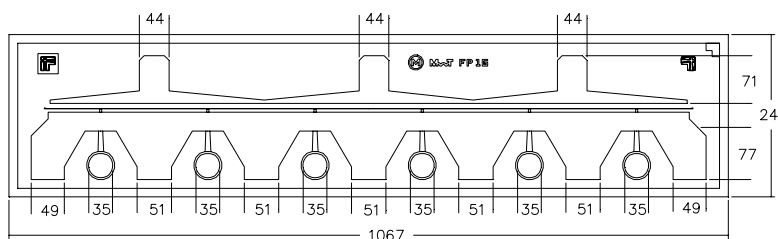


Features:

- +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 $T_a = 25^\circ\text{C}$

SYMBOL	PARAMETERS & CONDITIONS	FREQ	UNITS	MIN	TYP
P1dB	Output Power at 1dB Compression $V_{ds}=7.0\text{ V}$ $I_{ds}=0.75 \times I_{DSS}=195\text{ mA}$	12 GHz	dBm	28.5	30.0
SSG	Small Signal Gain $V_{DS}=7.0\text{ V}$ $I_{ds}=0.75 \times I_{DSS}=195\text{ mA}$	12 GHz	dB	10.0	11.5
PAE	Power Added Efficiency at P1dB $V_{DS}=7.0\text{ V}$ $I_{ds}=0.75 \times I_{DSS}=195\text{ mA}$	12 GHz	%		60
IDSS	Recommended IDSS Range for Optimum P1dB		mA		180-315

DC Specifications:

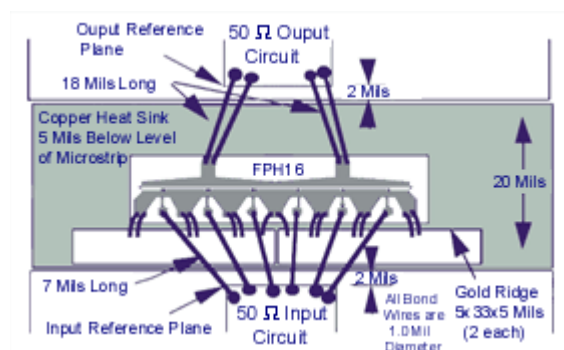
• at $T_a = 25^\circ\text{C}$

SYMBOL	PARAMETERS & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current $V_{ds}=4.0\text{ V}$ $V_{gs}=0.0\text{ V}$	mA	150		360
Gm	Transconductance $V_{ds}=2.5\text{ V}$ $V_{gs}=0.0\text{ V}$	mS	180	280	
Vp	Pinch-off Voltage $V_{ds}=3.0\text{ V}$ $I_{ds}=3.0\text{ mA}$	V		-1.2	-2.5
BVGSO	Gate-to-Source Breakdown Voltage $I_{gs} = -1.0\text{ mA}$	V	-6.0	-12.0	
BVGDO	Gate-to-Drain Breakdown Voltage $I_{gd} = -1.0\text{ mA}$	V	-10.0	-13.0	
Rth	Chip Thermal Resistance	C/W		45*	

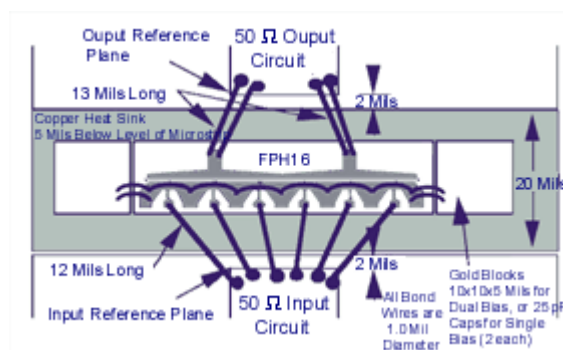
* Overall Rth depends on case mounting

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

MwT-PH16
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 dama



MwT-PH16

28 GHz Medium Power AlGaAs/InGaAs PHEMT
May 2011