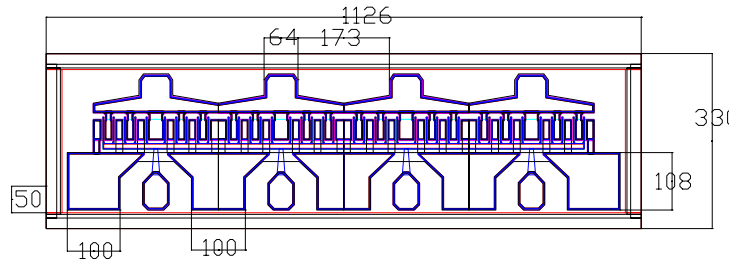


## Features:

- +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  $T_a = 25\text{ }^\circ\text{C}$

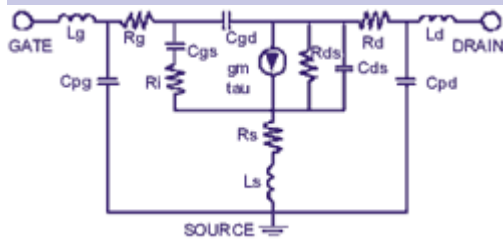
SYMBOL	PARAMETERS & CONDITIONS	FREQ	UNITS	MIN	TYP
P1dB	Output Power at 1dB Compression Vds=8.0 V Ids=0.6xIDSS	F=12 GHz	dBm	29.0	31.0
		F=18 GHz			31.0
SSG	Small Signal Gain Vds=8.0 V Ids=0.6xIDSS	F=12 GHz	dB	9.5	11.0
		F=18 GHz			9.0
PAE	Power Added Efficiency at P1dB VdS=8.0 V Ids=0.6xIDSS	12 GHz	%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

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

SYMBOL	PARAMETERS & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current Vds=2.0 V Vgs=0.0 V	mA	300		600
Gm	Transconductance Vds=2.0 V Vgs=0.0 V	mS	300	400	
Vp	Pinch-off Voltage Vds=3.0 V Ids=2.0 mA	V		-1.2	-2.5
BVGSO	Gate-to-Source Breakdown Voltage Igs= -2.0 mA	V	-6.0	-8.0	
BVGDO	Gate-to-Drain Breakdown Voltage Igd= -2.0 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	Rs	0.13	ohm
Source Inductance	Ls	0.025	nH
Drain-Source Resistance	Rds	40	ohm
Drain-Source Capacitance	Cds	0.25	pF
Drain Resistance	Rd	0.3	ohm
Drain Pad Capacitance	Cpd	0.027	pF
Drain Inductance	Ld	0.1	nH
Gate Bond Wire Inductance	Lg	0.1	nH
Gate Pad Capacitance	Cpg	0.050	pF
Gate Resistance	Rg	0.20	ohm
Gate-Source Capacitance	Cgs	2.50	pF
Channel Resistance	Ri	0.30	ohm
Gate-Drain Capacitance	Cgd	0.10	pF
Transconductance	gm	400.0	mS
Transit Time	tau	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](http://www.mwtinc.com). Contact factory for availability of packages.