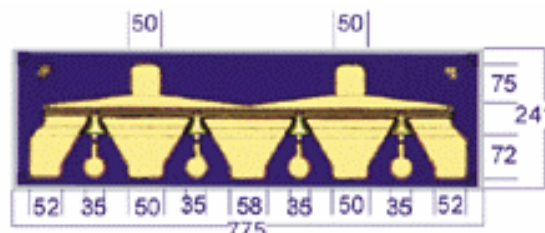


Features:

- +28.5 dBm typical Output Power at 12 GHz
- 12 dB typical Small Signal Gain at 12 GHz
- 60% typical PAE at 12 GHz
- 0.3 x 630 Micron Refractory Metal/Gold Gate
- Sorted into 10 mA Idss Bin Ranges
- Excellent for High Power, Gain, and High Power Added Efficiency
- Ideal for Commercial, Military, Hi-Rel Space Applications



Chip Dimensions: 775 x 241 microns
Chip Thickness: 100 microns

Description:

The MwT-PH15 is a AlGaAs/InGaAs PHEMT (Pseudomorphic-High-Electron-Mobility-Transistor) device whose nominal 0.3 micron gate length and 630 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 500 to 700 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 $T_a = 25^\circ\text{C}$

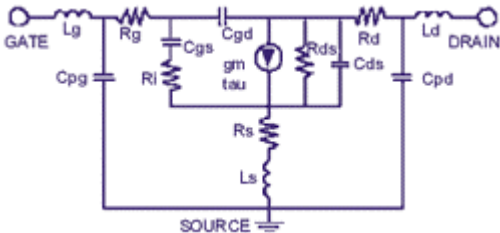
SYMBOL	PARAMETERS & CONDITIONS	FREQ	UNITS	MIN	TYP
P1dB	Output Power at 1dB Compression $V_{ds}=7.0\text{ V}$ $I_{ds}=0.75 \times I_{DSS}=150\text{ mA}$	12 GHz 18 GHz	dBm	27.0	28.5 28.5
SSG	Small Signal Gain $V_{ds}=7.0\text{ V}$ $I_{ds}=0.75 \times I_{DSS}=150\text{ mA}$	12 GHz 18 GHz	dB	10.0	12.0 9.5
PAE	Power Added Efficiency at P1dB $V_{ds}=7.0\text{ V}$ $I_{ds}=0.75 \times I_{DSS}=150\text{ mA}$	12 GHz	%		60
IDSS	Recommended IDSS Range for Optimum P1dB		mA		140 - 220

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

SYMBOL	PARAMETERS & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current $V_{ds}=4.0\text{ V}$ $V_{gs}=0.0\text{ V}$	mA	120		240
Gm	Transconductance $V_{ds}=2.5\text{ V}$ $V_{gs}=0.0\text{ V}$	mS	130	200	
Vp	Pinch-off Voltage $V_{ds}=3.0\text{ V}$ $I_{ds}=2.0\text{ mA}$	V		-1.2	-2.5
BVGSO	Gate-to-Source Breakdown Voltage $I_{gs} = -0.7\text{ mA}$	V	-6.0	-10.0	
BVGDO	Gate-to-Drain Breakdown Voltage $I_{gd} = -0.7\text{ mA}$	V	-10.0	-13.0	
Rth	Chip Thermal Resistance	C/W		65*	

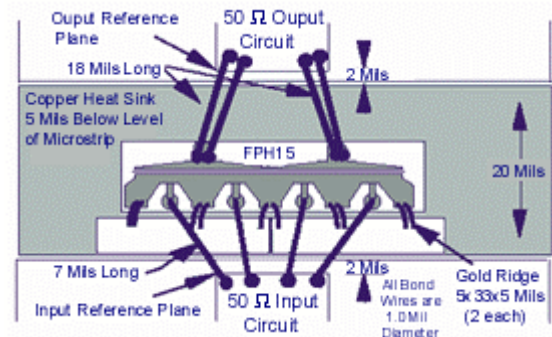
* Overall Rth depends on case mounting

DEVICE EQUIVALENT CIRCUIT	PARAMETER		VALUE
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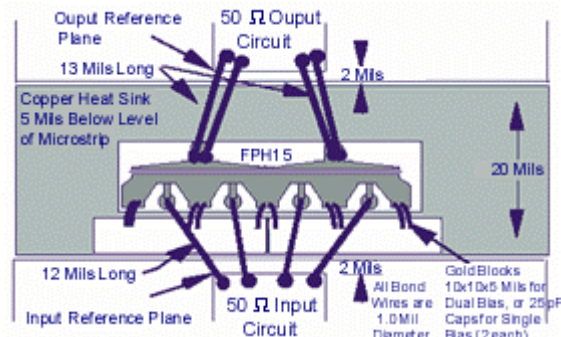


Source Resistance	R_s	0.10	ohm
Source Inductance	L_s	0.03	nH
Drain-Source Resistance	R_{ds}	200	ohm
Drain-Source Capacitance	C_{ds}	0.12	pF
Drain Resistance	R_d	0.84	ohm
Drain Pad Capacitance	C_{pd}	0.05	pF
Drain Inductance	L_d	0.10	nH
Gate Bond Wire Inductance	L_g	0.07	nH
Gate Pad Capacitance	C_{pg}	0.20	pF
Gate Resistance	R_g	0.10	ohm
Gate-Source Capacitance	C_{gs}	1.30	pF
Channel Resistance	R_i	2.30	ohm
Gate-Drain Capacitance	C_{gd}	0.07	pF
Transconductance	g_m	200	mS
Transit Time	τ	2.60	psec

**MwT-PH15
DUAL BIAS**



**MwT-PH15
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	200	300
Pt	Total Power Dissipation	mW	1900	2300

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
IDSS (mA)	120-130	130-140	140-150	150-160	160-170	170-180	180-190	190-200	200-210	210-220	220-230	230-240

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