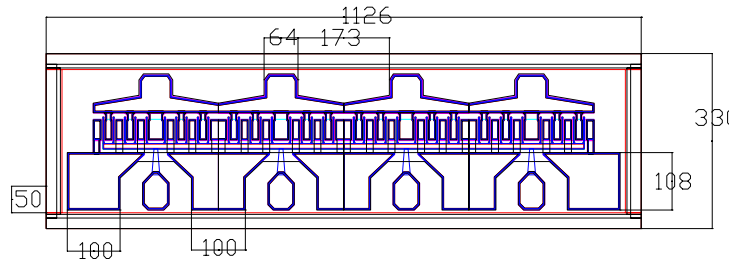


Features:

- **+31.0 dBm Output Power at 12 GHz**
- **11 dB Small Signal Gain at 12 GHz**
- **50% PAE at 12 GHz**
- **0.25 x 1600 Micron Refractory Metal/Gold Gate**
- **Sorted into 50 mA Idss Bin Ranges**
- **Excellent for High Power, Gain, and High Power-Added-Efficiency Applications**
- **Ideal for Commercial, Military, and Space Applications**



Chip Dimensions: 1126 x 330 microns
Chip Thickness: 100 microns
All dimensions in microns

Description:

The MwT-PH16A is a AlGaAs/InGaAs pHEMT device whose nominal 0.25 micron gate length and 1600 micron gate width make it ideally suited for applications requiring high-gain and high power up to 20 GHz . The device is equally effective for either wideband (e.g. 6 to 18 GHz) or narrow-band applications in EW, Radar, Instrumentation and Communications equipment .

Electrical Specifications:

• *at Ta= 25 °C*

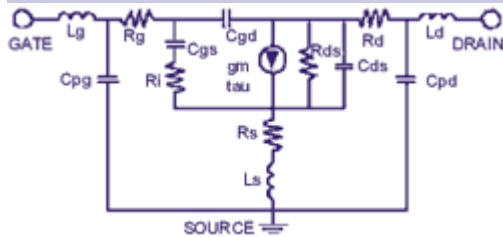
SYMBOL	PARAMETERS & CONDITIONS	FREQ	UNITS	MIN	TYP
P1dB	Output Power at 1dB Compression Vds=8.0 V Ids=0.6xIDSS	F=12 GHz	dBm	29.0	31.0
		F=18 GHz			31.0
SSG	Small Signal Gain Vds=8.0 V Ids=0.6xIDSS	F=12 GHz	dB	9.5	11.0
		F=18 GHz			9.0
PAE	Power Added Efficiency at P1dB VdS=8.0 V Ids=0.6xIDSS	12 GHz	%		50

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

SYMBOL	PARAMETERS & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current $V_{ds}=2.0\text{ V}$ $V_{gs}=0.0\text{ V}$	mA	300		600
Gm	Transconductance $V_{ds}=2.0\text{ V}$ $V_{gs}=0.0\text{ V}$	mS	300	400	
Vp	Pinch-off Voltage $V_{ds}=3.0\text{ V}$ $I_{ds}=2.0\text{ mA}$	V		-1.2	-2.5
BVGSO	Gate-to-Source Breakdown Voltage $I_{gs} = -2.0\text{ mA}$	V	-6.0	-8.0	
BVGDO	Gate-to-Drain Breakdown Voltage $I_{gd} = -2.0\text{ mA}$	V	-10.0	-13.0	
Rth	Thermal Resistance	$^\circ\text{C/W}$		30	

* Overall Rth depends on case mounting

DEVICE EQUIVALENT CIRCUIT



PARAMETER

VALUE

Source Resistance	R_s	0.13	ohm
Source Inductance	L_s	0.025	nH
Drain-Source Resistance	R_{ds}	40	ohm
Drain-Source Capacitance	C_{ds}	0.25	pF
Drain Resistance	R_d	0.3	ohm
Drain Pad Capacitance	C_{pd}	0.027	pF
Drain Inductance	L_d	0.1	nH
Gate Bond Wire Inductance	L_g	0.1	nH
Gate Pad Capacitance	C_{pg}	0.050	pF
Gate Resistance	R_g	0.20	ohm
Gate-Source Capacitance	C_{gs}	2.50	pF
Channel Resistance	R_i	0.30	ohm
Gate-Drain Capacitance	C_{gd}	0.10	pF
Transconductance	g_m	400.0	mS
Transit Time	τ	3.0	psec



MAXIMUM RATINGS AT Ta = 25 °C

Symbol	Parameter	Units	Cont Max1	Absolute Max2
VDS	Drain to Source Voltage	V	8.5	9.0
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-65 to+150	+175
Pin	RF Input Power	mW	800	1000
Pt	Total Power Dissipation	mW	2000	2400

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.

BIN SELECTION

BIN#	1	2	3	4	5	6
IDSS (mA)	300-350	350-400	400-450	450-500	500-550	550-600

BIN ACCURACY STATEMENT: Due to the effects of temperature, dc loading and probe tip varnishing, the IDSS from the "on wafer" probing of any MwT device may differ After it has been attached to a proper heat sink and tested in an RF or DC circuit. Because of the aforementioned effects, the IDSS distribution may deviate as much as +/- 1 bin within the range identified on the label of Each die shipping container, and +/- 2 bins within the selected range.

ORDERING INFORMATION:

CHIP – Model Number MwT-PH16A

When placing order or inquiring, please specify BIN range, wafer number, if known, and visual screening level required. For details of BIN Selection and Safe Handling Procedure please see supplementary information in available PDF on our website www.mwtinc.com. Contact factory for availability of packages.