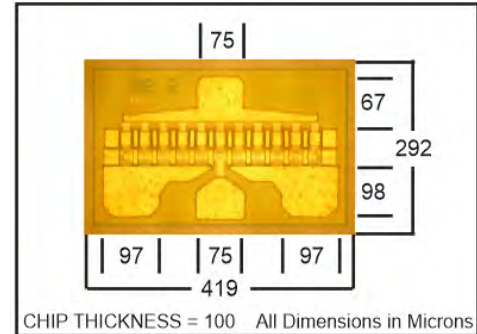


Features:

- +26.5 dBm Output Power at 12 GHz
- 11 dB Small Signal Gain at 12 GHz
- 0.25 Micron Refractory Metal/Gold Gate
- 750 Micron Gate Width
- Choice of Chip and Three Package Types



Chip Dimensions: 419 x 241 microns

Description:

The MwT-9F is a GaAs MESFET device whose nominal quarter-micron gate length and 750 micron gate width make it ideally suited to applications requiring high-gain in the 500 MHz to 18 GHz frequency range with power output ranging from +24 to +26.5 dBm. It can be easily matched as the driver stage in high power communications amplifiers or in broad-band military amplifiers and operated at reduced bias in battery powered wireless communications devices. The chip is produced using MwT's reliable metal system and devices from each wafer are screened to insure reliability. All chips are passivated with SiN (Silicon Nitride).

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

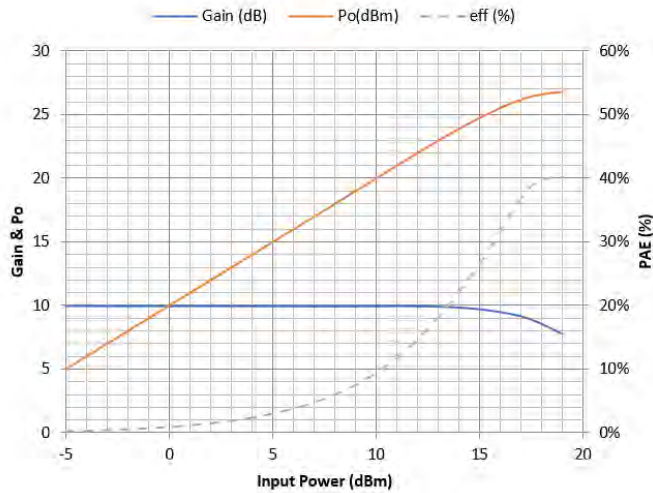
PARAMETERS & CONDITIONS	SYMBOL	FREQ	UNITS	TYP
Output Power at 1dB Compression $V_{ds}=7V$ $I_{ds}=0.6 \times I_{DSS}$	P1dB	12 GHz	dBm	26.5
Output Third Order Intercept Point $V_{ds}=7V$ $I_{ds}=0.6 \times I_{DSS}$	OIP3	12 GHz	dBm	36
Small Signal Gain $V_{ds}=7V$ $I_{ds}=0.6 \times I_{DSS}$	SSG	12 GHz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

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

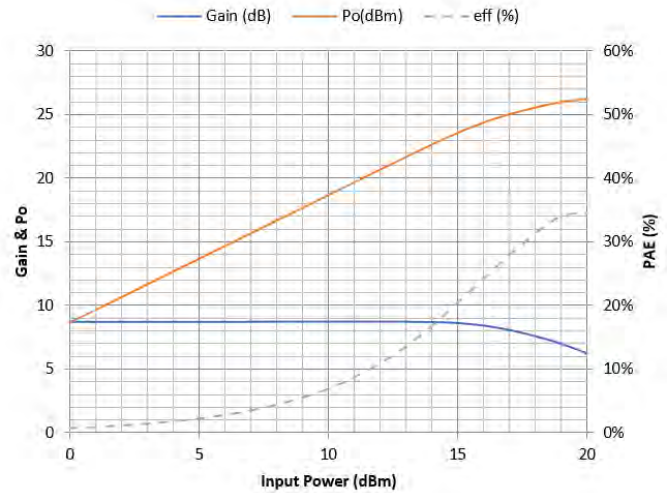
PARAMETERS & CONDITIONS	SYMBOL	UNITS	MIN	TYP	MAX
Saturated Drain Current $V_{ds}=4.0V$ $V_{gs}=0.0V$	I_{DSS}	mA	200		250
Transconductance $V_{ds}=2.0V$ $V_{gs}=0.0V$	Gm	mS	130	140	
Pinch-off Voltage $V_{ds}=3.0V$ $I_{ds}=5.0mA$	V_p	V		-2.0	
Gate-to-Source Breakdown Voltage $I_{gs}=-1.0mA$	BVGSO	V	-14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

*Overall Rth depends on case mounting

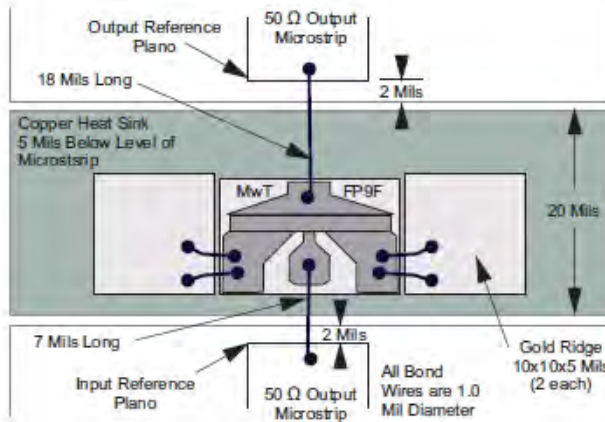
MwT-9F, Typical Power at 12GHz
Vds=7V; Ids=0.6xIDSS



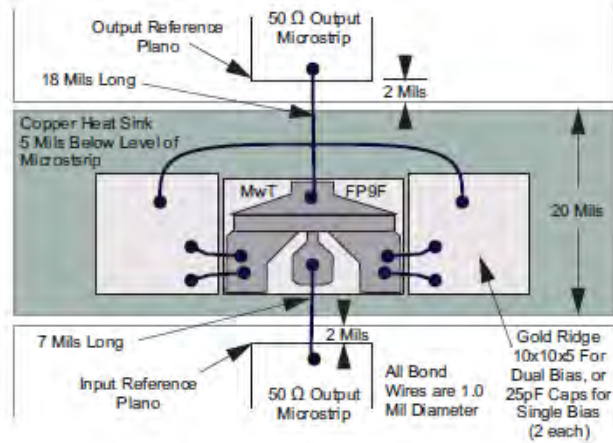
MwT-9F, Typical Power at 18GHz
Vds=7V; Ids=0.6xIDSS



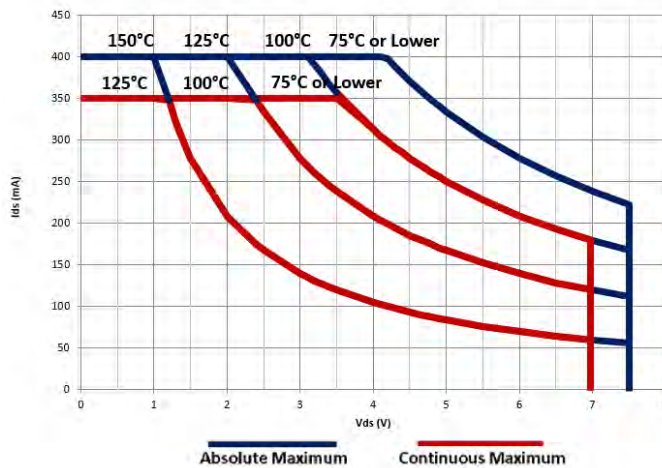
**MwT-9F
DUAL BIAS**



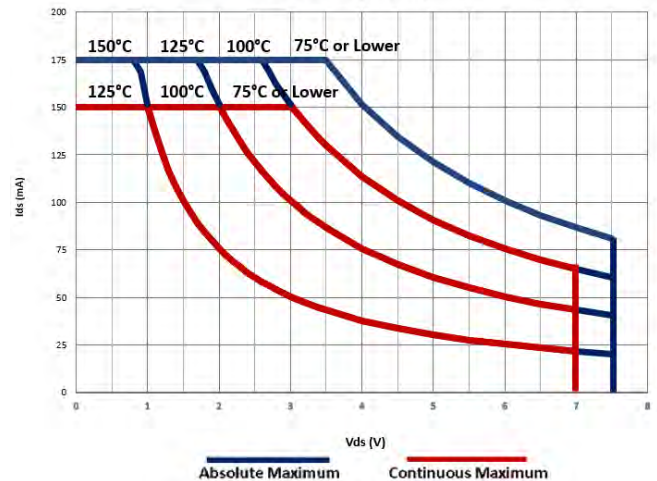
**MwT-9F
OPTIONAL BONDING**



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:

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

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

Freq.	S11		S21		S12		S22		K	GMAX
GHz	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)		dB
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.