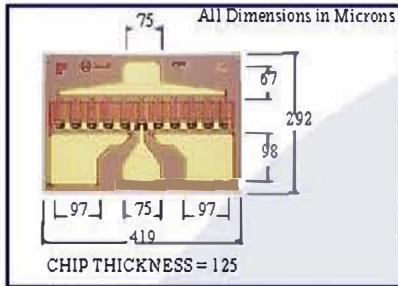


MwT-9/A9

18 GHz Medium Power
GaAs FET



DOWNLOAD ADDITIONAL DATA WWW.MWTINC.COM



FEATURES

- +26 dBm OUTPUT POWER AT 12 GHz
- 8.5 dB SMALL SIGNAL GAIN AT 12 GHz
- 0.3 MICRON REFRACTORY METAL/GOLD GATE
- 750 MICRON GATE WIDTH
- CHOICE OF CHIP AND THREE PACKAGE TYPES

DESCRIPTION

The MwT-9/A9 is a GaAs MESFET device whose nominal quarter-micron gate length and 750 micron gate width make it ideally suited to applications requiring high-gain in the 500 MHz to 18 GHz frequency range with power output ranging from +24 to +26 dBm. It can be easily matched as the driver stage in high power communications amplifiers or in broad-band military amplifiers and operated at reduced bias in battery powered wireless communications devices. 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 $T_a = 25^\circ\text{C}$

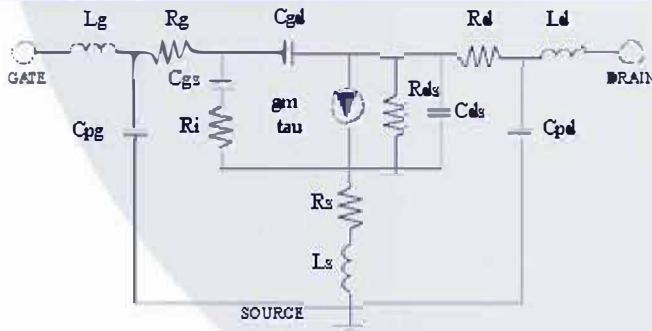
SYMBOL	PARAM. & CONDITIONS	UNITS	MIN	TYP	MAX
IDSS	Saturated Drain Current Vds= 4.0 V VGS= 0.0 V	mA	78		282
Gm	Transconductance Vds= 2.0 V VGS= 0.0 V	mS	95	120	
Vp	Pinch-off Voltage Vds= 3.0 V IDS= 5.0 mA	V		-2.0	-5.0
BVGSO	Gate-to-Source Breakdown Volt. Igs= -1.0mA	V	-6.0	-12.0	
BVGDO	Gate-to-Drain Breakdown Volt. Igd= -1.0mA	V	-8.0	-12.0	
Rth	Thermal Resistance MwT-9 Chip, 971 MwT-970, 973	$^\circ\text{C/W}$		70 175*	

*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 VDS= 6.0 V IDS= 180mA	12 GHz	dBm	25.0	26.0
PAE	Power Added Efficiency VDS= 6.0 V IDS= 180mA	12 GHz	%	30	35
SSG	Small Signal Gain VDS= 6.0 V IDS= 180mA	12 GHz	dB	8	8.5
IDSS	Recommended IDSS Range for Optimum P1dB		mA		198-270

DEVICE EQUIVALENT CIRCUIT MODEL



PARAMETER VALUE

PARAMETER	VALUE
Source Resistance	$R_s = 0.2 \Omega$
Source Inductance	$L_s = 0.055 \text{ nH}$
Drain-Source Resistance	$R_{ds} = 300.0 \Omega$
Drain-Source Capacitance	$C_{ds} = 0.05 \text{ pF}$
Drain Resistance	$R_d = 1.02 \Omega$
Drain Pad Capacitance	$C_{pd} = 0.05 \text{ pF}$
Drain Inductance	$L_d = 0.23 \text{ nH}$
Gate Bond Wire Inductance	$L_g = 0.15 \text{ nH}$
Gate Pad Capacitance	$C_{pg} = 0.07 \text{ pF}$
Gate Resistance	$R_g = 0.50 \Omega$
Gate-Source Capacitance	$C_{gs} = 0.85 \text{ pF}$
Channel Resistance	$R_i = 1.0 \Omega$
Gate-Drain Capacitance	$C_{gd} = 0.08 \text{ pF}$
Transconductance	$g_m = 95.0 \text{ mS}$
Transit Time	$\tau = 2.6 \text{ psec}$

ORDERING INFORMATION

Chip MwT-9 MwT-A9 **NOTE:**

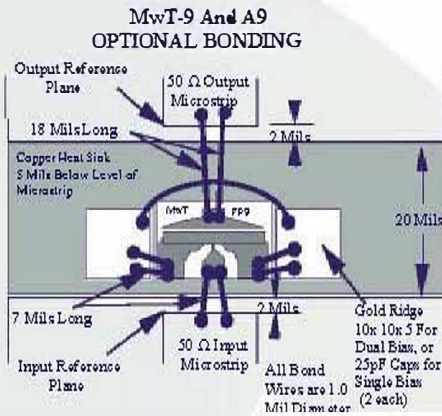
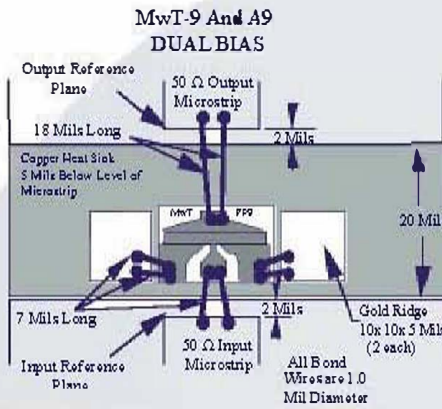
Package 70 MwT-970 MwT-A970
 Package 71 MwT-971 MwT-A971
 Package 73 MwT-973 MwT-A973
For Package information, please see supplementary application note from our website at www.mwtinc.com. When placing order or inquiring, please specify BIN range, wafer no., if known, and screening level required.

4268 Solar Way, Fremont, CA 94588 | Email sales@mwtinc.com | Phone (510) 651-6700 | Fax (510) 952-4000

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MwT-9/A9

18 GHz Medium Power GaAs FET



█ 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
P _{in}	RF Input Power	mW	300	450

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-9LN Chip: VDS= 3.0V IDS= 35mA

FREQUENCY GHz	NF MIN dB	GAMMA OPT		Rn/50
		MAG	ANGLE	
2.00	0.326	0.858	19.11	0.48
4.00	0.6	0.726	38.47	0.41
6.00	0.858	0.623	58.31	0.38
10.00	1.33	0.51	98.59	0.33
12.00	1.55	0.493	117.7	0.313
16.00	1.96	0.508	150.4	0.286

Bin Selection Guide

Bin	A	B	C	D
Idss Range	78-114	114-150	150-222	222-258

BIN ACCURACY STATEMENT

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

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