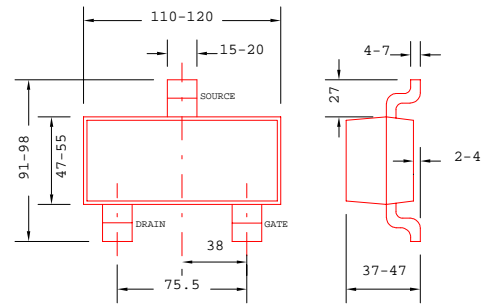


**PRELIMINARY DATA SHEET**
**DC-6GHz High Efficiency Heterojunction Power FET**

- **LOW COST SURFACE-MOUNT PLASTIC PACKAGE**
- **+20.0dBm TYPICAL OUTPUT POWER**
- **17.0dB TYPICAL POWER GAIN AT 2GHz**
- **0.7dB TYPICAL NOISE FIGURE AT 2GHz**
- **+27dBm TYPICAL OUTPUT 3rd ORDER INTERCEPT POINT AT 2GHz**
- **0.3 X 180 MICRON RECESSED “MUSHROOM” GATE**
- **Si<sub>3</sub>N<sub>4</sub> PASSIVATION**
- **ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY**



(Top View)  
All Dimensions In Mils

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25 °C)**

SYMBOLS	PARAMETERS/TEST CONDITIONS		MIN	TYP	MAX	UNIT
<b>P<sub>1dB</sub></b>	Output Power at 1dB Compression	f=2GHz V <sub>ds</sub> =6V, I <sub>ds</sub> =30mA	18.0	20.0		dBm
<b>G<sub>1dB</sub></b>	Gain at 1dB Compression	f=2GHz V <sub>ds</sub> =6V, I <sub>ds</sub> =30mA	15.0	17.0		dB
<b>NF</b>	Noise Figure, V <sub>ds</sub> =2V, I <sub>ds</sub> =15mA	f=2GHz V <sub>ds</sub> =6V, I <sub>ds</sub> =30mA		0.7 0.9		dB
<b>IP3</b>	Output 3rd Order Intercept Point	f=2GHz V <sub>ds</sub> =6V, I <sub>ds</sub> =30mA		27		dBm
<b>I<sub>dss</sub></b>	Saturated Drain Current	V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	30	55	80	mA
<b>G<sub>m</sub></b>	Transconductance	V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	35	60		mS
<b>V<sub>p</sub></b>	Pinch-off Voltage	V <sub>ds</sub> =3V, I <sub>ds</sub> =1.0mA		-1.0	-2.5	V
<b>BV<sub>gd</sub></b>	Drain Breakdown Voltage	I <sub>gd</sub> =0.5mA	-9	-15		V
<b>BV<sub>gs</sub></b>	Source Breakdown Voltage	I <sub>gs</sub> =0.5mA	-7	-14		V
<b>R<sub>th</sub></b>	Thermal Resistance			450*		°C/W

\* Overall R<sub>th</sub> depends on case mounting.

**MAXIMUM RATINGS AT 25 °C**

SYMBOLS	PARAMETERS	ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>
<b>V<sub>ds</sub></b>	Drain-Source Voltage	12V	6V
<b>V<sub>gs</sub></b>	Gate-Source Voltage	-8V	-3V
<b>I<sub>ds</sub></b>	Drain Current	I <sub>dss</sub>	45mA
<b>I<sub>gsf</sub></b>	Forward Gate Current	9mA	1.5mA
<b>P<sub>in</sub></b>	Input Power	16dBm	@3dB Compression
<b>T<sub>ch</sub></b>	Channel Temperature	175°C	150°C
<b>T<sub>stg</sub></b>	Storage Temperature	-65/175°C	-65/150°C
<b>P<sub>t</sub></b>	Total Power Dissipation	330mW	280mW

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**

**PRELIMINARY DATA SHEET**
**DC-6GHz High Efficiency Heterojunction Power FET**

<b>S-PARAMETERS</b>									
<b>6V, 30mA</b>									
FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---		
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	
0.1	1.016	-3.8	6.436	176.9	0.001	-173.4	0.828	-1.2	
0.2	1.008	-7.6	6.387	174.0	0.006	79.5	0.822	-4.0	
0.3	1.009	-11.4	6.371	170.9	0.009	81.1	0.822	-6.2	
0.4	1.004	-15.4	6.355	167.7	0.012	79.8	0.821	-8.4	
0.5	1.006	-19.2	6.351	164.6	0.016	80.6	0.821	-10.4	
1.0	0.984	-39.1	6.167	148.0	0.031	67.2	0.805	-21.7	
1.5	0.898	-44.3	4.608	136.1	0.033	62.1	0.812	-22.8	
2.0	0.834	-60.3	4.347	120.9	0.041	53.6	0.777	-31.5	
2.5	0.773	-74.7	3.971	107.2	0.045	45.6	0.746	-39.1	
3.0	0.719	-86.1	3.620	95.6	0.047	40.2	0.727	-45.3	
3.5	0.667	-95.1	3.357	85.6	0.048	39.1	0.713	-49.5	
4.0	0.606	-103.0	3.204	76.5	0.050	39.6	0.703	-53.0	
4.5	0.529	-111.7	3.113	66.9	0.055	42.2	0.686	-56.6	
5.0	0.448	-123.5	3.048	56.8	0.062	44.9	0.660	-60.7	
5.5	0.376	-140.5	2.932	46.2	0.072	44.8	0.627	-66.0	
6.0	0.338	-160.8	2.767	35.5	0.085	43.0	0.592	-72.5	
6.5	0.332	-179.3	2.542	25.4	0.099	37.5	0.549	-79.5	
7.0	0.312	171.0	2.288	18.2	0.105	27.2	0.494	-83.0	
7.5	0.254	168.2	2.134	15.0	0.082	26.1	0.505	-78.5	
8.0	0.215	179.1	2.204	11.5	0.093	52.4	0.617	-80.4	
8.5	0.208	172.4	2.298	3.6	0.145	53.8	0.691	-88.7	
9.0	0.186	145.9	2.317	-5.4	0.184	46.1	0.698	-96.8	
9.5	0.214	116.9	2.337	-14.0	0.224	41.7	0.716	-105.7	
10.0	0.302	102.2	2.295	-23.1	0.268	34.6	0.689	-118.2	
10.5	0.381	98.9	2.263	-29.0	0.309	28.8	0.668	-128.1	
11.0	0.433	105.6	2.386	-33.9	0.368	24.9	0.725	-136.4	
11.5	0.542	117.3	2.658	-41.4	0.485	19.4	0.905	-148.9	
12.0	0.897	108.0	3.059	-56.2	0.673	-2.8	1.112	-172.8	