

# TOSHIBA

## MICROWAVE SEMICONDUCTOR

### TECHNICAL DATA

## MICROWAVE POWER GaAs FET

### TIM5964-30LA

#### FEATURES :

- LOW INTERMODULATION DISTORTION  
 $IM_3 = -45$  dBc at  $P_o = 34.5$  dBm,  
 Single Carrier Level
- HIGH POWER  
 $P_{1dB} = 45$  dBm at 5.9 GHz to 6.4 GHz
- HIGH GAIN  
 $G_{1dB} = 9.0$  dB at 5.9 GHz to 6.4 GHz
- BROAD BAND INTERNALLY MATCHED
- HERMETICALLY SEALED PACKAGE

#### RF PERFORMANCE SPECIFICATIONS ( $T_a = 25^\circ C$ )

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1dB Compression Point	$P_{1dB}$	$V_{DS} = 10$ V $f = 5.9-6.4$ GHz	dBm	44.5	45.0	-
Power Gain at 1dB Compression Point	$G_{1dB}$		dB	8.0	9.0	-
Drain Current	$I_{DS}$		A	-	8.0	9.0
Power Added Efficiency	$\eta_{add}$		%	-	35	-
3rd Order Intermodulation Distortion	$IM_3$	Note 1	dBc	-42	-45	-
Channel-Temperature Rise	$\Delta T_{ch}$	$V_{DS} \times I_{DS} \times R_{th}(c-c)$	$^\circ C$	-	-	80

#### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	$g_m$	$V_{DS} = 3$ V $I_{DS} = 10.5$ A	mS	-	6300	-
Pinch-off Voltage	$V_{GSoff}$	$V_{DS} = 3$ V $I_{DS} = 140$ mA	V	-2	-3.5	-5.0
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 3$ V $V_{GS} = 0$ V	A	-	20	26
Gate-Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -420$ $\mu$ A	V	-5	-	-
Thermal Resistance	$R_{th}(c-c)$	Channel to Case	$^\circ C/W$	-	0.8	1.0

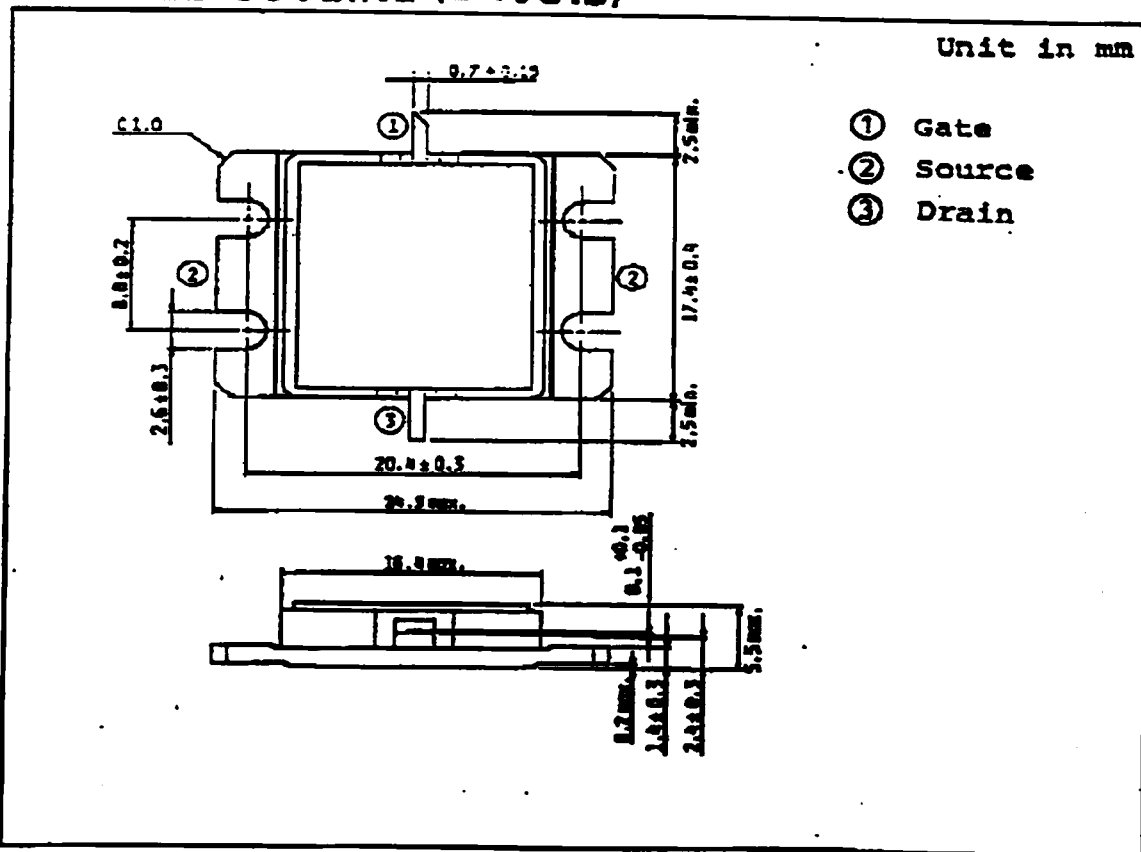
Note 1: 2 tone Test  $P_{out} = 34.5$  dBm Single Carrier Level.

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**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	26
Total Power Dissipation (T <sub>C</sub> =25°C)	P <sub>T</sub>	W	120
Channel Temperature	T <sub>ch</sub>	°C	175
Storage Temperature	T <sub>stg</sub>	°C	-65~175

**PACKAGE OUTLINE (2-16G1B)**

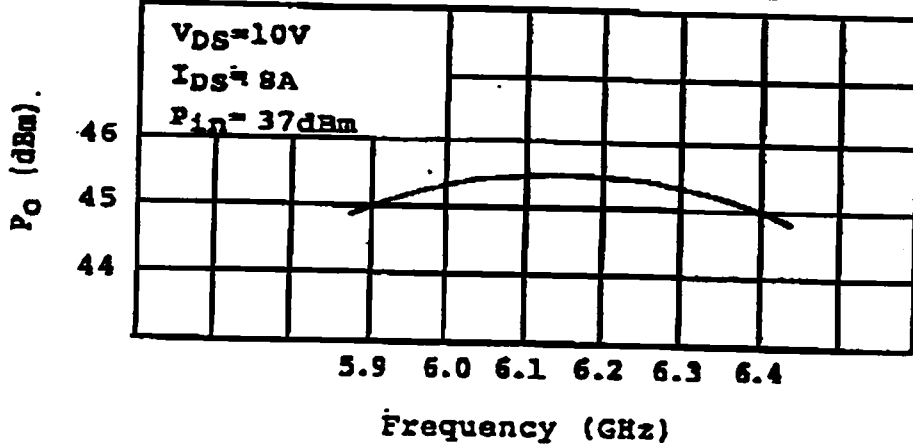


**HANDLING PRECAUTIONS FOR PACKAGED TYPE**

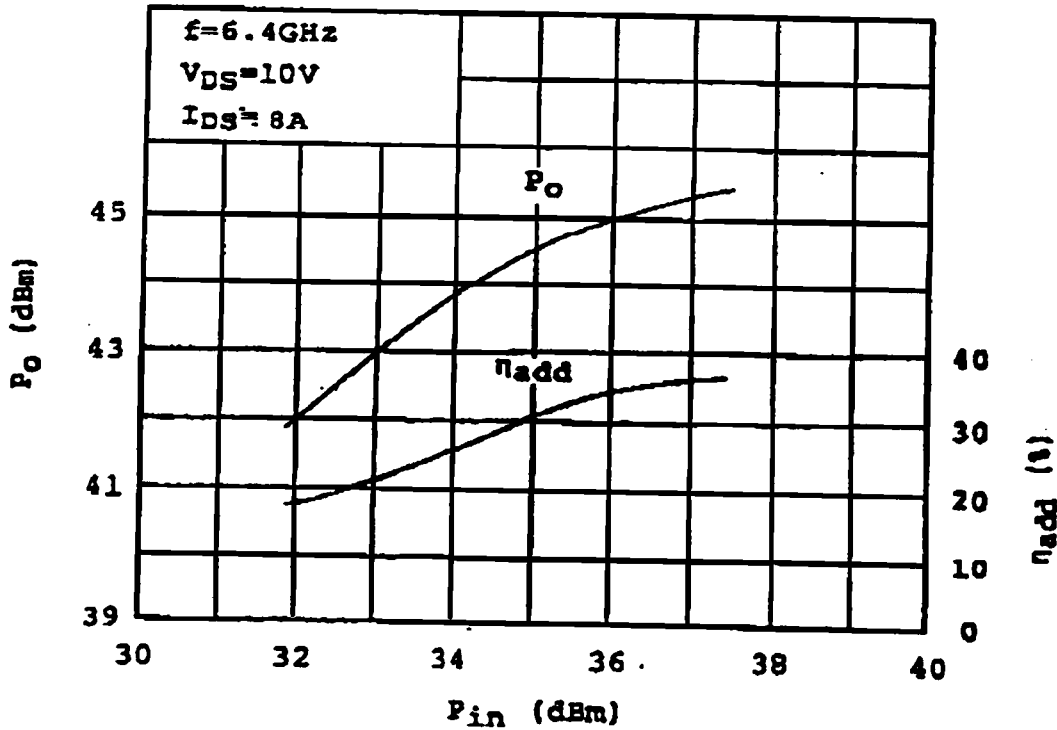
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

# RF PERFORMANCES

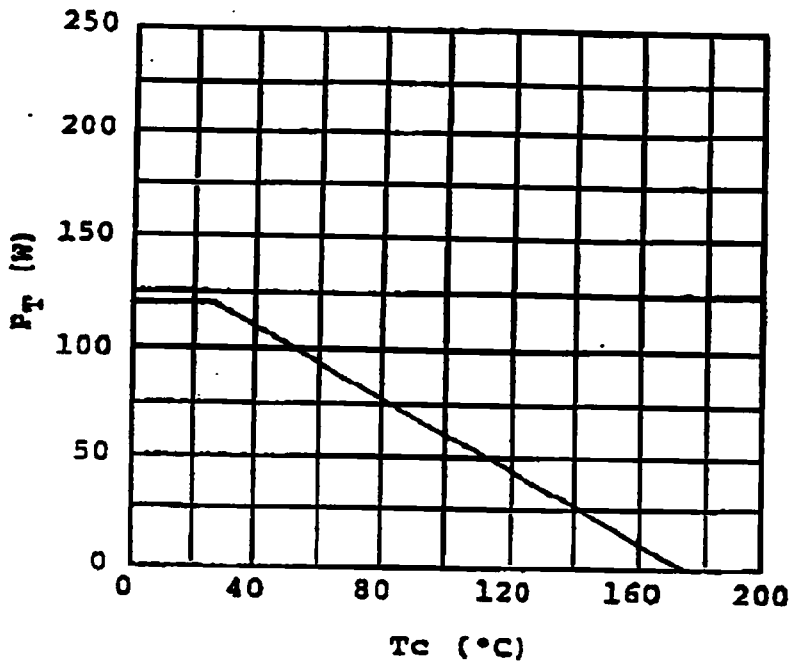
### Output Power vs. Frequency



### Output Power vs. Input Power



**POWER DISSIPATION VS. CASE TEMPERATURE**



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

