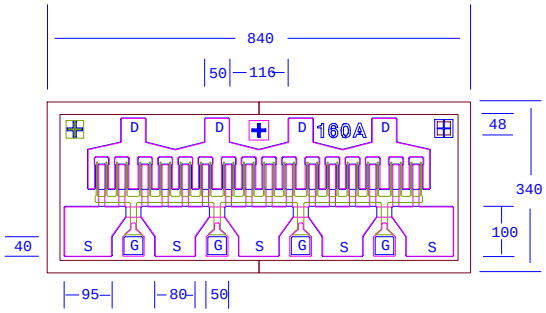
Excelics EFA160A

DATA SHEET

Low Distortion GaAs Power FET

- **+29.0dBm TYPICAL OUTPUT POWER**
- **9.0dB TYPICAL POWER GAIN AT 12GHz**
- **0.3 X 1600 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY**
- **Idss SORTED IN 30mA 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=8V, Ids=50% Idss	f=12GHz f=18GHz	27.0	29.0 29.0		dBm
G_{1dB}	Gain at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz f=18GHz	7.0	9.0 6.5		dB
PAE	Gain at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz		34		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V		260	420	600	mA
Gm	Transconductance Vds=3V, Vgs=0V		180	240		mS
Vp	Pinch-off Voltage Vds=3V, Ids=4.0mA			-2.0	-3.5	V
BVgd	Drain Breakdown Voltage Igd=1.6mA		-12	-15		V
BVgs	Source Breakdown Voltage Igs=1.6mA		-7	-14		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)			30		°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	475mA
Igsf	Forward Gate Current	40mA	7mA
Pin	Input Power	28dBm	@ 3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	4.5W	3.8W

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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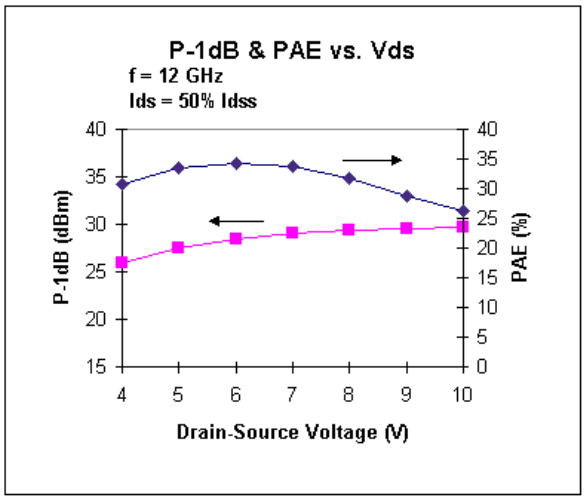

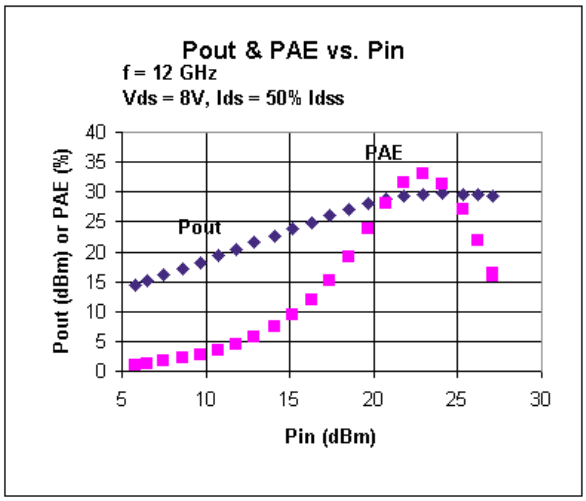

S-PARAMETERS

8V, 1/2 Idss

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.936	-81.9	9.025	133.3	0.035	48.7	0.221	-106.2
2.0	0.911	-119.8	5.964	108.8	0.047	27.7	0.285	-132.0
3.0	0.903	-138.7	4.275	94.5	0.050	18.4	0.319	-141.6
4.0	0.903	-149.8	3.297	84.3	0.050	13.0	0.347	-145.0
5.0	0.900	-157.8	2.644	75.5	0.049	9.3	0.382	-147.5
6.0	0.903	-162.4	2.207	68.6	0.048	6.4	0.413	-148.0
7.0	0.905	-165.8	1.884	62.3	0.047	5.6	0.445	-148.7
8.0	0.908	-168.0	1.640	56.4	0.046	3.6	0.476	-149.5
9.0	0.913	-170.0	1.451	51.2	0.044	3.1	0.510	-150.4
10.0	0.914	-171.8	1.297	46.2	0.042	3.9	0.536	-151.0
11.0	0.918	-173.7	1.172	41.0	0.041	3.2	0.563	-152.2
12.0	0.920	-175.2	1.067	36.1	0.039	2.6	0.592	-153.8
13.0	0.924	-177.4	0.977	31.0	0.038	2.9	0.612	-155.2
14.0	0.925	-179.9	0.901	25.9	0.038	1.8	0.635	-157.2
15.0	0.925	177.5	0.836	20.8	0.038	1.6	0.653	-159.4
16.0	0.929	174.2	0.775	15.4	0.038	0.7	0.675	-161.8
17.0	0.927	171.0	0.721	10.0	0.037	1.5	0.688	-164.7
18.0	0.928	167.6	0.670	4.6	0.037	2.2	0.706	-167.7
19.0	0.927	164.8	0.626	-0.6	0.037	1.4	0.721	-171.1
20.0	0.931	162.1	0.580	-5.4	0.037	1.0	0.738	-174.6
21.0	0.945	162.3	0.502	-9.7	0.036	2.4	0.771	-178.4
22.0	0.951	161.1	0.469	-13.0	0.033	2.9	0.786	178.6
23.0	0.960	159.9	0.433	-16.9	0.035	5.0	0.803	176.2
24.0	0.961	159.6	0.409	-20.1	0.037	8.9	0.821	174.3
25.0	0.973	159.3	0.391	-22.7	0.037	10.9	0.831	172.5
26.0	0.969	159.6	0.368	-24.8	0.039	10.8	0.849	170.6

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.