

# TOSHIBA

## MICROWAVE SEMICONDUCTOR TECHNICAL DATA

MICROWAVE POWER GaAs FET

**TIM5964-4-251**

### FEATURES:

- HIGH POWER  
 $P_{1dB} = 36.0 \text{ dBm}$  at 5.9 GHz to 6.75 GHz
- BROAD BAND INTERNALLY MATCHED
- HIGH GAIN  
 $G_{1dB} = 8.0 \text{ dB}$  at 5.9 GHz to 6.75 GHz
- HERMETICALLY SEALED PACKAGE

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

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1 dB Compression Point	$P_{1dB}$	$V_{DS} = 10 \text{ V}$ $f = 5.9 \sim 6.75 \text{ GHz}$	dBm	35.0	36.0	-
Power Gain at 1 dB Compression Point	$G_{1dB}$		dB	8.0	-	-
Drain Current	$I_{DS}$		A	-	1.1	1.5
Power Added Efficiency	$\eta_{add}$		%	-	32	-
Channel Temperature Rise	$\Delta T_{ch}$	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	$^\circ\text{C}$	-	-	80

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

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	$g_m$	$V_{DS} = 3 \text{ V}$ $I_{DS} = 1.5 \text{ A}$	ms	-	900	-
Pinch-off Voltage	$V_{GSoff}$	$V_{DS} = 3 \text{ V}$ $I_{DS} = 20 \text{ mA}$	V	-2	-3.5	-5
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 3 \text{ V}$ $V_{GS} = 0 \text{ V}$	A	-	2.9	3.8
Gate-Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -60 \text{ }\mu\text{A}$	V	-5	-	-
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	$^\circ\text{C/W}$	-	4.0	6.0

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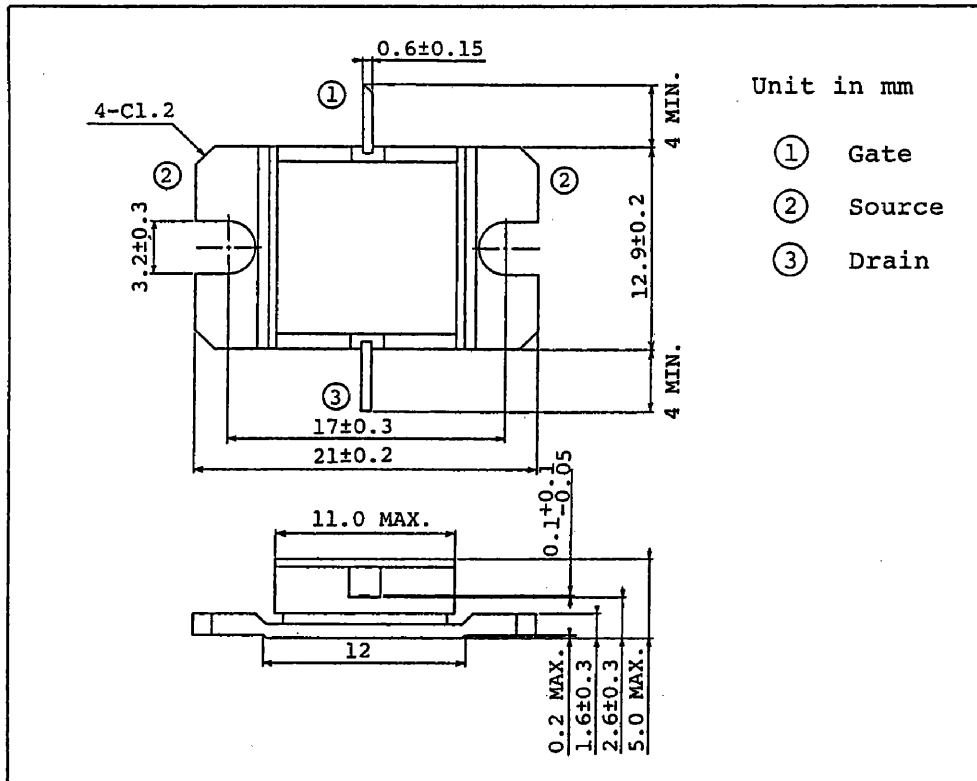
**TOSHIBA CORPORATION**

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**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )**

CHARACTERISTIC	SYMBOL	UNIT	RATING
Drain-Source Voltage	$V_{DS}$	V	15
Gate-Source Voltage	$V_{GS}$	V	-5
Drain Current	$I_{DS}$	A	4
Total Power Dissipation ( $T_c=25^\circ\text{C}$ )	$P_T$	W	20
Channel Temperature	$T_{ch}$	$^\circ\text{C}$	175
Storage Temperature	$T_{stg}$	$^\circ\text{C}$	-65~175

**PACKAGE OUTLINE (2-11D1B)**

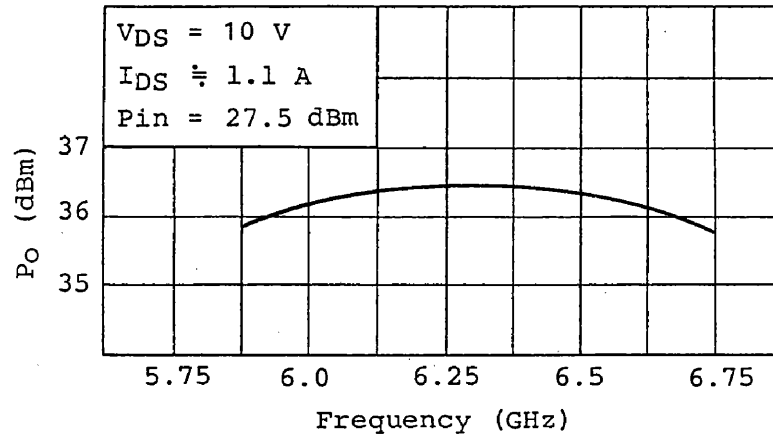


**HANDLING PRECAUTIONS FOR PACKAGED TYPE**

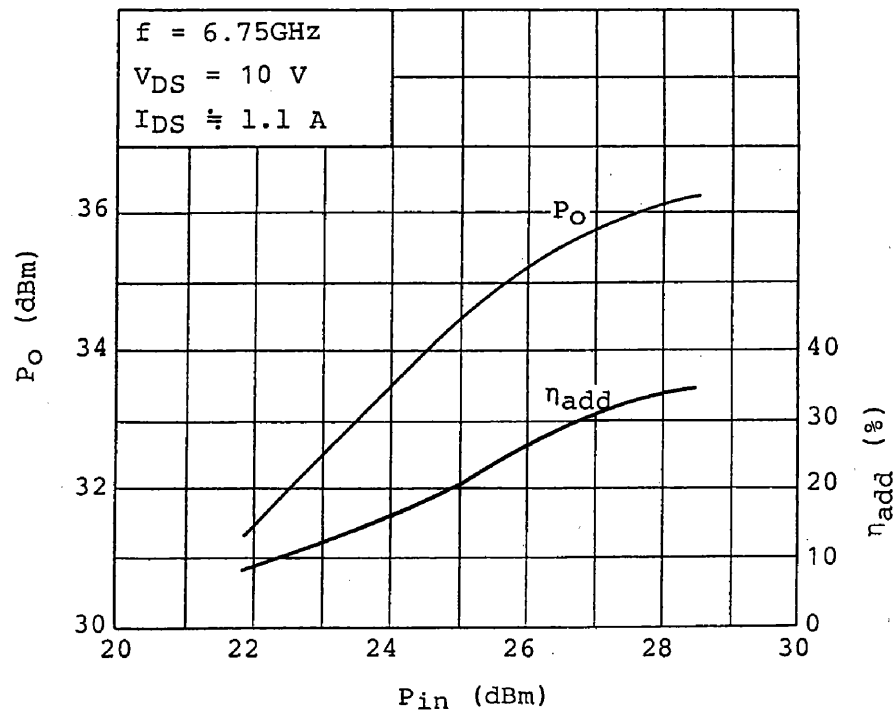
Soldering iron should be grounded and the operating time should not exceed 10 seconds at  $260^\circ\text{C}$ .

# RF PERFORMANCES

Output Power vs. Frequency



Output Power vs. Input Power



POWER DISSIPATION VS. CASE TEMPERATURE

