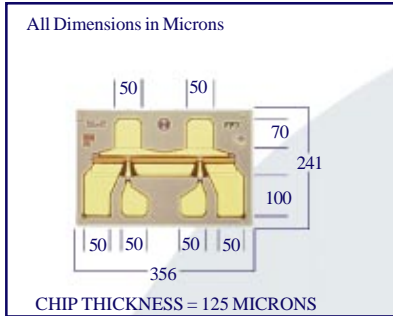


# MwT-H7

28 GHz Medium Power/ High Gain  
AlGaAs/InGaAs PHEMT



DOWNLOAD ADDITIONAL DATA [WWW.MWTINC.COM](http://WWW.MWTINC.COM)



## FEATURES

- 21.5 dBm POWER OUTPUT AT 12 GHz
- EXCELLENT FOR HIGH GAIN AND MEDIUM POWER APPLICATIONS
- 0.3 MICRON REFRACTORY METAL/GOLD GATE
- 250 MICRON GATE WIDTH
- CHOICE OF CHIP AND TWO PACKAGE TYPES

## DESCRIPTION

The MwT-H7 is an AlGaAs/InGaAs heterojunction PHEMT (Pseudomorphic-High-Electron-Mobility Transistor) device whose nominal 0.3 micron gate length and 250 micron gate width make it ideally suited to applications requiring high-gain and medium power in the 500 MHz to 28 GHz frequency range. The device is equally effective for either wideband (e.g. 6-18 GHz) or narrow-band applications. The chip is produced using MwT's reliable metal system and all devices are screened to insure reliability. All chips are passivated using MwT's patented "Diamond-Like Carbon" process for increased durability.

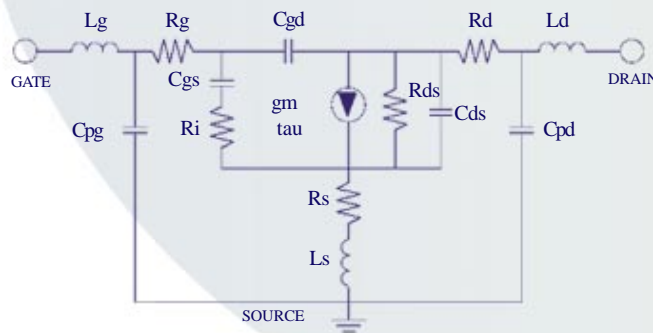
## DC SPECIFICATIONS AT Ta = 25°C

SYMBOL	PARAM. & CONDITIONS	UNITS	MIN	TYP	MAX
<b>IDSS</b>	Saturated Drain Current Vds= 3.0 V VGS= 0.0 V	mA	34	106	
<b>Gm</b>	Transconductance Vds= 3.0 V VGS= 0.0 V	mS	50	75	
<b>Vp</b>	Pinch-off Voltage Vds= 3.0 V IDS= 1.0 mA	V		-1.5	-5.0
<b>BVGSO</b>	Gate-to-Source Breakdown Volt. Igs= -0.4mA, Igd= 0	V	-5.0	-8.0	
<b>BVGDO</b>	Gate-to-Drain Breakdown Volt. Igd= -0.4 mA, Igs= 0	V	-6.0	-8.0	
<b>Rth</b>	Thermal Resistance MwT-H7 Chip MwT-H770, H773	°C/W		180-380	

## RF SPECIFICATIONS AT Ta = 25°C

SYMBOL	PARAMETERS AND CONDITIONS	FREQ	UNITS	MIN	TYP
<b>P1dB</b>	Output Power at 1 dB Compression VDS= 5.0 V Idss= 50mA IDS=0.8	12 GHz	dBm	20.0	21.5
<b>SSG</b>	Small Signal Gain VDS= 5.0 V Idss= 50mA IDS=0.8	12 GHz	dB	11.0	12.0
<b>NFopt</b>	Optimum Noise Figure VDS= 3.0 V IDS= 10mA	12 GHz	dB		2.0
<b>GA</b>	Gain at Optimum Noise Figure VDS= 3.0 V IDS= 10mA	12 GHz	%		10.0
<b>Idss</b>	Recommended IDSS Range for Optimum P1dB		mA		50-86

## DEVICE EQUIVALENT CIRCUIT MODEL



## PARAMETER VALUE

PARAMETER	VALUE
Source Resistance	Rs 2.6 Ω
Source Inductance	Ls 0.025 nH
Drain-Source Resistance	Rds 400.0 Ω
Drain-Source Capacitance	Cds 0.070 pF
Drain Resistance	Rd 3.67 Ω
Drain Pad Capacitance	Cpd 0.027 pF
Drain Inductance	Ld 0.159 nH
Gate Bond Wire Inductance	Lg 0.089 nH
Gate Pad Capacitance	Cpg 0.050 pF
Gate Resistance	Rg 0.20 Ω
Gate-Source Capacitance	Cgs 0.4 pF
Channel Resistance	Ri 6.9 Ω
Gate-Drain Capacitance	Cgd 0.04 pF
Transconductance	gm 85.0 mS
Transit Time	tau 3.02 psec

## ORDERING INFORMATION

Chip	MwT-H7
Package 70	MwT-H770
Package 73	MwT-H773

### NOTE:

For Package information, please see the Fapp0002 note from our website at [www.mwtinc.com](http://www.mwtinc.com). When placing order or inquiring, please specify BIN range, wafer no., if known, and screening level required.

4268 Solar Way Fremont California 94538 Phone: (510) 651-6700 Fax: (510) 651-2208

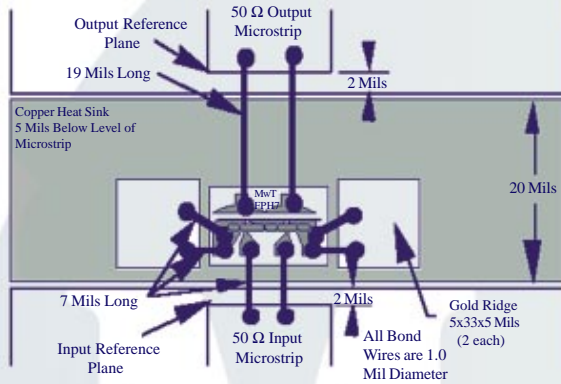
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# MwT-H7

**32 GHz Medium Power/ High Gain  
AlGaAs/InGaAs PHEMT**

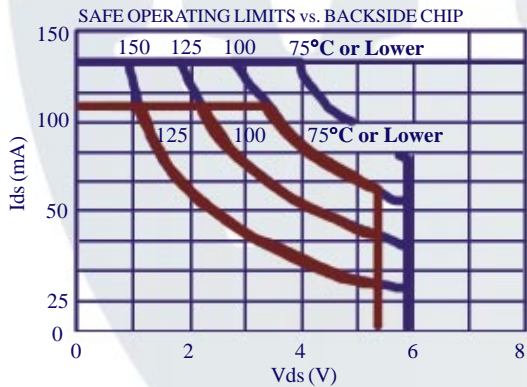
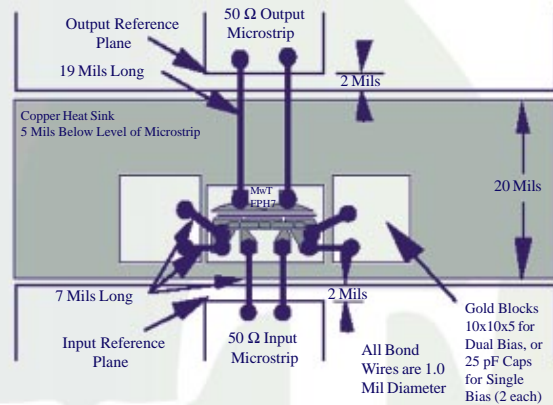


MwT-H7  
DUAL BIAS



Bonding Configuration used to Obtain "S" Data

MwT-H7  
OPTIONAL BONDING



— Absolute Maximum — Continuous Maximum

## MAXIMUM RATINGS AT $T_a = 25^\circ\text{C}$

SYMBOL	PARAMETER	UNITS	CONT MAX <sup>1</sup>	ABSOLUTE MAX <sup>2</sup>
VDS	Drain to Source Voltage	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 goals.  
2. Exceeding any one of these limits may cause permanent damage.

### BIN SELECTION

BIN#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	14	14
IDSS (mA)	34-38	38-42	42-46	46-50	50-54	54-58	58-62	62-66	66-70	70-74	74-78	78-82	82-86	86-90	90-94	94-98

### BIN ACCURACY STATEMENT

*When placing order or inquiring, please specify BIN range, wafer no., if known, and screening level required.  
For more information on device handling, bin accuracy, or bin selection please see Fapp0001 on our website.*

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