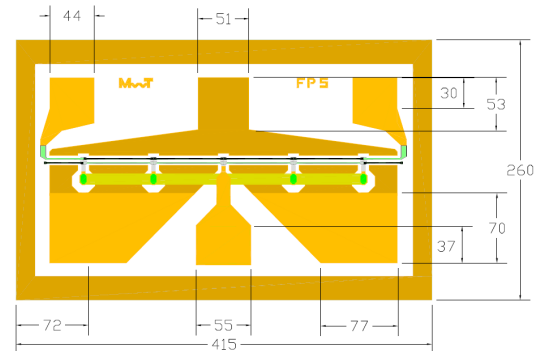


Features:

- 21 dBm P1dB at 12 GHz
- 19 dB Small Signal Gain at 12 GHz
- 0.25 Micron Refractory Metal/Gold Gate
- Excellent for High Gain and High Linear Amplifier Applications
- Ideal for Commercial, Military, Hi-Rel Space Applications
- 300 Micron Dual Gate Width
- Choice of Chip and One Package Type



Chip Dimensions: 415 x 260 microns
Chip Thickness: 100 microns

Description:

The MwT-5F is a dual gate GaAs MESFET device whose nominal 0.25 micron gate length and 300 micron dual gate width make it ideally suited to applications requiring high gain and high linearity in the 500 MHz to 26 GHz frequency range. MwT-5F is equally effective for either wideband (e.g. 2 to 26 GHz) or narrow-band applications. All chips are passivated with SiN (Silicon Nitride).

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

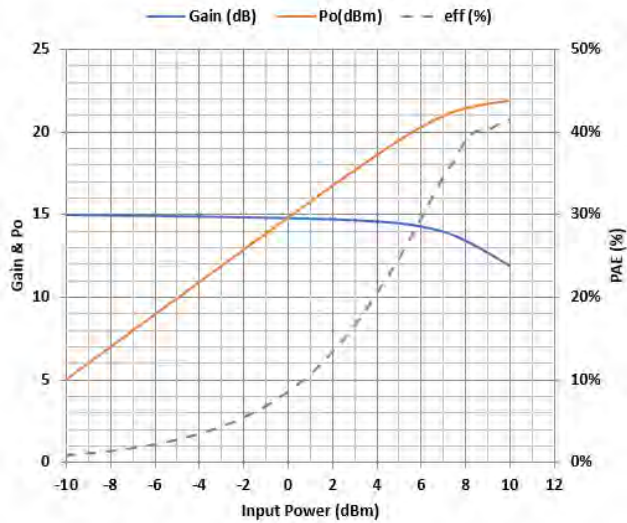
PARAMETERS & CONDITIONS	SYMBOL	FREQ	UNITS	TYP
Output Power at 1dB Compression $V_{ds}=7.0\text{V}$ $I_{ds}=6.0\text{V} \times I_{DSS}$ $V_{gs2}=1.5\text{V}$	P1dB	12 GHz	dBm	21.0
Output Third Order Intercept Point $V_{ds}=7.0\text{V}$ $I_{ds}=6.0\text{V} \times I_{DSS}$ $V_{gs2}=1.5\text{V}$	OIP3	12GHz	dBm	31
Small Signal Gain $V_{ds}=6.0\text{V}$ $I_{ds}=0.6 \times I_{DSS}$	SSG	12 GHz	dB	19.0
Optimum Noise Figure $V_{ds}=6.0\text{V}$ $I_{ds}=30\text{mA}$	NF Opt	12 GHz	dB	3.5
Gain @ Opt NF $V_{ds}=6.0\text{V}$ $I_{ds}=30\text{mA}$	GA	12 GHz	dB	11

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

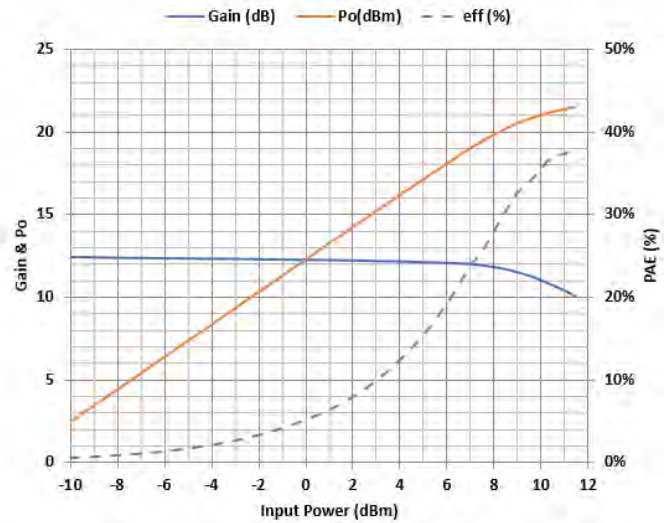
PARAMETERS & CONDITIONS	SYMBOL	UNITS	MIN	TYP	MAX
Saturated Drain Current $V_{ds}=4.0\text{V}$ $V_{G1S}=V_{G2S}=0.0\text{V}$	I_{DSS}	mA	60		80
Transconductance $V_{ds}=2.0\text{V}$ $V_{G2S}=0.0\text{V}$	G_m	mS	33	48	
Pinch-off Voltage $V_{ds}=3.0\text{V}$ $V_{G2S}=0.0\text{V}$ $I_{DS}=0\text{mA}$	V_p	V		-1.0	
Gate-to-Source Breakdown Voltage $I_{gs}=-0.4\text{mA}$	BVGSO	V	-16	-18	
Gate-to-Drain Breakdown Voltage $I_{gd}=-0.4\text{mA}$	BVGDO	V	-15	-17	
Thermal Resistance <i>MwT-5F Chip</i>	R_{th}	$^\circ\text{C/W}$		120	

*Overall R_{th} depends on case mounting

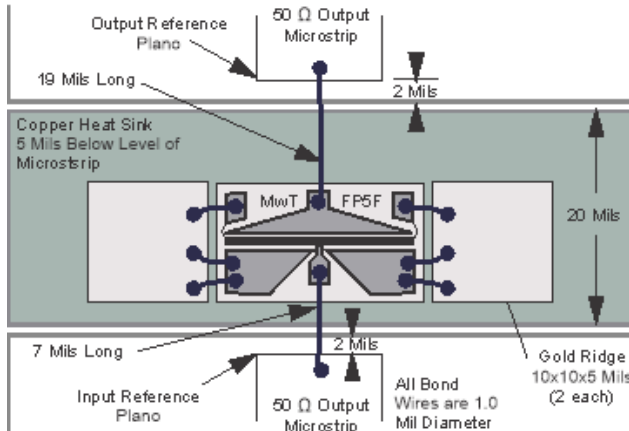
MwT-5F, Typical Power, 12GHz
Vds=7V; Ids=0.6xIDSS; Vgs2=1.5V



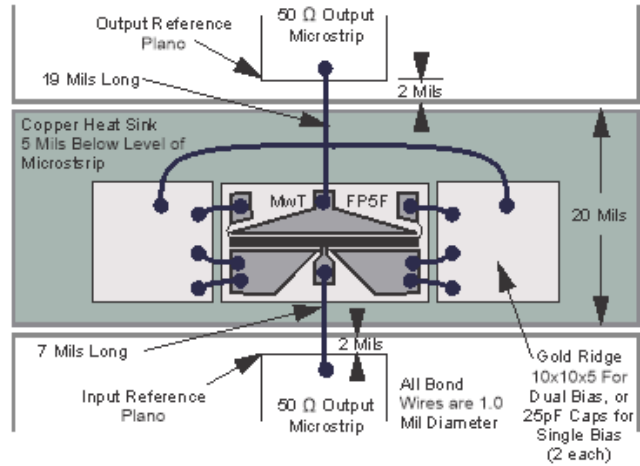
MwT-5F, Typical Power at 18GHz
Vds=7V; Ids=0.6xIDSS; Vgs2=1.5V



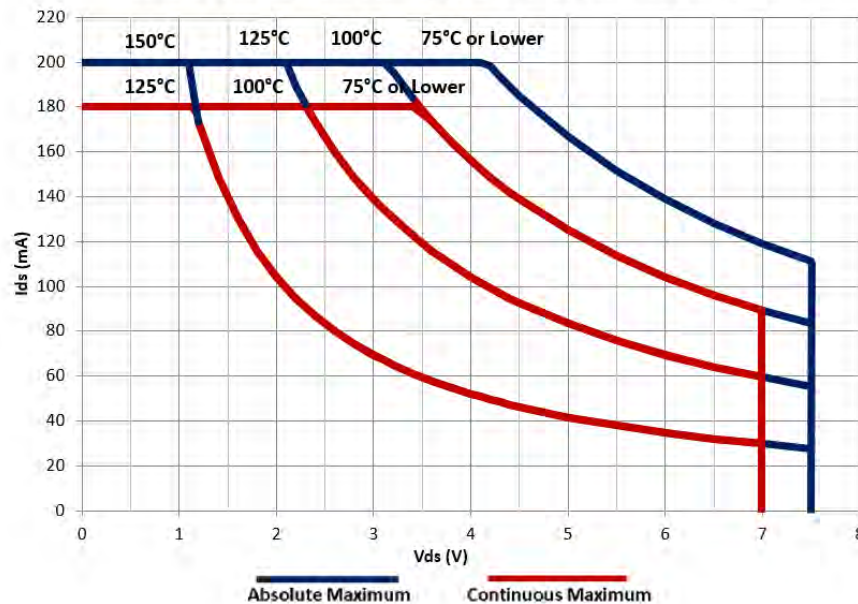
**MwT-5F
DUAL BIAS**



**MwT-5F
OPTIONAL BONDING**



Thermal Operating Limits vs Chip Backside Temperature of MwT-5F



S-PARAMETER $V_{ds}=6V$, $I_{ds}=0.7 \times I_{dss}$

Freq.	S11		S21		S12		S22		K	GMAX
GHz	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)		dB
1	-0.586	-10.932	11.963	168.981	-46.999	83.781	-1.057	-4.047	0.812	29.481
2	-0.665	-21.359	11.850	158.721	-41.218	78.419	-1.086	-8.292	0.525	26.534
3	-0.788	-31.452	11.664	148.752	-37.963	71.284	-1.129	-12.133	0.506	24.813
4	-0.952	-41.584	11.438	138.778	-35.887	65.896	-1.159	-16.103	0.519	23.663
5	-1.126	-50.186	11.077	129.326	-34.461	61.163	-1.315	-20.285	0.593	22.769
6	-1.294	-59.278	10.676	120.403	-33.552	57.512	-1.501	-22.832	0.686	22.114
7	-1.629	-67.336	10.360	111.513	-32.670	51.730	-1.397	-27.056	0.751	21.515
8	-1.785	-76.046	10.049	103.060	-32.040	48.126	-1.469	-30.428	0.795	21.045
9	-1.992	-84.861	9.762	94.576	-31.559	44.478	-1.495	-33.909	0.841	20.660
10	-2.127	-92.223	9.485	86.527	-31.336	41.549	-1.425	-37.483	0.851	20.410
11	-2.366	-100.035	9.092	78.385	-31.133	37.384	-1.455	-41.176	0.941	20.113
12	-2.477	-107.334	8.827	70.834	-31.142	34.411	-1.459	-44.608	0.989	19.985
13	-2.605	-114.579	8.532	62.809	-31.411	31.758	-1.375	-48.348	1.026	18.992
14	-2.705	-121.340	8.169	55.257	-31.720	29.030	-1.384	-52.261	1.116	17.870
15	-2.793	-127.874	7.870	47.661	-32.359	28.636	-1.264	-55.753	1.144	17.812
16	-2.828	-134.048	7.610	40.430	-32.911	28.759	-1.135	-60.133	1.114	18.207
17	-2.839	-139.752	7.272	33.063	-33.671	30.749	-1.027	-64.255	1.104	18.511
18	-2.818	-145.291	6.993	25.669	-34.484	33.431	-0.879	-68.499	1.025	19.776
19	-2.782	-150.694	6.712	18.589	-35.437	41.824	-0.725	-72.747	0.851	21.074
20	-2.723	-155.783	6.432	11.146	-36.013	52.552	-0.575	-77.547	0.576	21.223
21	-2.653	-160.797	6.178	3.738	-36.062	58.436	-0.409	-82.496	0.249	21.120
22	-2.576	-165.138	5.888	-3.559	-35.376	72.522	-0.182	-87.488	-0.280	20.632
23	-2.507	-169.324	5.599	-11.177	-34.224	89.412	0.031	-92.560	-0.731	19.911
24	-2.325	-174.035	5.343	-18.775	-32.430	94.462	0.261	-97.751	-1.038	18.886
25	-2.182	-178.106	5.071	-26.257	-30.832	98.001	0.470	-103.140	-1.227	17.952
26	-2.076	177.969	4.736	-33.979	-29.018	100.184	0.678	-108.574	-1.345	16.877

MAXIMUM RATINGS AT $T_a = 25^\circ\text{C}$

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	95	145

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.

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 I_{dss} Range. For details of Safe Handling Procedure please see supplementary information in available PDF on our website www.mwtinc.com.

Available Packaging:

71 Package - MwT-5F71