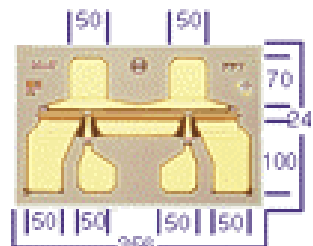


Features:

- +24.0 dBm typical Output Power at 12 GHz
- 13.5 dB typical Small Signal Gain at 12 GHz
- 60% typical PAE at 12 GHz
- 0.3 x 250 Micron Refractory Metal/Gold Gate
- Sorted into 4 mA Idss Bin Ranges
- Excellent for High Power, Gain, and High Power Added Efficiency
- Ideal for Commercial, Military, Hi-Rel Space Applications



Chip Dimensions: 356 x 241 microns
Chip Thickness: 100 microns

Description:

The MwT-PH7 is a AlGaAs/InGaAs PHEMT (Pseudomorphic-High-Electron-Mobility-Transistor) device whose nominal 0.3 micron Gate length and 250 micron gate width make it ideally suited for applications requiring high-gain and medium power up to 28 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 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:

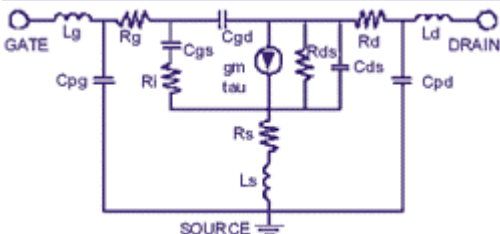
• at $T_a = 25^\circ\text{C}$

SYMBOL	PARAMETERS & CONDITIONS	FREQ	UNITS	MIN	TYP
P1dB	Output Power at 1dB Compression $V_{ds}=6.0\text{ V}$ $I_{ds}=0.75 \times I_{DSS}=60\text{ mA}$	12 GHz	dBm	22.0	24.0
SSG	Small Signal Gain $V_{ds}=6.0\text{ V}$ $I_{ds}=0.75 \times I_{DSS}=60\text{ mA}$	12 GHz 18 GHz	dB	12.0	13.5 10.0
PAE	Power Added Efficiency at P1dB $V_{ds}=7.0\text{ V}$ $I_{ds}=0.75 \times I_{DSS}=60\text{ mA}$	12 GHz	%		60
IDSS	Recommended IDSS Range for Optimum P1dB		mA		58- 110

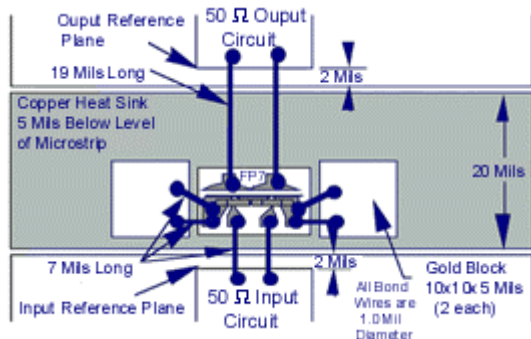
DC Specifications: • at $T_a = 25^\circ\text{C}$

SYMBOL	PARAMETERS & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current $V_{ds}=3.0\text{ V}$ $V_{gs}=0.0\text{ V}$	mA	50		122
Gm	Transconductance $V_{ds}=2.5\text{ V}$ $V_{gs}=0.0\text{ V}$	mS	50	80	
Vp	Pinch-off Voltage $V_{ds}=3.0\text{ V}$ $I_{ds}=1.0\text{ mA}$	V		-1.2	-2.5
BVGSO	Gate-to-Source Breakdown Voltage $I_{gs} = -0.3\text{ mA}$	V	-5.0	-8.0	
BVGDO	Gate-to-Drain Breakdown Voltage $I_{gd} = -0.3\text{ mA}$	V	-10.0	-13.0	
Rth	Thermal Resistance MwT-PH7 Chip MwT-PH770, PH773	C/W		150 160-200*	

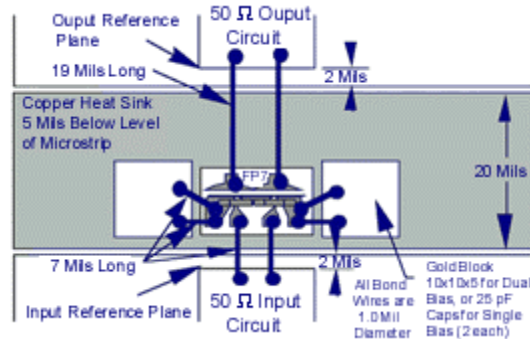
* Overall Rth depends on case mounting

DEVICE EQUIVALENT CIRCUIT	PARAMETER		VALUE
	Source Resistance	Rs	2.60 ohm
	Source Inductance	Ls	0.025 nH
	Drain-Source Resistance	Rds	400 ohm
	Drain-Source Capacitance	Cds	0.070 pF
	Drain Resistance	Rd	3.67 ohm
	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 ohm
	Gate-Source Capacitance	Cgs	0.50 pF
	Channel Resistance	Ri	6.00 ohm
	Gate-Drain Capacitance	Cgd	0.03 pF
	Transconductance	gm	90.0 mS
	Transit Time	tau	3.02 psec

MwT-PH7 DUAL BIAS



MwT-PH7 SELF BIAS



MAXIMUM RATINGS AT Ta = 25 °C

Symbol	Parameter	Units	Cont Max1	Absolute Max2
VDS	Drain to Source Voltage	V	6.5	7.0
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-65 to +150	+175
Pin	RF Input Power	mW	80	120
Pt	Total Power Dissipation	mW	800	1000

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	15	16	17	18
IDSS (mA)	50-54	54-58	58-62	62-66	66-70	70-74	74-78	78-82	82-86	86-90	90-94	94-98	98-102	102-106	106-110	110-114	114-118	118-122

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. For package information, please see supplementary application note in PDF format by clicking located on our website.

Chip	MwT-PH7
Package 70	MwT-PH770
Package 73	MwT-PH773