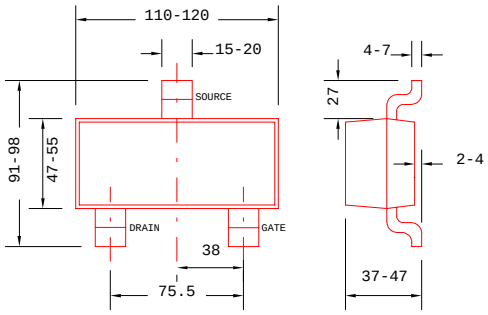
Excelics EPA018A-SOT23

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_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY**



(Top View)
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=30mA	f=2GHz	18.0	20.0		dBm
G_{1dB}	Gain at 1dB Compression Vds=6V, Ids=30mA	f=2GHz	15.0	17.0		dB
NF	Noise Figure, Vds=2V, Ids=15mA Vds=6V, Ids=30mA	f=2GHz		0.7 0.9		dB
IP3	Output 3rd Order Intercept Point Vds=6V, Ids=30mA	f=2GHz		27		dBm
Idss	Saturated Drain Current	Vds=3V, Vgs=0V	30	55	80	mA
Gm	Transconductance	Vds=3V, Vgs=0V	35	60		mS
Vp	Pinch-off Voltage	Vds=3V, Ids=1.0mA		-1.0	-2.5	V
BVgd	Drain Breakdown Voltage	Igd=0.5mA	-9	-15		V
BVgs	Source Breakdown Voltage	Igs=0.5mA	-7	-14		V
Rth	Thermal Resistance			450*		°C/W

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

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE[1]	CONTINUOUS[2]
Vds	Drain-Source Voltage	12V	6V
Vgs	Gate-Source Voltage	-8V	-3V
Ids	Drain Current	Idss	45mA
Igsf	Forward Gate Current	9mA	1.5mA
Pin	Input Power	16dBm	@3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	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.

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DC-6GHz High Efficiency Heterojunction Power FET

S-PARAMETERS

6V, 30mA

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	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