

# TOSHIBA

MICROWAVE SEMICONDUCTOR

## TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM5964-16LB

### FEATURES:

- LOW INTERMODULATION DISTORTION  
IM<sub>3</sub> = -45 dBc at P<sub>o</sub> = 31.5 dBm,  
Single Carrier Level
- HIGH GAIN  
G<sub>1dB</sub> = 9.0 dB at 5.9 GHz to 6.4 GHz
- BROAD BAND INTERNALLY MATCHED
- HIGH POWER  
P<sub>1dB</sub> = 42.5 dBm at 5.9 GHz to 6.4 GHz
- HERMETICALLY SEALED PACKAGE

### RF PERFORMANCE SPECIFICATIONS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1 dB Compression Point	P <sub>1dB</sub>	V <sub>DS</sub> = 10V f = 5.9~6.4GHz	dBm	42.0	42.5	-
Power Gain at 1 dB Compression Point	G <sub>1dB</sub>		dB	8.0	9.0	-
Drain Current	I <sub>DS1</sub>		A	-	4.8	5.5
Gain Flatness	ΔG		dB	-	-	±0.8
Power Added Efficiency	η <sub>add</sub>		%	-	32	-
3rd Order Intermodulation Distortion	IM <sub>3</sub>	Note 1	dBc	-42	-45	-
Drain Current	I <sub>DS2</sub>		A	-	4.8	5.5
Channel Temperature Rise	ΔT <sub>ch</sub>	V <sub>DS</sub> × I <sub>DS</sub> × R <sub>th(c-c)</sub>	°C	-	-	80

### ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	gm	V <sub>DS</sub> = 3V I <sub>DS</sub> = 6.0A	mS	-	3600	-
Pinch-off Voltage	V <sub>GSoff</sub>	V <sub>DS</sub> = 3V I <sub>DS</sub> = 80mA	V	-2.0	-3.5	-5.0
Saturated Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 3V V <sub>GS</sub> = 0V	A	-	11.6	15.0
Gate-Source Breakdown Voltage	V <sub>GS0</sub>	I <sub>GS</sub> = -240 μA	V	-5	-	-
Thermal Resistance	R <sub>th(c-c)</sub>	Channel to Case	°C/W	-	1.4	1.8

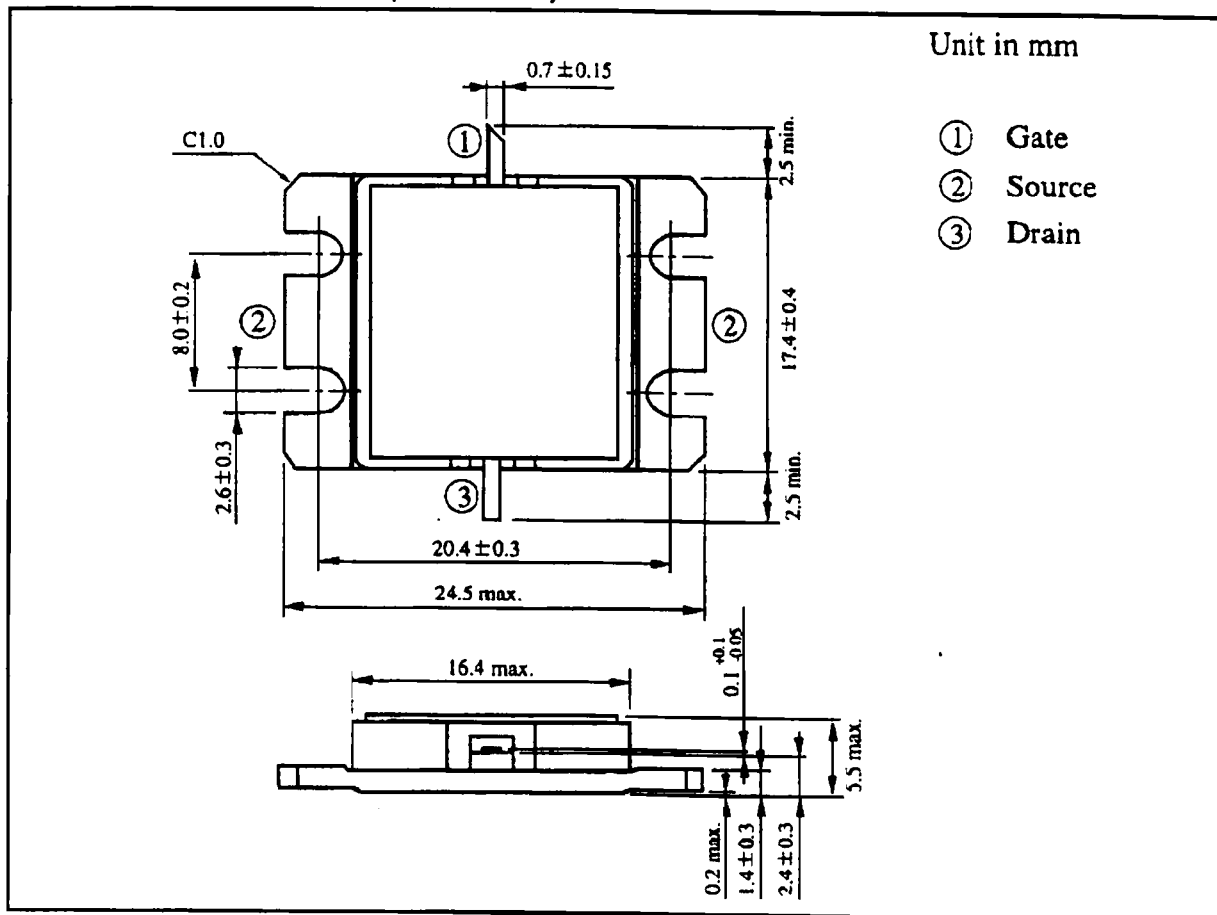
Note 1: 2 tone Test Pout = 31.5 dBm Single Carrier Level.

- ★ The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of TOSHIBA or others.
- ★ 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.

### ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V <sub>DS</sub>	V	15
Gate-Source Voltage	V <sub>GS</sub>	V	-5
Drain Current	I <sub>DS</sub>	A	16
Total Power Dissipation (Tc=25°C)	P <sub>T</sub>	W	70
Channel Temperature	T <sub>ch</sub>	°C	175
Storage Temperature	T <sub>stg</sub>	°C	-65~175

### PACKAGE OUTLINE (2-16G1B)

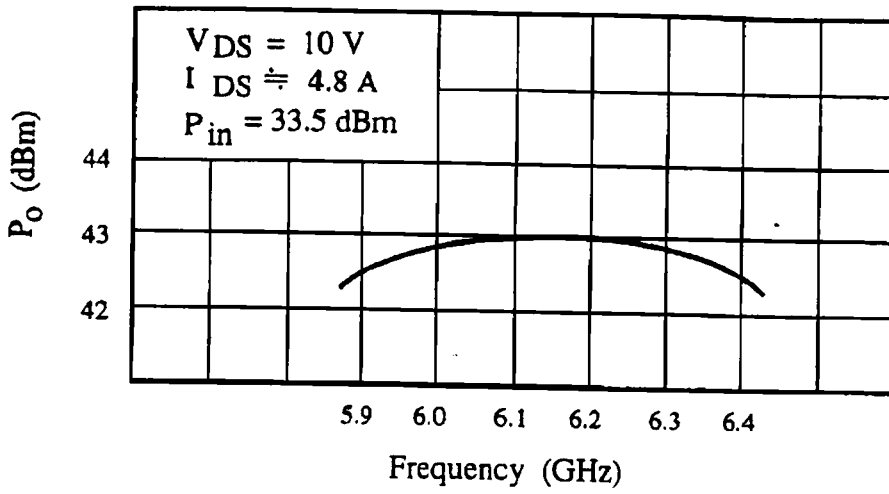


### HANDLING PRECAUTIONS FOR PACKAGED TYPE

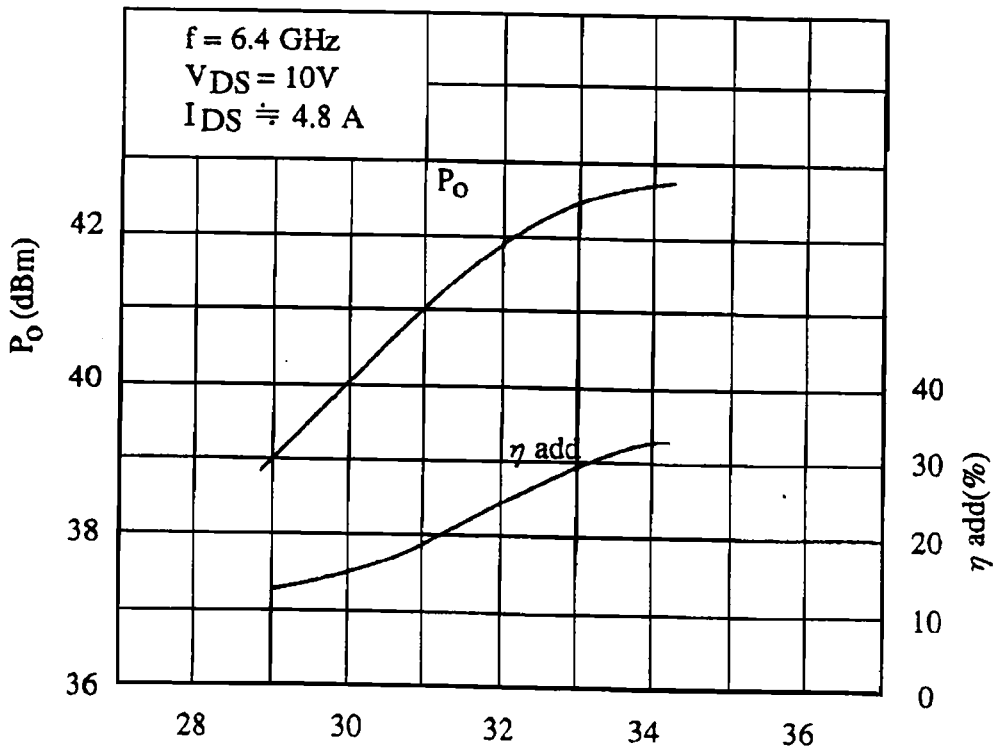
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCES

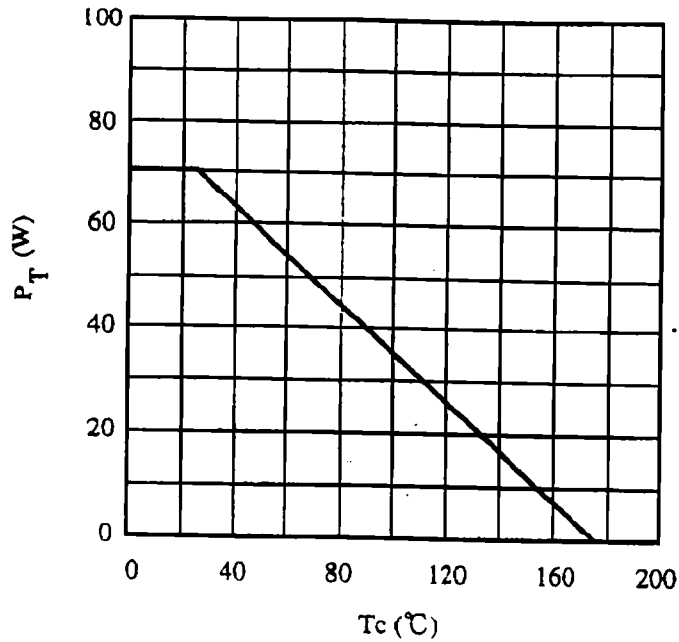
Output Power vs. Frequency



Output Power vs. Input Power



POWER DISSIPATION VS. CASE TEMPERATURE



IM<sub>3</sub> VS. OUTPUT POWER CHARACTERISTICS

