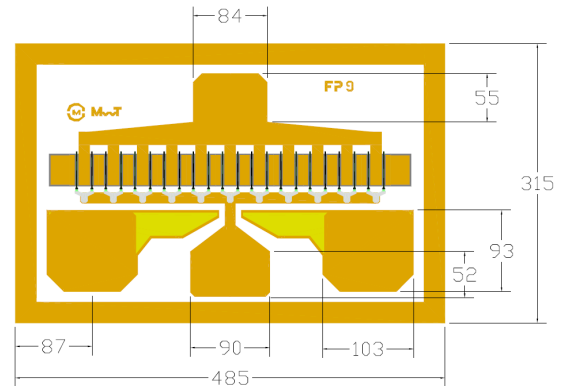


## Features:

- 26.5 dBm Output Power at 12 GHz
- 11 dB Small Signal Gain at 12 GHz
- Excellent for Medium Linear Power Applications
- Ideal for Commercial, Military, Hi-Rel Space Applications
- 0.25 Micron Refractory Metal/Gold Gate
- 750 Micron Gate Width
- Choice of Chip and Three Package Types



Chip Dimensions: 485 x 315 microns  
Chip Thickness: 100 microns

## Description:

The MwT-9F is a GaAs MESFET device whose nominal 0.25 micron gate length and 750 micron gate width make it ideally suited to applications requiring medium linear power. It can be easily matched as the driver stage in high power communications amplifiers or in broad-band military amplifiers. All chips are passivated with SiN (Silicon Nitride).

## RF Specifications: • at $T_a = 25\text{ }^\circ\text{C}$

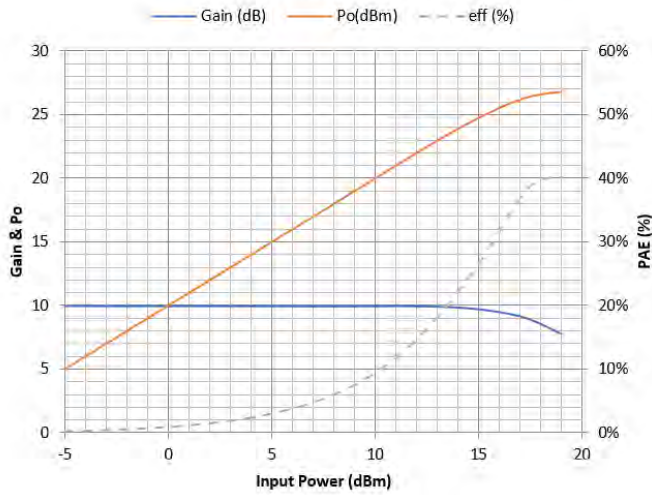
PARAMETERS & CONDITIONS	SYMBOL	FREQ	UNITS	TYP
Output Power at 1dB Compression $V_{ds}=7V$ $I_{ds}=0.6 \times I_{DSS}$	P1dB	12 GHz	dBm	26.5
Output Third Order Intercept Point $V_{ds}=7V$ $I_{ds}=0.6 \times I_{DSS}$	OIP3	12 GHz	dBm	36
Small Signal Gain $V_{ds}=7V$ $I_{ds}=0.6 \times I_{DSS}$	SSG	12 GHz	dB	11
Power Added Efficiency $V_{ds}=7V$ $I_{ds}=0.6 \times I_{DSS}$	PAE	12 GHz	%	35

## DC Specifications: • at $T_a = 25\text{ }^\circ\text{C}$

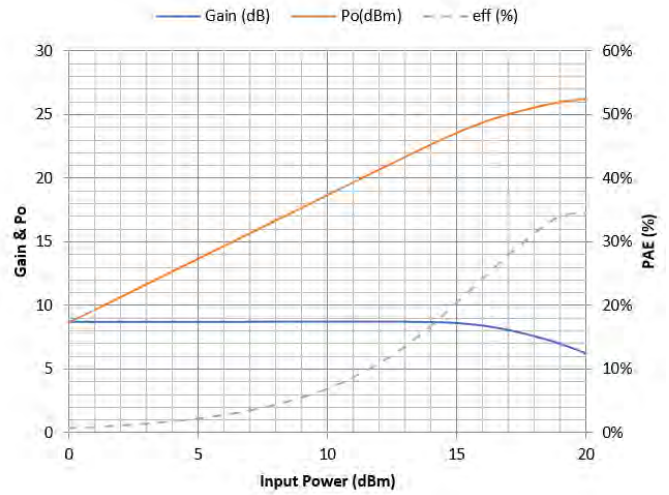
PARAMETERS & CONDITIONS	SYMBOL	UNITS	MIN	TYP	MAX
Saturated Drain Current $V_{ds}=4.0V$ $V_{gs}=0.0V$	$I_{DSS}$	mA	200		250
Transconductance $V_{ds}=2.0V$ $V_{gs}=0.0V$	Gm	mS	130	140	
Pinch-off Voltage $V_{ds}=3.0V$ $I_{ds}=5.0mA$	$V_p$	V		-2.0	
Gate-to-Source Breakdown Voltage $I_{gs}=-1.0mA$	BVGSO	V	-14	-16	
Gate-to-Drain Breakdown Voltage $I_{gd}=-1.0mA$	BVGDO	V	-14	-16	
Thermal Resistance <i>MwT-9F chip &amp; 71 pkg</i> <i>70 pkg &amp; 73 pkg</i>	Rth	C/W		60 165*	

\*Overall Rth depends on case mounting

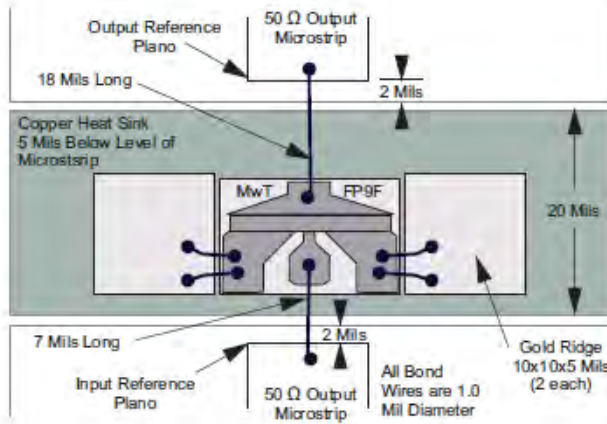
**MwT-9F, Typical Power at 12GHz**  
 $V_{ds}=7V; I_{ds}=0.6 \times I_{DSS}$



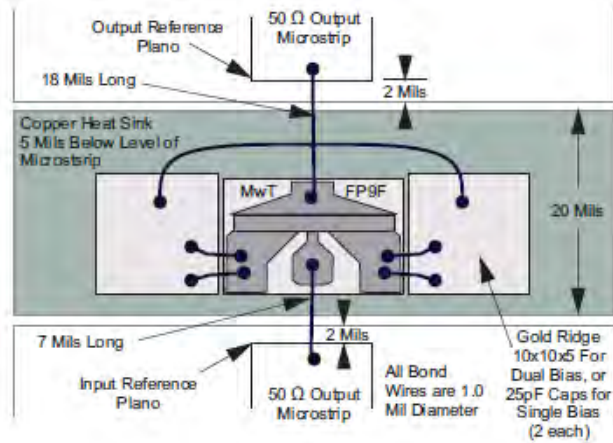
**MwT-9F, Typical Power at 18GHz**  
 $V_{ds}=7V; I_{ds}=0.6 \times I_{DSS}$



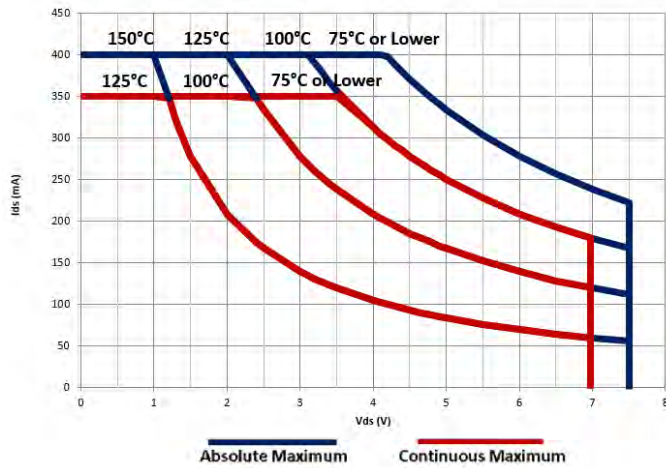
**MwT-9F  
DUAL BIAS**



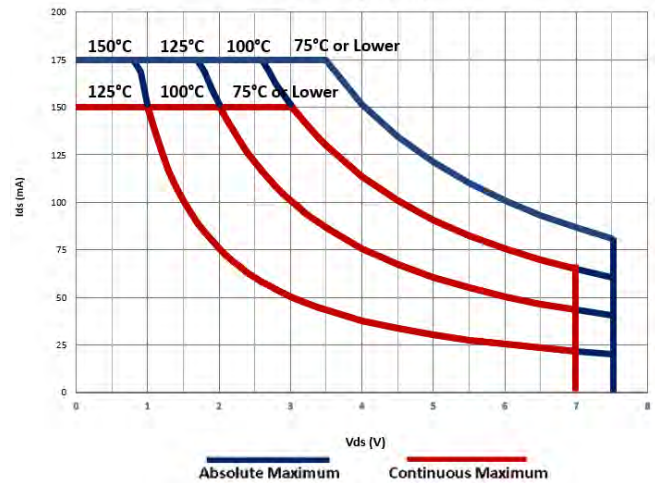
**MwT-9F  
OPTIONAL BONDING**



**SAFE OPERATING LIMITS vs BACKSIDE TEMPERATURE**  
MwT-9F Chip and 71 Pkg



**SAFE OPERATING LIMITS vs BACKSIDE TEMPERATURE**  
MwT-9F with 70 Pkg and 73 Pkg



### MAXIMUM RATINGS AT Ta = 25 °C

Symbol	Parameter	Units	Cont Max1	Absolute Max2
VDS	Drain to Source Volt.	V	See Safe Operating Limits	
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-65 to +150	+175
Pin	RF Input Power	mW	300	450

**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.



**S-PARAMETER Vds=6V, Ids= 0.7 x Idss**

Freq. GHz	S11		S21		S12		S22		K	GMAX dB
	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)		
1	-0.800	-38.696	17.699	154.354	-32.959	69.451	-6.472	-19.135	0.376	25.329
2	-1.237	-70.911	16.387	133.405	-28.220	53.391	-7.285	-34.571	0.379	22.303
3	-1.574	-95.485	14.857	117.065	-26.278	42.079	-8.081	-46.488	0.442	20.567
4	-1.869	-114.374	13.317	103.897	-25.382	33.977	-8.704	-55.958	0.548	19.349
5	-2.057	-128.300	11.963	93.185	-24.950	28.267	-9.034	-64.017	0.655	18.457
6	-2.185	-140.053	10.659	84.163	-24.748	25.059	-9.451	-70.248	0.787	17.704
7	-2.259	-149.654	9.582	75.831	-24.630	21.937	-9.279	-77.223	0.883	17.106
8	-2.238	-157.917	8.571	68.009	-24.615	20.255	-9.279	-84.061	0.974	16.593
9	-2.218	-165.253	7.676	61.068	-24.725	19.218	-9.121	-90.652	1.072	14.565
10	-2.198	-171.776	6.851	53.781	-24.697	18.795	-8.815	-96.786	1.144	13.472
11	-2.128	-177.539	6.011	47.390	-24.844	18.512	-8.578	-103.223	1.232	12.525
12	-2.107	177.155	5.266	41.173	-24.898	19.517	-8.204	-109.299	1.313	11.729
13	-2.067	172.343	4.556	35.033	-24.975	21.336	-7.875	-115.432	1.392	11.035
14	-1.989	168.059	3.863	29.401	-25.060	23.700	-7.559	-121.411	1.451	10.477
15	-1.945	164.080	3.212	23.687	-24.934	26.462	-7.168	-126.906	1.478	9.979
16	-1.846	160.223	2.623	18.173	-24.673	28.994	-6.736	-132.457	1.416	9.815
17	-1.815	156.655	1.980	12.884	-24.333	32.125	-6.353	-137.976	1.409	9.352
18	-1.738	153.331	1.374	7.535	-23.913	34.462	-5.930	-143.288	1.331	9.199
19	-1.601	150.039	0.811	2.382	-23.377	36.657	-5.556	-148.535	1.184	9.497
20	-1.568	146.990	0.196	-2.293	-22.789	38.149	-5.162	-153.520	1.117	9.413
21	-1.446	143.886	-0.323	-7.291	-22.260	39.163	-4.822	-158.456	0.980	10.969
22	-1.443	141.440	-0.946	-11.739	-21.724	38.558	-4.468	-163.501	0.939	10.389
23	-1.358	138.202	-1.513	-16.685	-21.050	39.592	-4.119	-168.092	0.820	9.769
24	-1.193	135.970	-2.034	-20.844	-20.475	39.396	-3.745	-172.628	0.641	9.220
25	-1.163	133.450	-2.643	-24.733	-19.836	38.019	-3.489	-177.097	0.581	8.597
26	-1.112	130.851	-3.234	-28.783	-19.333	37.473	-3.228	-178.922	0.520	8.050

**ORDERING INFORMATION:**

When placing order or inquiring, please specify wafer number, if known. All dice are Visual Level 3 (military grade visual screening). MwT cannot guarantee dice will fall at the lower or upper end of the Idss Range. For details of Safe Handling Procedure please see supplementary information in available PDF on our website [www.mwtinc.com](http://www.mwtinc.com).

**Available Packaging:**

- 70 Package - MwT-9F70
- 71 Package - MwT-9F71
- 73 Package - MwT-9F73