

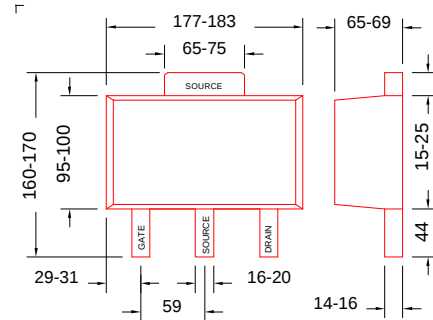
PRELIMINARY DATA SHEET

DC-4GHz

Low Distortion GaAs Power FET

Features

- LOW COST SURFACE-MOUNT PLASTIC PACKAGE
- +28.0dBm TYPICAL OUTPUT POWER
- 14.0dB TYPICAL POWER GAIN AT 2GHz
- 0.7dB TYPICAL NOISE FIGURE AT 2GHz
- +42dBm TYPICAL OUTPUT 3rd ORDER INTERCEPT POINT AT 2GHz
- 0.5 X 2400 MICRON RECESSED “MUSHROOM” GATE
- Si₃N₄ PASSIVATION
- ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY



(Top View)

All Dimensions In Mils

Applications

- Analog and Digital Wireless System
- HPA

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOLS	PARAMETERS/TEST CONDITIONS	MIN	TYP	MAX	UNIT
P _{1dB}	Output Power at 1dB Compression f = 2GHz V _{ds} =7V, I _{ds} =180mA	26.5	28.0		dBm
G _{1dB}	Gain at 1dB Compression f = 2GHz V _{ds} =7V, I _{ds} =180mA	12.0	14.0		dB
PAE	Power Added Efficiency at 1dB Compression V _{ds} =7V, I _{ds} =180mA f = 2GHz		45		%
NF	Noise Figure f = 2GHz V _{ds} =5V, I _{ds} =75mA V _{ds} =5-7V, I _{ds} =180mA		0.7 1.2		dB
IP3	Output 3rd Order Intercept Point f = 2GHz V _{ds} =5-7V, I _{ds} =180mA V _{ds} =5V, I _{ds} =75mA		42 33		dBm
I _{dss}	Saturated Drain Current V _{ds} =3V, V _{gs} =0V	220	340	440	mA
G _m	Transconductance V _{ds} =3V, V _{gs} =0V	140	180		mS
V _p	Pinch-off Voltage V _{ds} =3V, I _{ds} =3mA		-2.0	-3.5	V
BV _{gd}	Drain Breakdown Voltage I _{gd} =1.2mA	-11	-15		V
BV _{gs}	Source Breakdown Voltage I _{gs} =1.2mA	-7	-14		V
R _{th}	Thermal Resistance		43*		°C/W

 *Overall R_{th} depends on case mounting.

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
V _{ds}	Drain-Source Voltage	12V	7V
V _{gs}	Gate-Source Voltage	-8V	-4V
I _{ds}	Drain Current	I _{dss}	390mA
I _{gsf}	Forward Gate Current	30mA	5mA
P _{in}	Input Power	26dBm	@ 3dB Compression
T _{ch}	Channel Temperature	175°C	150°C
T _{stg}	Storage Temperature	-65/175°C	-65/150°C
P _t	Total Power Dissipation	3.2 W	2.7 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.

Excelics Semiconductor, Inc., 2908 Scott Blvd., Santa Clara, CA 95054
Phone: (408) 970-8664 Fax: (408) 970-8998 Web Site: www.excelics.com

EFA120D-SOT89

PRELIMINARY DATA SHEET

DC-4GHz

Low Distortion GaAs Power FET

S-PARAMETERS

5V, 75mA									7V, 180mA								
FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---		FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
GHz	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang	GHz	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
0.1	0.974	-17.9	13.178	168.4	0.010	60.8	0.101	-48.3	0.1	0.988	-18.5	13.317	168.2	0.017	83.2	0.191	-33.8
0.2	0.983	-35.1	12.865	157.8	0.022	69.6	0.155	-78.1	0.2	0.990	-34.6	12.905	158.0	0.020	71.4	0.203	-52.2
0.3	0.969	-51.2	12.209	147.6	0.030	63.9	0.199	-94.1	0.3	0.981	-50.5	12.292	147.9	0.030	64.1	0.225	-71.4
0.4	0.955	-65.9	11.496	138.5	0.039	54.6	0.240	-108.2	0.4	0.974	-65.4	11.665	138.3	0.037	56.5	0.251	-86.8
0.5	0.942	-79.0	10.720	129.8	0.045	49.7	0.272	-118.3	0.5	0.958	-78.3	10.901	129.7	0.043	49.6	0.270	-98.8
1.0	0.865	-126.8	7.356	97.3	0.063	26.6	0.361	-151.1	1.0	0.867	-127.0	7.393	96.7	0.060	25.1	0.311	-137.9
1.5	0.742	-142.0	5.973	82.1	0.080	20.0	0.220	-155.8	1.5	0.772	-142.2	5.984	81.2	0.075	18.8	0.192	-131.4
2.0	0.706	-167.6	4.781	62.6	0.087	8.9	0.225	-179.9	2.0	0.712	-167.8	4.755	61.3	0.081	7.5	0.174	-157.6
2.5	0.681	171.4	4.029	45.6	0.095	-0.7	0.222	163.7	2.5	0.688	169.6	4.027	43.8	0.089	-2.0	0.174	-171.2
3.0	0.657	151.4	3.532	29.1	0.104	-10.4	0.210	148.2	3.0	0.667	149.4	3.515	26.8	0.095	-11.7	0.157	172.8
3.5	0.648	129.1	3.169	11.6	0.112	-21.5	0.202	127.5	3.5	0.653	127.5	3.159	9.3	0.103	-21.9	0.135	152.4
4.0	0.665	104.9	2.812	-6.5	0.118	-33.4	0.218	100.6	4.0	0.673	102.8	2.804	-9.2	0.107	-33.5	0.135	115.7
4.5	0.704	81.9	2.443	-24.7	0.119	-45.7	0.276	73.7	4.5	0.712	81.5	2.430	-27.0	0.109	-44.7	0.180	75.4
5.0	0.755	63.3	2.080	-41.3	0.116	-57.4	0.356	54.0	5.0	0.762	63.3	2.093	-43.6	0.107	-55.7	0.258	52.4
5.5	0.796	49.1	1.769	-56.1	0.110	-67.6	0.437	39.0	5.5	0.802	48.8	1.789	-59.0	0.102	-65.1	0.347	37.1
6.0	0.826	36.7	1.520	-70.2	0.105	-76.9	0.496	26.8	6.0	0.827	35.5	1.556	-73.1	0.099	-73.7	0.413	27.0