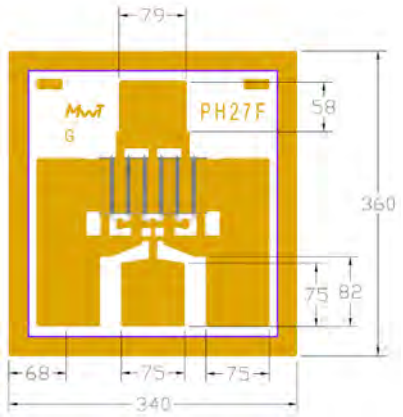
MwT-PH27F 26 GHz Medium Power AlGaAs/InGaAs pHEMT

Features:

- **25 dBm of Power at 18 GHz**
- **14 dB Small Signal Gain at 18 GHz**
- **45% PAE at 18 GHz**
- **0.25 x 400 Micron Refractory Metal/Gold Gate**
- **Excellent for Medium Power, Gain, and High Power Added Efficiency**
- **Ideal for Commercial, Military, Hi-Rel Space Applications**



Chip Dimensions: 340 x 360 microns
Chip Thickness: 100 microns

Description:

The MwT-PH27F is a AlGaAs/InGaAs pHEMT (Pseudomorphic-High-Electron-Mobility-Transistor) device whose nominal 0.25 micron gate length and 400 micron gate width make it ideally suited for applications requiring high-gain and medium power up to 26 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*

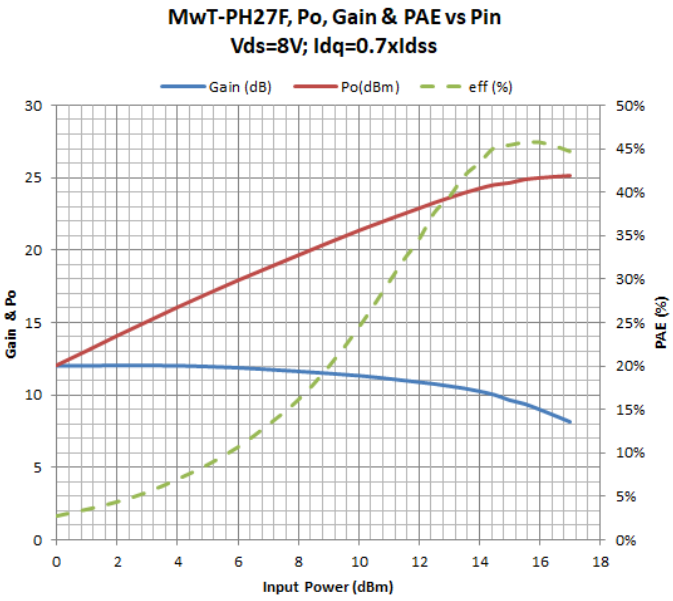
PARAMETERS & CONDITIONS	SYMBOL	FREQ	UNITS	MIN	TYP
Output Power at 1dB Compression Vds=9.0V Ids=0.7xIDSS	P1dB	18 GHz	dBm		22.5
Saturated Power Vds=9.0V Ids=0.7xIDSS	Psat	18 GHz	dBm		25.0
Output Third Order Intercept Point Vds=9.0V Ids=0.7xIDSS	OIP3	18 GHz	dBm		31.0
Small Signal Gain Vds=9.0V Ids=0.7xIDSS	SSG	18 GHz	dB		16.0
Power Added Efficiency at P1dB Vds=9.0V Ids=0.7xIDSS	PAE	18 GHz	%		45

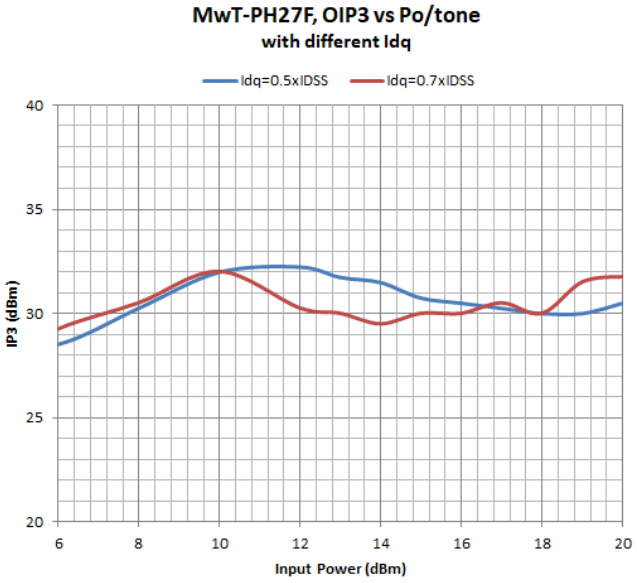
Note: Ids should be between 40% and 80% of Idss. Currently, our data shows Ids at 70% of IDSS. Low Ids will improve efficiency, but high Ids will make Psat and IP3 better.

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	90		120
Transconductance Vds= 2.5 V Vgs= 0.0 V		Gm	mS		140	
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	Chip & 71 pkg 70 & 73 pkg	Rth	C/W		95 225*	

* Overall Rth depends on case mounting

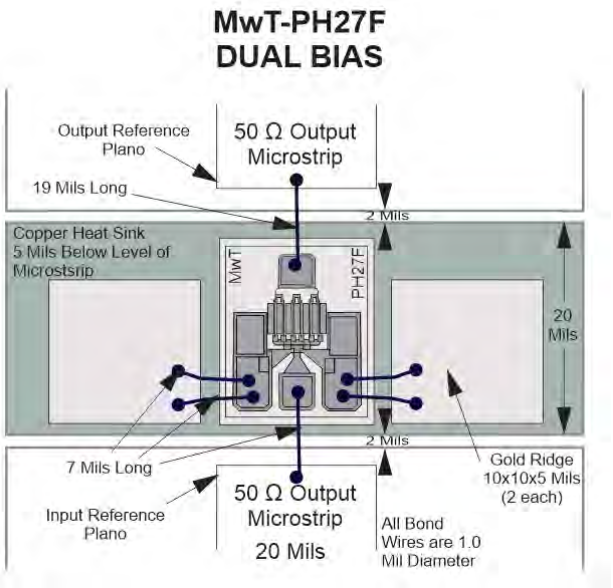


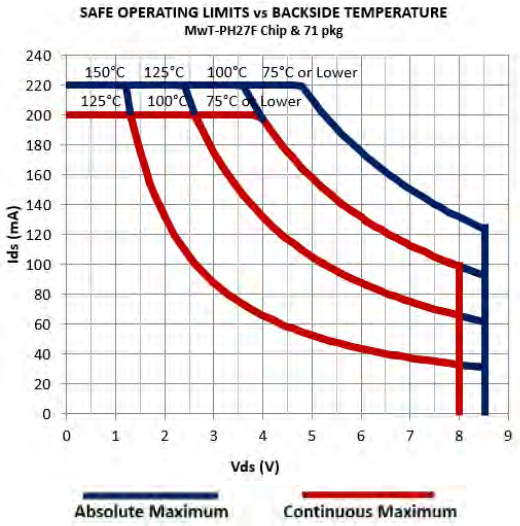


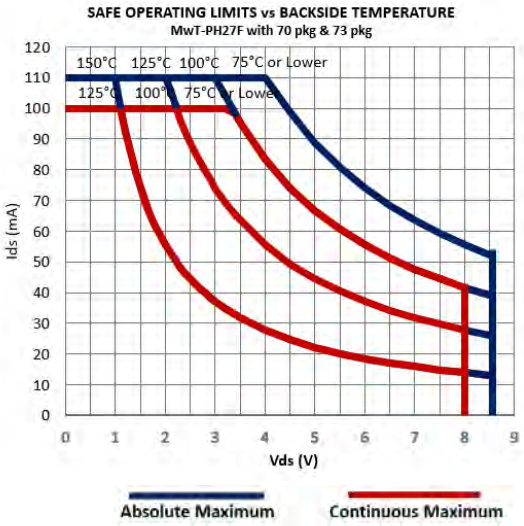
MwT-PH27F, Load Pull Data, Vdq=8V; Idq=0.7xIdss

Freq (GHz)	Zs		ZL		Psat
	Mag	phase	mag	phase	dBm
2	0.84	50.00	0.16	22.56	25.8
4	0.77	90.00	0.17	33.56	25.9
6	0.76	112.00	0.19	46.65	25.8
8	0.79	129.00	0.28	65.03	25.6
10	0.80	137.00	0.28	70.74	25.7
12	0.82	149.00	0.35	78.36	25.5
14	0.86	151.00	0.38	83.73	25.3
16	0.83	160.00	0.38	84.90	25.3
18	0.85	164.00	0.43	97.06	25.3

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







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	130	200

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-Parameters

S-PARAMETER Vds=8V, Ids= 0.7 x Idss

Freq.	S11		S21		S12		S22		K	GMAX
GHz	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)		dB
1	-0.231	-32.694	19.665	158.071	-36.548	72.399	-2.160	-8.934	0.115	28.106
2	-0.640	-61.163	18.651	140.369	-31.601	59.978	-2.672	-15.713	0.166	25.126
3	-1.079	-85.153	17.410	125.221	-29.335	48.992	-3.170	-21.042	0.241	23.373
4	-1.386	-104.475	16.169	112.916	-28.102	41.107	-3.610	-24.819	0.302	22.135
5	-1.761	-119.922	14.784	102.685	-27.581	35.053	-4.099	-28.464	0.417	21.182
6	-1.983	-131.782	13.725	94.677	-27.048	31.418	-4.315	-30.382	0.491	20.387
7	-2.195	-143.772	12.685	86.683	-26.970	28.522	-4.557	-32.770	0.594	19.827
8	-2.134	-152.508	11.837	79.877	-26.604	26.067	-4.718	-37.131	0.599	19.221
9	-2.148	-161.518	10.655	72.635	-26.825	25.021	-5.079	-39.773	0.732	18.740
10	-2.158	-168.517	10.045	66.584	-26.674	22.641	-4.987	-43.411	0.753	18.359
11	-2.025	-175.835	9.363	59.695	-26.844	22.444	-5.178	-46.034	0.794	18.104
12	-1.978	178.553	8.602	54.635	-26.802	21.868	-5.321	-49.977	0.847	17.702
13	-1.996	173.295	7.922	48.918	-26.939	22.962	-5.368	-53.571	0.936	17.430
14	-1.927	168.420	7.163	43.642	-26.876	23.745	-5.449	-57.977	0.978	17.019
15	-1.898	163.936	6.736	38.677	-26.939	25.503	-5.572	-61.784	1.025	15.867
16	-1.827	159.393	6.173	34.214	-26.768	28.271	-5.517	-66.454	0.999	16.470
17	-1.893	155.811	5.549	29.308	-26.693	29.474	-5.498	-72.013	1.104	14.159
18	-1.663	152.829	4.955	25.013	-26.406	32.946	-5.506	-77.229	0.976	15.680
19	-1.645	151.205	4.537	20.792	-26.107	35.919	-5.459	-81.318	0.963	15.322
20	-1.565	145.351	4.104	15.854	-25.883	36.755	-5.557	-86.388	0.943	14.994
21	-1.581	143.051	3.545	9.574	-25.354	38.691	-5.335	-92.138	0.919	14.449
22	-1.579	140.188	3.124	5.470	-25.001	40.464	-5.284	-97.372	0.918	14.063
23	-1.402	138.352	2.664	0.691	-24.223	41.543	-5.284	-103.922	0.745	13.443
24	-1.362	135.736	2.220	-4.336	-23.845	41.498	-5.275	-110.968	0.727	13.033
25	-1.418	133.109	1.672	-8.620	-23.266	42.930	-5.038	-117.456	0.740	12.469
26	-1.321	130.648	1.212	-13.116	-22.760	44.637	-4.872	-123.799	0.653	11.986
27	-1.187	128.092	0.790	-18.101	-22.283	45.873	-4.615	-129.916	0.526	11.537
28	-1.114	127.122	0.390	-22.352	-21.403	41.984	-4.480	-136.444	0.403	10.896
29	-1.131	123.760	-0.153	-26.948	-20.886	42.084	-4.328	-142.815	0.418	10.367
30	-1.124	122.425	-0.592	-31.182	-20.361	40.077	-4.008	-149.395	0.363	9.884

Available Packaging:

70 Package - MwT-PH27F70
71 Package - MwT-PH27F71
73 Package - MwT-PH27F73

Contact Information

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