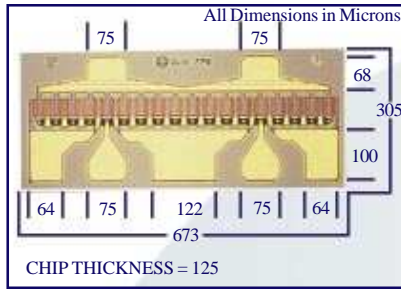


# MwT-8

## 16 GHz High Power GaAs FET



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



### FEATURES

- 0.6 WATT POWER OUTPUT AT 12 GHz
- +40 THIRD ORDER INTERCEPT
- HIGH ASSOCIATED GAIN
- 0.3 MICRON REFRACTORY METAL/GOLD GATE
- 1200 MICRON GATE WIDTH
- CHOICE OF CHIP AND ONE PACKAGE TYPE

### DESCRIPTION

The MwT-8 is a GaAs MESFET device which is ideally suited to narrow-band applications such as cellular telephone, PCN, point-to-point communications links, and other wireless applications as the driver transistor for the output power amplifier. The third-order intercept performance of the MwT-8 is excellent, typically 12 dB above the 1 dB compression point. 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

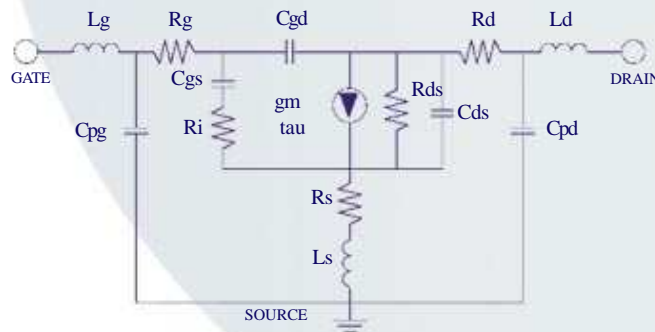
SYMBOL	PARAM. & CONDITIONS	UNITS	MIN	TYP	MAX
<b>IDSS</b>	Saturated Drain Current Vds= 4.0 V VGS= 0.0 V	mA	120		480
<b>Gm</b>	Transconductance Vds= 2.0 V VGS= 0.0 V	mS	144	160	
<b>Vp</b>	Pinch-off Voltage Vds= 3.0 V IDS= 5.0 mA	V		-2.0	-5.0
<b>BVGSO</b>	Gate-to-Source Breakdown Volt. Igs= -0.8 mA	V	-6.0	-12.0	
<b>BVGDO</b>	Gate-to-Drain Breakdown Volt. Igd= -0.8 mA	V	-8.0	-12.0	
<b>Rth</b>	Thermal Resistance MwT-8 Chip, MwT-871.	°C/W		45	60*

\*Overall Rth depends on case mounting.

### RF SPECIFICATIONS AT Ta = 25°C

SYMBOL	PARAMETERS AND CONDITIONS	FREQ	UNITS	MIN	TYP
<b>P1dB</b>	Output Power at 1 dB Compression VDS= 6.0 V IDS= 180mA	12 GHz	dBm	27.0	28.0
<b>PAE</b>	Power Added Efficiency VDS= 6.0 V IDS= 180mA	12 GHz	%	25	35
<b>SSG</b>	Small Signal Gain VDS= 6.0V IDS= 180mA	12 GHz	dB	7	7.5
<b>IDSS</b>	Recommended IDSS Range for Optimum P1dB		mA		320-440

### DEVICE EQUIVALENT CIRCUIT MODEL



### PARAMETER

### VALUE

Source Resistance	Rs	0.3	Ω
Source Inductance	Ls	0.055	nH
Drain-Source Resistance	Rds	60.0	Ω
Drain-Source Capacitance	Cds	0.1	pF
Drain Resistance	Rd	0.3	Ω
Drain Pad Capacitance	Cpd	0.2	pF
Drain Inductance	Ld	0.1	nH
Gate Bond Wire Inductance	Lg	0.12	nH
Gate Pad Capacitance	Cpg	0.25	pF
Gate Resistance	Rg	0.2	Ω
Gate-Source Capacitance	Cgs	1.4	pF
Channel Resistance	Ri	1.0	Ω
Gate-Drain Capacitance	Cgd	0.05	pF
Transconductance	gm	150.0	mS
Transit Time	tau	1.0	psec

### ORDERING INFORMATION

Chip	MwT-8
Package 71	MwT-871

#### NOTE:

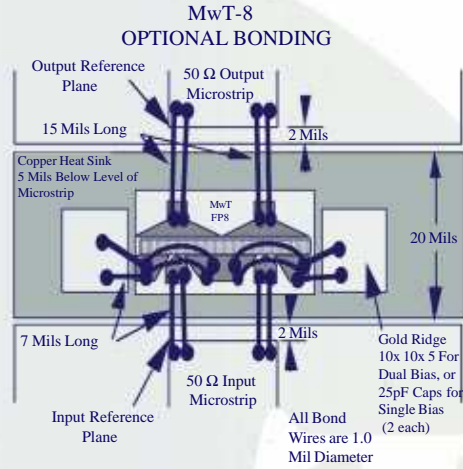
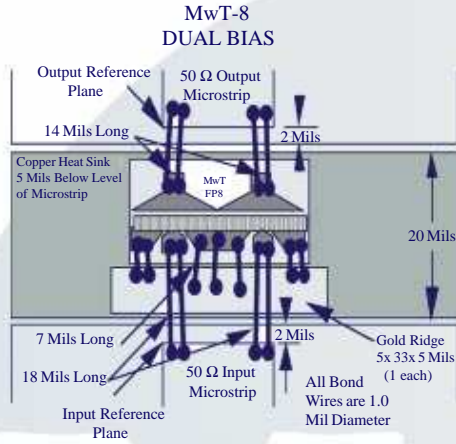
For Package information, please see supplementary application note from our website at [www.mwtinc.com](http://www.mwtinc.com). When placing order or inquiring, please specify BIN range, wafer no., if known, and screening level required.

4268 Solar Way Fremont California 94538 Phone: (510) 651-6700 Fax: (510) 651-2208

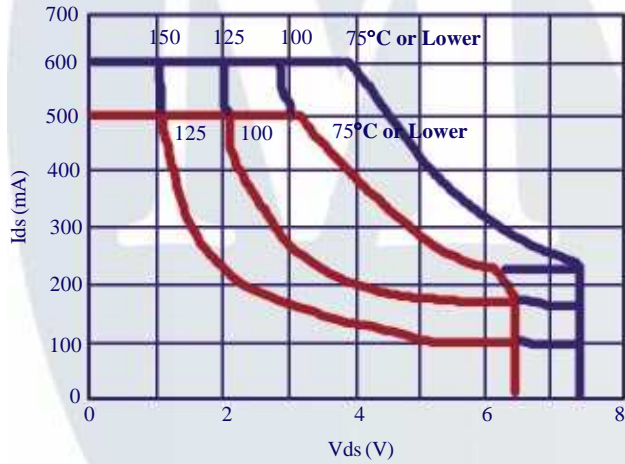
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# MwT-8

## 16 GHz High Power GaAs FET



SAFE OPERATING LIMITS vs. BACKSIDE CHIP



■ Absolute Maximum ■ Continuous Maximum

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

SYMBOL	PARAMETER	UNITS	CONT MAX <sup>1</sup>	ABSOLUTE MAX <sup>2</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	480	720

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

BIN#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
IDSS (mA)	120-140	140-160	160-180	180-200	200-220	220-240	240-260	260-280	280-300	300-320	320-340	340-360	360-380	380-400	400-420	420-440	440-460	460-480

#### BIN ACCURACY STATEMENT

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

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