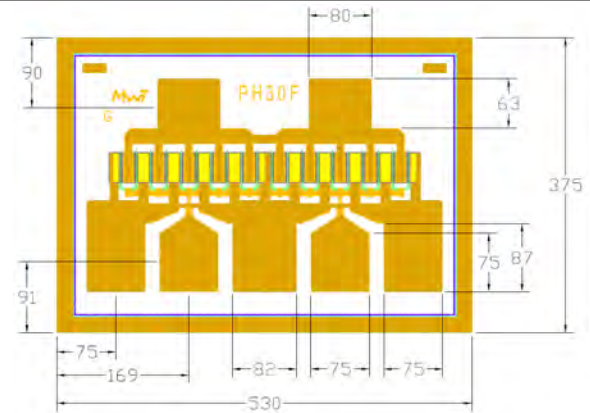


MwT-PH30F 18 GHz Medium Power AlGaAs/InGaAs pHEMT

Features:

- 28 dBm of Power at 12 GHz
- 14 dB Small Signal Gain at 12 GHz
- 45 % PAE at 12 GHz
- 0.25 x 800 μm Refractory Metal / Gold Gate
- Excellent for Medium Power, Gain, and High Power Added Efficiency
- Ideal for Commercial, Military, Hi-Rel Space Applications



Chip Dimensions: 530 x 375 μm
Chip Thickness: 100 μm

Description:

The MwT-PH30F is a AlGaAs/InGaAs pHEMT (Pseudomorphic-High-Electron-Mobility-Transistor) device whose nominal 0.25μm gate length and 800 μm gate width make it ideally suited for applications requiring high-gain and medium power up to 18 GHz frequency range. 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=8.0V Ids=0.7xIDSS	P1dB	12 GHz	dBm		25.0
Saturated Power Vds=8.0V Ids=0.7xIDSS	Psat	12 GHz	dBm		28.0
Output Third Order Intercept Point Vds=8.0V Ids=0.7xIDSS	OIP3	12 GHz	dBm		34.0
Small Signal Gain Vds=8.0V Ids=0.7xIDSS	SSG	12 GHz	dB		14.0
Power Added Efficiency at P1dB Vds=8.0V Ids=0.7xIDSS	PAE	12 GHz	%		45

Note: Ids should be between 40% and 80% of Idss. Currently, our data shows Ids at 70% of IDSS. Low Ids will improve efficiency, but high Ids will make Psat and IP3 better.

DC Specifications: at Ta = 25 °C

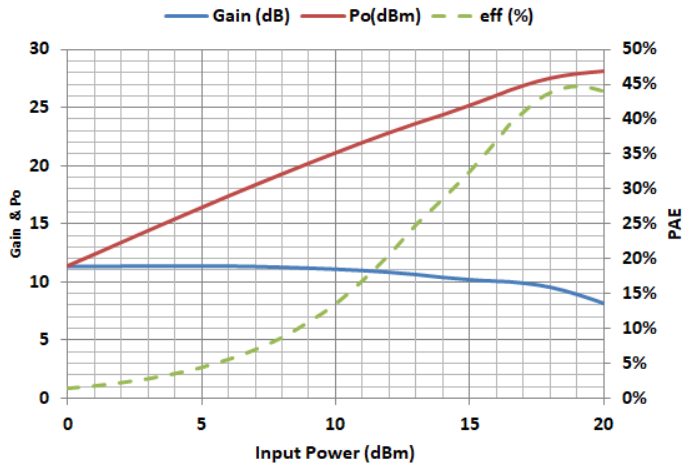
PARAMETERS & CONDITIONS	SYMBOL	UNITS	MIN	TYP	MAX
Saturated Drain Current Vds= 3.0 V Vgs= 0.0 V	IDSS	mA	160		200
Transconductance Vds= 2.5 V Vgs= 0.0 V	Gm	mS		200	
Pinch-off Voltage Vds= 3.0 V Ids= 1.0 mA	Vp	V		-0.8	-1.0
Gate-to-Source Breakdown Voltage Igs= -0.3 mA	BVGSO	V		-18.0	
Gate-to-Drain Breakdown Voltage Igd= -0.3 mA	BVGDO	V		-18.0	
Chip Thermal Resistance	Rth	C/W		50	170*

* Overall Rth depends on case mounting

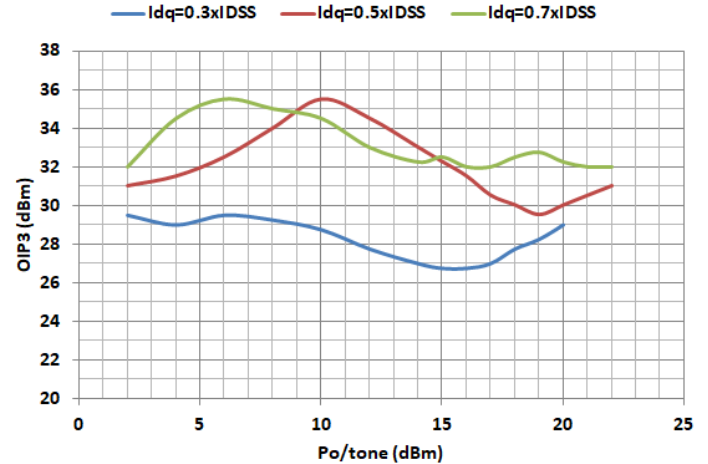
MwT-PH30F

18 GHz Medium Power AlGaAs/InGaAs pHEMT

MwT-PH30F, Po, Gain & PAE at 12GHz vs Pin
Vds=8V; Idq=0.7xIDSS



MwT-PH30F, OIP3 at 12GHz with different Idq vs Po/Tone
Vds=8V; Idq=0.7xIDSS



MwT-PH30F, Load Pull Data, Vds=8V, Idq=0.7xIdss

Freq GHz	ZS		ZL		Psat dBm
	Mag	phase	mag	phase	
2	0.86	101.00	0.22	126.40	28.07
4	0.92	147.50	0.31	121.50	27.51
6	0.93	149.00	0.42	125.80	27.55
8	0.91	160.00	0.48	131.60	27.53
10	0.94	163.00	0.52	135.60	27.51
12	0.91	167.00	0.57	139.00	27.43

The load pull data is based on nonlinear model provided by the foundry that processes the device.

ESD Caution

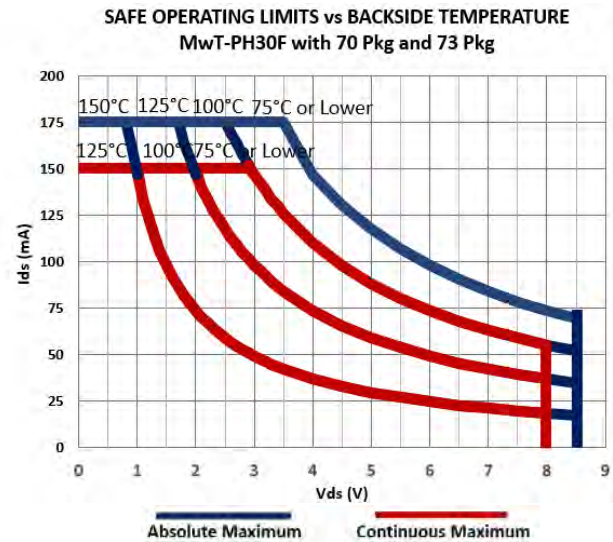
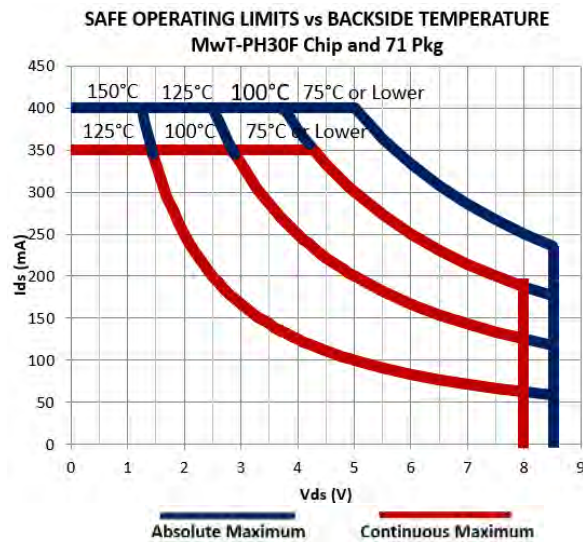
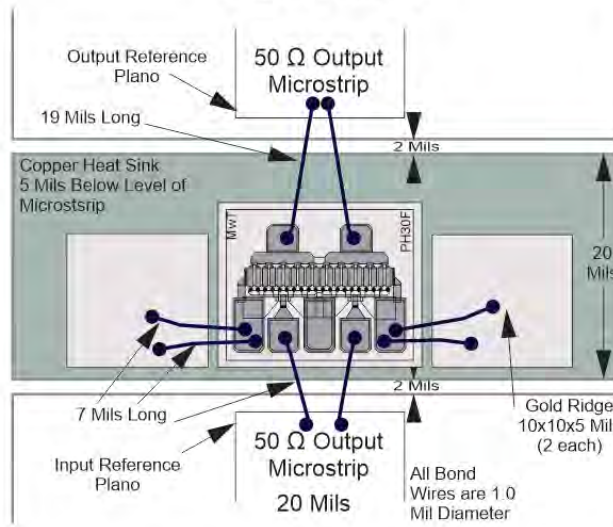


High-performance RF integrated circuits are highly sensitive to electrostatic discharge (ESD) and may contain unprotected inputs and outputs. Handling and assembly should be conducted in an ESD-controlled environment. It is recommended that ESD precautions and protocols are adopted to minimise the risk of electrostatic discharge and protect product integrity.

MwT-PH30F

18 GHz Medium Power AlGaAs/InGaAs pHEMT

MwT-PH30F DUAL BIAS



Absolute Maximum Rating

Symbol	Parameter	Units	Cont Max1	Absolute Max2
VDS	Drain to Source Volt.	V	8.0	8.5
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-65 to +150	+175
Pin	RF Input Power	mW	300	400

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.

MwT-PH30F

18 GHz Medium Power AlGaAs/InGaAs pHEMT

S-Parameters

S-PARAMETER Vds=8.0V, Ids= 0.7 x Idss										
Freq.	S11		S21		S12		S22		K	GMAX
GHz	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)		dB
1	-0.652	-74.597	22.941	136.307	-30.869	51.647	-5.689	-31.679	0.130	26.905
2	-1.092	-116.007	19.701	112.057	-28.123	33.014	-7.922	-46.483	0.219	23.912
3	-1.274	-138.647	16.987	97.045	-27.387	23.524	-9.233	-54.738	0.315	22.187
4	-1.364	-152.728	14.808	86.259	-27.081	18.767	-9.825	-61.819	0.408	20.945
5	-1.391	-162.796	12.905	78.067	-27.049	15.831	-10.157	-67.798	0.513	19.977
6	-1.391	-170.373	11.537	70.657	-26.862	14.934	-10.196	-71.799	0.586	19.199
7	-1.393	-177.875	10.322	63.209	-26.930	13.278	-10.219	-77.723	0.682	18.626
8	-1.353	177.875	9.131	56.537	-27.087	13.092	-9.734	-85.242	0.752	18.109
9	-1.390	172.838	7.875	49.967	-27.330	14.774	-9.751	-92.406	0.936	17.603
10	-1.322	168.152	7.007	43.722	-27.145	14.405	-9.080	-97.975	0.923	17.076
11	-1.176	163.081	6.163	37.399	-27.227	15.738	-8.944	-104.071	0.903	16.695
12	-1.164	159.795	5.339	32.004	-27.309	17.415	-8.477	-110.028	0.976	16.324
13	-1.215	156.044	4.521	26.163	-27.258	18.948	-8.087	-116.083	1.108	13.893
14	-1.219	152.982	3.677	21.150	-27.027	21.685	-7.695	-122.260	1.177	12.802
15	-1.006	148.974	3.044	15.549	-26.817	24.672	-7.381	-127.424	0.976	14.931
16	-1.084	146.844	2.439	9.983	-26.485	27.458	-6.842	-133.042	1.059	12.973
17	-1.058	144.249	1.784	5.267	-26.262	28.980	-6.416	-138.430	1.055	12.590
18	-1.102	141.709	1.103	1.217	-25.612	31.156	-5.899	-143.788	1.060	11.857
19	-0.965	139.573	0.412	-3.994	-25.184	32.602	-5.712	-148.353	0.923	12.798
20	-0.921	136.584	-0.080	-8.757	-24.430	33.808	-5.372	-153.173	0.808	12.175
21	-0.874	133.891	-0.907	-14.602	-24.112	35.757	-5.108	-156.664	0.790	11.603
22	-0.940	132.014	-1.464	-18.447	-23.318	34.754	-4.677	-162.025	0.780	10.927
23	-0.776	130.364	-2.040	-22.707	-23.003	35.322	-4.421	-167.422	0.605	10.481
24	-0.796	127.534	-2.730	-27.372	-22.459	33.696	-4.252	-171.560	0.620	9.865
25	-0.956	126.012	-3.240	-31.472	-21.724	33.969	-3.915	-176.356	0.723	9.242
26	-0.876	124.144	-3.847	-35.248	-21.176	32.737	-3.653	-178.880	0.609	8.664
27	-0.881	121.628	-4.355	-38.783	-20.646	32.450	-3.360	-175.534	0.569	8.146
28	-0.738	120.460	-5.004	-42.709	-20.050	30.665	-3.227	-171.107	0.410	7.523
29	-0.776	117.928	-5.651	-46.070	-19.645	28.542	-3.022	-167.951	0.427	6.997
30	-0.764	116.436	-6.160	-49.587	-19.117	27.239	-2.825	-163.526	0.382	6.478

Available Packaging:

70 Package - MwT-PH30F70

71 Package - MwT-PH30F71

73 Package - MwT-PH30F73

RoHS Compliance



CML Micro certifies, to the best of our knowledge, that its products comply with RoHS directive (2011/65/EU), as amended by Directive (EU) 2015/863.

REACH Compliance



CML Micro certifies, to the best of our knowledge, that its products do not contain any of the banned substances specified in the SVHC list at <https://echa.europa.eu/candidate-list-table>. CML Micro are committed to ensuring the safety of products and the compliance with regulations. Publications will be updated in the event that REACH control is compromised.

Contact Information

For further information please contact your local CML sales representative.
Contact details can be found at www.cmlmicro.com.

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