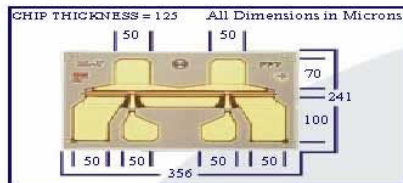


MwT-7

26 GHz Medium Power GaAs FET



DOWNLOAD ADDITIONAL DATA 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

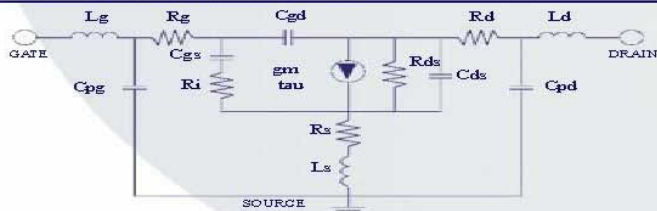
SYMBOL	PARAM. & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current Vds= 4.0 V VGS= 0.0 V	mA	26		98
Gm	Transconductance Vds= 2.0 V VGS= 0.0 V	mS	36	45	
Vp	Pinch-off Voltage Vds= 3.0 V IDS= 5.0 mA	V		-1.5	-4.5
BVGS0	Gate-to-Source Breakdown Volt. Igs= -1.0 mA	V	-5.0	-8.0	
BVGDO	Gate-to-Drain Breakdown Volt. Igd= -1.0 mA	V	-6.0	-8.0	
Rth	Thermal Resistance MwT-7 Chip, MwT-770,773	°C/W			180 380*

*Overall Rth depends on case in 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	R _s 2.6 Ω
Source Inductance	L _s 0.025 nH
Drain-Source Resistance	R _{ds} 173 Ω
Drain-Source Capacitance	C _{ds} 0.07 pF
Drain Resistance	R _d 3.67 Ω
Drain Pad Capacitance	C _{pd} 0.027 pF
Drain Inductance	L _d 0.159 nH
Gate Bond Wire Inductance	L _g 0.89 nH
Gate Pad Capacitance	C _{pg} 0.05 pF
Gate Resistance	R _g 0.2 Ω
Gate-Source Capacitance	C _{gs} 0.314 pF
Channel Resistance	R _i 6.9 Ω
Gate-Drain Capacitance	C _{gd} 0.027 pF
Transconductance	gm 69.0 mS
Transit Time	tau 3.02 psec

ORDERING INFORMATION

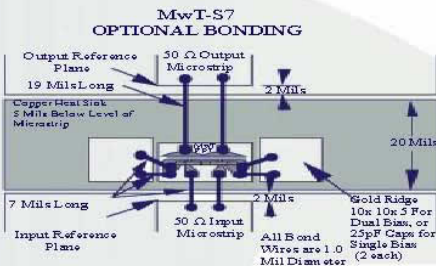
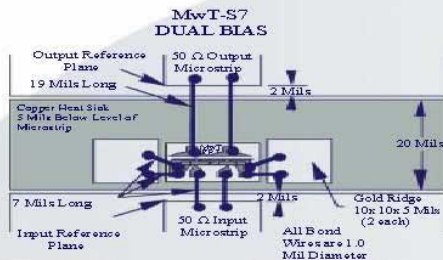
Chip	MwT-7
Package 71	MwT-771
Package 73	MwT-773

NOTE:

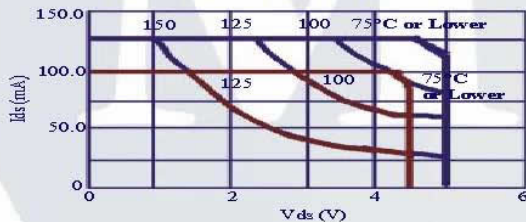
For Package information, please see supplementary application note from our website at www.mwtinc.com. When placing order or inquiring, please specify BIN range, wafer no., if known, and screening level required.

4268 Solar Way, Fremont, CA 94538 | Email sales@mwtinc.com | Phone (510) 651-6700 | Fax (510) 952-4000

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SAFE OPERATING LIMITS vs. BACKSIDE CHIP



— Absolute Maximum — Continuous Maximum

MAXIMUM RATINGS AT Ta = 25°C

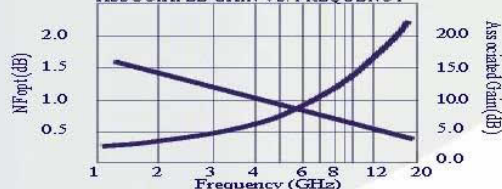
SYMBOL	PARAMETER	UNITS	CONT. MAX.	ABSOLUTE MAX.
VDS	Drain to Source Voltage	V	See Safe Operating Limits	
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-65 to +150	+175
Pin	RF Input Power	mW	80	120

- 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 IDSS= 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	0.163
12.00	1.5	0.42	149	0.152
16.00	1.89	0.35	168	0.143
18.00	2.1	0.38	175	0.14

NOISE FIGURE AND ASSOCIATED GAIN VS. FREQUENCY



Bin Selection Guide

Bin No.	A	B	C	D	E
Idss	26-	34-	46-	74-	86-
Range	34mA	46mA	74mA	86mA	98mA

BIN ACCURACY STATEMENT

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