

# TOSHIBA

## MICROWAVE SEMICONDUCTOR TECHNICAL DATA

## MICROWAVE POWER GaAs FET TIM3742-16SL

### FEATURES :

- LOW INTERMODULATION DISTORTION  
IM<sub>3</sub> = -45 dBc at P<sub>o</sub> = 31.5 dBm,  
Single Carrier Level
- HIGH POWER  
P<sub>1dB</sub> = 42.5 dBm at 3.7GHz to 4.2GHz
- HIGH GAIN  
G<sub>1dB</sub> = 9.5 dB at 3.7 GHz to 4.2 GHz
- BROAD BAND INTERNALLY MATCHED
- 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> = 10 V f = 3.7 ~ 4.2GHz	dBm	41.5	42.5	—
Power Gain at 1 dB Compression Point	G <sub>1dB</sub>		dB	8.5	9.5	—
Drain Current	I <sub>DS</sub>		A	—	4.4	5.0
Gain Flatness	ΔG		dB	—	—	±0.8
Power Added Efficiency	η <sub>add</sub>		%	—	36	—
3rd Order Intermodulation Distortion	IM <sub>3</sub>	Note 1	dBc	-42	-45	—
Channel-Temperature Rise	ΔT <sub>ch</sub>	V <sub>DS</sub> × I <sub>DS</sub> × R <sub>th</sub> (c-c)	°C	—	—	80

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

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	V <sub>DS</sub> = 3 V I <sub>DS</sub> = 6.0 A	mS	—	3600	—
Pinch-off Voltage	V <sub>GSoFF</sub>	V <sub>DS</sub> = 3 V I <sub>DS</sub> = 60 mA	V	-1	-2.5	-4.0
Saturated Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 3 V V <sub>GS</sub> = 0 V	A	—	10.5	14.0
Gate-Source Breakdown Voltage	V <sub>GSO</sub>	I <sub>GS</sub> = - 200 μA	V	-5	—	—
Thermal Resistance	R <sub>th</sub> (c-c)	Channel to Case	°C/W	—	1.5	2.0

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

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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.

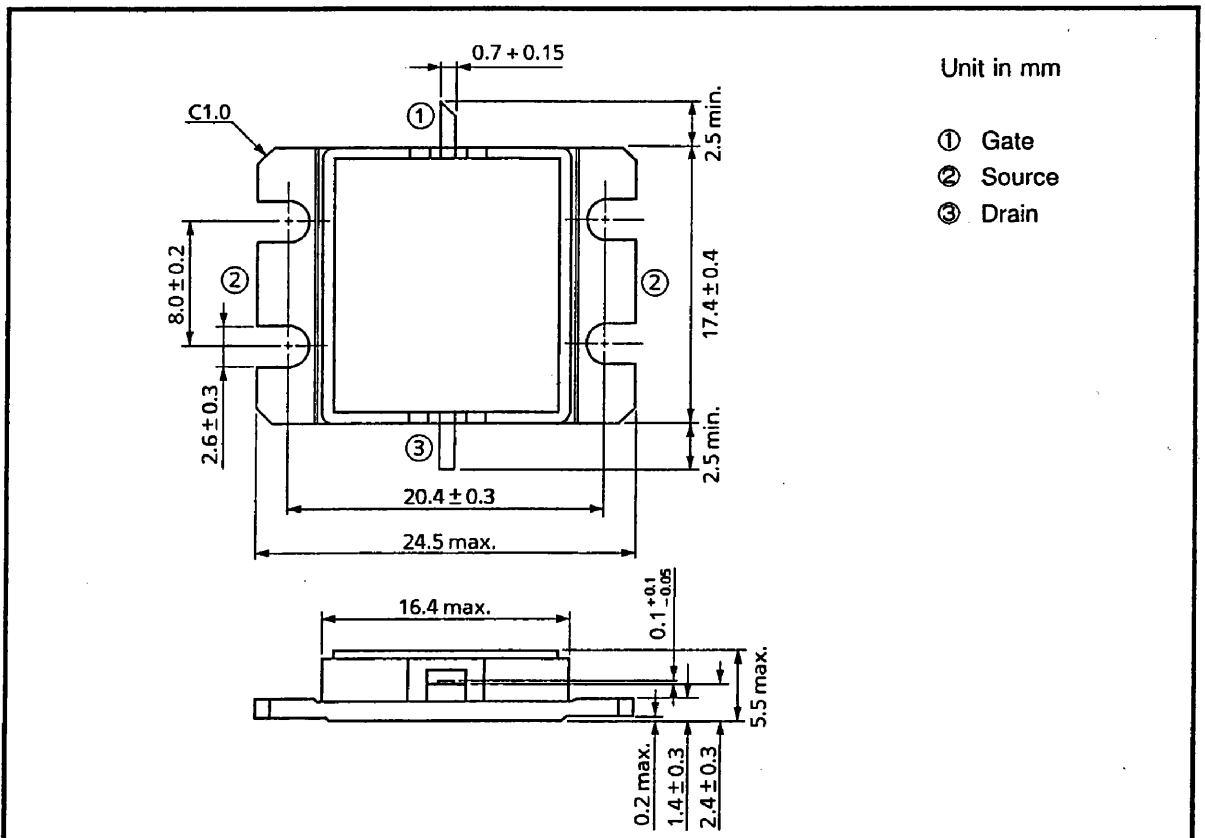


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## ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V <sub>DS</sub>	V	15
Gate-Source Voltage	V <sub>GS</sub>	V	-5
Drain Current	I <sub>DS</sub>	A	14
Total Power Dissipation (T <sub>C</sub> = 25°C)	P <sub>T</sub>	W	75
Channel Temperature	T <sub>ch</sub>	°C	175
Storage Temperature	T <sub>stg</sub>	°C	-65 ~ 175

## PACKAGE OUTLINE (2-16G1B)

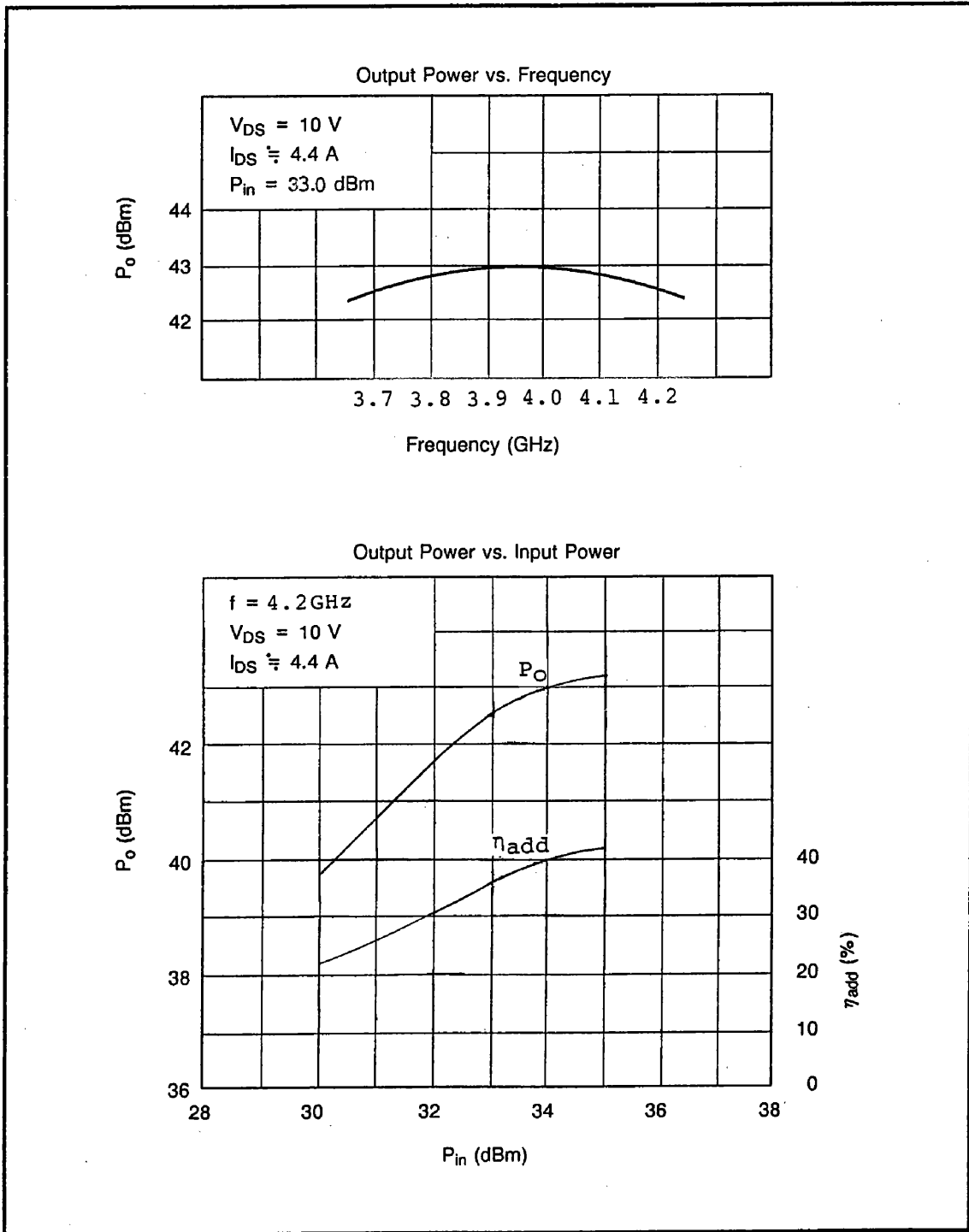


### HANDLING PRECAUTIONS FOR PACKAGED TYPE

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

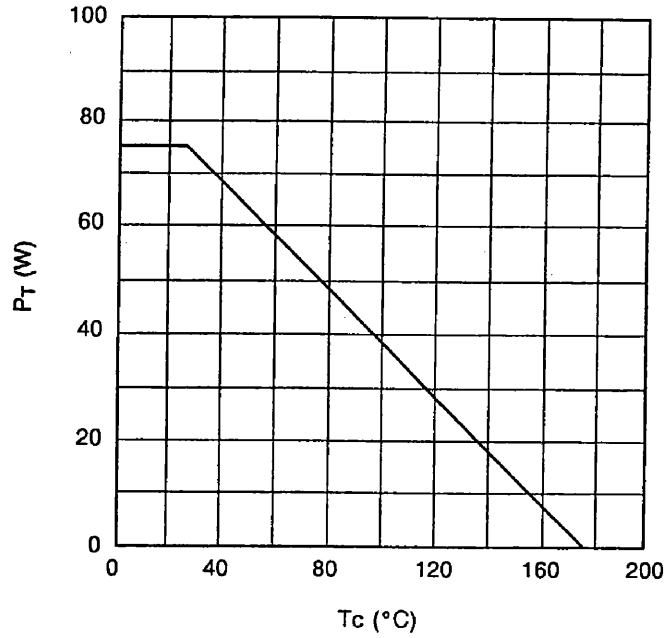
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## RF PERFORMANCES



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## POWER DISSIPATION VS. CASE TEMPERATURE



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

