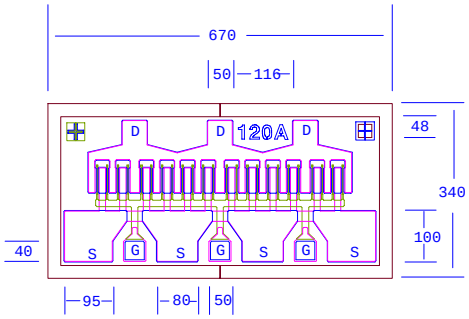
Excelics EFA120A

DATA SHEET

Low Distortion GaAs Power FET

- **+28.0dBm TYPICAL OUTPUT POWER**
- **9.5dB TYPICAL POWER GAIN AT 12GHz**
- **0.3 X 1200 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY**
- **Idss SORTED IN 20mA 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	26.0	28.0 28.0		dBm
G_{1dB}	Gain at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz f=18GHz	8.0	9.5 7.0		dB
PAE	Power Added Efficiency at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz		34		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V		200	340	440	mA
Gm	Transconductance Vds=3V, Vgs=0V		140	180		mS
Vp	Pinch-off Voltage Vds=3V, Ids=3.0mA			-2.0	-3.5	V
BVgd	Drain Breakdown Voltage Igd=1.2mA		-12	-15		V
BVgs	Source Breakdown Voltage Igs=1.2mA		-7	-14		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)			37		°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	385mA
Igsf	Forward Gate Current	30mA	5mA
Pin	Input Power	26dBm	@ 3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	3.7 W	3.1 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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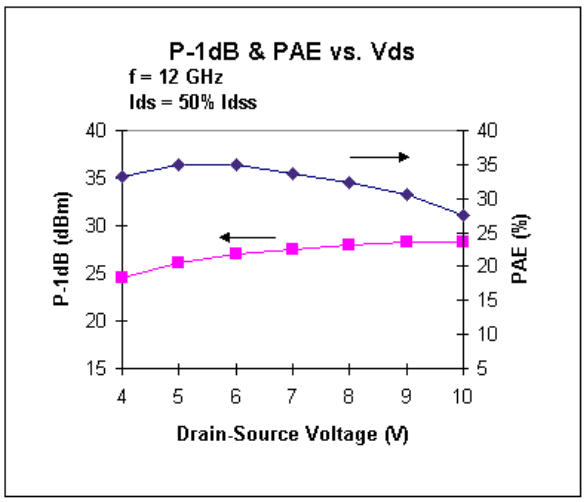

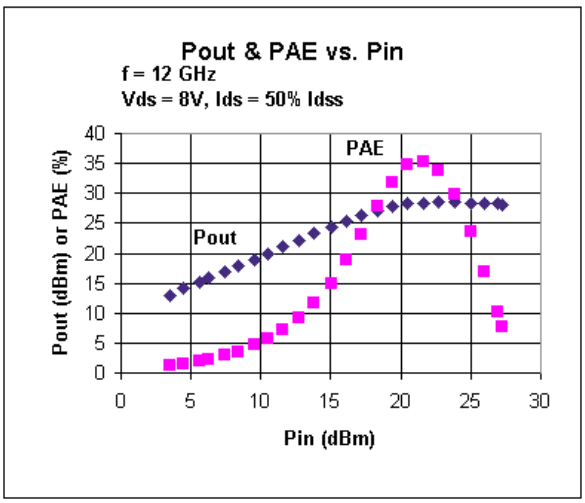

S-PARAMETERS

8V, 1/2 Idss

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.943	-63.6	9.082	141.1	0.034	54.8	0.243	-57.3
2.0	0.912	-102.6	6.636	117.0	0.049	36.0	0.247	-92.6
3.0	0.896	-125.1	4.987	101.3	0.055	24.4	0.259	-111.5
4.0	0.892	-139.2	3.926	89.9	0.057	17.1	0.280	-121.4
5.0	0.889	-149.7	3.190	80.2	0.056	12.6	0.309	-128.0
6.0	0.890	-155.8	2.675	72.6	0.056	9.4	0.337	-131.7
7.0	0.892	-160.3	2.294	65.8	0.055	7.0	0.369	-134.6
8.0	0.895	-163.5	2.003	59.7	0.053	5.4	0.399	-136.9
9.0	0.898	-166.1	1.773	54.1	0.051	3.7	0.430	-139.1
10.0	0.899	-168.3	1.588	48.9	0.048	3.2	0.457	-140.9
11.0	0.903	-170.5	1.442	43.6	0.047	2.4	0.484	-143.3
12.0	0.906	-172.2	1.318	38.6	0.047	2.8	0.508	-145.6
13.0	0.911	-174.5	1.215	33.6	0.045	2.3	0.530	-148.4
14.0	0.912	-177.1	1.128	28.4	0.044	1.8	0.550	-151.3
15.0	0.914	-179.8	1.055	23.0	0.044	1.7	0.570	-154.9
16.0	0.919	176.8	0.986	17.3	0.044	1.3	0.587	-158.8
17.0	0.921	173.2	0.926	11.6	0.044	0.1	0.605	-163.1
18.0	0.924	169.5	0.868	5.7	0.045	-0.2	0.625	-167.3
19.0	0.927	166.1	0.811	-0.2	0.045	-1.6	0.643	-172.3
20.0	0.931	162.8	0.757	-5.8	0.045	-1.7	0.666	-176.9
21.0	0.947	162.4	0.655	-10.0	0.041	-1.6	0.705	178.4
22.0	0.952	160.7	0.608	-14.5	0.042	-0.3	0.726	174.7
23.0	0.957	158.9	0.564	-18.9	0.043	1.2	0.749	172.0
24.0	0.959	158.2	0.527	-22.6	0.043	4.5	0.769	169.7
25.0	0.965	157.5	0.499	-25.5	0.043	7.3	0.785	167.5
26.0	0.968	157.2	0.474	-29.0	0.046	10.0	0.803	166.2

Note: The data included 0.7 mils diameter Au bonding wires:
3 gate wires, 15 mils each; 3 drain wires, 20 mils each; 8 source wires, 7 mils each.