167.6	2.994	50.1	0.024	30.7	0.652	151.9
3.0	0.889	163.7	2.825	40.1	0.030	25.7	0.599	143.9
3.5	0.872	156.4	2.805	27.2	0.037	17.6	0.523	133.5
4.0	0.845	145.5	2.818	11.2	0.047	5.0	0.441	117.9
4.5	0.825	131.4	2.804	-6.8	0.055	-7.9	0.375	96.0
5.0	0.814	115.7	2.750	-26.1	0.063	-23.2	0.353	69.3
5.5	0.802	98.9	2.673	-45.2	0.070	-39.0	0.358	43.9
6.0	0.797	80.9	2.591	-65.2	0.078	-56.4	0.369	20.9
6.5	0.809	59.0	2.458	-86.0	0.079	-75.2	0.394	-4.9
7.0	0.812	35.2	2.377	-110.0	0.081	-94.9	0.436	-30.0
7.5	0.840	7.8	2.123	-135.7	0.075	-116.1	0.517	-55.3
8.0	0.872	-17.1	1.714	-158.8	0.061	-132.6	0.611	-77.2
8.5	0.905	-35.8	1.363	-176.4	0.049	-144.9	0.709	-89.5
9.0	0.913	-53.2	1.105	168.1	0.044	-139.4	0.754	-96.1
9.5	0.902	-66.8	0.940	155.6	0.052	-161.7	0.748	-102.5
10.0	0.912	-80.5	0.847	138.2	0.044	176.6	0.761	-119.1