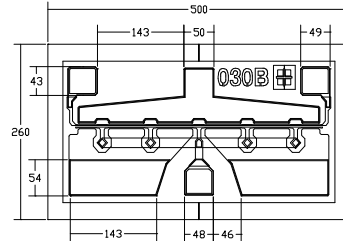


PRELIMINARY DATA SHEET
High Performance Heterojunction Dual-Gate FET

- **+18.0dBm TYPICAL OUTPUT POWER**
- **19.5dB TYPICAL POWER GAIN AT 12GHz**
- **0.3 X 300 MICRON RECESSED “MUSHROOM” DUAL GATE**
- **Si₃N₄ PASSIVATION**
- **ADVANCED EPITAXIAL DOPING PROFILE PROVIDES EXTRA HIGH PERFORMANCE AND HIGH RELIABILITY**
- **MIXER, SWITCH, AGC AND TEMPERATURE COMPENSATION APPLICATIONS**
- **Idss SORTED IN 5mA PER BIN RANGE**



Chip Thickness: 75 ± 13 microns
All Dimensions In Microns

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOLS	PARAMETERS/TEST CONDITIONS	MIN	TYP	MAX	UNIT
P_{1dB}	Output Power at 1dB Compression V _{ds} =6V, I _{ds} =50% I _{dss} , V _{g2s} =0V f=12GHz	15.0	18.0		dBm
G_{1dB}	Gain at 1dB Compression V _{ds} =6V, I _{ds} =50% I _{dss} , V _{g2s} =0V f=12GHz	17.5	19.5		dB
NF	Noise Figure V _{ds} =3V, I _{ds} =15mA, V _{g2s} =0V f=12GHz		1.2		dB
G_a	Associated Gain V _{ds} =3V, I _{ds} =15mA, V _{g2s} =0V f=12GHz		17.5		dB
I_{dss}	Saturated Drain Current V _{ds} =3V, V _{g1s} =V _{g2s} =0V	30	80	115	mA
G_m	Transconductance V _{ds} =3V, V _{g1s} =-0.5V, V _{g2s} =0V	40	70		mS
V_{p1}	Pinch-off Voltage V _{ds} =3V, I _{ds} =1.0mA, V _{g2s} =0V		-1.5	-3.5	V
V_{p2}	Pinch-off Voltage V _{ds} =3V, I _{ds} =1.0mA, V _{g1s} =0V		-1.5	-3.5	V
BV_{g2d}	Gate 2 to Drain Breakdown Voltage I _{g2d} =1.0mA, Gate 1 Open	-10	-14		V
BV_{g1s}	Gate 1 to Source Breakdown Voltage I _{g1s} =1.0mA, Gate 2 Open	-6	-12		V
R_{th}	Thermal Resistance (Au-Sn Eutectic Attach)		125		°C/W

PRELIMINARY DATA SHEET

High Performance Heterojunction Dual-Gate FET

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
Vds	Drain-Source Voltage	10V	7V
Vgs	Gate-Source Voltage	-6V	-3.5V
Ids	Drain Current	Idss	Idss
Igsf	Forward Gate Current	15mA	2.5mA
Pin	Input Power	15dBm	@3dB Compression
Tch	Channel Temperature	175°C	150°C
Tstg	Storage Temperature	-65/175°C	-65/150°C
Pt	Total Power Dissipation	1.1W	900mW

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.

S-PARAMETERS

6V, 1/2 Idss, Vg2s=0V

FREQ	--- S11 ---	--- S21 ---	--- S12 ---	--- S22 ---	FREQ	--- S11 ---	--- S21 ---	--- S12 ---	--- S22 ---								
(GHz)	MAG	ANG	MAG	ANG	(GHz)	MAG	ANG	MAG	ANG								
1.0	0.987	-15.5	9.119	165.4	0.006	84.4	0.941	-6.4	21.0	0.869	142.8	4.727	-49.2	0.018	55.4	1.148	-122.2
2.0	0.972	-30.0	8.833	152.3	0.011	67.5	0.930	-12.8	22.0	0.895	135.8	4.661	-61.4	0.023	62.6	1.215	-130.0
3.0	0.943	-43.4	8.447	140.3	0.015	63.7	0.915	-18.5	23.0	0.919	129.8	4.615	-74.5	0.030	64.6	1.285	-140.4
4.0	0.917	-56.0	8.042	128.6	0.019	55.8	0.901	-23.4	24.0	0.944	125.5	4.605	-89.6	0.039	62.3	1.361	-155.4
5.0	0.871	-70.3	7.817	116.2	0.021	47.0	0.878	-28.6	25.0	0.978	122.1	4.514	-107.3	0.048	54.1	1.434	-174.8
6.0	0.837	-81.6	7.430	106.1	0.023	42.9	0.866	-32.0	26.0	0.994	117.6	4.183	-125.4	0.058	45.7	1.479	167.2
7.0	0.811	-93.0	7.126	96.2	0.024	39.3	0.853	-35.5	27.0	1.005	110.7	3.649	-142.2	0.062	36.6	1.470	153.0
8.0	0.783	-104.6	6.898	86.4	0.025	32.1	0.839	-38.9	28.0	1.014	103.8	3.103	-158.4	0.064	26.7	1.411	141.6
9.0	0.761	-116.8	6.662	76.4	0.024	25.0	0.825	-42.7	29.0	1.023	100.4	2.569	-172.7	0.064	20.3	1.351	130.4
10.0	0.741	-128.5	6.456	66.4	0.023	21.8	0.814	-46.8	30.0	1.016	99.6	2.115	175.2	0.059	16.0	1.281	121.0
11.0	0.739	-140.3	6.281	56.1	0.022	16.8	0.813	-51.9	31.0	1.009	97.6	1.753	164.4	0.055	13.4	1.216	116.1
12.0	0.740	-151.2	6.090	45.8	0.020	11.3	0.812	-57.7	32.0	1.024	96.3	1.492	154.4	0.052	11.3	1.169	112.4
13.0	0.748	-161.4	5.883	35.3	0.019	6.5	0.820	-64.8	33.0	1.038	98.6	1.278	145.0	0.050	8.8	1.106	106.4
14.0	0.763	-170.1	5.692	24.9	0.016	6.1	0.840	-72.3	34.0	1.060	102.3	1.131	136.8	0.050	7.3	1.068	100.4
15.0	0.783	-177.9	5.515	14.0	0.014	9.1	0.875	-81.1	35.0	1.066	103.0	1.009	129.3	0.052	4.4	1.070	98.1
16.0	0.798	175.1	5.279	3.1	0.013	12.5	0.919	-89.6	36.0	1.064	98.7	0.924	121.4	0.051	-4.2	1.061	101.0
17.0	0.812	169.0	5.034	-7.4	0.013	17.8	0.958	-97.7	37.0	1.071	92.6	0.858	112.7	0.052	-17.4	1.034	102.7
18.0	0.825	163.0	4.866	-17.4	0.012	26.4	1.002	-104.2	38.0	1.087	90.5	0.810	103.2	0.048	-31.0	0.998	100.6
19.0	0.835	157.3	4.776	-27.7	0.014	37.8	1.050	-111.0	39.0	1.076	89.4	0.764	93.2	0.050	-45.2	0.990	95.1
20.0	0.851	151.7	4.733	-37.8	0.014	48.1	1.105	-117.5	40.0	1.047	84.1	0.700	81.9	0.044	-59.4	0.978	93.2

Note: The data included 0.7 mils diameter Au bonding wires:

1 gate wires, 15 mils each; 1 drain wires, 20 mils each; 4 source wires, 7 mils each., 2 gate2 wires(to ground), 7 mils each