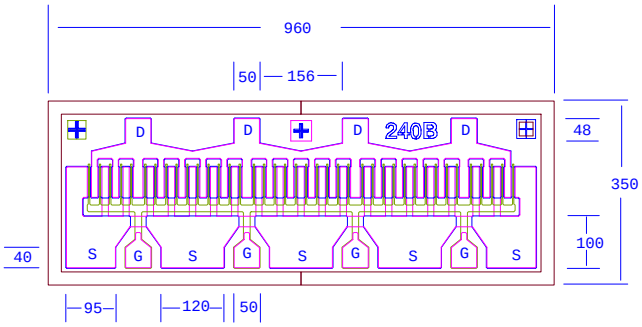
Excelics EFC240B

PRELIMINARY DATA SHEET

Low Distortion GaAs Power FET

- **+31.0dBm TYPICAL OUTPUT POWER**
- **8.5dB TYPICAL POWER GAIN AT 12GHz**
- **HIGH BVgd FOR 10V BIAS**
- **0.3 X 2400 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY**
- **Idss SORTED IN 40mA 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=10V, Ids=50% Idss	f=12GHz f=18GHz	29.0	31.0 31.0		dBm
G_{1dB}	Gain at 1dB Compression Vds=10V, Ids=50% Idss	f=12GHz f=18GHz	7.0	8.5 6.0		dB
PAE	Power Added Efficiency at 1dB compression Vds=10V, Ids=50% Idss	f=12GHz		33		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V		320	520	720	mA
Gm	Transconductance Vds=3V, Vgs=0V		200	280		mS
Vp	Pinch-off Voltage Vds=3V, Ids=6mA			-2.5	-4.0	V
BVgd	Drain Breakdown Voltage Igd=2.4mA		-15	-20		V
BVgs	Source Breakdown Voltage Igs=2.4mA		-10	-17		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)			20		°C/W

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE[1]	CONTINUOUS[2]
Vds	Drain-Source Voltage	14V	10V
Vgs	Gate-Source Voltage	-8V	-4.5V
Ids	Drain Current	Idss	570mA
Igsf	Forward Gate Current	60mA	10mA
Pin	Input Power	29dBm	@ 3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	6.8 W	5.7 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

10V, 1/2 Idss

Freq GHz	S11 Mag	S11 Ang	S21 Mag	S21 Ang	S12 Mag	S12 Ang	S22 Mag	S22 Ang
1.000	0.944	-86.7	7.064	130.8	0.041	41.9	0.296	-132.9
2.000	0.915	-125.9	4.551	104.6	0.052	22.7	0.374	-146.8
3.000	0.907	-144.8	3.217	89.3	0.055	13.2	0.409	-152.2
4.000	0.907	-155.6	2.450	78.1	0.054	6.7	0.433	-154.1
5.000	0.912	-161.6	1.929	69.0	0.052	2.7	0.460	-157.6
6.000	0.911	-166.1	1.596	60.9	0.050	0.1	0.487	-158.3
7.000	0.920	-169.0	1.362	54.1	0.049	-2.2	0.512	-159.2
8.000	0.915	-171.1	1.181	47.7	0.047	-3.4	0.549	-161.0
9.000	0.919	-173.3	1.040	41.7	0.045	-4.5	0.586	-161.9
10.000	0.922	-176.1	0.922	35.7	0.041	-5.2	0.620	-162.0
11.000	0.925	-179.2	0.826	30.0	0.041	-6.2	0.647	-162.2
12.000	0.932	178.8	0.747	24.7	0.039	-7.5	0.673	-163.2
13.000	0.933	177.0	0.681	19.1	0.037	-7.5	0.690	-165.6
14.000	0.939	175.4	0.622	13.8	0.035	-7.7	0.716	-168.5
15.000	0.941	172.9	0.569	8.5	0.035	-7.0	0.739	-170.1
16.000	0.945	170.6	0.522	3.0	0.035	-6.4	0.752	-172.8
17.000	0.946	169.7	0.483	-2.1	0.035	-7.5	0.764	-177.3
18.000	0.952	170.3	0.452	-7.0	0.034	-6.2	0.776	176.4
19.000	0.955	170.4	0.421	-12.7	0.034	-6.5	0.791	169.8
20.000	0.955	168.7	0.387	-18.0	0.035	-3.8	0.813	164.9
21.000	0.954	160.5	0.359	-23.1	0.034	-5.3	0.835	168.3
22.000	0.948	158.1	0.327	-26.7	0.035	-2.1	0.847	166.2
23.000	0.958	157.0	0.303	-30.7	0.035	0.6	0.870	163.7
24.000	0.956	156.1	0.275	-33.9	0.036	2.9	0.876	162.1
25.000	0.961	155.3	0.251	-36.4	0.038	7.7	0.887	160.5
26.000	0.954	153.5	0.232	-39.0	0.036	10.4	0.897	160.1

Note: The data included 0.7 mils diameter Au bonding wires:
4 gate wires, 15 mils each; 4 drain wires, 20 mils each; 10 source wires, 7 mils each.