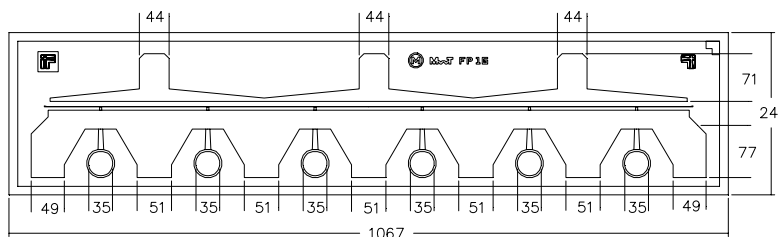


Features:

- +30.0 dBm Output Power at 12 GHz
- 11.5 dB Small Signal Gain at 12 GHz
- 60% PAE at 12 GHz
- 0.3 x 900 Micron Refractory Metal/Gold Gate
- 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 $T_a = 25\text{ }^\circ\text{C}$

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 Efficiency at P1dB VDS=7.0 V Ids=0.75xIDSS=195 mA	12 GHz	%		60
IDSS	Recommended IDSS Range for Optimum P1dB		mA		180-315

DC Specifications:

• at $T_a = 25\text{ }^\circ\text{C}$

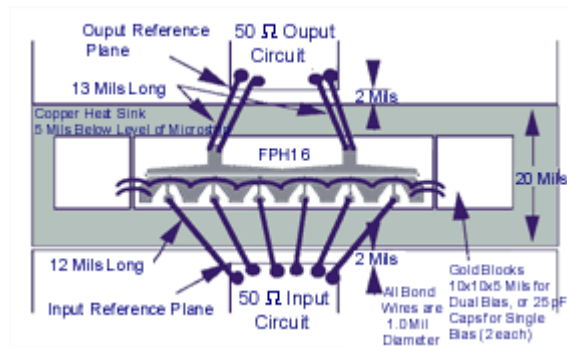
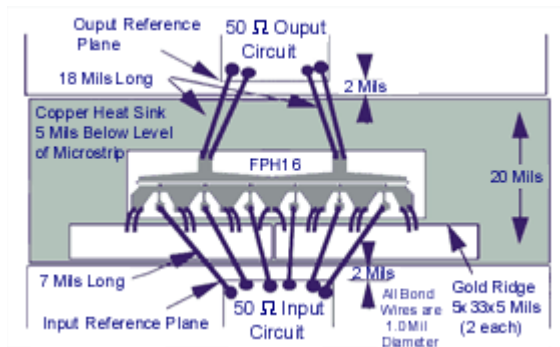
SYMBOL	PARAMETERS & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current Vds=4.0 V Vgs=0.0 V	mA	150		360
Gm	Transconductance Vds=2.5 V Vgs=0.0 V	mS	180	280	
Vp	Pinch-off Voltage Vds=3.0 V Ids=3.0 mA	V		-1.2	-2.5
BVGSO	Gate-to-Source Breakdown Voltage Igs= -1.0 mA	V	-6.0	-12.0	
BVGDO	Gate-to-Drain 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	R_s	0.60 ohm
	Source Inductance	L_s	0.04 nH
	Drain-Source Resistance	R_{ds}	140 ohm
	Drain-Source Capacitance	C_{ds}	0.10 pF
	Drain Resistance	R_d	1.00 ohm
	Drain Pad Capacitance	C_{pd}	0.20 pF
	Drain Inductance	L_d	0.09 nH
	Gate Bond Wire Inductance	L_g	0.05 nH
	Gate Pad Capacitance	C_{pg}	0.50 pF
	Gate Resistance	R_g	0.30 ohm
	Gate-Source Capacitance	C_{gs}	1.60 pF
	Channel Resistance	R_i	3.60 ohm
	Gate-Drain Capacitance	C_{gd}	0.10 pF
	Transconductance	g_m	260 mS
Transit Time	τ	1.90 psec	

MwT-PH16
DUAL BIAS

MwT-PH16
SELF BIAS



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

Symbol	Parameter	Units	Cont Max1	Absolute Max2
VDS	Drain to Source Volt.	V	7.5	8.0
Tch	Channel Temperature	$^\circ\text{C}$	+150	+175
Tst	Storage Temperature	$^\circ\text{C}$	-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.



MwT-PH16
28 GHz Medium Power AlGaAs/InGaAs PHEMT
May 2011