

**TOSHIBA**  
**MICROWAVE SEMICONDUCTOR**  
**TECHNICAL DATA**

**MICROWAVE POWER GaAs FET**  
**TIM1414-15L**

**FEATURES**

- n **LOW INTERMODULATION DISTORTION**  
 IM3=-45 dBc at Pout= 30.0dBm  
 Single Carrier Level
- n **HIGH POWER**  
 P1dB=42.0dBm at 14.0GHz to 14.5GHz
- n **HIGH GAIN**  
 G1dB=6.0 dB at 14.0 GHz to 14.5GHz
- n **BROAD BAND INTERNALLY MATCHED FET**
- n **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= 9V f= 14.0 to 14.5GHz	dBm	41.0	42.0	—
Power Gain at 1dB Gain Compression Point	G1dB		dB	5.0	6.0	—
Drain Current	IDS1		A	—	4.5	5.5
Gain Flatness	ΔG		dB	—	—	±0.8
Power Added Efficiency	ηadd		%	—	29	—
3 <sup>rd</sup> Order Intermodulation Distortion	IM3	Two-Tone Test Po=30.0 dBm	dBc	-42	-45	—
Drain Current	IDS2	(Single Carrier Level)	A	—	4.5	5.5
Channel Temperature Rise	ΔTch	(VDS X IDS + Pin - P1dB) X Rth(c-c)	°C	—	—	100

Recommended gate resistance(Rg) : Rg= 100 W(MAX.)

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

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	VDS= 3V IDS= 4.8A	mS	—	3000	—
Pinch-off Voltage	VGSoff	VDS= 3V IDS= 145mA	V	-1.5	-3.0	-4.5
Saturated Drain Current	IDSS	VDS= 3V VGS= 0V	A	—	10.0	—
Gate-Source Breakdown Voltage	VGSO	IGS= -145μA	V	-5	—	—
Thermal Resistance	Rth(c-c)	Channel to Case	°C/W	—	2.0	2.5

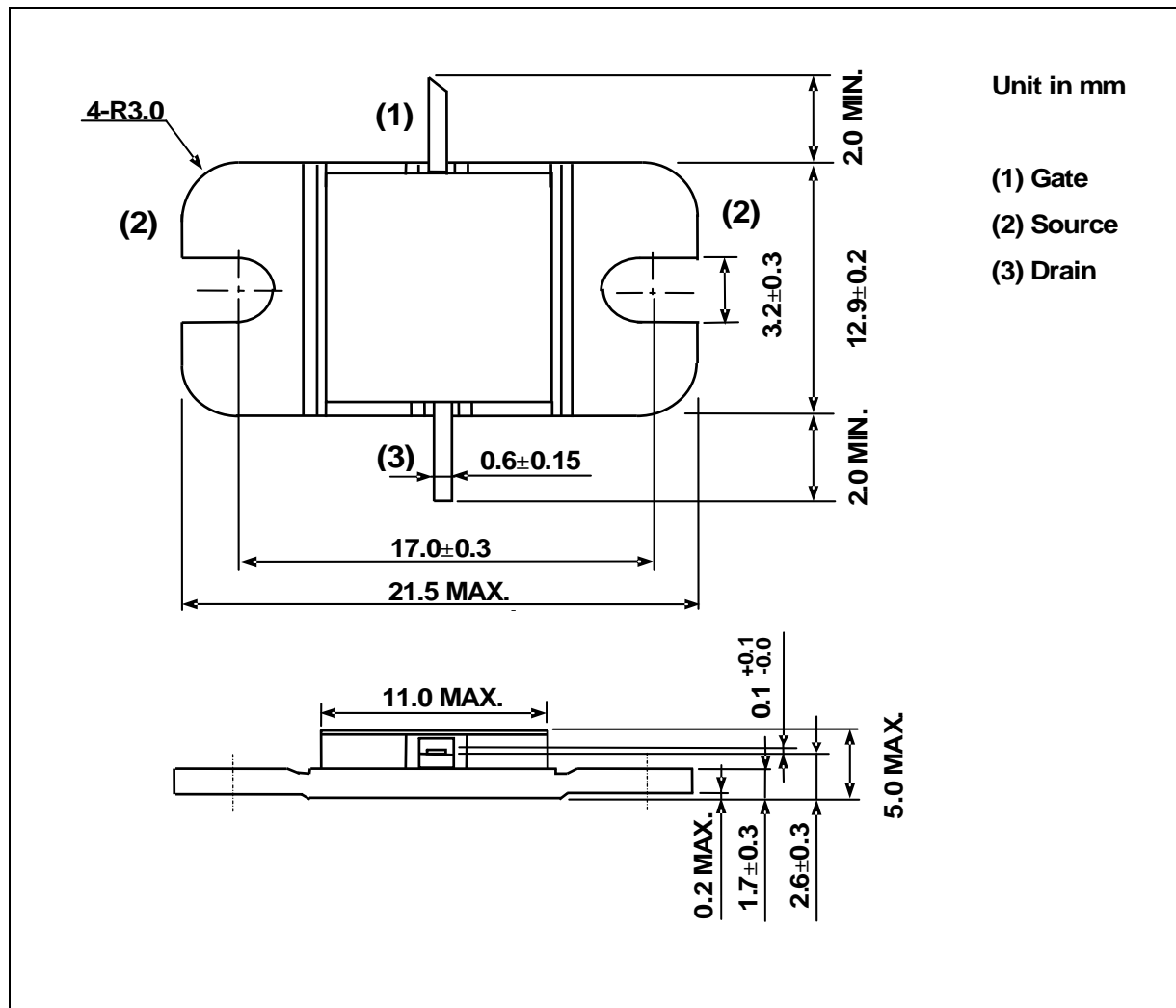
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**ABSOLUTE MAXIMUM RATINGS ( Ta= 25°C )**

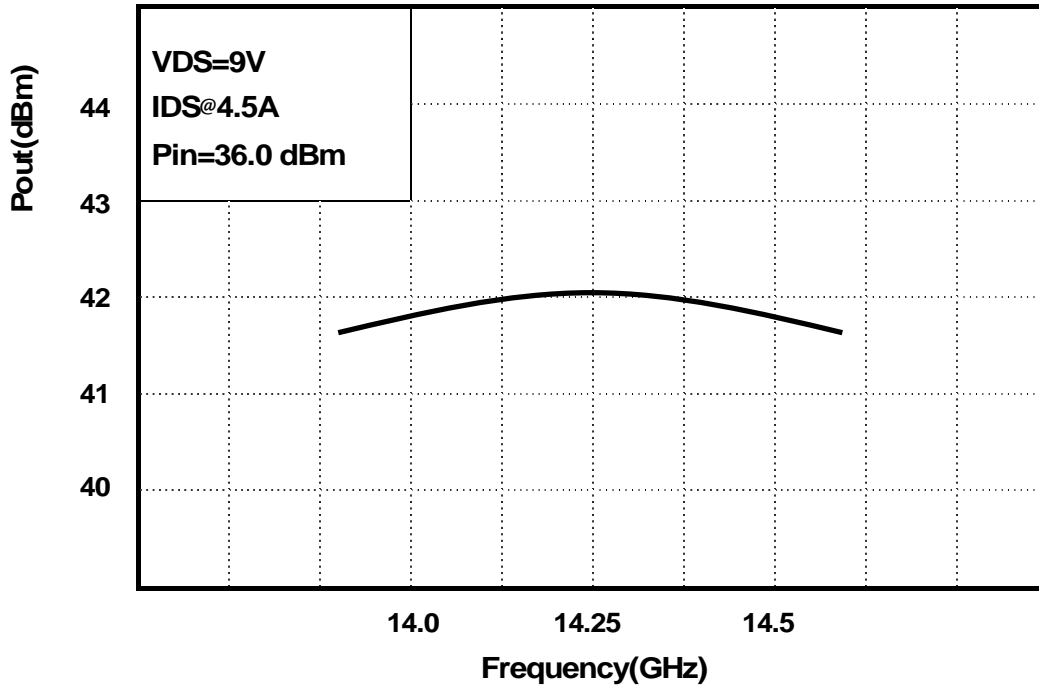
CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V <sub>DS</sub>	V	15
Gate-Source Voltage	V <sub>GS</sub>	V	-5
Drain Current	I <sub>DS</sub>	A	11.5
Total Power Dissipation (T <sub>c</sub> = 25 °C)	PT	W	60
Channel Temperature	T <sub>ch</sub>	°C	175
Storage Temperature	T <sub>stg</sub>	°C	-65 to +175

**PACKAGE OUTLINE (2-11C1B)****HANDLING PRECAUTIONS FOR PACKAGE MODEL**

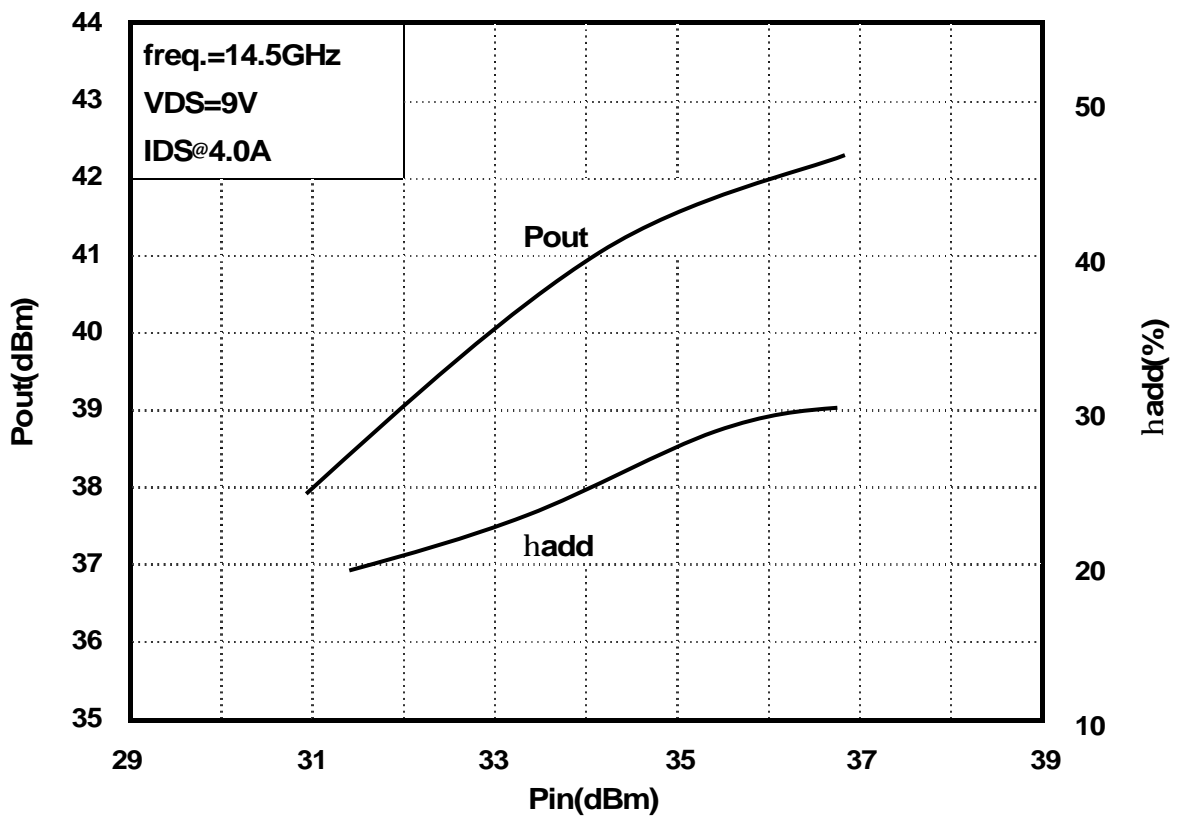
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

**RF PERFORMANCE**

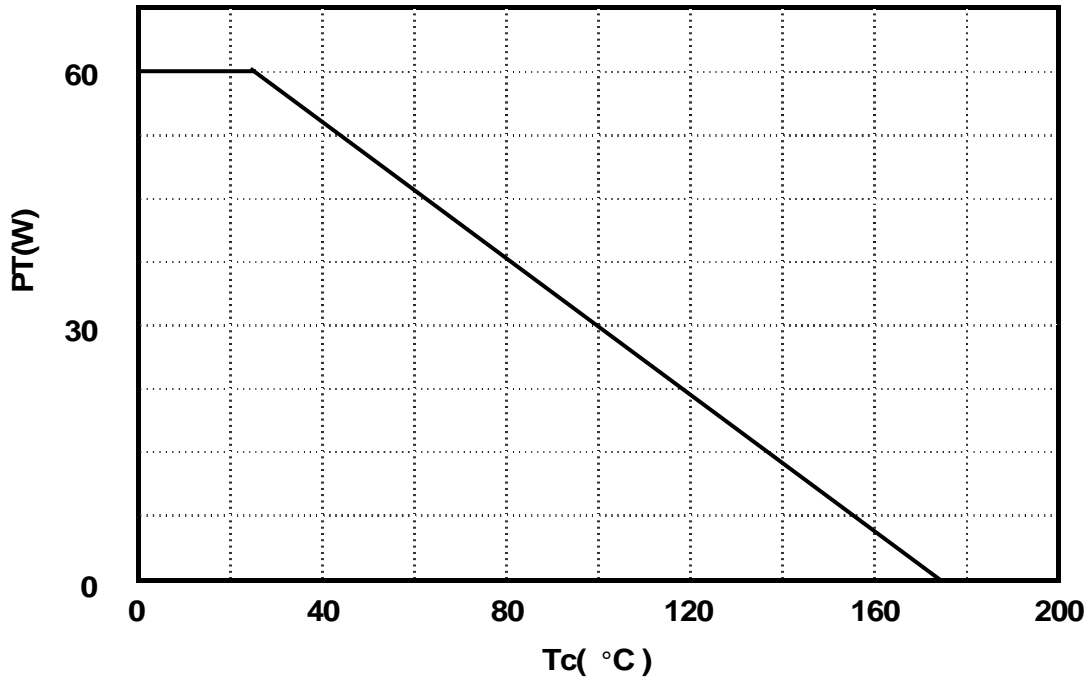
**Output Power (Pout) vs. Frequency**



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



Power Dissipation(PT) vs. Case Temperature(Tc)



IM3 vs. Output Power Characteristics

