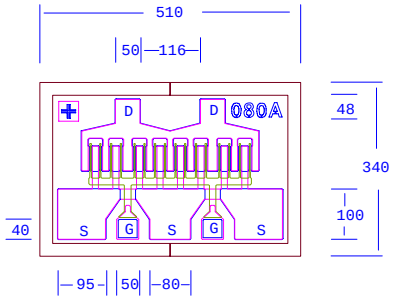
Excelics EFA080A

DATA SHEET

Low Distortion GaAs Power FET

- **+26.0dBm TYPICAL OUTPUT POWER**
- **10.0dB TYPICAL POWER GAIN AT 12GHz**
- **0.3 X 800 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY**
- **Idss SORTED IN 15mA 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 f=12GHz Vds=8V, Ids=50% Idss f=18GHz	24.0	26.0 26.0		dBm
G_{1dB}	Gain at 1dB Compression f=12GHz Vds=8V, Ids=50% Idss f=18GHz	8.0	10.0 7.5		dB
PAE	Power Added Efficiency at 1dB Compression Vds=8V, Ids=50% Idss f=12GHz		35		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V	130	210	300	mA
Gm	Transconductance Vds=3V, Vgs=0V	90	120		mS
Vp	Pinch-off Voltage Vds=3V, Ids=2.0mA		-2.0	-3.5	V
BVgd	Drain Breakdown Voltage Igd=1.0mA	-12	-15		V
BVgs	Source Breakdown Voltage Igs=1.0mA	-7	-14		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)		55		°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	260mA
Igsf	Forward Gate Current	20mA	4mA
Pin	Input Power	25dBm	@ 3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	2.5 W	2.1 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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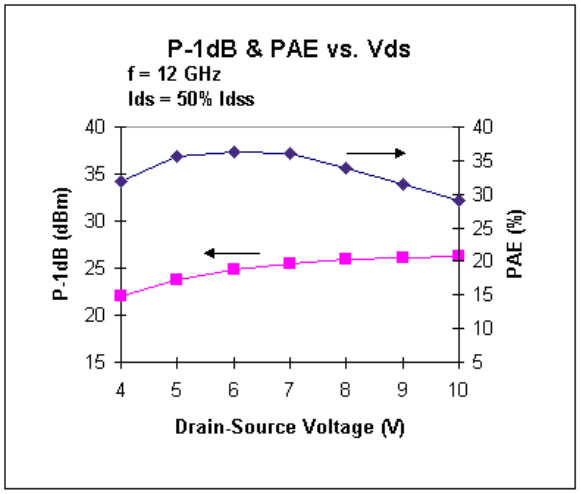

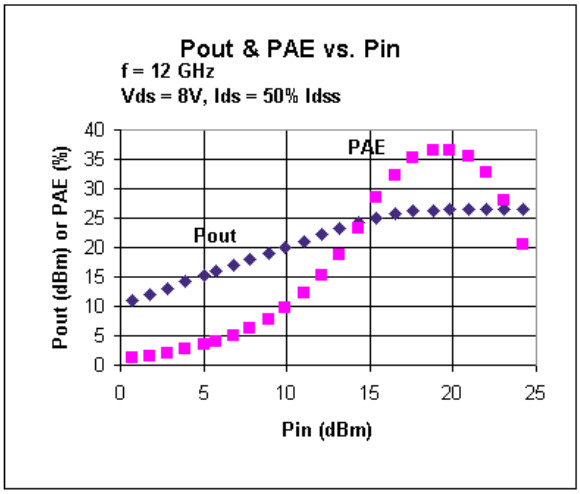

S-PARAMETERS

8V, 1/2 Idss

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.983	-38.9	6.602	158.2	0.029	65.4	0.421	-24.5
2.0	0.949	-71.6	5.927	135.8	0.050	49.2	0.380	-45.7
3.0	0.916	-96.5	4.998	118.0	0.061	36.4	0.343	-62.4
4.0	0.894	-115.4	4.191	104.1	0.066	27.2	0.326	-75.6
5.0	0.879	-130.5	3.536	92.2	0.068	19.6	0.327	-87.3
6.0	0.873	-140.5	3.028	82.8	0.069	14.5	0.339	-95.6
7.0	0.871	-148.3	2.628	74.6	0.068	10.3	0.359	-102.4
8.0	0.869	-154.1	2.311	67.5	0.067	7.4	0.382	-107.5
9.0	0.872	-158.8	2.058	61.1	0.065	3.8	0.408	-111.9
10.0	0.872	-162.7	1.857	55.2	0.063	3.0	0.433	-115.1
11.0	0.873	-166.5	1.689	49.5	0.061	1.8	0.457	-118.4
12.0	0.876	-169.7	1.557	43.9	0.060	1.0	0.478	-121.4
13.0	0.879	-173.3	1.446	38.4	0.058	-0.9	0.495	-124.4
14.0	0.880	-177.4	1.356	32.9	0.059	-2.3	0.511	-127.6
15.0	0.882	178.3	1.276	27.2	0.057	-2.9	0.522	-131.2
16.0	0.886	173.2	1.207	20.9	0.057	-4.6	0.532	-135.3
17.0	0.889	168.2	1.141	14.6	0.057	-5.7	0.542	-140.3
18.0	0.892	162.8	1.075	8.3	0.058	-7.1	0.557	-145.3
19.0	0.897	157.9	1.010	1.7	0.057	-8.0	0.568	-151.5
20.0	0.905	153.4	0.949	-4.6	0.057	-9.8	0.585	-157.6
21.0	0.923	152.7	0.829	-9.6	0.053	-9.0	0.627	-165.3
22.0	0.928	150.2	0.769	-14.6	0.053	-9.5	0.650	-170.5
23.0	0.936	147.8	0.713	-19.7	0.052	-7.8	0.680	-174.4
24.0	0.939	146.5	0.664	-23.8	0.052	-5.4	0.706	-177.2
25.0	0.945	145.2	0.624	-27.3	0.053	-3.9	0.728	-179.7
26.0	0.944	144.7	0.592	-30.4	0.053	0.4	0.753	179.1

Note: The data included 0.7 mils diameter Au bonding wires:
2 gate wires, 15 mils each; 2 drain wires, 20 mils each; 6 source wires, 7 mils each.