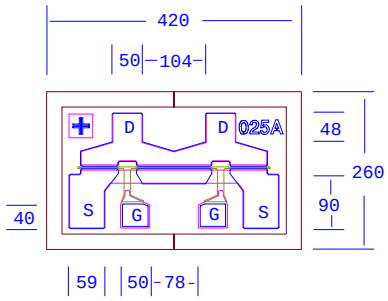
Excelics EFA025AL

DATA SHEET

High Gain GaAs Power FET

- **+20.0dBm TYPICAL OUTPUT POWER**
- **11.5dB TYPICAL POWER GAIN AT 12GHz**
- **0.3 X 250 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY**
- **Idss SORTED IN 5mA 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	17.0	20.0 20.0		dBm
G_{1dB}	Gain at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz f=18GHz	9.5	11.5 9.0		dB
PAE	Power Added efficiency at 1dB Compression Vds=8V, Ids=50% Idss	f=12GHz		38		%
Idss	Saturated Drain Current Vds=3V, Vgs=0V		20	45	65	mA
Gm	Transconductance Vds=3V, Vgs=0V		30	50		mS
Vp	Pinch-off Voltage Vds=3V, Ids=1.0mA			-1.5	-2.5	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)			155		°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	Idss
Igsf	Forward Gate Current	6mA	1mA
Pin	Input Power	19dBm	@ 3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	880mW	730mW

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	0.990	-19.8	5.439	163.7	0.014	78.3	0.787	-7.4
2.0	0.970	-38.4	5.095	150.4	0.027	68.7	0.772	-14.1
3.0	0.927	-55.0	4.719	137.3	0.037	58.7	0.751	-20.6
4.0	0.895	-69.0	4.328	126.3	0.043	52.7	0.727	-26.3
5.0	0.862	-81.3	3.961	116.0	0.049	45.8	0.709	-32.1
6.0	0.838	-91.8	3.630	107.0	0.051	41.8	0.692	-37.1
7.0	0.815	-101.4	3.327	98.8	0.054	37.2	0.681	-42.0
8.0	0.802	-110.2	3.078	90.9	0.055	33.0	0.675	-46.6
9.0	0.779	-118.3	2.822	83.7	0.056	28.4	0.663	-51.0
10.0	0.769	-125.4	2.613	77.3	0.053	25.0	0.655	-54.8
11.0	0.765	-132.3	2.436	71.1	0.052	23.8	0.651	-58.5
12.0	0.764	-139.0	2.285	64.8	0.051	22.4	0.645	-62.0
13.0	0.769	-144.9	2.150	58.9	0.051	20.1	0.636	-65.3
14.0	0.771	-150.5	2.032	53.3	0.050	19.7	0.628	-69.1
15.0	0.779	-155.4	1.945	47.5	0.051	20.2	0.619	-73.7
16.0	0.781	-159.8	1.852	41.3	0.053	20.5	0.614	-79.6
17.0	0.786	-163.1	1.783	35.8	0.056	19.3	0.593	-86.9
18.0	0.793	-166.7	1.732	29.6	0.061	17.0	0.580	-95.4
19.0	0.794	-170.0	1.674	22.7	0.063	16.1	0.577	-105.2
20.0	0.786	-173.1	1.607	15.7	0.067	14.6	0.582	-116.6
21.0	0.773	-175.2	1.505	9.1	0.070	12.7	0.590	-128.3
22.0	0.762	-177.7	1.437	3.0	0.071	13.3	0.604	-138.3
23.0	0.763	-179.9	1.368	-2.4	0.076	16.5	0.637	-146.1
24.0	0.762	176.7	1.305	-8.5	0.083	16.6	0.678	-153.2
25.0	0.759	173.1	1.235	-14.3	0.088	16.8	0.703	-158.7
26.0	0.753	170.5	1.168	-18.0	0.092	17.9	0.721	-161.8

Note: The data included 0.7 mils diameter Au bonding wires:
2 gate wires, 15 mils each; 2 drain wires, 20 mils each; 4 source wires, 7 mils each.