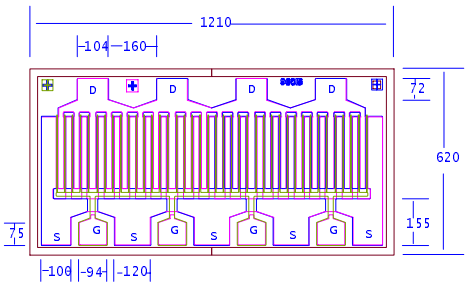
Excelics EFA960B

DATA SHEET

Low Distortion GaAs Power FET

- **+36.5dBm TYPICAL OUTPUT POWER**
- **16.0dB TYPICAL POWER GAIN AT 2GHz**
- **0.5 X 9600 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 160mA 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 f= 2GHz Vds=8V, Ids=50% Idss f= 4GHz	35.0	36.5 36.5		dBm
G_{1dB}	Gain at 1dB Compression f= 2GHz Vds=8V, Ids=50% Idss f= 4GHz	15.0	16.5 11.5		dB
PAE	Power Added Efficiency at 1dB Compression Vds=8V, Ids=50% Idss f= 2GHz		34		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V	1600	2720	3520	mA
Gm	Transconductance Vds=3V, Vgs=0V	1100	1450		mS
Vp	Pinch-off Voltage Vds=3V, Ids=25mA		-2.0	-3.5	V
BVgd	Drain Breakdown Voltage Igd=9.6mA	-12	-15		V
BVgs	Source Breakdown Voltage Igs=9.6mA	-7	-14		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)		5		°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	2.8A
Igsf	Forward Gate Current	240mA	40mA
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	27 W	23 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	0.963	-150.4	6.232	100.8	0.015	20.2	0.741	-176.3
1.000	0.962	-165.8	3.195	89.5	0.015	18.3	0.750	-177.8
1.500	0.961	-171.5	2.140	83.1	0.016	21.0	0.753	-178.3
2.000	0.961	-174.6	1.608	77.9	0.016	24.7	0.755	-178.5
2.500	0.962	-176.7	1.287	73.2	0.017	28.6	0.758	-178.5
3.000	0.962	-178.3	1.072	68.9	0.018	32.5	0.761	-178.5
3.500	0.962	-179.6	0.919	64.7	0.018	36.2	0.764	-178.6
4.000	0.962	179.2	0.803	60.7	0.019	39.7	0.768	-178.6
4.500	0.963	178.2	0.713	56.8	0.020	42.9	0.772	-178.6
5.000	0.963	177.3	0.641	53.0	0.021	45.9	0.776	-178.6
5.500	0.964	176.4	0.582	49.3	0.022	48.6	0.781	-178.7
6.000	0.964	175.6	0.532	45.8	0.024	51.0	0.786	-178.8
6.500	0.965	174.8	0.490	42.3	0.025	53.2	0.791	-178.9
7.000	0.965	174.1	0.453	38.9	0.026	55.2	0.797	-179.0
7.500	0.966	173.3	0.421	35.7	0.028	56.9	0.802	-179.2
8.000	0.966	172.6	0.392	32.5	0.029	58.5	0.808	-179.4
8.500	0.967	171.9	0.367	29.5	0.031	59.9	0.814	-179.6
9.000	0.968	171.2	0.344	26.6	0.033	61.1	0.819	-179.8
9.500	0.968	170.5	0.324	23.7	0.034	62.2	0.825	179.9
10.000	0.969	169.8	0.305	21.0	0.036	63.2	0.831	179.6

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.