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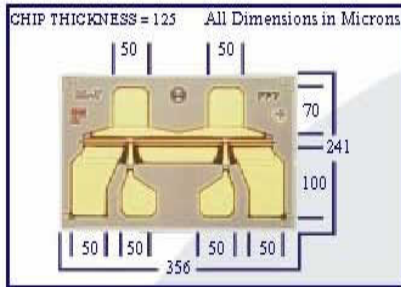


# MwT-7

## 26 GHz Medium Power GaAs FET



DOWNLOAD ADDITIONAL DATA [WWW.MWTINC.COM](http://WWW.MWTINC.COM)



### FEATURES

- +20 dBm OUTPUT POWER AT 12 GHz
- EXCELLENT FOR BROADBAND GAIN OR OSCILLATOR APPLICATIONS
- 0.3 MICRON REFRACTORY METAL/GOLD GATE
- 250 MICRON GATE WIDTH
- CHOICE OF CHIP AND TWO PACKAGE TYPES

### DESCRIPTION

The MwT-7 is a GaAs MESFET device whose nominal quarter-micron gate length and 250 micron gate width make it ideally suited to applications requiring high-gain and medium power in the 500 MHz to 26 GHz frequency range. The straight geometry of the MwT-7 makes it equally effective for either wideband (e.g. 6 to 18 GHz) or narrow-band applications. Processing which guarantees low phase noise makes the MwT-7 particularly attractive for oscillator 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 Ta = 25°C

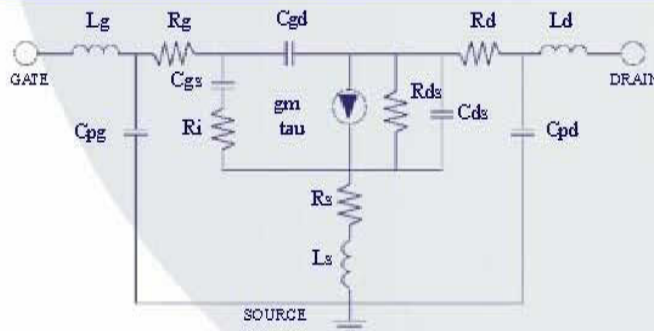
SYMBOL	PARAM. & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current Vds= 4.0 V VGS= 0.0 V	mA	26		98
Gm	Transconductance Vds= 2.0 V VGS= 0.0 V	mS	36	45	
Vp	Pinch-off Voltage Vds= 3.0 V IDS= 5.0 mA	V		-1.5	-4.5
BVGSO	Gate-to-Source Breakdown Volt. Igs= -1.0 mA	V	-5.0	-8.0	
BVGDO	Gate-to-Drain Breakdown Volt. Igd= -1.0 mA	V	-6.0	-8.0	
Rth	Thermal Resistance MwT-7 Chip, Resistance MwT-770, 773	°C/W			180 380*

\*Overall Rth depends on case mounting.

### RF SPECIFICATIONS AT Ta = 25°C

SYMBOL	PARAMETERS AND CONDITIONS	FREQ	UNITS	MIN	TYP
P1dB	Output Power at 1 dB Compression VDS= 5.0 V Idss= 0.6 IDS= 35mA	12 GHz	dBm	18.0	20.0
SSG	Small Signal Gain VDS= 5.0 V Idss= 0.6 IDS= 35mA	12 GHz	dB	10.0	11.0
NFopt	Optimum Noise Figure VDS= 3.0V IDS= 10mA	12 GHz	dB		2.0
GA	Gain at Optimum Noise Figure VDS= 3.0V IDS= 10mA	12 GHz	dB		8.0
IDSS	Recommended IDSS Range for Optimum P1dB		mA		50- 86

### DEVICE EQUIVALENT CIRCUIT MODEL



### PARAMETER VALUE

PARAMETER	VALUE
Source Resistance	Rs 2.6 Ω
Source Inductance	Ls 0.025 nH
Drain-Source Resistance	Rds 173 Ω
Drain-Source Capacitance	Cds 0.07 pF
Drain Resistance	Rd 3.67 Ω
Drain Pad Capacitance	Cpd 0.027 pF
Drain Inductance	Ld 0.159 nH
Gate Bond Wire Inductance	Lg 0.89 nH
Gate Pad Capacitance	Cpg 0.05 pF
Gate Resistance	Rg 0.2 Ω
Gate-Source Capacitance	Cgs 0.314 pF
Channel Resistance	Ri 6.9 Ω
Gate-Drain Capacitance	Cgd 0.027 pF
Transconductance	gm 69.0 mS
Transit Time	tau 3.02 psec

### ORDERING INFORMATION

Chip	MwT-7
Package 71	MwT-771
Package 73	MwT-773

### NOTE:

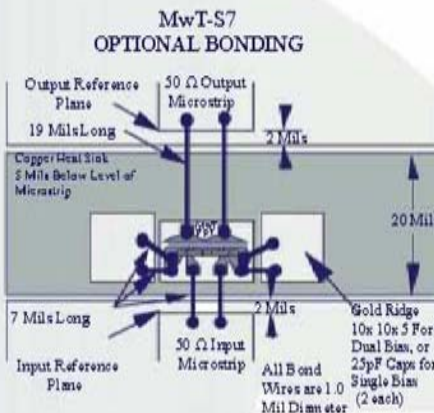
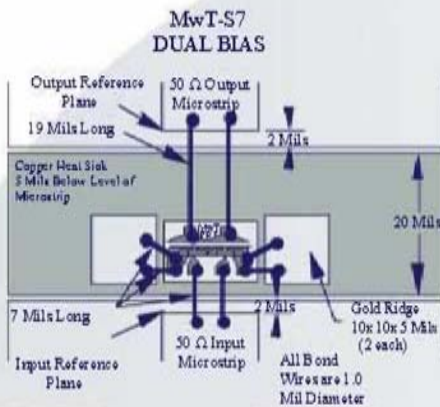
For Package information, please see supplementary application note from our website at [www.mwtinc.com](http://www.mwtinc.com). When placing order or inquiring, please specify BIN range, wafer no., if known, and screening level required.

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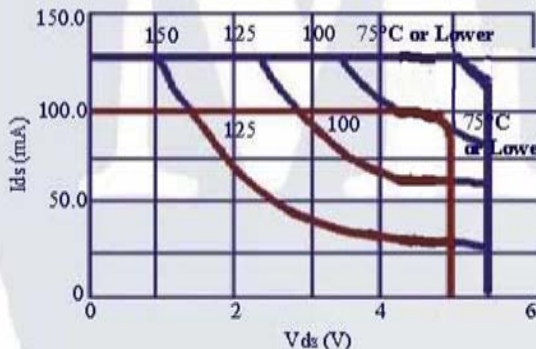
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# MwT-7

## 26 GHz Medium Power GaAs FET



SAFE OPERATING LIMITS vs. BACKSIDE CHIP



Absolute Maximum Continuous Maximum

### MAXIMUM RATINGS AT Ta = 25°C

SYMBOL	PARAMETER	UNITS	CONT MAX <sup>1</sup>	ABSOLUTE MAX <sup>1</sup>
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	RF Input Power	mW	80	120

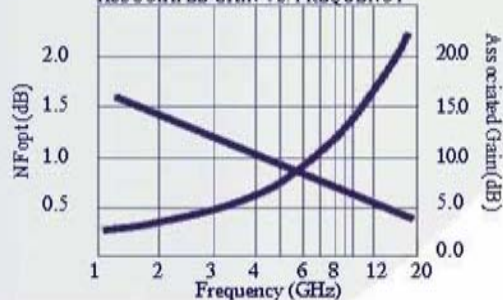
NOTES: 1. Exceeding any one of these limits in continuous operation may reduce the mean-time-to-failure below the design goals.  
2. Exceeding any one of these limits may cause permanent damage.

### TYPICAL NOISE PARAMETERS

MwT-A9LN Chip: VDS= 3.0V IDS= 35mA

FREQUENCY GHz	NF MIN dB	GAMMA OPT		Rn/50
		MAG	ANGLE	
2.00	0.29	0.68	27	0.188
4.00	0.56	0.49	57	0.182
8.00	1.06	0.41	114	0.165
12.00	1.5	0.49	149	0.152
16.00	1.89	0.55	168	0.143
18.00	2.1	0.58	175	0.14

### NOISE FIGURE AND ASSOCIATED GAIN VS. FREQUENCY



### Bin Selection Guide

Bin	A	B	C	D
Idss Range	26-38	38-50	50-74	74-86

### BIN ACCURACY STATEMENT

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

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