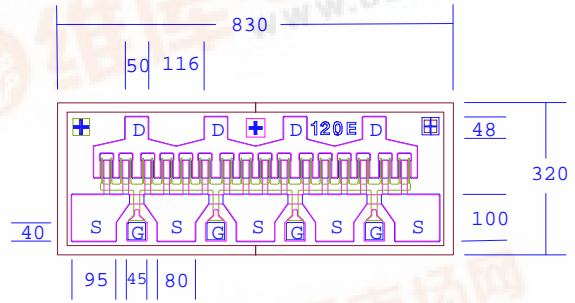




EPA120E

DATA SHEET High Efficiency Heterojunction Power FET

- +29.5dBm TYPICAL OUTPUT POWER
- 9.5dB TYPICAL POWER GAIN AT 18GHz
- 0.3 X 1200 MICRON RECESSED “MUSHROOM” GATE
- Si₃N₄ PASSIVATION
- ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY
- Idss SORTED IN 30mA 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} =8V, I _{ds} =50% I _{ds}	f=12GHz 28.0	f=18GHz 29.5	29.5	dBm
G_{1dB}	Gain at 1dB Compression V _{ds} =8V, I _{ds} =50% I _{ds}	f=12GHz 10.0	f=18GHz 12.0	9.5	dB
PAE	Power Added Efficiency at 1dB Compression V _{ds} =8V, I _{ds} =50% I _{ds}		f=12GHz 46		%
I_{ds}	Saturated Drain Current V _{ds} =3V, V _{gs} =0V	210	360	510	mA
G_m	Transconductance V _{ds} =3V, V _{gs} =0V	240	380		mS
V_p	Pinch-off Voltage V _{ds} =3V, I _{ds} =3.5mA		-1.0	-2.5	V
BV_{gd}	Drain Breakdown Voltage I _{gd} =1.2mA	-12	-15		V
BV_{gs}	Source Breakdown Voltage I _{gs} =1.2mA	-7	-14		V
R_{th}	Thermal Resistance (Au-Sn Eutectic Attach)		35		°C/W

MAXIMUM RATINGS AT 25°C

SYMBOLS	PARAMETERS	ABSOLUTE ¹	CONTINUOUS ²
V_{ds}	Drain-Source Voltage	12V	8V
V_{gs}	Gate-Source Voltage	-8V	-3V
I_{ds}	Drain Current	I _{ds}	405mA
I_{gsf}	Forward Gate Current	60mA	10mA
P_{in}	Input Power	27dBm	@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	3.9W	3.2W

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

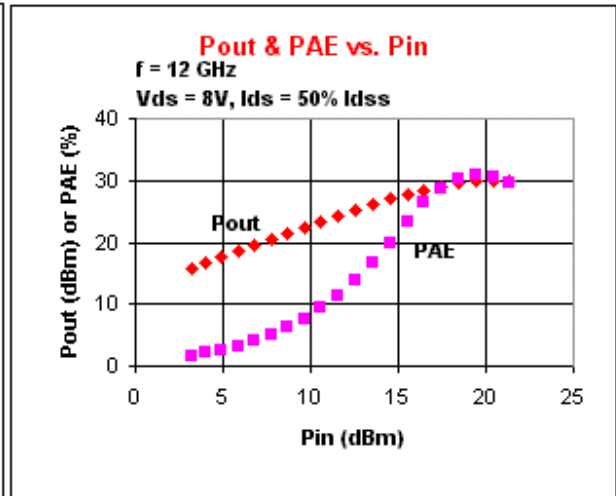
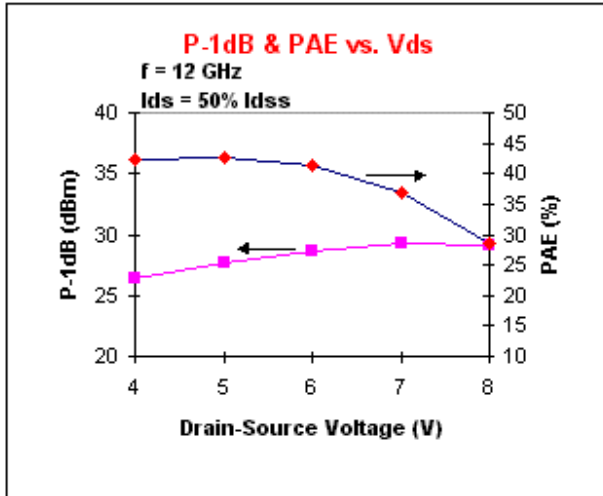
2. Exceeding any of the above ratings may reduce MTTF below design goals.



EPA120E

DATA SHEET

High Efficiency Heterojunction Power FET



S-PARAMETERS

8V, 1/2 Idss

FREQ (GHz)	S11		S21		S12		S22		FREQ (GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.898	-97.8	14.488	124.9	0.034	39.3	0.300	-95.1	21.0	0.938	162.3	0.751	-2.6	0.036	7.9	0.725	179.6
2.0	0.885	-134.7	8.805	103.0	0.041	22.6	0.313	-125.6	22.0	0.938	161.2	0.701	-6.4	0.036	6.4	0.743	177.5
3.0	0.882	-150.7	6.129	90.7	0.042	16.0	0.322	-135.8	23.0	0.939	160.1	0.659	-10.5	0.037	7.6	0.758	175.3
4.0	0.887	-159.7	4.668	81.9	0.042	10.9	0.338	-140.7	24.0	0.939	159.3	0.622	-14.1	0.039	10.6	0.769	173.4
5.0	0.896	-165.0	3.747	74.9	0.042	9.3	0.349	-143.7	25.0	0.948	158.8	0.592	-18.1	0.040	12.3	0.776	170.9
6.0	0.898	-168.8	3.128	68.6	0.040	8.5	0.366	-145.2	26.0	0.946	158.7	0.559	-21.2	0.041	12.6	0.783	168.3
7.0	0.901	-171.8	2.674	62.8	0.040	7.3	0.390	-146.7	27.0	0.945	158.5	0.535	-24.4	0.044	15.2	0.790	166.0
8.0	0.904	-174.2	2.329	57.5	0.039	6.7	0.411	-148.1	28.0	0.946	158.0	0.513	-27.1	0.046	16.3	0.791	164.0
9.0	0.908	-176.0	2.057	52.2	0.037	5.3	0.433	-150.2	29.0	0.958	157.6	0.493	-30.1	0.049	16.5	0.790	161.3
10.0	0.912	-177.2	1.842	47.7	0.037	5.6	0.458	-152.2	30.0	0.948	156.9	0.472	-33.6	0.050	11.6	0.799	158.5
11.0	0.916	-178.7	1.657	42.9	0.035	5.4	0.483	-154.7	31.0	0.961	155.8	0.451	-36.8	0.051	12.6	0.802	156.0
12.0	0.917	-179.9	1.501	38.2	0.035	6.4	0.511	-157.7	32.0	0.955	154.5	0.430	-40.1	0.049	10.4	0.813	152.9
13.0	0.920	-178.8	1.370	33.5	0.033	6.8	0.538	-160.3	33.0	0.951	153.2	0.405	-42.9	0.048	13.5	0.824	150.1
14.0	0.922	-177.5	1.256	28.9	0.033	6.5	0.564	-163.1	34.0	0.959	151.2	0.388	-46.3	0.048	11.3	0.836	147.6
15.0	0.927	-175.6	1.163	24.2	0.033	4.8	0.590	-165.9	35.0	0.963	148.9	0.369	-49.0	0.048	13.2	0.856	144.8
16.0	0.927	-173.8	1.077	19.4	0.033	5.8	0.616	-168.7	36.0	0.967	147.5	0.348	-51.4	0.050	9.7	0.875	141.4
17.0	0.929	-171.4	0.998	14.4	0.033	3.9	0.638	-171.4	37.0	0.978	145.4	0.338	-54.7	0.052	7.8	0.891	138.2
18.0	0.934	-169.1	0.934	9.9	0.034	6.0	0.658	-173.5	38.0	0.993	143.3	0.325	-58.0	0.055	0.1	0.891	134.7
19.0	0.934	-166.8	0.880	5.2	0.034	5.7	0.675	-176.4	39.0	1.005	139.3	0.320	-64.0	0.057	-12.6	0.883	131.9
20.0	0.936	-164.2	0.827	0.5	0.035	4.2	0.692	-178.4	40.0	0.994	137.0	0.312	-67.9	0.058	-21.3	0.876	130.0

Note: The data included 0.7 mils diameter Au bonding wires:
4 gate wires, 15 mils each; 4 drain wires, 20 mils each; 10 source wires, 7 mils each.