TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM5964-60SL

FEATURES

- **LOW INTERMODULATION DISTORTION**
  IM3=-45 dBc at Pout= 36.5dBm
  Single Carrier Level
- **HIGH POWER**
  P1dB=48.0dBm at 5.9GHz to 6.4GHz
- **HIGH GAIN**
  G1dB=8.5dB at 5.9GHz to 6.4GHz
- **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}	V_{DS}=10V f = 5.9 to 6.4GHz I_{DS}set≅9.5A	dBm	47.0	48.0	—
Power Gain at 1dB Gain Compression Point	G_{1dB}		dB	7.5	8.5	—
Drain Current	I_{DS1}		A	—	13.2	15.0
Gain Flatness	ΔG		dB	—	—	±0.8
Power Added Efficiency	η_{add}		%	—	41	—
3rd Order Intermodulation Distortion	IM3	Two-Tone Test Po=36.5dBm (Single Carrier Level)	dBc	-42	-45	—
Drain Current	I_{DS2}		A	—	—	11.8
Channel Temperature Rise	ΔTch	(VDS X IDS + Pin – P1dB) X Rth(c-c)	°C	—	—	100

Recommended Gate Resistance(Rg) : 28 Ω (Max.)

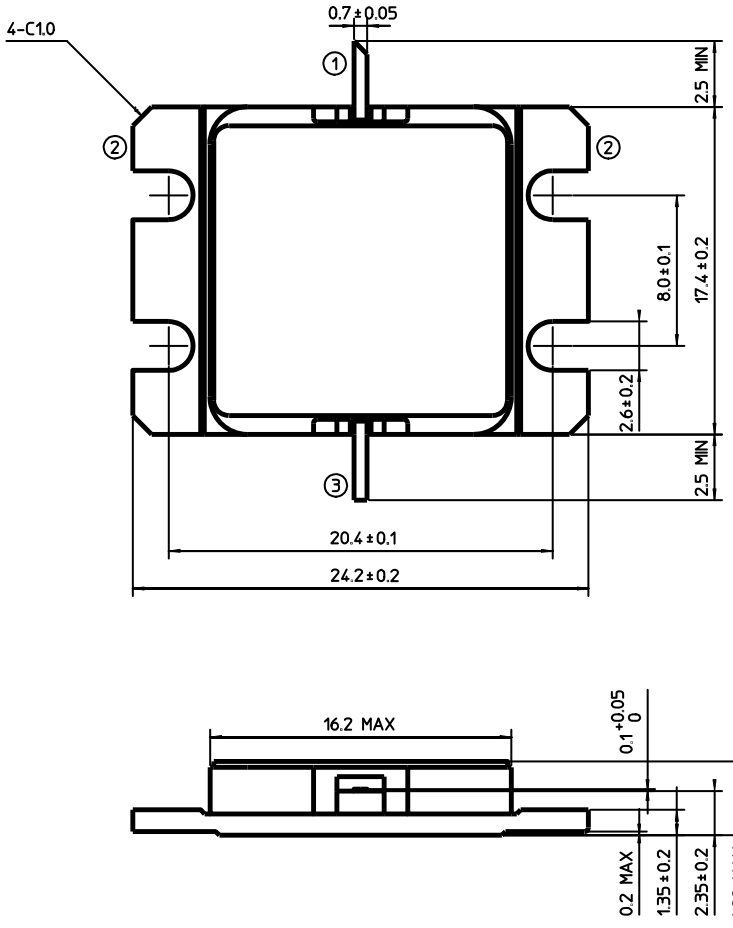
ELECTRICAL CHARACTERISTICS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	V_{DS}= 3V I_{DS}= 12.0A	S	—	20	—
Pinch-off Voltage	V_{GSoff}	V_{DS}= 3V I_{DS}= 200mA	V	-1.0	-1.8	-3.0
Saturated Drain Current	I_{DSS}	V_{DS}= 3V V_{GS}= 0V	A	—	38	—
Gate-Source Breakdown Voltage	V_{GSO}	I_{GS}= -1.0mA	V	-5	—	—
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	°C/W	—	0.6	0.8

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	20
Total Power Dissipation (Tc= 25 °C)	PT	W	187.5
Channel Temperature	Tch	°C	175
Storage Temperature	Tstg	°C	-65 to +175

PACKAGE OUTLINE (2-16G1B)



Unit in mm

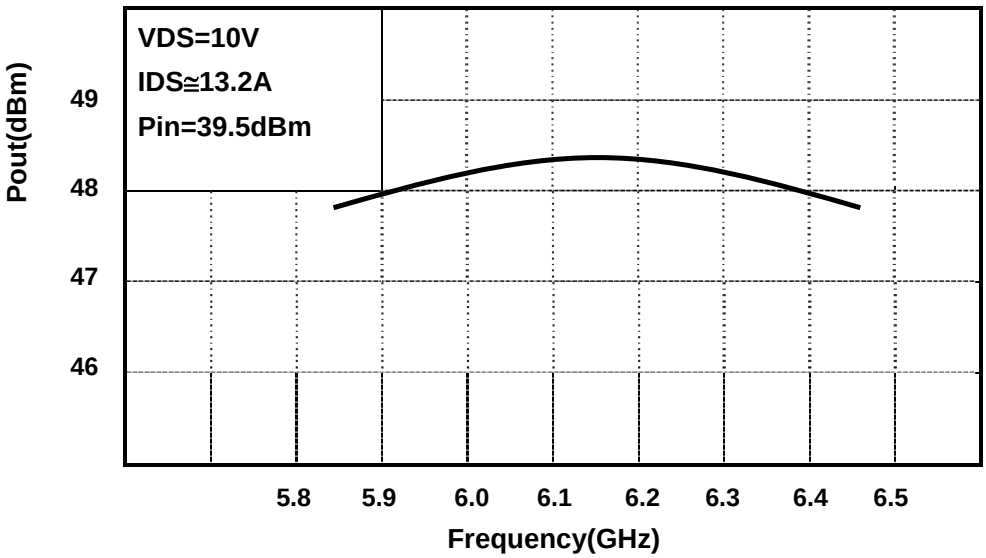
(1) Gate
(2) Source
(3) Drain

HANDLING PRECAUTIONS FOR PACKAGE MODEL

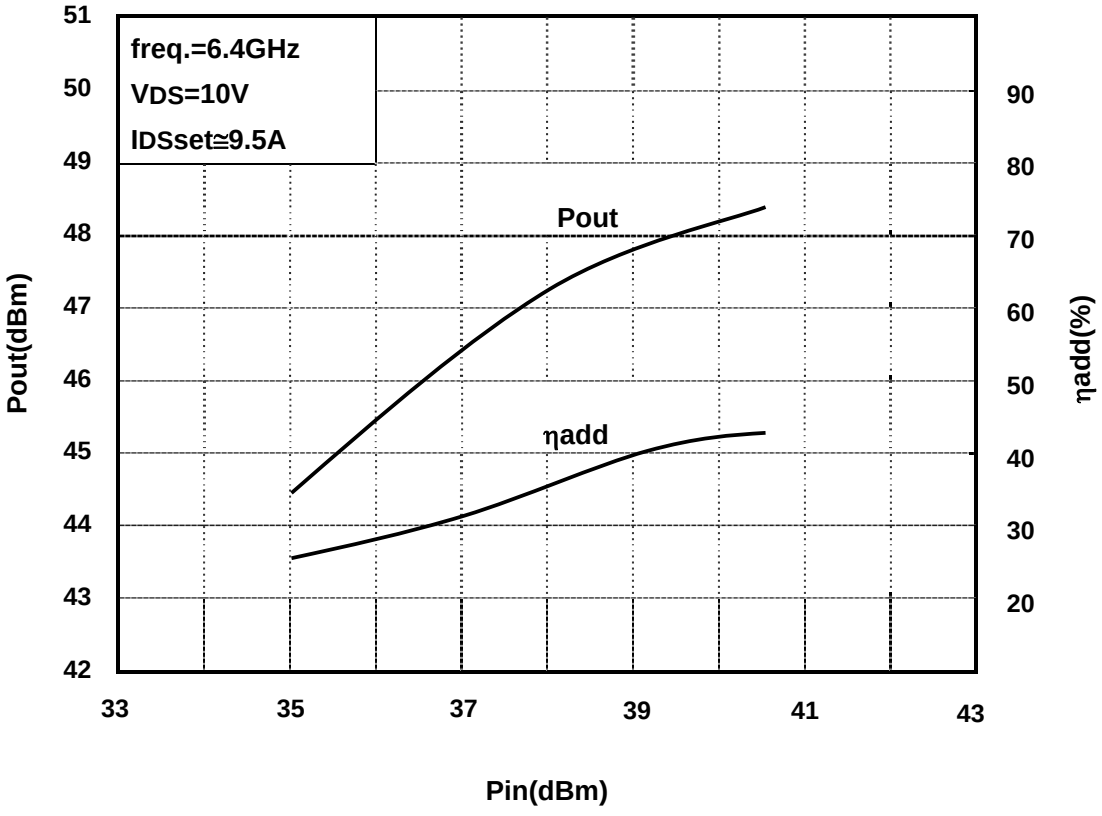
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCE

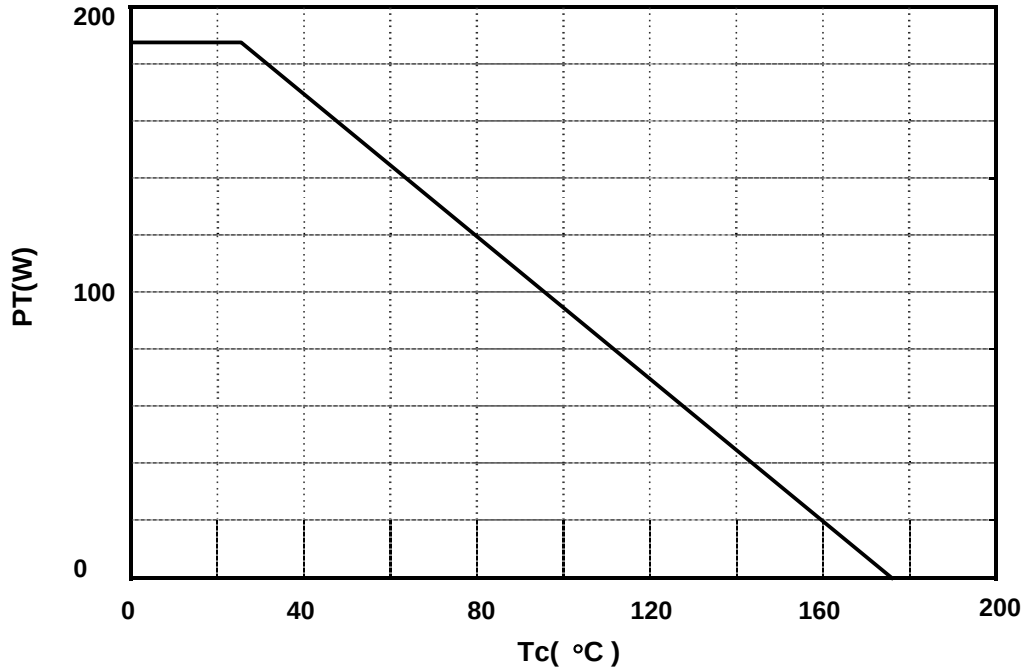
Output Power (Pout) vs. Frequency



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



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



IM3 vs. Power Characteristics