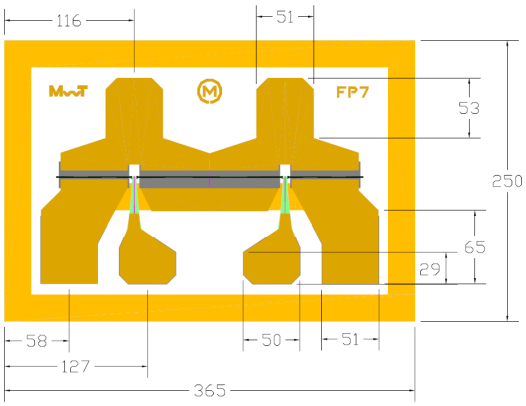
MwT-7F 26 GHz Medium Power GaAs FET

Features:

- **21 dBm Output Power at 12 GHz**
- **15 dB Small Signal Gain at 12 GHz**
- **Excellent for High Linear Gain or Oscillator Applications**
- **Ideal for Commercial, Military, Hi-Rel Space Applications**
- **0.25 Micron Refractory Metal/Gold Gate**
- **250 Micron Gate Width**
- **Choice of Chip and Three Package Types**



Chip Dimensions: 365 x 250 microns
Chip Thickness: 100 microns

Description:

The MwT-7F is a GaAs MESFET device whose nominal 0.25 micron gate length and 250 micron gate width make it ideally suited to applications requiring high-gain and medium linear power in the 500 MHz to 26 GHz frequency range. MwT-7F is equally effective for either wideband (e.g., 6 to 18 GHz) or narrow-band applications. Processing which guarantees low phase noise makes the MwT-7F particularly attractive for oscillator applications. All chips are passivated with SiN (Silicon Nitride).

RF Specifications: • *at Ta= 25 C*

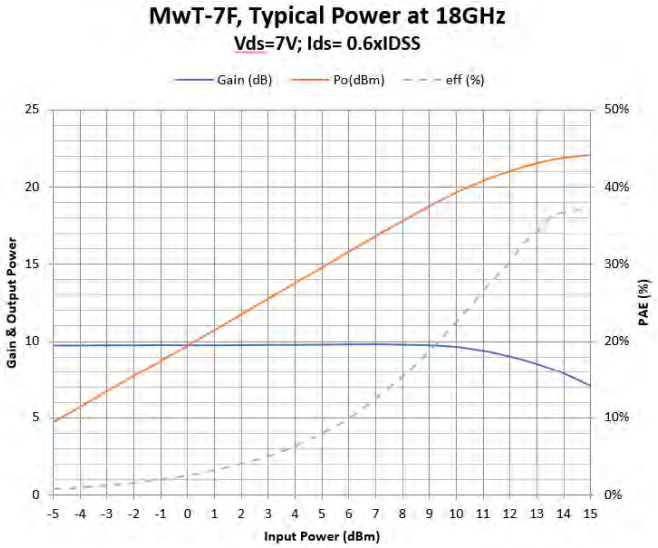
PARAMETERS & CONDITIONS	SYMBOL	FREQ	UNITS	MIN	TYP
Output Power at 1dB Compression Vds=7.0V Ids=0.6xIDSS	P1dB	12 GHz	dBm		21.0
Output Third Order Intercept Point Vds=7.0V Ids=0.6xIDSS	OIP3	12 GHz	dBm		32
Power Added Efficiency Vds=7.0V Ids=0.6xIDSS	PAE	12 GHz	%		35
Small Signal Gain Vds=7.0V Ids=0.6xIDSS	SSG	12 GHz	dB	14.0	15.0
Optimum Noise Figure Vds=4.0V Ids=20mA	NF Opt	12 GHz	dB		2.0
Gain @ Opt NF Vds=4.0V Ids=20mA	GA	12 GHz	dB		8.0

DC Specifications: • *at Ta= 25 ° C*

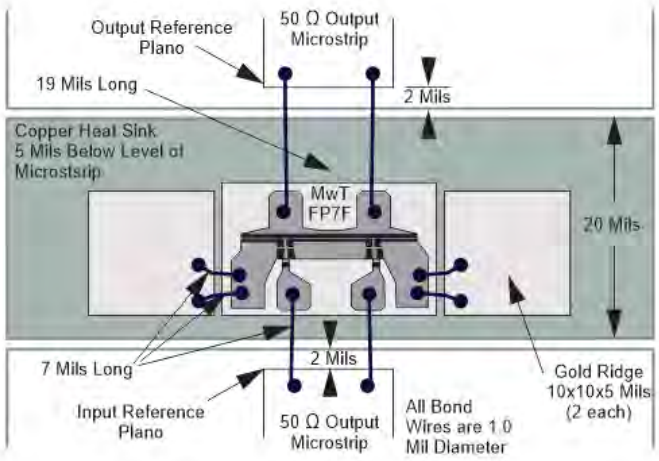
PARAMETERS & CONDITIONS	SYMBOL	UNITS	MIN	TYP
Saturated Drain Current Vds= 4.0 V VGS=0.0V	IDSS	mA		77
Transconductance Vds= 2.0 V VGS=0.0V	Gm	mS		42
Pinch-off Voltage Vds= 3.0 IDS=0mA	Vp	V		-2.0
Gate-to-Source Breakdown Voltage Igs= -1.0 mA	BVGSO	V	-14	-15
Gate-to-Drain Breakdown Voltage Igd= -1.0 mA	BVGDO	V	-14	-15
Thermal Resistance *MwT-7F Chip, 71 Pkg* *70 Pkg & 73 Pkg*	Rth	°C/W		

**Overall Rth depends on case mounting*

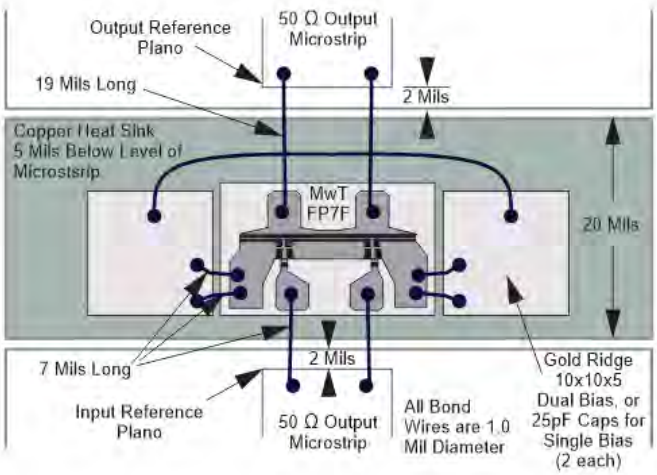

MwT-7F, Typical Power at 12GHz
Vds=7V; Ids=0.6xIDSS
Gain (dB)
Po(dBm)
eff (%)
Gain & Po
PAE (%)
Input Power (dBm)


MwT-7F, Typical Power at 18GHz
Vds=7V; Ids= 0.6xIDSS
Gain (dB)
Po(dBm)
eff (%)
Gain & Output Power
PAE (%)
Input Power (dBm)

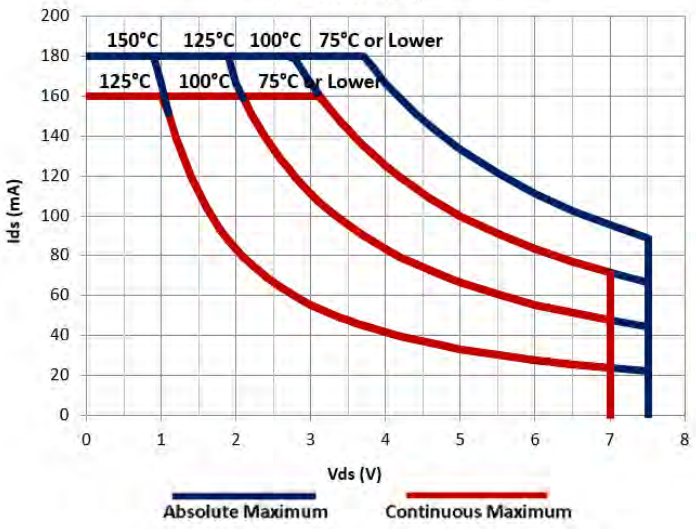
MwT-7F
DUAL BIAS



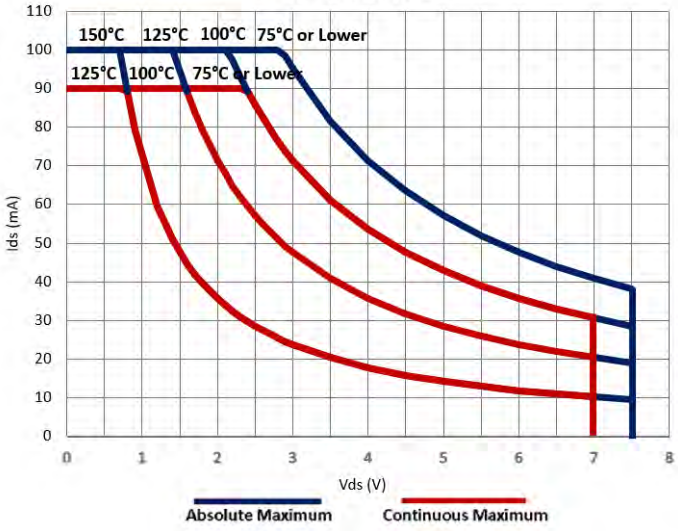
MwT-7F
OPTIONAL BONDING



SAFE OPERATING LIMITS vs BACKSIDE TEMPERATURE
MwT-7F Chip & 71 pkg



SAFE OPERATING LIMITS vs BACKSIDE TEMPERATURE
MwT-7F with 70 pkg & 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	80	120

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.	S11		S21		S12		S22		K	GMAX
GHz	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)		dB
1	-0.498	-10.990	10.175	170.686	-41.693	81.458	-2.335	-4.381	0.893	25.934
2	-0.582	-21.883	10.025	161.933	-35.631	76.775	-2.392	-9.029	0.537	22.828
3	-0.595	-32.489	9.882	153.342	-32.571	71.286	-2.479	-12.917	0.416	21.226
4	-0.854	-41.958	9.630	145.248	-30.386	65.747	-2.545	-16.709	0.482	20.008
5	-1.012	-52.008	9.248	137.024	-28.750	61.358	-2.669	-20.685	0.491	18.999
6	-1.317	-60.380	8.819	129.651	-27.611	56.034	-2.719	-24.087	0.585	18.215
7	-1.308	-70.683	8.482	122.074	-26.643	51.065	-2.921	-26.615	0.572	17.563
8	-1.647	-76.766	8.087	115.568	-26.098	47.441	-3.019	-31.051	0.683	17.093
9	-1.679	-83.673	7.872	108.759	-25.185	44.458	-3.073	-37.449	0.621	16.528
10	-1.921	-93.421	7.409	101.968	-24.956	39.335	-3.200	-39.572	0.727	16.182
11	-1.759	-99.388	7.018	96.243	-24.529	36.131	-3.496	-42.818	0.714	15.773
12	-1.902	-106.018	6.738	90.372	-24.161	32.319	-3.402	-46.227	0.736	15.450
13	-2.146	-112.957	6.439	84.479	-24.083	29.700	-3.217	-50.391	0.773	15.261
14	-2.181	-120.728	5.965	77.818	-23.951	26.960	-3.360	-53.920	0.820	14.958
15	-1.903	-124.452	5.685	73.257	-23.920	24.396	-3.348	-57.984	0.744	14.802
16	-2.323	-130.428	5.198	67.592	-23.824	22.045	-3.472	-60.964	0.934	14.511
17	-2.494	-137.360	4.811	61.971	-23.939	19.772	-3.595	-64.451	1.052	12.986
18	-2.210	-143.696	4.517	56.014	-24.051	17.966	-3.513	-68.062	0.960	14.284
19	-2.108	-146.372	4.175	52.126	-23.983	16.273	-3.504	-72.649	0.936	14.079
20	-2.212	-150.234	3.768	46.823	-24.214	14.476	-3.446	-77.164	1.031	12.911
21	-2.512	-155.237	3.491	43.152	-24.378	14.523	-3.455	-80.552	1.179	11.372
22	-2.194	-159.572	3.120	38.548	-24.300	14.126	-3.392	-84.296	1.040	12.481
23	-2.023	-162.750	2.795	32.613	-24.657	12.653	-3.225	-88.295	1.007	13.204
24	-2.232	-164.405	2.399	29.542	-25.011	13.683	-3.086	-91.882	1.150	11.354
25	-2.215	-169.779	2.116	25.191	-24.712	13.904	-3.060	-95.917	1.088	11.606
26	-1.983	-172.505	1.650	21.285	-24.875	15.290	-2.987	-100.029	1.000	13.262

Available Packaging:

70 Package - MwT-7F70
71 Package - MwT-7F71
73 Package - MwT-7F73

Contact Information

For additional information please visit www.cmlmicro.com or contact a sales office.

Europe	America	Asia
• Maldon, UK • Tel +44 (0) 1621 875500 • sales@cmlmicro.com	• Winston-Salem, NC • Tel +1 336 744 5050 • us.sales@cmlmicro.com	• Singapore • Tel +65 6288129 • sg.sales@cmlmicro.com