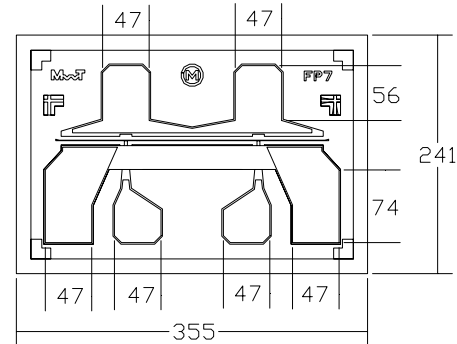


Features:

- +24.0 dBm Output Power at 12 GHz
- 13.5 dB Small Signal Gain at 12 GHz
- 60% PAE at 12 GHz
- 0.3 x 250 Micron Refractory Metal/Gold Gate
- Excellent for High Power, Gain, and High Power Added Efficiency up to 28 GHz
- 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 $T_a = 25\text{ }^\circ\text{C}$

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

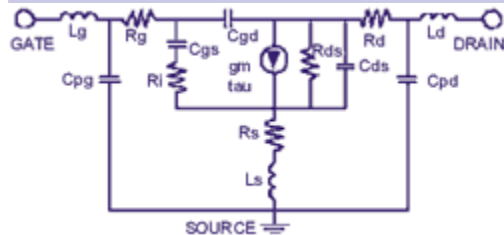
SYMBOL	PARAMETERS & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current $V_{ds}=3.0\text{ V}$ $V_{gs}=0.0\text{ V}$	mA	50		122
Gm	Transconductance $V_{ds}=2.5\text{ V}$ $V_{gs}=0.0\text{ V}$	mS	50	80	
Vp	Pinch-off Voltage $V_{ds}=3.0\text{ V}$ $I_{ds}=1.0\text{ mA}$	V		-1.2	-2.5
BVGSO	Gate-to-Source 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 MwT-PH7 Chip	C/W		150	

Resistance MwT-PH770, PH773

160-200*

* Overall Rth depends on case mounting

DEVICE EQUIVALENT CIRCUIT

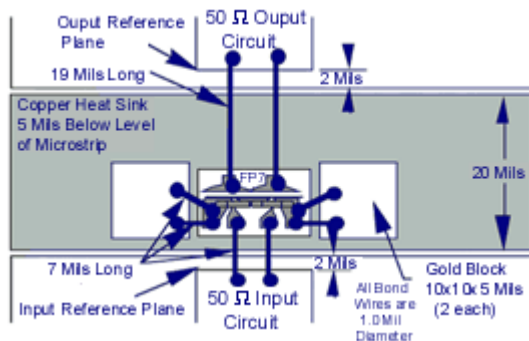


PARAMETER

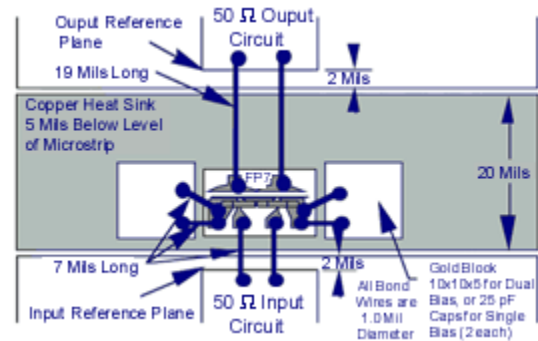
VALUE

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:

- Exceeding any one of these limits in continuous operation may reduce the mean-time-to-failure below the design goal.
- Exceeding any one of these limits may cause permanent damage.



MwT-PH7
28 GHz Medium Power AlGaAs/InGaAs PHEMT
May 2011