

# TOSHIBA

## MICROWAVE SEMICONDUCTOR

### TECHNICAL DATA

## MICROWAVE POWER GaAs FET

### TIM3742-16SL-341

### FEATURES

- **LOW INTERMODULATION DISTORTION**  
IM3=-45 dBc at Pout= 31.5dBm  
Single Carrier Level
- **HIGH POWER**  
P1dB=42.5dBm at 3.3GHz to 3.6GHz
- **HIGH GAIN**  
G1dB=10.0dB at 3.3GHz to 3.6GHz
- **BROAD BAND INTERNALLY MATCHED FET**
- **HERMETICALLY SEALED PACKAGE**

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

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Output Power at 1dB Gain Compression Point	P1dB	VDS= 10V f= 3.3 to 3.6GHz	dBm	41.5	42.5	—
Power Gain at 1dB Gain Compression Point	G1dB		dB	10.0	—	—
Drain Current	IDS1		A	—	4.4	5.0
Gain Flatness	ΔG		dB	—	—	±0.8
Power Added Efficiency	ηadd		%	—	36	—
3 <sup>rd</sup> Order Intermodulation Distortion	IM3	Two-Tone Test Po=31.5dBm	dBc	-42	-45	—
Drain Current	IDS2	(Single Carrier Level)	A	—	4.4	5.0
Channel Temperature Rise	ΔTch	(VDS X IDS + Pin - P1dB) X Rth(c-c)	°C	—	—	80

Recommended Gate Resistance(Rg): 100 Ω (Max.)

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

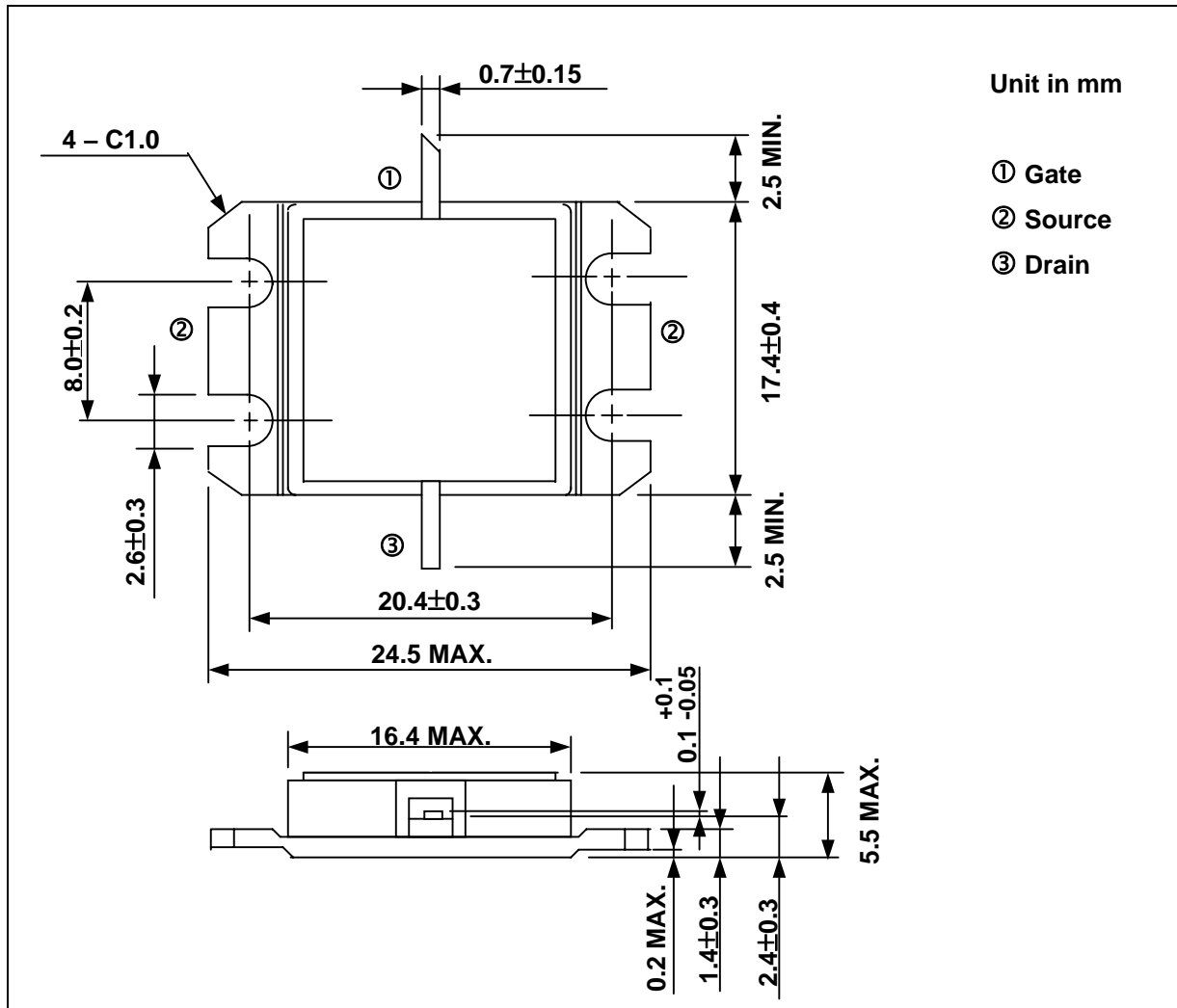
CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	VDS= 3V IDS= 5.2A	mS	—	3200	—
Pinch-off Voltage	VGSoff	VDS= 3V IDS= 70mA	V	-1.0	-2.5	-4.0
Saturated Drain Current	IDSS	VDS= 3V VGS= 0V	A	—	10.0	—
Gate-Source Breakdown Voltage	VGSO	IGS= -210μA	V	-5	—	—
Thermal Resistance	Rth(c-c)	Channel to Case	°C/W	—	1.4	2.0

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

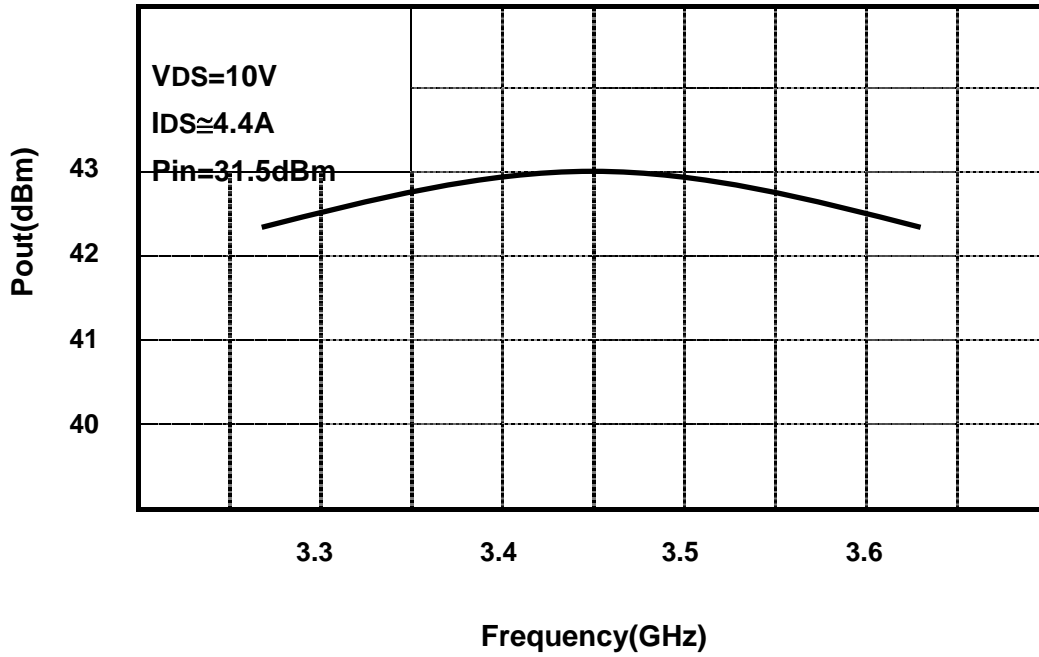
CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	VDS	V	15
Gate-Source Voltage	VGS	V	-5
Drain Current	IDS	A	14.0
Total Power Dissipation (Tc= 25 °C)	PT	W	75
Channel Temperature	Tch	°C	175
Storage Temperature	Tstg	°C	-65 to +175

**PACKAGE OUTLINE (2-16G1B)****HANDLING PRECAUTIONS FOR PACKAGE MODEL**

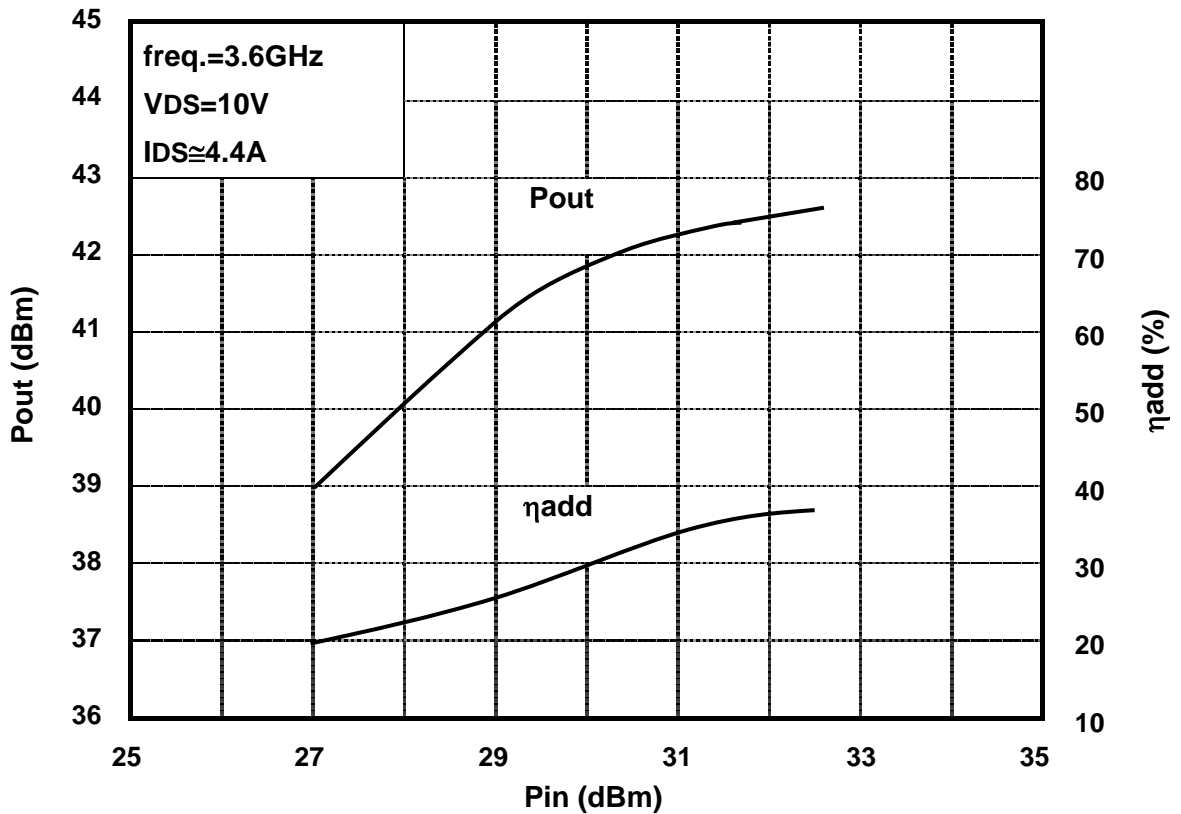
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

## RF PERFORMANCE

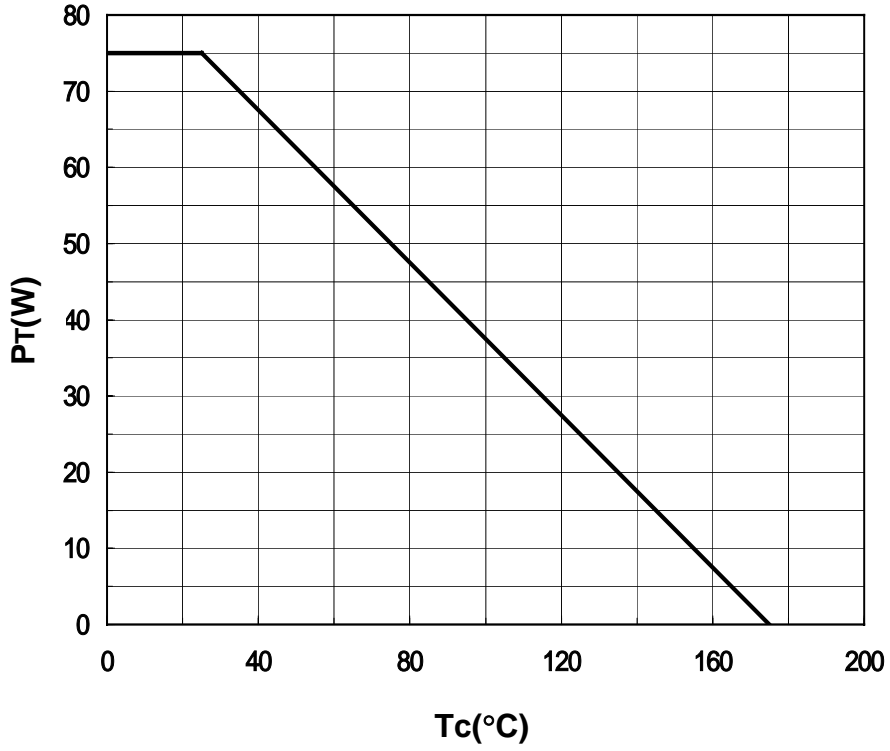
### Output Power (Pout) vs. Frequency



### Output Power (Pout) vs. Input Power (Pin)



**Power Dissipation vs. Case Temperature**



**IM3 vs. Output Power Characteristics**

