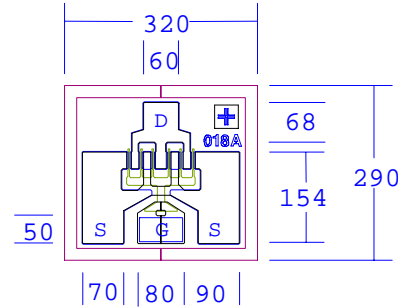


DATA SHEET
Low Distortion GaAs Power FET

- **VERY HIGH f_{max} : 100GHz**
- **+18.5dBm TYPICAL OUTPUT POWER**
- **11.5dB TYPICAL POWER GAIN AT 12GHz**
- **TYPICAL 1.1dB NOISE FIGURE AND 10.5dB ASSOCIATED GAIN AT 12GHz**
- **0.3 X 180 MICRON RECESSED “MUSHROOM” GATE**
- **Si_3N_4 PASSIVATION**
- **ADVANCED EPITAXIAL DOPING PROFILE PROVIDES HIGH POWER EFFICIENCY, LINEARITY AND RELIABILITY**
- **I_{dss} SORTED IN 5mA PER BIN RANGE**



Chip Thickness: 75 ± 13 microns
All Dimensions In Microns

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

SYMBOLS	PARAMETERS/TEST CONDITIONS		MIN	TYP	MAX	UNIT
P_{1dB}	Output Power at 1dB Compression	$f=12GHz$ $V_{ds}=6V, I_{ds}=50\% I_{dss}$	16.5	18.5*		dBm
G_{1dB}	Gain at 1dB Compression	$f=12GHz$ $V_{ds}=6V, I_{ds}=50\% I_{dss}$	9.5	11.5 9.5		dB
PAE	Power Added Efficiency at 1dB Compression	$V_{ds}=6V, I_{ds}=50\% I_{dss}$ $f=12GHz$		35		%
NF	Noise Figure	$V_{ds}=2V, I_{ds}=15mA$ $f=12GHz$		1.1		dB
Ga	Associated Gain	$f=12GHz$ $V_{ds}=2V, I_{ds}=15mA$		10.5		dB
I_{dss}	Saturated Drain Current	$V_{ds}=3V, V_{gs}=0V$	25	50	80	mA
Gm	Transconductance	$V_{ds}=3V, V_{gs}=0V$	20	30		mS
V_p	Pinch-off Voltage	$V_{ds}=3V, I_{ds}=1.0mA$		-2.0	-3.5	V
BVgd	Drain Breakdown Voltage	$I_{gd}=0.5mA$	-10	-15		V
BVgs	Source Breakdown Voltage	$I_{gs}=0.5mA$	-7	-14		V
Rth	Thermal Resistance (Au-Sn Eutectic Attach)			185		$^\circ C/W$

* $P_{1dB} = 19.5dBm$ can be obtained with 8v/50% I_{dss} bias. Consult factory for wafer selection.

MAXIMUM RATINGS AT $25^\circ C$

SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
Vds	Drain-Source Voltage	12V	6V
Vgs	Gate-Source Voltage	-8V	-4V
Ids	Drain Current	I_{dss}	I_{dss}
Igsf	Forward Gate Current	4mA	0.7mA
Pin	Input Power	17dBm	@ 3dB Compression
Tch	Channel Temperature	175 $^\circ C$	150 $^\circ C$
Tstg	Storage Temperature	-65/175 $^\circ C$	-65/150 $^\circ C$
Pt	Total Power Dissipation	740mW	625mW

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.

DATA

SHEET

Low Distortion GaAs Power FET

S-PARAMETERS								
6V, 1/2 Idss								
FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.989	-9.7	3.058	171.1	0.011	80.4	0.785	-3.1
2.0	0.982	-19.5	3.018	163.5	0.021	79.1	0.783	-6.9
3.0	0.972	-29.1	2.977	156.0	0.031	73.7	0.779	-10.4
4.0	0.960	-39.0	2.929	148.3	0.041	67.8	0.771	-14.2
5.0	0.942	-49.2	2.894	140.5	0.049	63.0	0.761	-18.0
6.0	0.927	-58.8	2.819	132.9	0.057	56.4	0.751	-21.6
7.0	0.910	-67.9	2.744	125.3	0.063	51.1	0.740	-25.4
8.0	0.894	-77.1	2.658	118.2	0.070	45.2	0.730	-28.8
9.0	0.876	-85.4	2.569	111.3	0.076	40.1	0.718	-32.2
10.0	0.861	-93.4	2.488	104.5	0.078	34.8	0.703	-35.5
11.0	0.852	-101.3	2.427	98.1	0.083	30.9	0.696	-38.6
12.0	0.837	-108.9	2.348	92.1	0.086	26.1	0.683	-41.2
13.0	0.824	-117.1	2.292	85.8	0.091	21.0	0.670	-44.0
14.0	0.812	-125.0	2.246	79.6	0.096	17.5	0.658	-46.4
15.0	0.801	-134.3	2.207	73.2	0.098	12.9	0.641	-49.0
16.0	0.789	-143.8	2.195	66.5	0.102	8.8	0.628	-51.2
17.0	0.783	-153.6	2.146	59.8	0.105	4.9	0.611	-53.9
18.0	0.773	-164.4	2.094	52.8	0.111	0.2	0.589	-56.3
19.0	0.773	-175.1	2.051	45.8	0.112	-3.5	0.568	-59.6
20.0	0.774	-175.0	1.983	38.7	0.116	-7.7	0.549	-62.9
21.0	0.780	166.2	1.889	31.8	0.115	-13.0	0.521	-68.7
22.0	0.789	158.1	1.793	25.4	0.116	-15.9	0.510	-73.4
23.0	0.793	151.4	1.695	19.1	0.113	-19.1	0.505	-78.9
24.0	0.800	145.8	1.616	13.3	0.113	-21.4	0.509	-84.3
25.0	0.800	142.4	1.532	8.3	0.113	-25.2	0.518	-89.1
26.0	0.800	139.5	1.470	4.3	0.110	-25.8	0.527	-94.4
27.0	0.806	137.7	1.420	-0.9	0.110	-26.8	0.542	-99.3
28.0	0.809	135.5	1.386	-5.3	0.108	-29.3	0.546	-104.5
29.0	0.802	133.5	1.371	-9.7	0.109	-29.2	0.549	-109.7
30.0	0.798	131.8	1.342	-14.2	0.108	-31.0	0.561	-114.3
31.0	0.788	127.8	1.322	-19.1	0.106	-33.7	0.561	-119.4
32.0	0.793	122.2	1.298	-25.0	0.109	-36.8	0.551	-124.4
33.0	0.778	117.3	1.254	-29.9	0.106	-41.4	0.537	-129.5
34.0	0.771	111.3	1.222	-36.5	0.107	-43.8	0.520	-135.9
35.0	0.805	103.9	1.194	-42.3	0.102	-50.4	0.506	-142.6
36.0	0.821	97.8	1.150	-48.1	0.097	-53.1	0.497	-149.9
37.0	0.855	88.5	1.114	-55.0	0.100	-58.5	0.502	-157.1
38.0	0.882	84.3	1.057	-60.8	0.096	-61.8	0.515	-164.8
39.0	0.892	78.0	0.986	-67.9	0.097	-69.1	0.525	-172.3
40.0	0.912	74.5	0.922	-73.7	0.098	-71.4	0.545	-178.8

S-PARAMETERS								
2V, 15mA								
FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	1.013	-7.4	2.545	172.5	0.015	85.8	0.534	-4.0
2.0	1.007	-14.7	2.538	166.5	0.030	78.5	0.531	-8.9
3.0	1.001	-22.3	2.528	159.9	0.044	74.9	0.526	-14.0
4.0	0.993	-30.0	2.519	153.4	0.058	69.9	0.518	-19.3
5.0	0.983	-38.7	2.525	145.9	0.072	63.8	0.499	-25.3
6.0	0.971	-47.3	2.499	138.9	0.085	58.5	0.488	-31.2
7.0	0.961	-55.9	2.462	131.8	0.097	52.9	0.475	-37.5
8.0	0.944	-64.1	2.407	124.7	0.107	46.9	0.464	-43.7
9.0	0.929	-72.4	2.347	117.8	0.116	41.5	0.451	-49.7
10.0	0.915	-79.8	2.282	111.5	0.124	36.4	0.440	-55.0
11.0	0.899	-86.9	2.227	105.2	0.131	31.5	0.431	-59.9
12.0	0.891	-94.0	2.166	99.5	0.138	27.0	0.422	-64.5
13.0	0.878	-100.9	2.124	93.5	0.146	22.2	0.409	-68.7
14.0	0.862	-108.3	2.093	87.7	0.153	17.6	0.394	-72.7
15.0	0.850	-116.0	2.072	82.0	0.160	13.1	0.377	-76.7
16.0	0.841	-124.1	2.057	75.8	0.168	8.8	0.355	-81.8
17.0	0.824	-133.9	2.039	69.1	0.178	3.5	0.331	-87.2
18.0	0.819	-144.1	2.013	62.4	0.185	-2.0	0.296	-94.2
19.0	0.808	-155.0	1.973	55.1	0.190	-7.3	0.266	-102.1
20.0	0.800	-165.8	1.924	47.7	0.195	-13.2	0.235	-113.2
21.0	0.808	-175.2	1.784	40.4	0.189	-18.4	0.223	-133.0
22.0	0.795	176.9	1.695	34.6	0.188	-22.6	0.215	-144.3
23.0	0.820	169.5	1.628	28.5	0.186	-27.0	0.226	-155.0
24.0	0.816	164.8	1.539	23.0	0.185	-30.6	0.237	-162.2
25.0	0.824	159.8	1.486	18.3	0.181	-34.1	0.257	-167.1
26.0	0.838	157.1	1.424	13.9	0.179	-36.3	0.270	-169.9
27.0	0.820	154.5	1.362	9.9	0.177	-39.0	0.282	-172.4
28.0	0.827	152.5	1.317	5.9	0.175	-41.0	0.284	-173.1
29.0	0.825	150.3	1.291	1.8	0.176	-43.3	0.294	-175.0
30.0	0.825	147.0	1.266	-2.5	0.176	-46.1	0.296	-175.6
31.0	0.815	143.5	1.240	-6.3	0.175	-48.5	0.292	-179.4
32.0	0.816	138.1	1.217	-11.6	0.173	-52.9	0.290	-176.4
33.0	0.801	133.0	1.165	-16.2	0.170	-57.2	0.277	-169.0
34.0	0.808	126.0	1.135	-21.5	0.169	-62.0	0.275	-162.0
35.0	0.811	120.1	1.092	-26.5	0.168	-66.3	0.268	-149.4
36.0	0.830	111.8	1.049	-31.6	0.163	-72.0	0.295	-137.7
37.0	0.857	106.2	0.996	-37.4	0.160	-77.8	0.319	-125.0
38.0	0.883	100.1	0.952	-43.0	0.158	-83.8	0.359	-116.9
39.0	0.914	94.9	0.890	-49.1	0.155	-88.9	0.405	-109.5
40.0	0.918	91.0	0.821	-54.9	0.148	-95.5	0.453	-106.1

Note: The data included 0.7 mils diameter Au bonding wires:
 1 gate wire, 15 mils each; 1 drain wire, 20 mils each; 6 source wires, 8 mils each.