TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM3742-4SL

FEATURES:

- LOW INTERMODULATION DISTORTION
  IM_3 = -45 dBc at Po 25.5 dBm,
  Single Carrier Level
- HIGH POWER
  P_{1dB} = 36.5 dBm at 3.7 GHz to 4.2 GHz
- HIGH GAIN
  G_{1dB} = 10.5dB at 3.7 GHz to 4.2 GHz
- BROAD BAND INTERNALLY MATCHED
- HERMETICALLY SEALED PACKAGE

RF PERFORMANCE SPECIFICATIONS (Ta = 25℃)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1 dB Compression Point	P_{1dB}	V_{DS} = 10V f = 3.7~4.2GHz	dBm	35.5	36.5	-
Power Gain at 1 dB Compression Point	G_{1dB}		dB	9.5	10.5	-
Drain Current	I_{DS}		A	-	1.1	1.3
Gain Flatness	$\triangle G$		dB	-	-	±0.6
Power Added Efficiency	η add		%	-	37	-
3rd Order Intermodulation Distortion	IM_3	Note 1	dBc	-42	-45	-
Channel Temperature Rise	$\triangle T_{ch}$	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	℃	-	-	80

ELECTRICAL CHARACTERISTICS (Ta = 25℃)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	gm	V_{DS} = 3V I_{DS} = 1.5A	mS	-	900	-
Pinch-off Voltage	VGSoff	V_{DS} = 3V I_{DS} = 15mA	V	-1	-2.5	-4.0
Saturated Drain Current	I_{DSS}	V_{DS} = 3V V_{GS} = 0V	A	-	2.6	3.5
Gate-Source Breakdown Voltage	V_{GSO}	I_{GS} = -50μA	V	-5	-	-
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	℃/W	-	4.5	6.5

Note 1: 2 tone Test Pout = 25.5dBm Single Carrier Level.

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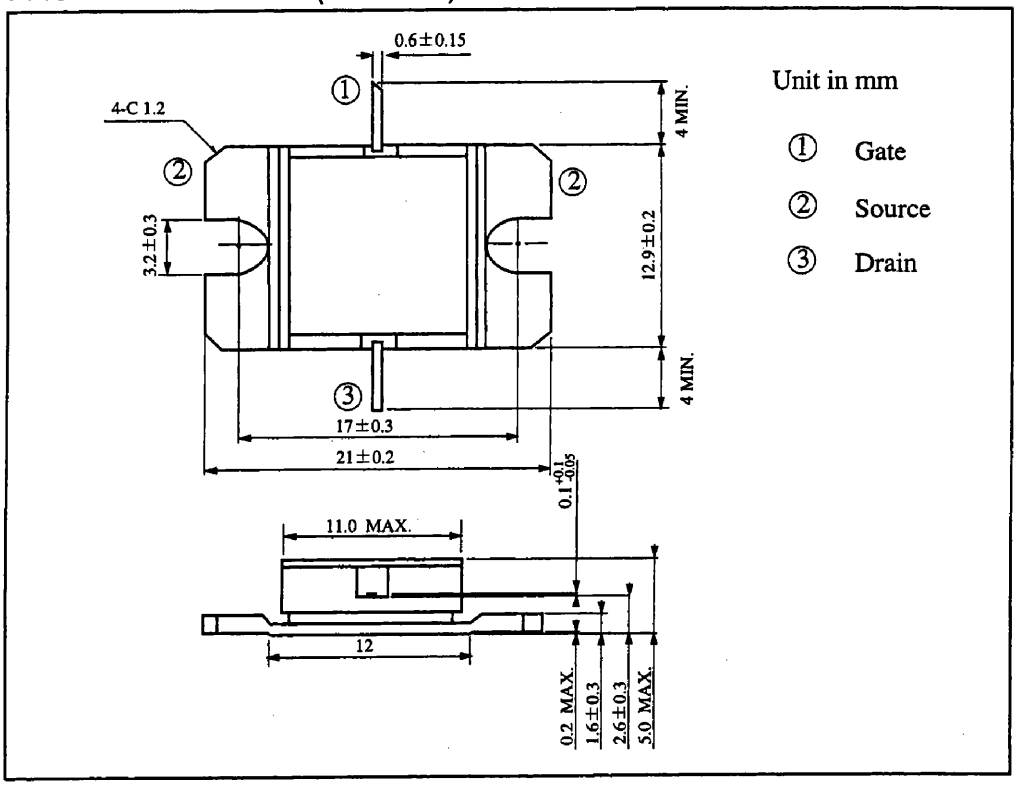
ABSOLUTE MAXIMUM RATINGS (Ta = 25℃)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_{DS}	A	3.5
Total Power Dissipation (Tc=25℃)	P_T	W	23
Channel Temperature	T_{ch}	℃	175
Storage Temperature	T_{stg}	℃	-65~175

PACKAGE OUTLINE (2-11D1B)

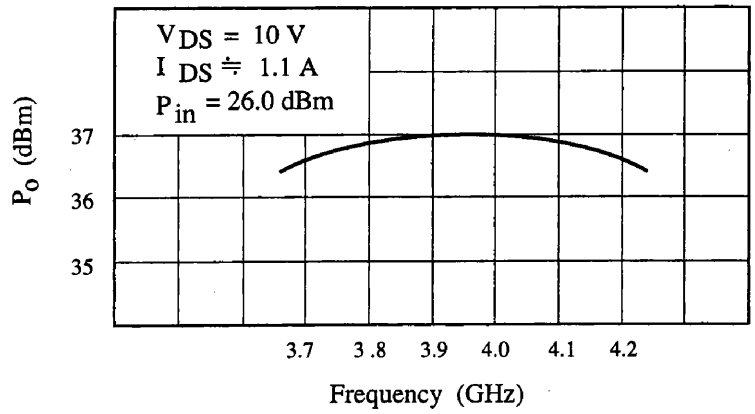


HANDLING PRECAUTIONS FOR PACKAGED TYPE

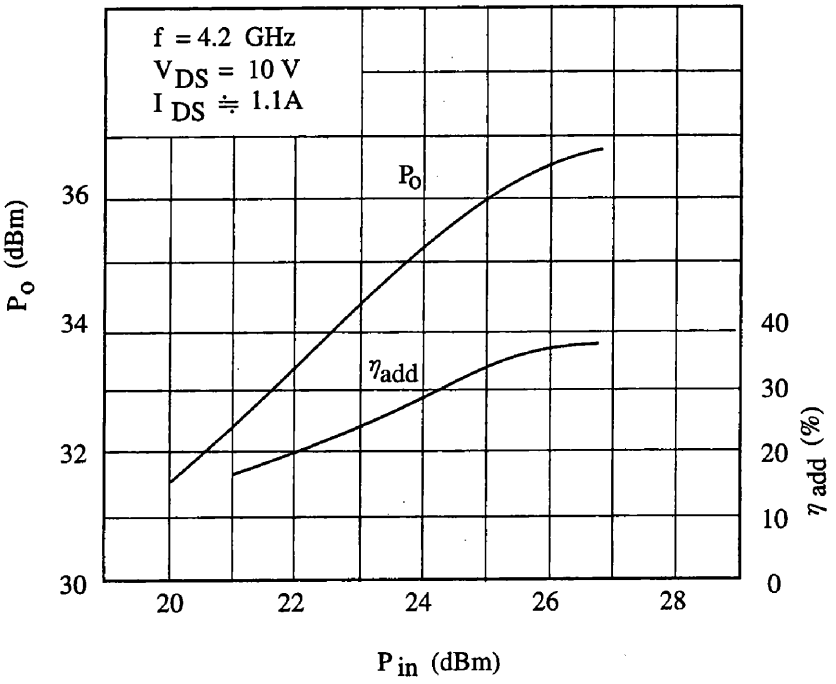
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260℃.

RF PERFORMANCES

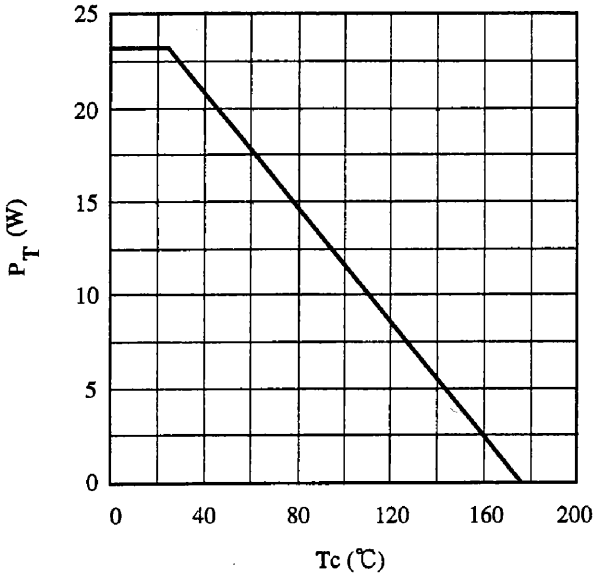
Output Power vs. Frequency



Output Power vs. Input Power



POWER DISSIPATION VS. CASE TEMPERATURE



IM_3 VS. OUTPU T POWER CHARACTERISTICS