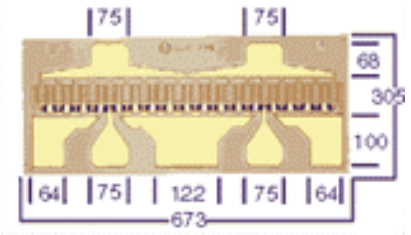
MwT-PH8

20 GHz Medium Power AlGaAs/InGaAs PHEMT
June 2006

Features:

- **+30.0 dBm typical Output Power at 12 GHz**
- **10.0 dB typical Small Signal Gain at 12 GHz**
- **55% typical PAE at 12 GHz**
- **0.3 x 1200 Micron Refractory Metal/Gold Gate**
- **Sorted into 20 mA Idss Bin Ranges**
- **Excellent for High Power, Gain, and High Power Added Efficiency**
- **Ideal for Commercial, Military, Hi-Rel Space Applications**



Chip Dimensions: 673 x 305 microns
Chip Thickness: 100 microns

Description:

The MwT-PH8 is a AlGaAs/InGaAs PHEMT (Pseudomorphic-High-Electron-Mobility-Transistor) device whose nominal 0.3 micron gate length and 1200 micron gate width make it ideally suited for applications requiring high-gain and power up to 20 GHz frequency range with power outputs ranging from 800 to 1000 milli-watts. The device is equally effective for either wideband (e.g. 6 to 18 GHz) or narrow-band applications. The chip is produced using MwT's reliable metal systems and all devices from each wafer are screened to insure reliability. All chips are passivated using MwT's patented "Diamond-Like Carbon" process for increased durability.

Electrical Specifications:

- ***at Ta= 25 ℃***

SYMBOL	PARAMETERS & CONDITIONS	FREQ	UNITS	MIN	TYP
P1dB	Output Power at 1dB Compression Vds=7.0 V Ids=0.6xIDSS=240 mA	12 GHz	dBm	29.0	30.0
SSG	Small Signal Gain VDS=7.0 V Ids=0.6xIDSS=240 mA	12 GHz	dB	9.0	10.0
PAE	Power Added Efficiency at P1dB VDS=7.0 V Ids=0.6xIDSS=240 mA	12 GHz	%		55
IDSS	Recommended IDSS Range for Optimum P1dB		mA		280-460

MicroWave Technology, Inc. an IXYS Company, 4268 Solar Way, Fremont, CA 94538
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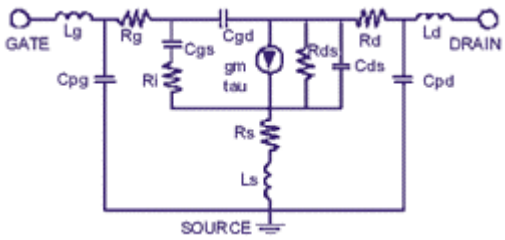
DC Specifications:

- *at Ta= 25 ℃*

SYMBOL	PARAMETERS & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current Vds=4.0 V Vgs=0.0 V	mA	240		600
Gm	Transconductance Vds=2.5 V Vgs=0.0 V	mS	240	320	
Vp	Pinch-off Voltage Vds=3.0 V Ids=8.0 mA	V		-1.2	-2.5
BVGSO	Gate-to-Source Breakdown Voltage Igs= -1.4 mA	V	-6.0	-12.0	
BVGDO	Gate-to-Drain Breakdown Voltage Igd= -1.4 mA	V	-10.0	-13.0	
Rth	Chip Thermal Resistance	C/W		40*	

* Overall Rth depends on case mounting

DEVICE EQUIVALENT CIRCUIT



PARAMETER		VALUE	
Source Resistance	Rs	0.30	ohm
Source Inductance	Ls	0.055	nH
Drain-Source Resistance	Rds	200	ohm
Drain-Source Capacitance	Cds	0.15	pF
Drain Resistance	Rd	0.3	ohm
Drain Pad Capacitance	Cpd	0.20	pF
Drain Inductance	Ld	0.1	nH
Gate Bond Wire Inductance	Lg	0.12	nH
Gate Pad Capacitance	Cpg	0.25	pF
Gate Resistance	Rg	0.20	ohm
Gate-Source Capacitance	Cgs	2.50	pF
Channel Resistance	Ri	4.00	ohm
Gate-Drain Capacitance	Cgd	0.13	pF
Transconductance	gm	280	mS
Transit Time	tau	1.0	psec

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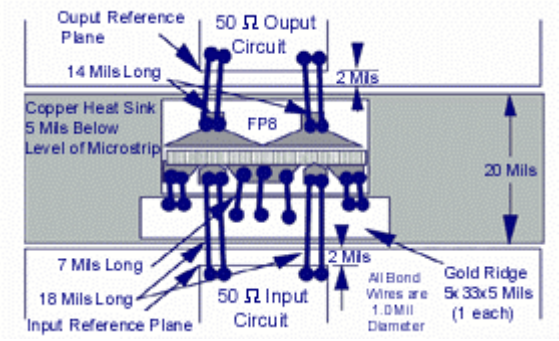
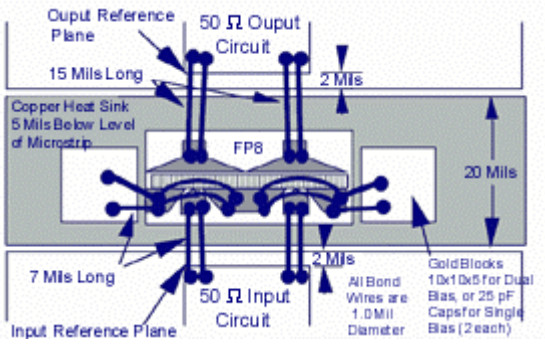
DUAL BIAS



MwT-PH8
SELF BIAS



MAXIMUM RATINGS AT Ta = 25 °C

Symbol	Parameter	Units	Cont Max1	Absolute Max2
VDS	Drain to Source Volt.	V	7.5	8.0
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-65 to+150	+175
Pin	RF Input Power	mW	240	360
Pt	Total Power Dissipation	mW	2700	3300

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	7	8	9	10	11	12	13	14
IDSS (mA)	240-260	260-280	280-300	300-320	320-340	340-360	360-380	380-400	400-420	420-440	440-460	460-480	480-500	500-520

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:

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

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