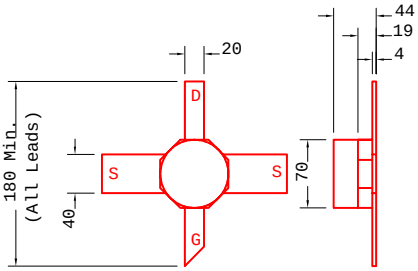
Excelics

EFA018A-70

DATA SHEET

Low Distortion GaAs Power FET

- **NON-HERMETIC LOW COST CERAMIC 70mil PACKAGE**
- **+18.5dBm TYPICAL OUTPUT POWER**
- **10.5dB TYPICAL POWER GAIN AT 12GHz**
- **TYPICAL 1.1dB NOISE FIGURE AND 10.5dB ASSOCIATED GAIN AT 12GHz**
- **0.3 X 180 MICRON RECESSED "MUSHROOM" GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY**



All Dimensions In mils.

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOLS	PARAMETERS/TEST CONDITIONS		MIN	TYP	MAX	UNIT
P_{1dB}	Output Power at 1dB Compression Vds=6V, Ids=50% Idss	f=12GHz f=18GHz	16.5	18.5 18.5		dBm
G_{1dB}	Gain at 1dB Compression Vds=6V, Ids=50% Idss	f=12GHz f=18GHz	9.0	10.5 8.0		dB
PAE	Power Added Efficiency at 1dB Compression Vds=6V, Ids=50% Idss	f=12GHz		33		%
NF	Noise Figure Vds=2V, Ids=15mA	f=12GHz		1.1		dB
Ga	Associated Gain Vds=2V, Ids=15mA	f=12GHz		10.5		dB
Idss	Saturated Drain Current Vds=3V, Vgs=0V		25	50	80	mA
Gm	Transconductance Vds=3V, Vgs=0V		20	30		mS
Vp	Pinch-off Voltage Vds=3V, Ids=1.0 mA			-2.0	-3.5	V
BVgd	Drain Breakdown Voltage Igd=0.5mA		-10	-15		V
BVgs	Source Breakdown Voltage Igs=0.5mA		-6	-14		V
Rth	Thermal Resistance			480*		°C/W

*** Overall Rth depends on case mounting.**

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE[1]	CONTINUOUS[2]
Vds	Drain-Source Voltage	10V	6V
Vgs	Gate-Source Voltage	-6V	-4V
Ids	Drain Current	Idss	40mA
Igsf	Forward Gate Current	4mA	0.7mA
Pin	Input Power	17dBm	@ 3dB Compression
Tch	Channel Temperature	175°C	150 °C
Tstg	Storage Temperature	-65/175°C	-65/150 °C
Pt	Total Power Dissipation	285mW	240mW

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

6V, 1/2 Idss

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.992	-15.2	2.467	164.6	0.013	80.7	0.813	-9.6
2.0	0.973	-31.3	2.404	148.7	0.024	66.9	0.799	-21.0
3.0	0.948	-47.1	2.307	133.4	0.033	56.3	0.788	-32.1
4.0	0.927	-62.2	2.278	119.2	0.040	47.1	0.778	-40.9
5.0	0.896	-76.8	2.271	105.4	0.046	38.0	0.757	-49.5
6.0	0.862	-89.8	2.217	91.4	0.050	28.7	0.730	-60.6
7.0	0.824	-103.6	2.144	77.5	0.050	18.8	0.709	-71.2
8.0	0.785	-116.7	2.099	64.5	0.047	8.7	0.679	-80.0
9.0	0.745	-137.4	2.141	50.1	0.043	6.9	0.675	-85.5
10.0	0.712	-157.8	2.132	34.6	0.041	4.4	0.658	-95.2
11.0	0.685	-167.8	2.113	21.5	0.039	4.7	0.636	-109.4
12.0	0.659	178.6	2.119	8.0	0.039	11.3	0.625	-121.6
13.0	0.661	151.4	2.080	-9.0	0.043	10.3	0.608	-130.8
14.0	0.678	126.4	1.968	-26.0	0.047	7.7	0.598	-141.9
15.0	0.668	112.7	1.941	-42.0	0.053	3.2	0.600	-161.3
16.0	0.663	96.6	1.927	-58.8	0.059	-4.7	0.592	-179.9
17.0	0.681	77.3	1.733	-74.2	0.059	-3.2	0.558	170.3
18.0	0.716	64.4	1.654	-86.1	0.081	-17.9	0.607	158.0
19.0	0.704	48.0	1.596	-103.7	0.070	-34.8	0.622	135.6
20.0	0.736	30.3	1.560	-120.9	0.071	-45.7	0.677	119.0
21.0	0.799	18.9	1.480	-136.6	0.072	-58.3	0.666	107.4
22.0	0.786	7.3	1.378	-151.5	0.067	-77.2	0.676	95.1
23.0	0.753	-11.7	1.305	-170.3	0.060	-97.4	0.674	76.0
24.0	0.771	-30.9	1.249	169.6	0.055	-120.5	0.671	57.6
25.0	0.753	-43.1	1.245	152.3	0.055	-141.1	0.655	42.6
26.0	0.720	-58.4	1.255	136.8	0.060	-161.3	0.649	28.8