

# TOSHIBA

## MICROWAVE SEMICONDUCTOR

### TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM3742-30SL-341

#### FEATURES :

- LOW INTERMODULATION DISTORTION  
 $IM_3 = -45$  dBc at  $P_o = 34.5$  dBm,  
 Single Carrier Level
- HIGH POWER  
 $P_{1dB} = 45$  dBm at 3.3 GHz to 3.6 GHz
- HIGH GAIN  
 $G_{1dB} = 11$ dB at 3.3 GHz to 3.6 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  $f = 3.3 \sim 3.6$ GHz	dBm	44.0	45.0	-
Power Gain at 1dB Compression Point	$G_{1dB}$		dB	10.0	11.0	-
Drain Current	$I_{DS1}$		A	-	7.0	8.0
Gain Flatness	$\Delta G$		dB	-	-	$\pm 0.8$
Power Added Efficiency	$\eta_{add}$		%	-	42	-
3rd Order Intermodulation Distortion	$IM_3$	Note 1	dBc	-42	-45	-
Drain Current	$I_{DS2}$		A	-	7.0	8.0
Channel-Temperature Rise	$\Delta T_{ch}$	$V_{DS} \times I_{DS} \times R_{th}(c-c)$	$^\circ C$	-	-	100

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

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	$g_m$	$V_{DS} = 3$ V $I_{DS} = 10$ A	mS	-	6300	-
Pinch-off Voltage	$V_{GSoff}$	$V_{DS} = 3$ V $I_{DS} = 100$ mA	V	-1.0	-2.5	-4.0
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 3$ V $V_{GS} = 0$ V	A	-	18	22
Gate-Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -350$ $\mu$ A	V	-5	-	-
Thermal Resistance	$R_{th}(c-c)$	Channel to Case	$^\circ C/W$	-	1.0	1.3

Note 1: 2 tone Test Pout = 34.5 dBm Single Carrier Level.

Recommended Gate Resistance( $R_g$ ) :  $R_g = R_{g1}(10 \Omega) + R_{g2}(18 \Omega) = 28 \Omega$  (MAX.)

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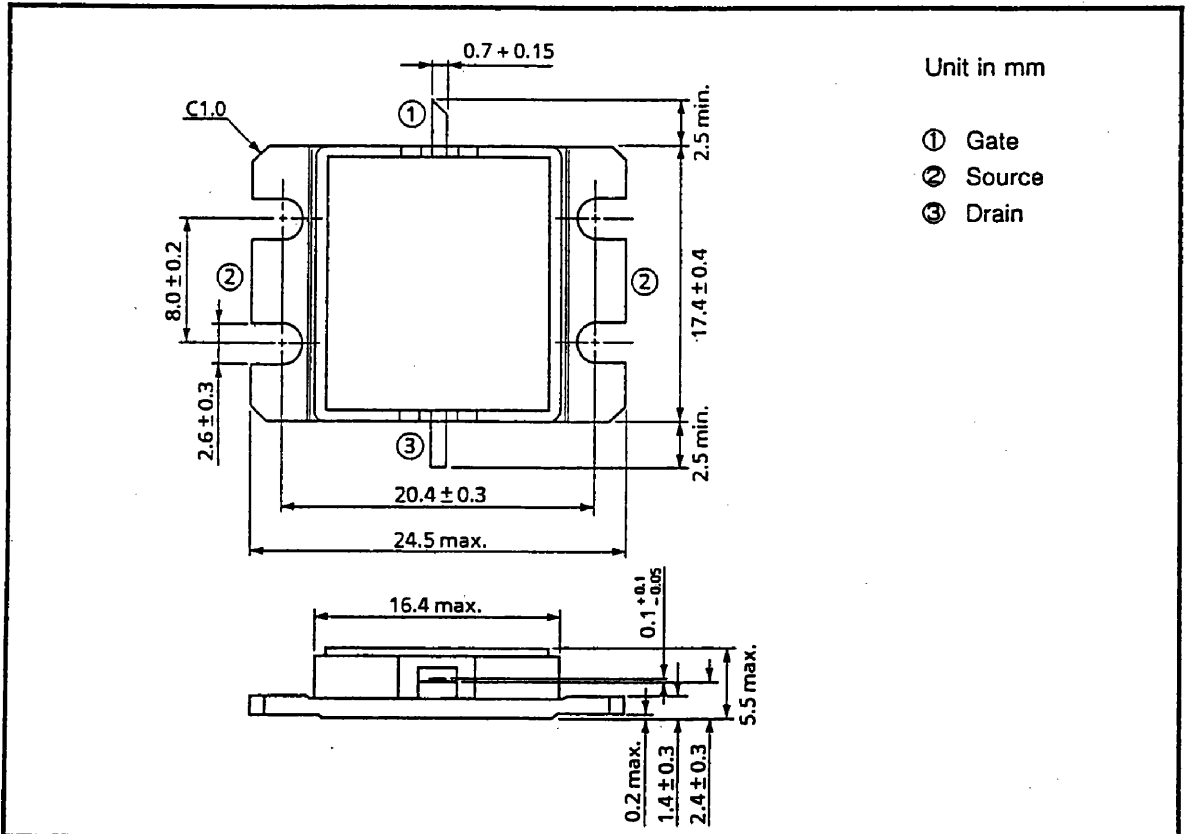


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## ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

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	22
Total Power Dissipation (T <sub>C</sub> = 25°C)	P <sub>T</sub>	W	115
Channel Temperature	T <sub>ch</sub>	°C	175
Storage Temperature	T <sub>slg</sub>	°C	-65~175

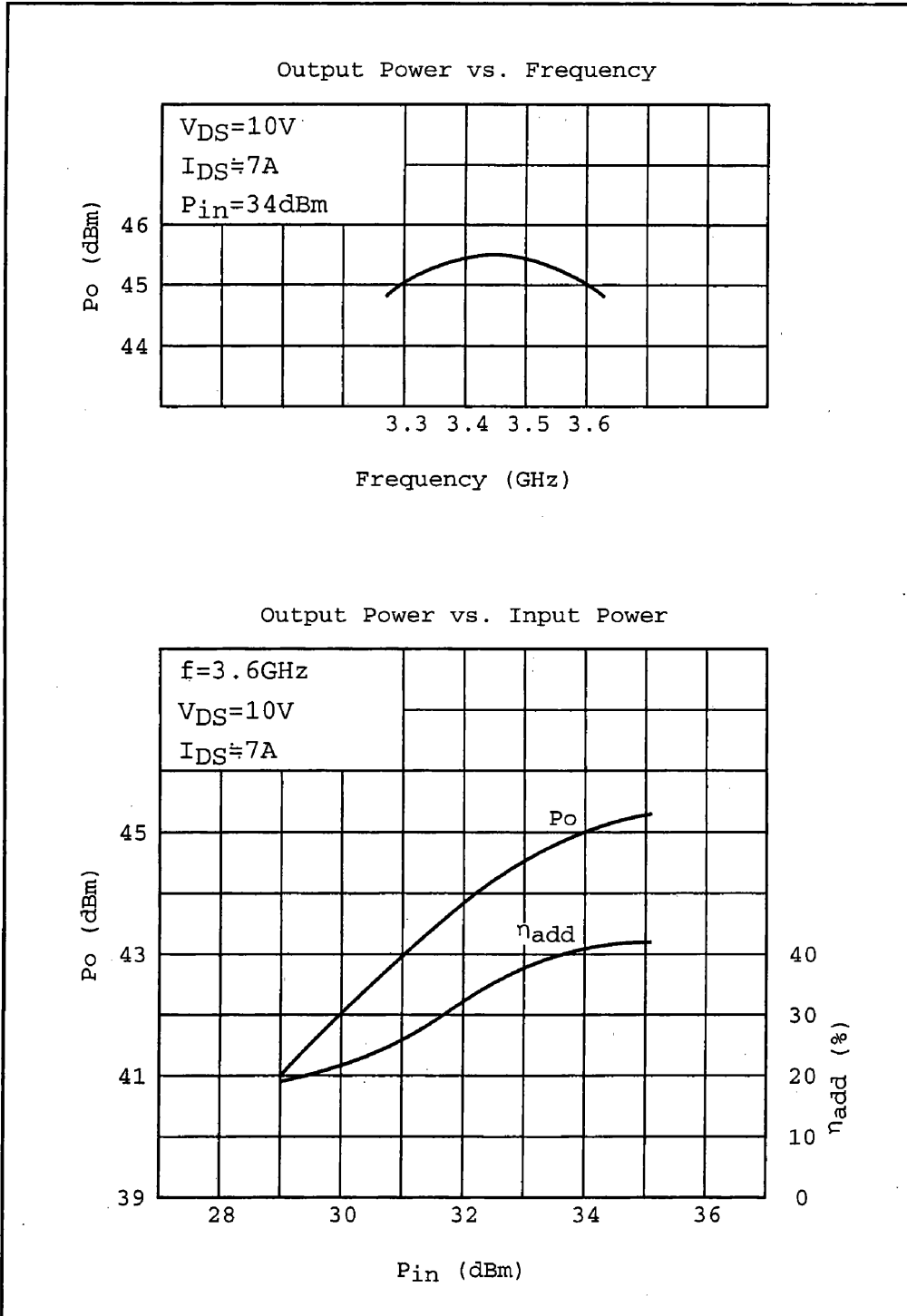
## PACKAGE OUTLINE (2-16G1B)



### HANDLING PRECAUTIONS FOR PACKAGED TYPE

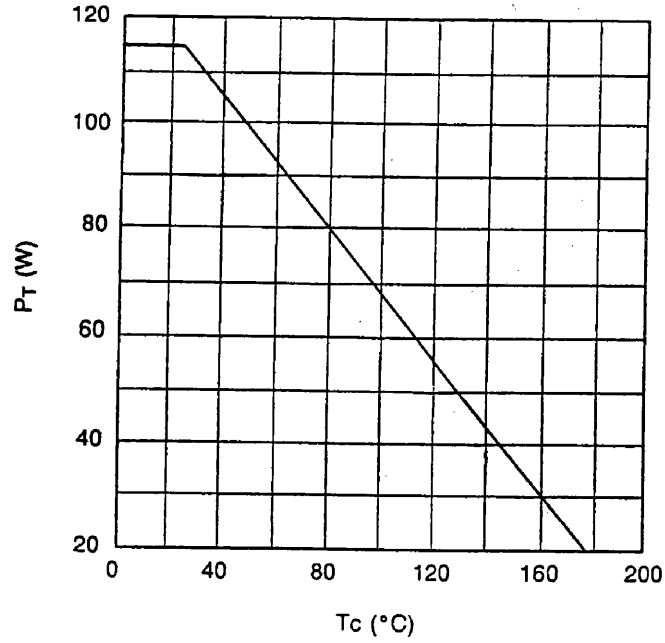
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCES.



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## POWER DISSIPATION VS. CASE TEMPERATURE



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

