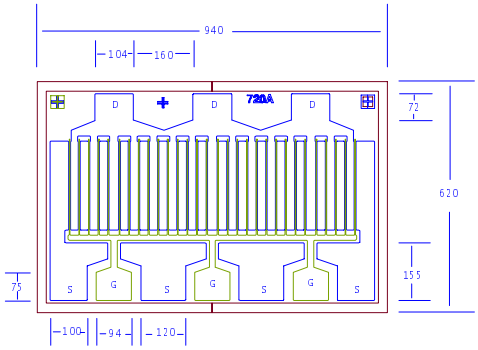
Excelics EFA720A

DATA SHEET

Low Distortion GaAs Power FET

- **+35.5dBm TYPICAL OUTPUT POWER**
- **17.5dB TYPICAL POWER GAIN AT 2GHz**
- **0.5 X 7200 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION AND PLATED HEAT SINK**
- **ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY**
- **Idss SORTED IN 120mA 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	33.5	35.5 35.5		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		36		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V		1200	2040	2640	mA
Gm	Transconductance Vds=3V, Vgs=0V		840	1100		mS
Vp	Pinch-off Voltage Vds=3V, Ids=20mA			-2.0	-3.5	V
BVgd	Drain Breakdown Voltage Igd=7.2mA		-12	-15		V
BVgs	Source Breakdown Voltage Igs=7.2mA		-7	-14		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)			6		°C/W

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE [1]	CONTINUOUS [2]
Vds	Drain-Source Voltage	12V	8V
Vgs	Gate-Source Voltage	-8V	-4V
Ids	Drain Current	Idss	2.4A
Igsf	Forward Gate Current	180mA	30mA
Pin	Input Power	34dBm	@3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	23 W	19 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	0.954	-139.8	7.651	105.9	0.018	25.1	0.664	-173.7
1.000	0.950	-160.3	4.004	92.2	0.019	20.5	0.680	-176.3
1.500	0.949	-168.0	2.694	84.8	0.020	22.1	0.685	-177.2
2.000	0.949	-172.3	2.027	79.1	0.020	25.1	0.689	-177.6
2.500	0.949	-175.1	1.624	74.1	0.021	28.5	0.692	-177.7
3.000	0.949	-177.3	1.354	69.5	0.022	32.1	0.696	-177.8
3.500	0.950	-179.1	1.161	65.2	0.023	35.5	0.700	-177.8
4.000	0.950	179.4	1.016	61.0	0.024	38.8	0.704	-177.9
4.500	0.951	178.1	0.903	57.0	0.025	41.8	0.709	-177.9
5.000	0.951	176.9	0.812	53.1	0.026	44.6	0.715	-178.0
5.500	0.952	175.7	0.737	49.3	0.028	47.2	0.720	-178.1
6.000	0.953	174.7	0.675	45.6	0.029	49.5	0.726	-178.2
6.500	0.953	173.6	0.621	42.0	0.031	51.6	0.733	-178.4
7.000	0.954	172.7	0.575	38.5	0.033	53.5	0.739	-178.6
7.500	0.955	171.7	0.535	35.1	0.034	55.2	0.746	-178.8
8.000	0.956	170.7	0.499	31.8	0.036	56.7	0.753	-179.0
8.500	0.957	169.8	0.468	28.6	0.038	58.0	0.760	-179.3
9.000	0.957	168.9	0.439	25.5	0.040	59.1	0.767	-179.6
9.500	0.958	168.0	0.413	22.6	0.042	60.1	0.774	-180.0
10.000	0.959	167.1	0.389	19.7	0.044	61.0	0.782	179.6

Note: The data included 0.7 mils diameter Au bonding wires:
3 gate wires, 20 mils each; 3 drain wires, 12 mils each; 8 source wires, 7 mils each.