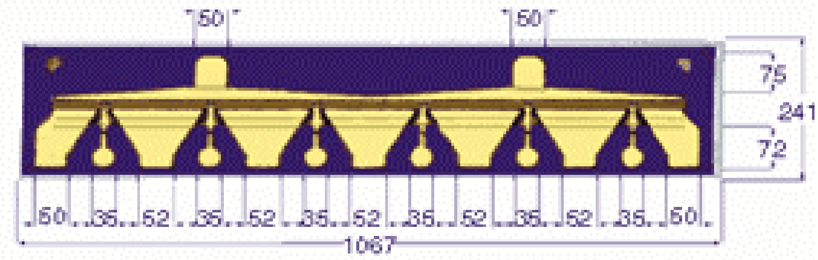
MwT-PH16

28 GHz Medium Power AlGaAs/InGaAs PHEMT

Features:

- **+30.0 dBm typical Output Power at 12 GHz**
- **11.5 dB typical Small Signal Gain at 12 GHz**
- **60% typical PAE at 12 GHz**
- **0.3 x 900 Micron Refractory Metal/Gold Gate**
- **Sorted into 15 mA Idss Bin Ranges**
- **Excellent for High Power, Gain, and High Power Added Efficiency**
- **Ideal for Commercial, Military, Hi-Rel Space Applications**



Chip Dimensions: 1,067 x 241 microns
Chip Thickness: 100 microns

Description:

The MwT-PH16 is a AlGaAs/InGaAs PHEMT (Pseudomorphic-High-Electron-Mobility-Transistor) device whose nominal 0.3 micron gate length and 900 micron gate width make it ideally suited for applications requiring high-gain and power up to 28 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=0.75xIDSS=195 mA	12 GHz	dBm	28.5	30.0
SSG	Small Signal Gain VDS=7.0 V Ids=0.75xIDSS=195 mA	12 GHz	dB	10.0	11.5
PAE	Power Added Effiency at P1dB VDS=7.0 V Ids=0.75xIDSS=195 mA	12 GHz	%		60
IDSS	Recommended IDSS Range for Optimum P1dB		mA		180- 315

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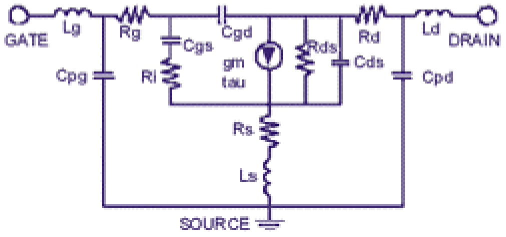
DC Specifications:

- *at Ta= 25 ℃*

SYMBOL	PARAMETERS & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current Vds=4.0 V Vgs=0.0 V	mA	150		360
Gm	Transconductance Vds=2.5 V Vgs=0.0 V	mS	180	280	
Vp	Pinch-off Voltage Vds=3.0 V Ids=3.0 mA	V		-1.2	-2.5
BVGSO	Gate-to-Source Breakdown Voltage Igs= -1.0 mA	V	-6.0	-12.0	
BVGDO	Gate-to-Drain Breakdown Voltage Igd= -1.0 mA	V	-10.0	-13.0	
Rth	Chip Thermal Resistance	C/W		45*	

* Overall Rth depends on case mounting

DEVICE EQUIVALENT CIRCUIT



PARAMETER		VALUE	
Source Resistance	Rs	0.60	ohm
Source Inductance	Ls	0.04	nH
Drain-Source Resistance	Rds	140	ohm
Drain-Source Capacitance	Cds	0.10	pF
Drain Resistance	Rd	1.00	ohm
Drain Pad Capacitance	Cpd	0.20	pF
Drain Inductance	Ld	0.09	nH
Gate Bond Wire Inductance	Lg	0.05	nH
Gate Pad Capacitance	Cpg	0.50	pF
Gate Resistance	Rg	0.30	ohm
Gate-Source Capacitance	Cgs	1.60	pF
Channel Resistance	Ri	3.60	ohm
Gate-Drain Capacitance	Cgd	0.10	pF
Transconductance	gm	260	mS
Transit Time	tau	1.90	psec

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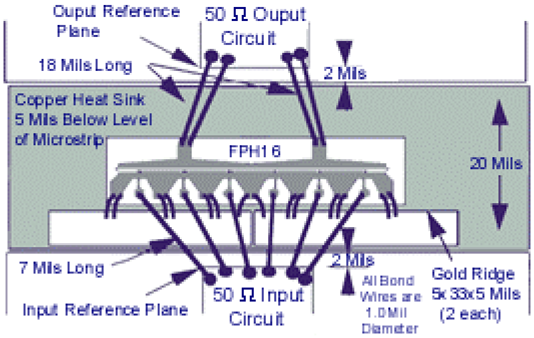
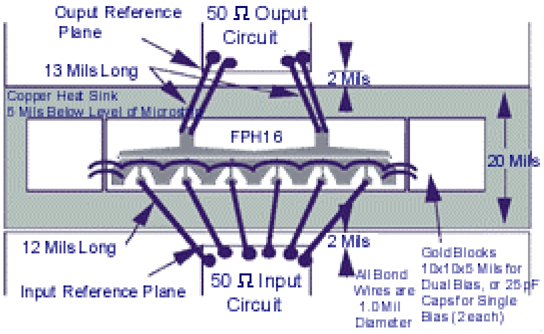
DUAL BIAS



MwT-PH16
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)	150-165	165-180	180-195	195-210	210-225	225-240	240-255	255-270	270-285	285-300	300-315	315-330	330-345	345-360

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