TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM1011-10L

FEATURES

- **LOW INTERMODULATION DISTORTION**
  IM3=-45 dBc at Pout= 29.0dBm
- **HIGH POWER**
  P1dB=40.5dBm at 10.7GHz to 11.7GHz
- **HIGH GAIN**
  G1dB=6.0 dB at 10.7 GHz to 11.7GHz
- **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	P_{1dB}	VDS= 9V f= 10.7 to 11.7GHz	dBm	40.0	40.5	—
Power Gain at 1dB Gain Compression Point	G_{1dB}		dB	5.0	6.0	—
Drain Current	I_{DS1}		A	—	4.0	5.0
Gain Flatness	ΔG		dB	—	—	±0.8
Power Added Efficiency	η_{add}		%	—	23	—
3rd Order Intermodulation Distortion	IM3	Two-Tone Test Po=29.0 dBm (Single Carrier Level)	dBc	-42	-45	—
Drain Current	I_{DS2}		A	—	4.0	5.0
Channel Temperature Rise	ΔT_{ch}	(VDS X IDS + Pin – P1dB) X Rth(c-c)	°C	—	—	90

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

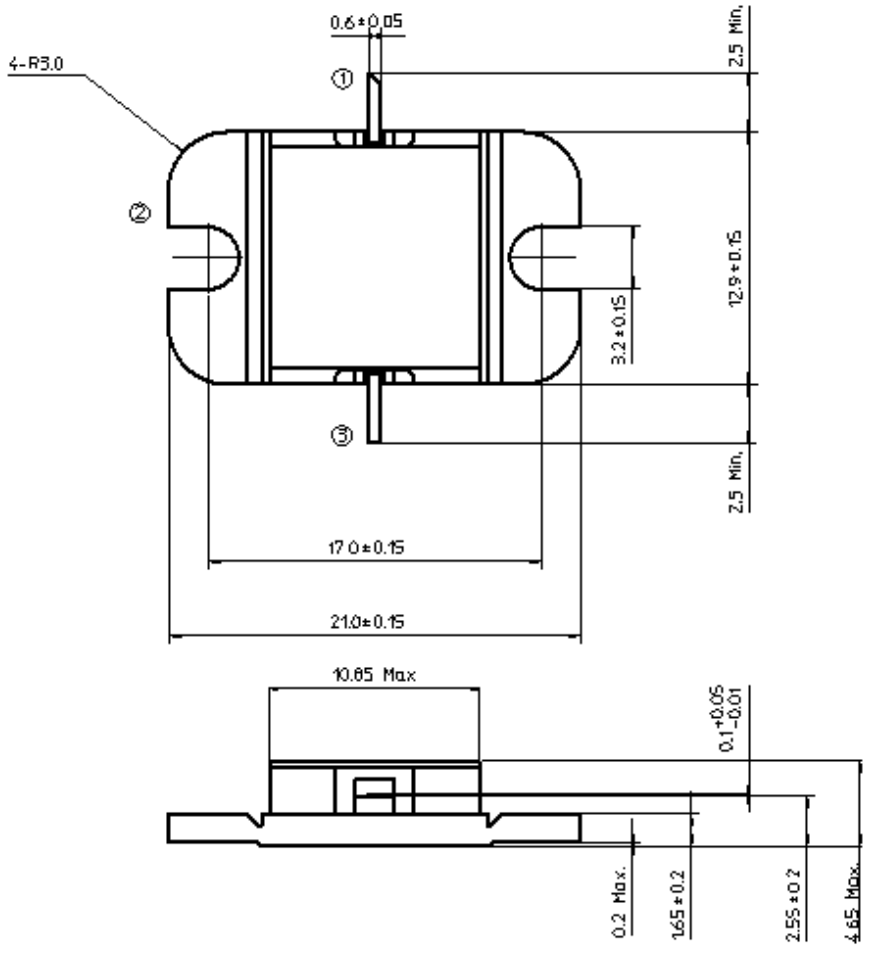
ELECTRICAL CHARACTERISTICS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	VDS= 3V IDS= 4.8A	mS	—	3000	—
Pinch-off Voltage	V_{GSoff}	VDS= 3V IDS= 145mA	V	-1.5	-3.5	-5.0
Saturated Drain Current	I_{DSS}	VDS= 3V VGS= 0V	A	—	10.0	—
Gate-Source Breakdown Voltage	V_{GSO}	IGS= -145μA	V	-5	—	—
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	°C/W	—	2.0	2.5

ABSOLUTE MAXIMUM RATINGS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_{DS}	A	11.5
Total Power Dissipation (Tc= 25 °C)	P_T	W	60
Channel Temperature	T_{ch}	°C	175
Storage Temperature	Tstg	°C	-65 to +175

PACKAGE OUTLINE (2-11C1B)



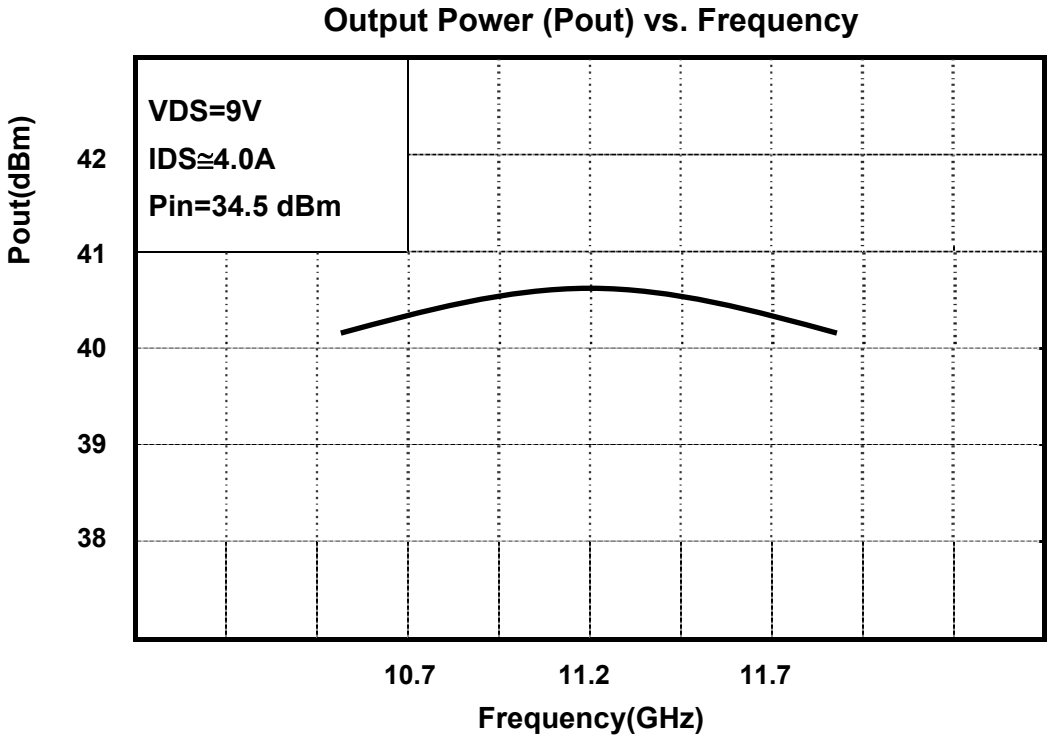
Unit in mm

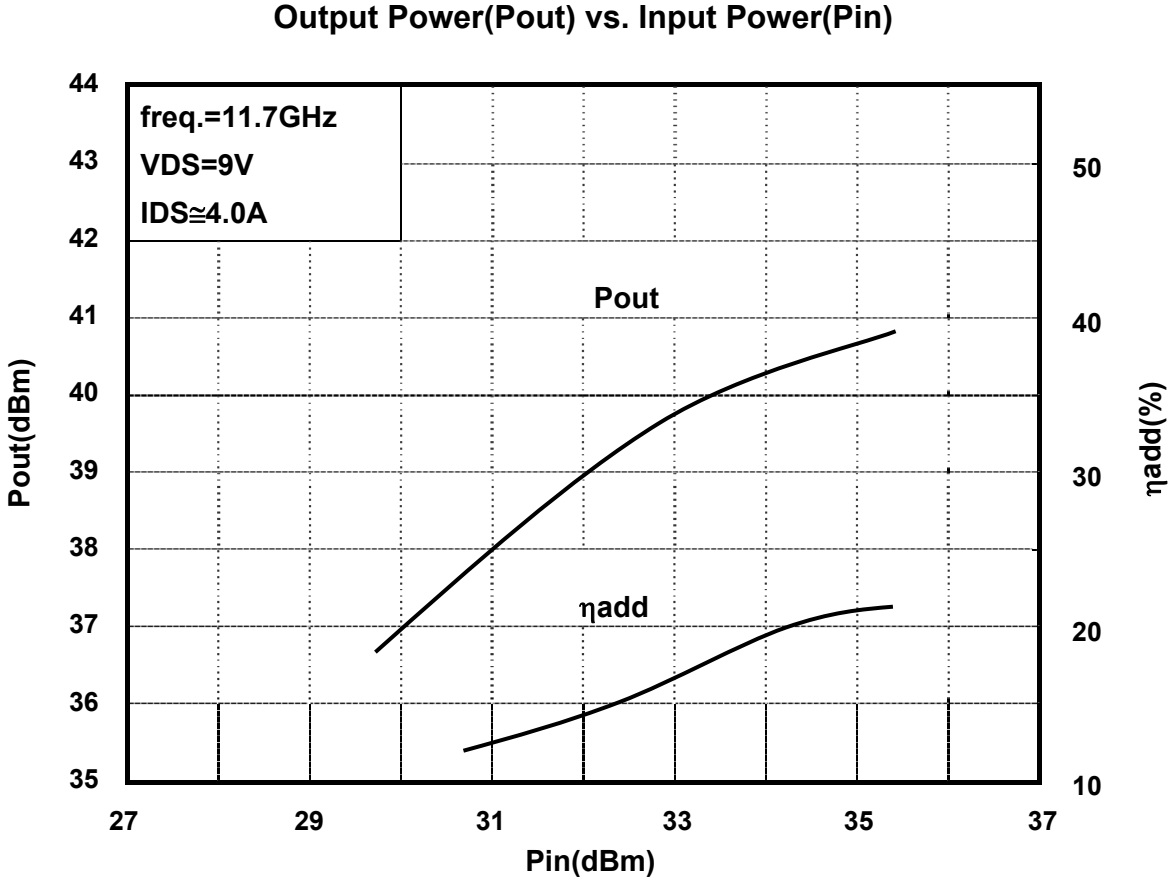
(1) Gate
(2) Source
(3) Drain

HANDLING PRECAUTIONS FOR PACKAGE MODEL

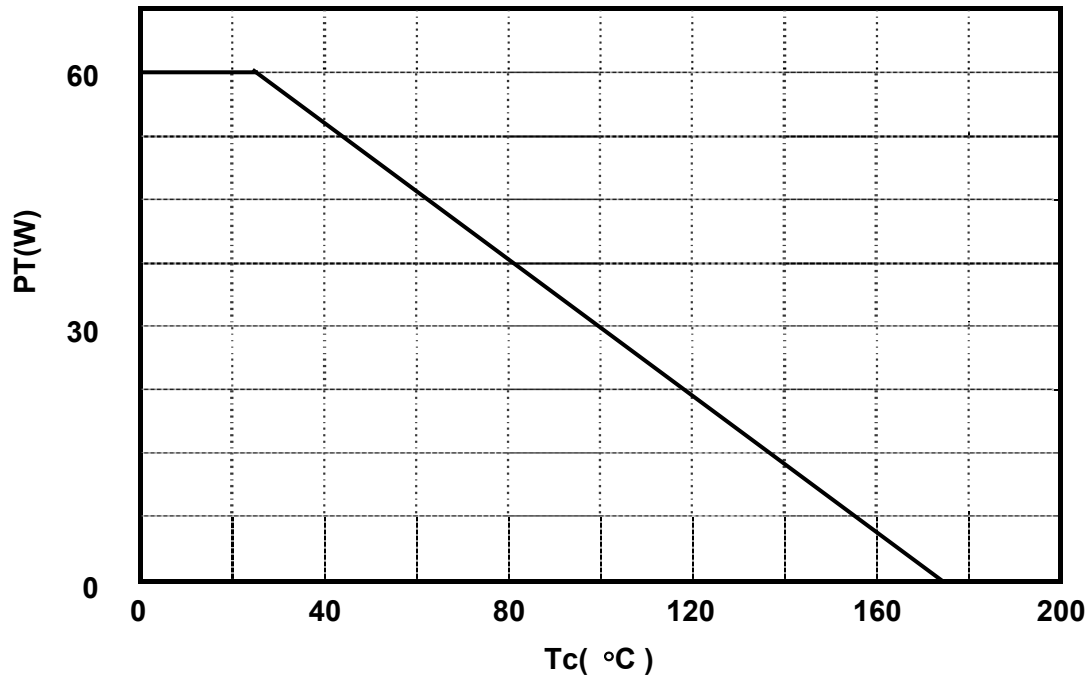
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCE





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



IM3 vs. Output Power Characteristics