

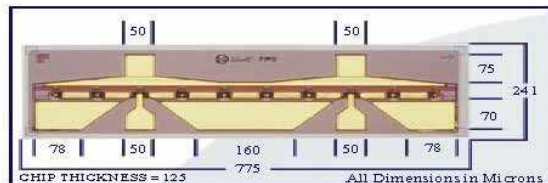
MwT-2

26 GHz High Power

GaAs FET



DOWNLOAD ADDITIONAL DATA WWW.MWTINC.COM



FEATURES

- 9 dB SMALL SIGNAL GAIN AT 12 GHz
- +24.5 dBm OUTPUT POWER AT 12 GHz
- 0.3 MICRON REFRACTORY METAL/GOLD GATE
- 630 MICRON GATE WIDTH
- CHOICE OF CHIP AND THREE PACKAGE TYPES

DESCRIPTION

The MwT-2 is a GaAs MESFET device whose nominal quarter-micron gate length and 630 micron gate width make it ideally suited to applications requiring high-gain in the 500 MHz to 26 GHz frequency range with power outputs ranging from 100 to 200 milli-watts. The straight geometry of the MwT-2 makes it equally effective for either wideband (e.g. 6 to 18 GHz) or narrow-band applications. The chip is produced using MwT's reliable metal system and devices from each wafer are screened to insure reliability. All chips are passivated using MwT's patented "Diamond-Like Carbon" process for increased durability. Designers can use MwT's unique BIN selection feature to choose devices from narrow Idss ranges, insuring consistent circuit operation.

DC SPECIFICATIONS AT $T_a = 25^\circ\text{C}$

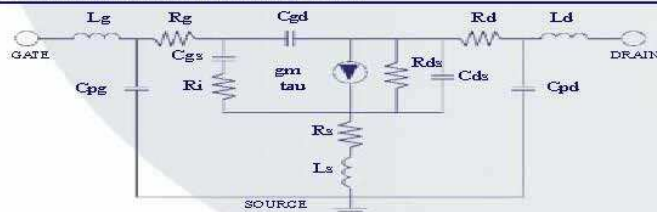
SYMBOL	PARAM. & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current $V_{ds} = 4.0\text{ V}$ $V_{gs} = 0.0\text{ V}$	mA	60		240
Gm	Transconductance $V_{ds} = 4.0\text{ V}$ $V_{gs} = 0.0\text{ V}$	mS	75	100	
Vp	Pinch-off Voltage $V_{ds} = 3.0\text{ V}$ $I_{DS} = 4.0\text{ mA}$	V		-2.0	-5.0
BVGSO	Gate-to-Source Breakdown Volt $I_{gs} = -0.4\text{ mA}$	V	-6.0	-12.0	
BVGDO	Gate-to-Drain Breakdown Volt $I_{gd} = -0.4\text{ mA}$	V	-8.0	-12.0	
Rth	Thermal Resistance MwT-2 Chip, MwT-270,273 MwT-271	$^\circ\text{C/W}$			80 180* 80*

*Overall Rth depends on case mounting

RF SPECIFICATIONS AT $T_a = 25^\circ\text{C}$

SYMBOL	PARAMETERS AND CONDITIONS	FREQ	UNITS	MIN	TYP
P1dB	Output Power at 1 dB Compression $V_{DS} = 6.0\text{ V}$ $I_{DS} = 0.6 \times I_{DSS}$	12 GHz 18 GHz	dBm	23.0	24.5 24.0
SSG	Small Signal Gain $V_{DS} = 6.0\text{ V}$ $I_{DS} = 0.6 \times I_{DSS}$	12 GHz 18 GHz	dB	8.0	9.0 6.0
PAE	Power Added Efficiency $V_{DS} = 6.0\text{ V}$ $I_{DS} = 0.6 \times I_{DSS}$	12 GHz	%	30	35
IDSS	Recommended IDSS Range for Optimum P1dB		mA		160-220

DEVICE EQUIVALENT CIRCUIT MODEL



PARAMETER

VALUE

Source Resistance	R_s	0.73	Ω
Source Inductance	L_s	0.03	nH
Drain-Source Resistance	R_{ds}	200	Ω
Drain-Source Capacitance	C_{ds}	0.007	pF
Drain Resistance	R_d	0.84	Ω
Drain Pad Capacitance	C_{pd}	0.142	pF
Drain Inductance	L_d	0.113	nH
Gate Bond Wire Inductance	L_g	0.18	nH
Gate Pad Capacitance	C_{pg}	0.1	pF
Gate Resistance	R_g	0.5	Ω
Gate-Source Capacitance	C_{gs}	0.67	pF
Channel Resistance	R_i	1.0	Ω
Gate-Drain Capacitance	C_{gd}	0.05	pF
Transconductance	g_m	83.0	mS
Transit Time	τ	3.5	psec

ORDERING INFORMATION

Chip	MwT-2
Package 70	MwT-270
Package 71	MwT-271
Package 73	MwT-273

NOTE:

For Package information, please see supplementary application note from our website at www.mwtinc.com. When placing order or inquiring, please specify BIN range, wafer no., if known, and screening level required.

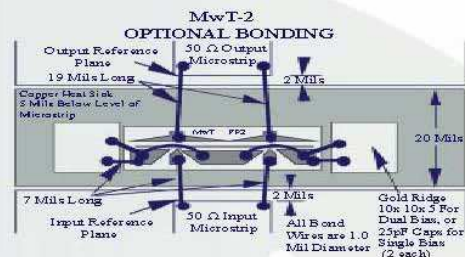
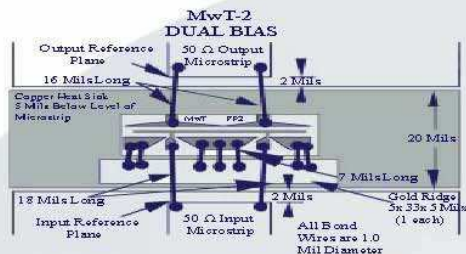
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Absolute Maximum Continuous Maximum

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

SYMBOL	PARAMETER	UNITS	CONT MAX ¹	ABSOLUTE MAX ²
VDS	Drain to Source Voltage	V	See Safe Operating Limits	
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-65 to +150	+175
Pin	R.F. Input Power	mW	250	380

NOTES: 1. Exceeding any one of these limits in continuous operation may reduce the mean time-to-failure below the design goals.
2. Exceeding any one of these limits may cause permanent damage.

Bin Selection Guide

Bin No.	A	B	C
Idss Range	60-110mA	110-200mA	200-240mA

BIN ACCURACY STATEMENT

When placing order or inquiring, please specify BIN range, wafer no., if known, and screening level required.

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