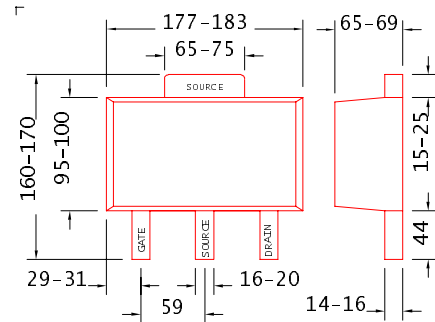


DATA SHEET
DC-4GHz Low Distortion GaAs Power FET
Features

- **LOW COST SURFACE-MOUNT PLASTIC PACKAGE**
- **+31.0dBm TYPICAL OUTPUT POWER**
- **13.0dB TYPICAL POWER GAIN AT 2GHz**
- **0.7dB TYPICAL NOISE FIGURE AT 2GHz**
- **+48dBm 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} =350mA	29.5	31.0		dBm
G_{1dB}	Gain at 1dB Compression f = 2GHz V _{ds} =7V, I _{ds} =350mA	11.0	13.0		dB
PAE	Power Added Efficiency at 1dB Compression V _{ds} =7V, I _{ds} =350mA f = 2GHz		45		%
NF	Noise Figure f = 2GHz V _{ds} =5V, I _{ds} =150mA V _{ds} =5-7V, I _{ds} =350mA		0.7 1.2		dB
IP3	Output 3rd Order Intercept Point f = 2GHz V _{ds} =5-7V, I _{ds} =350mA V _{ds} =5V, I _{ds} =150mA		48 36		dBm
I_{dss}	Saturated Drain Current V _{ds} =3V, V _{gs} =0V	440	680	880	mA
G_m	Transconductance V _{ds} =3V, V _{gs} =0V	280	360		mS
V_p	Pinch-off Voltage V _{ds} =3V, I _{ds} =6mA		-2.0	-3.5	V
BV_{gd}	Drain Breakdown Voltage I _{gd} =2.4mA	-11	-15		V
BV_{gs}	Source Breakdown Voltage I _{gs} =2.4mA	-7	-14		V
R_{th}	Thermal Resistance		25*		°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}	660mA
I_{gsf}	Forward Gate Current	60mA	10mA
P_{in}	Input Power	29dBm	@ 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	5.5 W	4.6 W

Note: 1. Exceeding any of the above ratings may result in permanent damage.

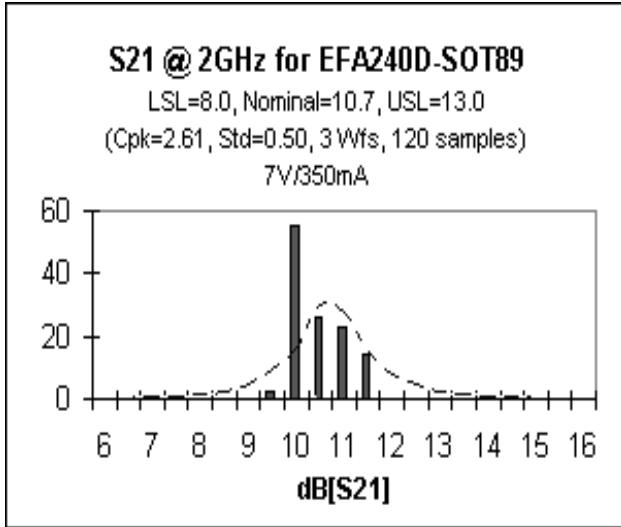
2. Exceeding any of the above ratings may reduce MTTF below design goals.

EFA240D-SOT89

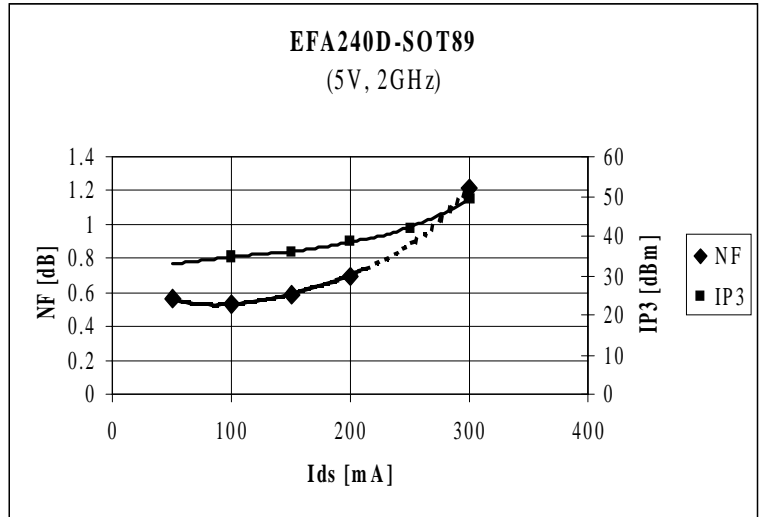
DATA SHEET DC-4GHz Low Distortion GaAs Power FET

Typical Performance

S21 Distribution



Noise Figure & IP3



S-PARAMETERS

FREQ (GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.1	0.980	-29.5	15.580	162.1	0.009	50.3	0.273	-165.8
0.2	0.964	-56.5	14.250	147.1	0.024	61.6	0.348	-155.7
0.3	0.942	-78.3	12.624	134.2	0.029	51.8	0.407	-157.6
0.4	0.923	-96.1	11.069	123.8	0.035	43.6	0.459	-161.2
0.5	0.907	-110.1	9.717	115.0	0.039	38.2	0.494	-165.6
1.0	0.870	-152.5	5.742	86.6	0.048	23.1	0.547	-179.8
1.5	0.765	-170.0	4.782	72.1	0.064	19.6	0.439	166.2
2.0	0.750	169.6	3.721	55.6	0.072	13.1	0.445	154.7
2.5	0.735	152.7	3.092	40.9	0.080	6.1	0.435	144.6
3.0	0.723	137.1	2.697	26.0	0.090	-1.9	0.420	133.7
3.5	0.722	119.8	2.411	10.4	0.101	-10.8	0.399	120.3
4.0	0.721	101.3	2.140	-6.9	0.110	-22.6	0.401	101.6
4.5	0.744	82.8	1.849	-23.5	0.113	-33.8	0.433	81.3
5.0	0.781	66.2	1.577	-38.8	0.113	-45.0	0.495	65.4
5.5	0.812	52.3	1.353	-52.7	0.110	-55.3	0.550	54.0
6.0	0.830	40.0	1.174	-65.7	0.109	-64.7	0.582	44.3

S-PARAMETERS

FREQ (GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.1	0.970	-32.8	17.023	161.5	0.019	75.7	0.148	-137.8
0.2	0.952	-58.4	15.321	145.4	0.023	58.2	0.241	-133.9
0.3	0.927	-80.6	13.396	132.4	0.030	49.9	0.312	-140.8
0.4	0.911	-98.4	11.673	121.9	0.034	41.9	0.362	-147.9
0.5	0.896	-112.	10.188	113.2	0.039	36.0	0.395	-154.6
1.0	0.861	-154.0	5.962	84.6	0.047	19.8	0.442	-171.7
1.5	0.760	-171.3	4.853	70.1	0.060	16.8	0.319	177.2
2.0	0.748	168.6	3.767	53.3	0.066	10.5	0.326	165.5
2.5	0.735	152.1	3.119	38.2	0.072	4.7	0.318	156.6
3.0	0.724	136.7	2.707	23.3	0.080	-1.6	0.303	147.2
3.5	0.725	119.5	2.413	7.7	0.089	-9.6	0.281	135.1
4.0	0.724	101.0	2.147	-9.5	0.096	-19.9	0.274	115.1
4.5	0.746	82.6	1.863	-26.3	0.100	-30.0	0.299	91.3
5.0	0.785	66.1	1.605	-42.2	0.102	-40.0	0.364	73.1
5.5	0.817	52.3	1.388	-56.5	0.102	-49.7	0.428	61.2
6.0	0.835	40.0	1.206	-70.0	0.102	-59.0	0.471	51.4