TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM3742-45SL-341

FEATURES

- **LOW INTERMODULATION DISTORTION**
  IM3=-45 dBc at Pout= 35.5dBm
  Single Carrier Level
- **HIGH POWER**
  P1dB=46.5dBm at 3.3GHz to 3.6GHz
- **HIGH GAIN**
  G1dB=11dB 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	46.0	46.5	—
Power Gain at 1dB Gain Compression Point	G1dB		dB	10.0	—	—
Drain Current	IDS		A	—	9.6	10.8
Gain Flatness	ΔG		dB	—	—	±0.8
Power Added Efficiency	ηadd		%	—	43	—
3rd Order Intermodulation Distortion	IM3	Two-Tone Test Po=35.5dBm (Single Carrier Level)	dBc	-42	-45	—
Drain Current	IDS2		A	—	9.6	10.8
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	VDS= 3V IDS= 11.0A	mS	—	8000	—
Pinch-off Voltage	VGSoff	VDS= 3V IDS= 170mA	V	-1.0	-2.5	-4.0
Saturated Drain Current	IDSS	VDS= 3V VGS= 0V	A	—	24	—
Gate-Source Breakdown Voltage	VGSO	IGS= -500μA	V	-5	—	—
Thermal Resistance	Rth(c-c)	Channel to Case	°C/W	—	0.8	1.2

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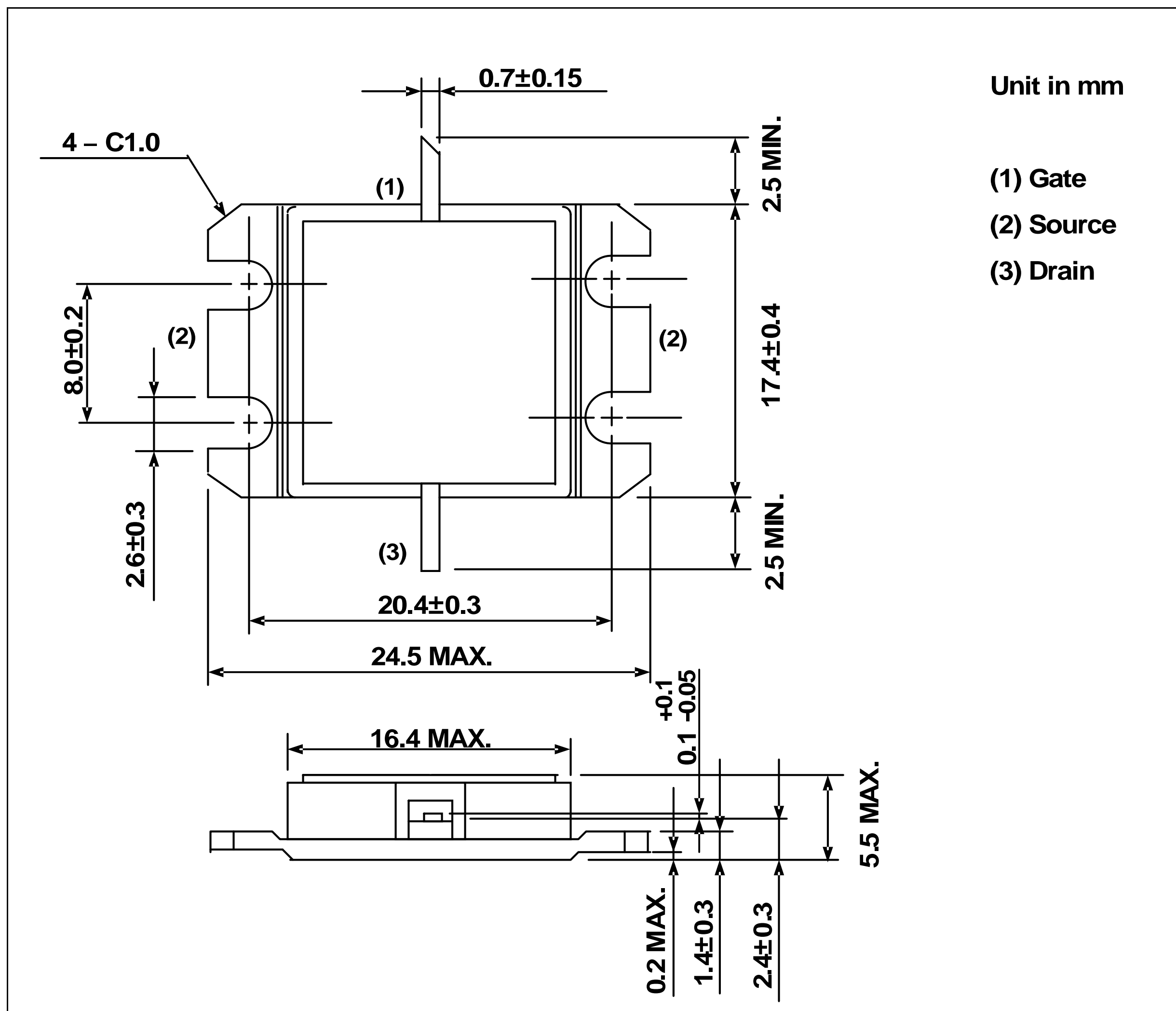
ABSOLUTE MAXIMUM RATINGS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_{DS}	A	20
Total Power Dissipation (Tc= 25 °C)	P_T	W	125
Channel Temperature	T_{ch}	°C	175
Storage Temperature	T_{stg}	°C	-65 to +175

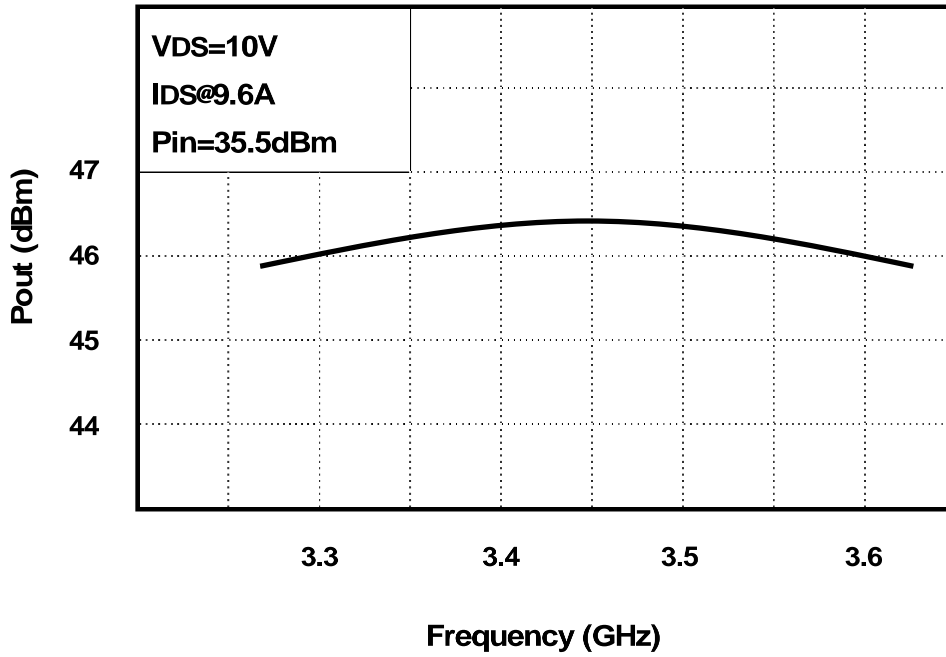
PACKAGE OUTLINE (2-16G1B)

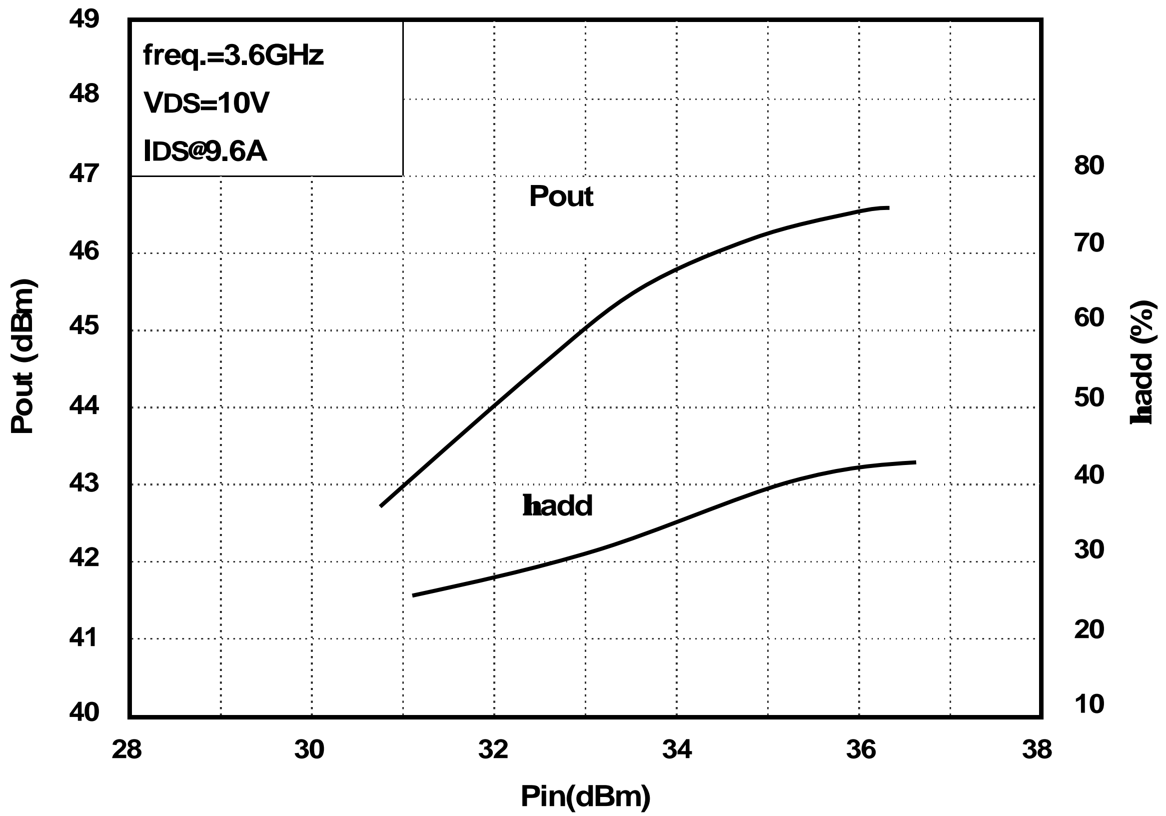


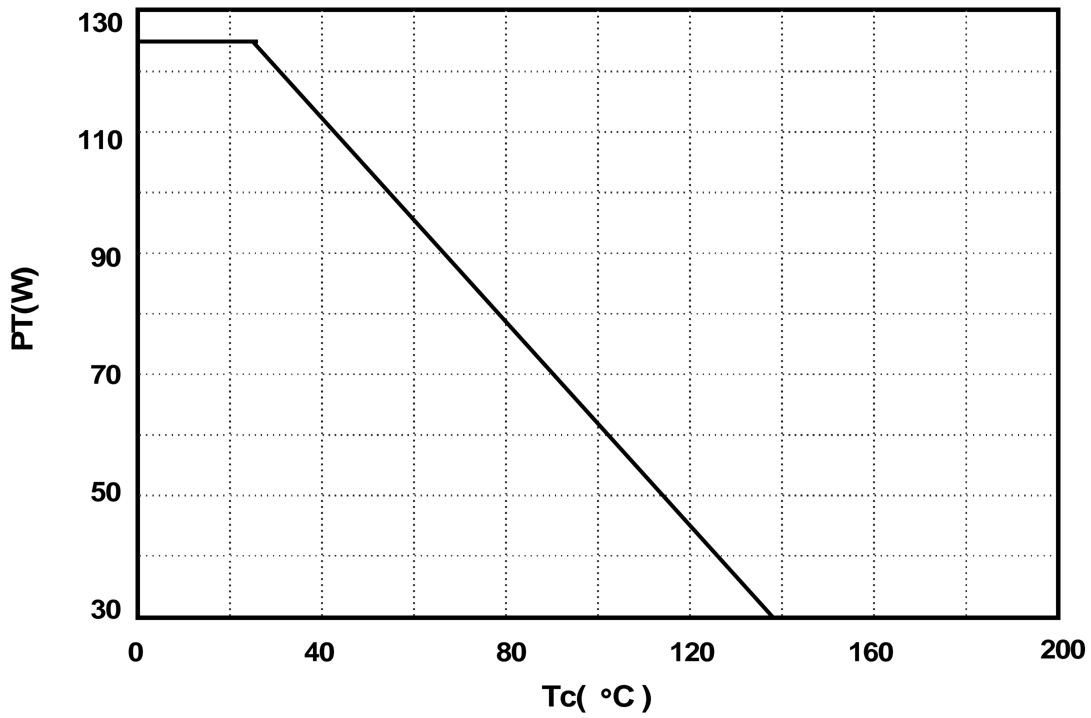
HANDLING PRECAUTIONS FOR PACKAGE MODEL

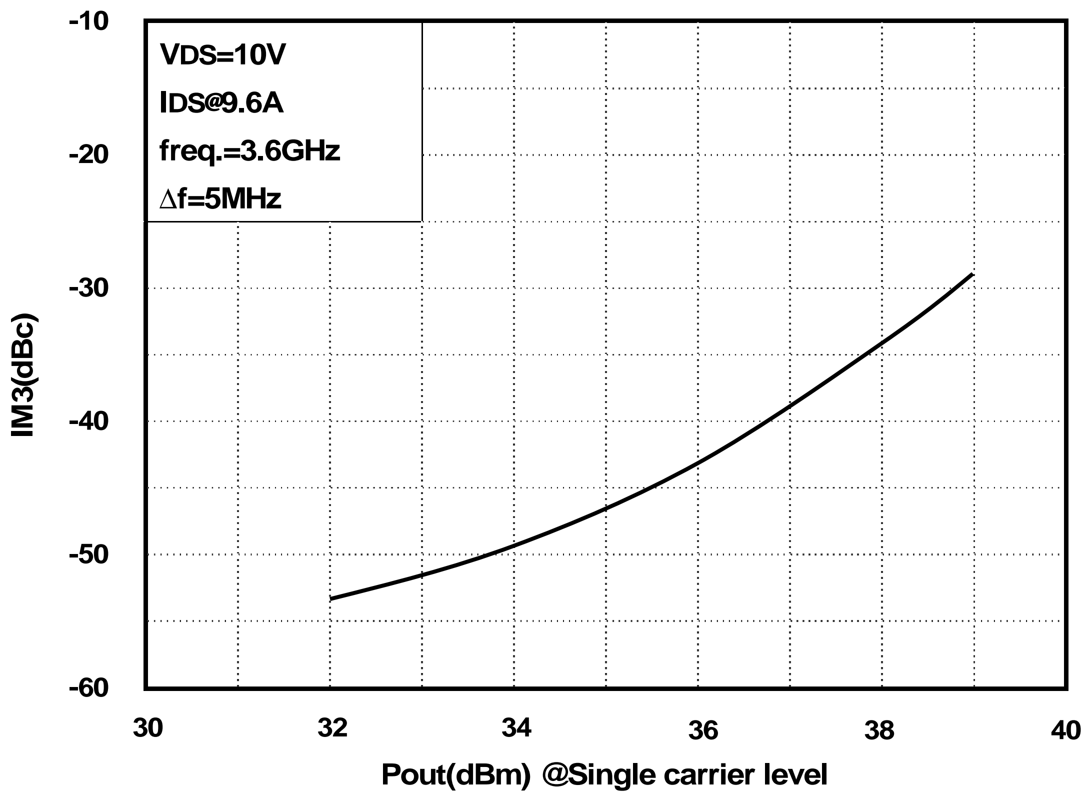
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCE






Power Dissipation(PT) vs. Case Temperature(Tc)
PT(W)
130
110
90
70
50
30
0
40
80
120
160
200
Tc(°C)


IM3 vs. Output Power Characteristics
VDS=10V
IDS@9.6A
freq.=3.6GHz
Δf=5MHz
IM3(dBc)
-10
-20
-30
-40
-50
-60
30
32
34
36
38
40
Pout(dBm) @Single carrier level