

TOSHIBA

MICROWAVE SEMICONDUCTOR TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM1414-7

FEATURES :

■ HIGH POWER

$P_{1dB} = 38.5 \text{ dBm}$ at 14.0 GHz to 14.5 GHz

■ BROAD BAND INTERNALLY MATCHED

■ HIGH GAIN

$G_{1dB} = 6.5 \text{ dB}$ at 14.0 GHz to 14.5 GHz

■ HERMETICALLY SEALED PACKAGE

RF PERFORMANCE SPECIFICATIONS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1dB Compression Point	P_{1dB}	$V_{DS} = 9 \text{ V}$ $f = 14.0 \sim 14.5 \text{ GHz}$	dBm	37.5	38.5	—
Power Gain at 1dB Compression Point	G_{1dB}		dB	5.5	6.5	—
Drain Current	I_{DS}		A	—	2.25	2.75
Power Added Efficiency	η_{add}		%	—	27	—
Channel-Temperature Rise	ΔT_{ch}		$V_{DS} \times I_{DS} \times R_{th(c-c)}$	°C	—	—

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	$V_{DS} = 3 \text{ V}$ $I_{DS} = 2.4 \text{ A}$	mS	—	1500	—
Pinch-off Voltage	V_{GSoff}	$V_{DS} = 3 \text{ V}$ $I_{DS} = 72 \text{ mA}$	V	-1.5	-3.0	-4.5
Saturated Drain Current	I_{DSS}	$V_{DS} = 3 \text{ V}$ $V_{GS} = 0 \text{ V}$	A	—	5.0	5.7
Gate-Source Breakdown Voltage	V_{GSO}	$I_{GS} = -72 \mu\text{A}$	V	-5	—	—
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	°C/W	—	3.0	3.7

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★ The information contained herein may be changed without prior notice. It is therefore advisable to contact TOSHIBA before proceeding with the design of equipment incorporating this product.

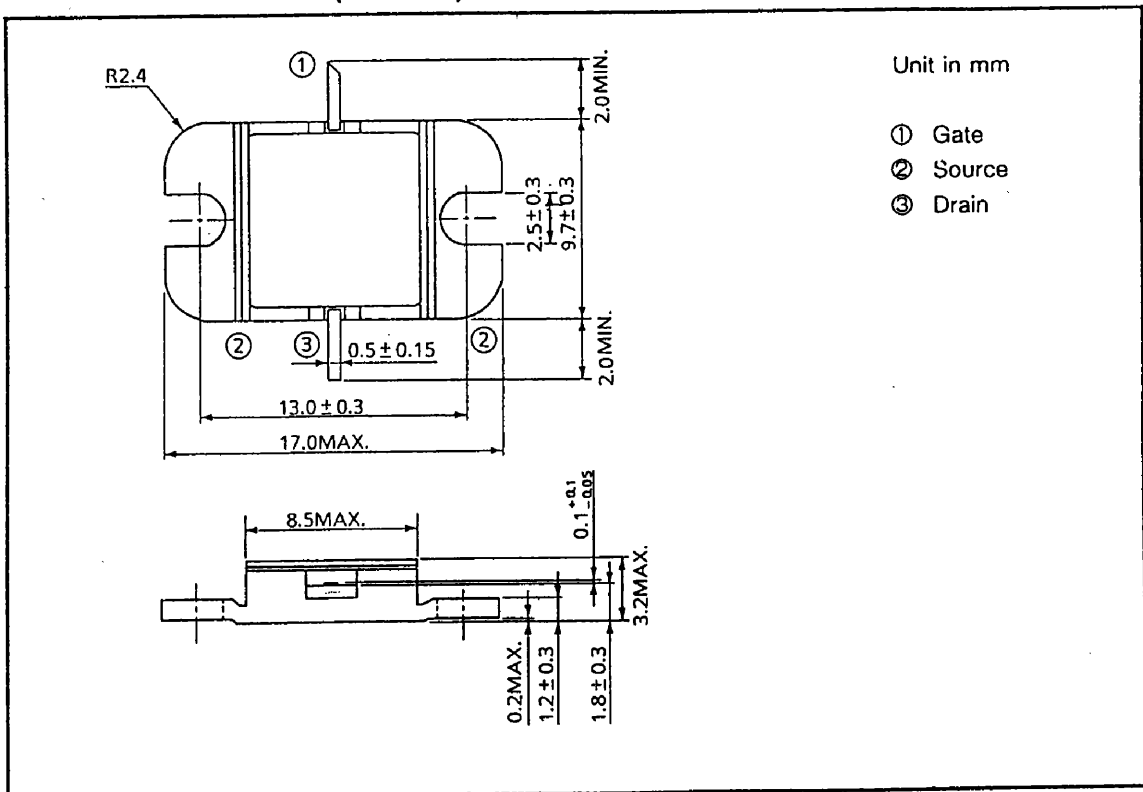


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ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V _{DS}	V	15
Gate-Source Voltage	V _{GS}	V	-5
Drain Current	I _{DS}	A	5.7
Total Power Dissipation (T _C = 25°C)	P _T	W	30
Channel Temperature	T _{ch}	°C	175
Storage Temperature	T _{slg}	°C	-65~175

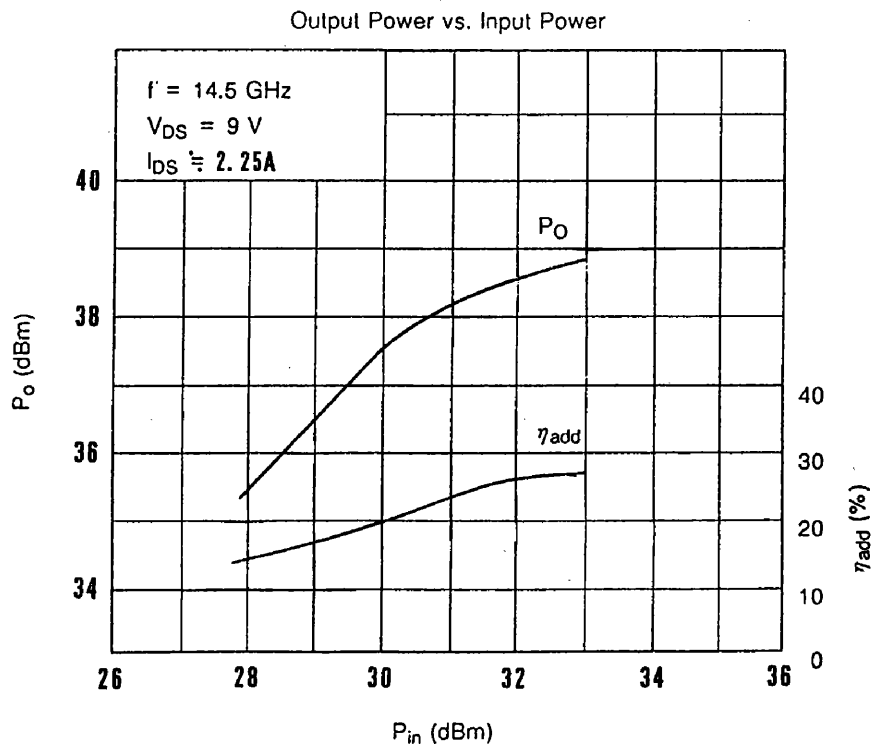
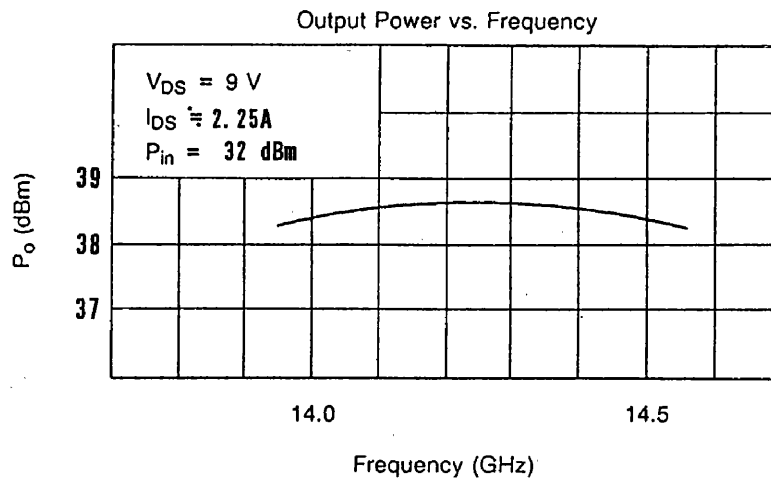
PACKAGE OUTLINE (2-9D1B)



HANDLING PRECAUTIONS FOR PACKAGED TYPE

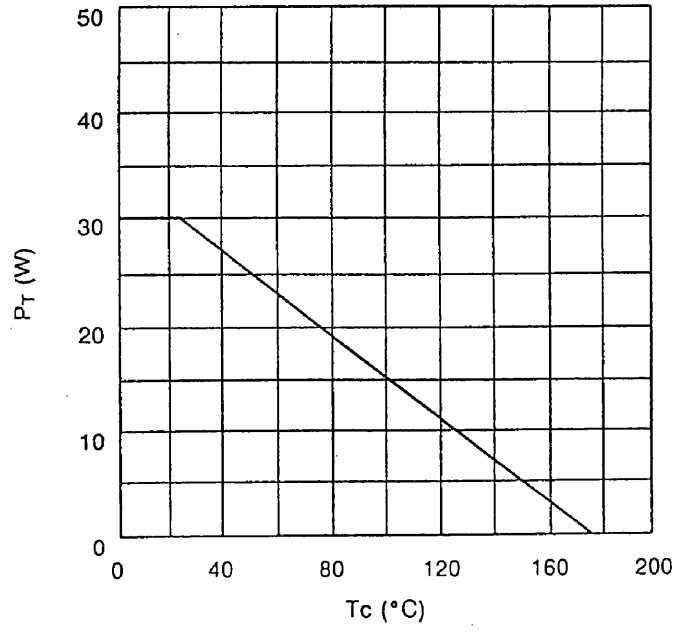
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCES



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POWER DISSIPATION VS. CASE TEMPERATURE



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TIM1414-7 S-PARAMETERS (MAGN.and ANGLES)

V_{DS} = 9V, I_{DS} = 2.25A

