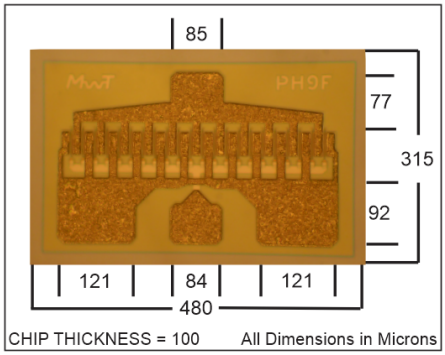
MwT-PH9F

26 GHz Medium Power AlGaAs/InGaAs PHEMT

Features:

- **+27.0 dBm typical Output Power at 12 GHz**
- **11.0 dB typical Small Signal Gain at 12 GHz**
- **50 % typical PAE at 12 GHz**
- **0.25 x 750 Micron Refractory Metal/Gold Gate**
- **Excellent for High Power, Gain, and High Power Added Efficiency Applications**
- **Ideal for Commercial, Military, Hi-Rel Space Applications**



Chip Dimensions: 480 x 315 microns
Chip Thickness: 100 microns

Description:

The MwT-PH9F is a AlGaAs/InGaAs PHEMT (Pseudomorphic-High-Electron-Mobility-Transistor) device whose nominal 0.25 micron gate length and 750 micron gate width make it ideally suited for applications requiring high-gain and power up to 26 GHz frequency range with power outputs ranging from 400 to 500 milli-watts. The device is equally effective for either wideband (e.g. 6 to 18 GHz) or narrow-band applications. The chip is produced using reliable metal systems and passivated to insure excellent reliability.

Electrical Specifications: • *at Ta= 25 °C*

PARAMETERS & CONDITIONS	SYMBOL	FREQ	UNITS	MIN	TYP
Output Power at 1dB Compression Vds=7.0V Ids=0.7xIdss	P1dB	12 GHz	dBm	26.0	27.0
Small Signal Gain Vds=7.0V Ids=0.7xIdss	SSG	12 GHz	dB	10.0	11.0
Power Added Efficiency at P1dB Vds=7.0V Ids=0.7xIdss	PAE	12 GHz	%		50

DC Specifications: • *at Ta= 25 °C*

PARAMETERS & CONDITIONS		SYMBOL	UNITS	MIN	TYP	MAX
Saturated Drain Current Vds= 4.0 V Vgs= 0.0 V		IDSS	mA	190		220
Transconductance Vds= 2.5 V Vgs= 0.0 V		Gm	mS		250	
Pinch-off Voltage Vds= 3.0 V Ids= 5.0 mA		Vp	V		-1.2	
Gate-to-Source Breakdown Voltage Igs= -1.0 mA		BVGSO	V	-13.0	-15.0	
Gate-to-Drain Breakdown Voltage Igd= -1.0 mA		BVGDO	V	-16.0	-18.0	
Chip Thermal Resistance	MwT-PH7F Chip & 70 pkg 71 pkg & 73 pkg	Rth	C/W		60 175*	

* Overall Rth depends on case mounting

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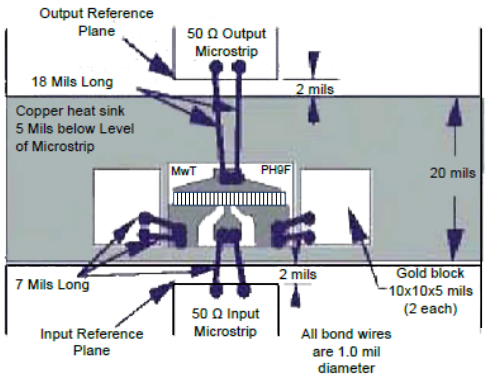
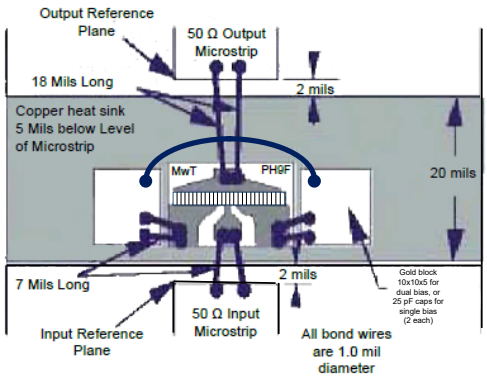
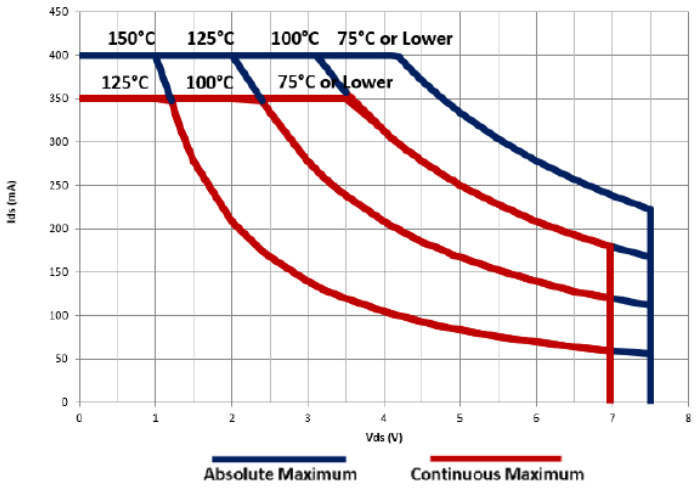
MwT-PH9F
DUAL BIAS



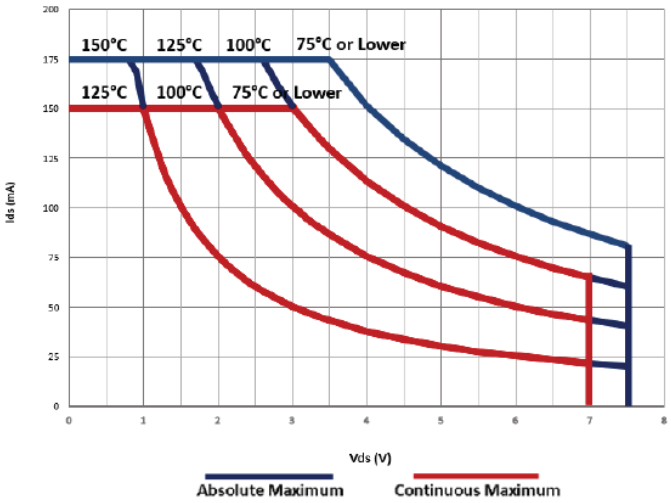
MwT-PH9F
OPTIONAL BONDING



SAFE OPERATING LIMITS vs BACKSIDE TEMPERATURE
MwT-PH9F Chip and Pkg



SAFE OPERATING LIMITS vs BACKSIDE TEMPERATURE
MwT-PH9F with 70Pkg and 73Pkg



MAXIMUM RATINGS AT Ta = 25 °C

Symbol	Parameter	Units	Cont Max1	Absolute Max2
VDS	Drain to Source Volt.	V	7.5	8.0
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-65 to +160	+180
Pin	RF Input Power	mW	240	360
Pt	Total Power Dissipation	mW	2700	3300

Notes:
1. Exceeding any one of these limits in continuous operation may reduce the mean-time- to-failure below the design goal.
2. Exceeding any one of these limits may cause permanent damage.

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S-PARAMETER Vds=7V, Ids= 0.7 x Idss

Freq.	S11		S21		S12		S22		K	GMAX
GHz	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)		dB
1	-0.664	-52.464	21.121	145.891	-31.907	57.188	-8.138	-31.964	0.243	26.514
2	-1.266	-90.814	18.912	122.829	-28.232	42.215	-9.381	-55.802	0.303	23.572
3	-1.673	-116.399	16.713	107.021	-27.103	32.576	-10.310	-72.716	0.416	21.908
4	-1.881	-133.834	14.812	95.498	-26.533	27.696	-10.862	-85.549	0.532	20.672
5	-1.930	-146.746	13.191	85.536	-26.274	24.740	-11.224	-95.457	0.641	19.733
6	-2.089	-156.520	11.906	78.358	-26.128	24.343	-11.589	-101.686	0.804	19.017
7	-2.023	-165.844	10.682	69.984	-25.967	23.300	-11.529	-111.340	0.886	18.324
8	-2.001	-172.818	9.581	63.794	-25.936	24.350	-11.670	-118.718	1.012	17.097
9	-2.077	-179.373	8.739	56.965	-25.663	25.191	-11.191	-121.787	1.104	15.234
10	-2.040	174.931	7.725	51.250	-25.615	26.367	-11.253	-128.479	1.238	13.729
11	-1.923	169.173	6.845	45.249	-25.352	28.323	-10.794	-132.291	1.255	13.061
12	-1.909	165.261	6.150	39.814	-25.243	29.221	-10.260	-136.949	1.320	12.310
13	-1.767	160.882	5.501	33.727	-24.931	31.092	-9.678	-139.799	1.257	12.167
14	-1.784	155.899	4.845	27.471	-24.680	32.321	-9.254	-143.160	1.316	11.394
15	-1.733	152.239	4.041	21.019	-24.507	35.119	-8.269	-146.213	1.322	10.875
16	-1.614	149.765	3.189	14.145	-24.121	38.211	-7.430	-152.399	1.258	10.601
17	-1.505	146.289	2.424	8.925	-23.569	39.930	-6.741	-158.324	1.172	10.482
18	-1.521	142.275	1.406	3.558	-22.750	41.448	-6.185	-164.823	1.195	9.408
19	-1.305	139.906	0.598	1.017	-21.992	42.677	-5.808	-170.189	1.045	10.001
20	-1.273	136.984	-0.063	-2.202	-21.300	41.921	-5.470	-174.872	1.008	10.054
21	-1.028	134.174	-0.652	-5.218	-20.761	40.973	-5.266	179.916	0.843	10.055
22	-1.092	132.022	-1.249	-8.280	-20.164	40.132	-4.967	176.165	0.878	9.457
23	-0.952	128.904	-1.747	-11.789	-19.519	38.378	-4.780	172.567	0.759	8.886
24	-0.921	126.203	-2.284	-14.236	-19.062	36.357	-4.561	170.281	0.727	8.389
25	-0.969	123.684	-2.813	-17.418	-18.602	35.273	-4.233	165.973	0.758	7.894
26	-0.824	121.908	-3.302	-20.125	-18.025	34.264	-4.027	162.941	0.644	7.361

ORDERING INFORMATION:

When placing order or inquiring, please specify BIN range, wafer number, if known, and visual screening level required. For details of BIN Selection and Safe Handling Procedure please see supplementary information in available PDF on our website www.mwtinc.com.

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