

TOSHIBA

MICROWAVE SEMICONDUCTOR TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM3742-30SL-341

FEATURES :

- LOW INTERMODULATION DISTORTION
 $IM_3 = -45 \text{ dBc}$ at $P_o = 34.5 \text{ dBm}$,
 Single Carrier Level
- HIGH POWER
 $P_{1dB} = 45 \text{ dBm}$ at 3.3 GHz to 3.6 GHz
- HIGH GAIN
 $G_{1dB} = 11 \text{ dB}$ at 3.3 GHz to 3.6 GHz
- BROAD BAND INTERNALLY MATCHED
- HERMETICALLY SEALED PACKAGE

RF PERFORMANCE SPECIFICATIONS ($T_a = 25^\circ \text{C}$)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1dB Compression Point	P_{1dB}	$V_{DS} = 10 \text{ V}$ $f = 3.3 \sim 3.6 \text{ GHz}$	dBm	44.0	45.0	-
Power Gain at 1dB Compression Point	G_{1dB}		dB	10.0	11.0	-
Drain Current	I_{DS1}		A	-	7.0	8.0
Gain Flatness	ΔG		dB	-	-	± 0.8
Power Added Efficiency	η_{add}		%	-	42	-
3rd Order Intermodulation Distortion	IM_3	Note 1	dBc	-42	-45	-
Drain Current	I_{DS2}		A	-	7.0	8.0
Channel-Temperature Rise	ΔT_{ch}	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	$^\circ \text{C}$	-	-	100

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ \text{C}$)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	g_m	$V_{DS} = 3 \text{ V}$ $I_{DS} = 10 \text{ A}$	mS	-	6300	-
Pinch-off Voltage	V_{GSoff}	$V_{DS} = 3 \text{ V}$ $I_{DS} = 100 \text{ mA}$	V	-1.0	-2.5	-4.0
Saturated Drain Current	I_{DSS}	$V_{DS} = 3 \text{ V}$ $V_{GS} = 0 \text{ V}$	A	-	18	22
Gate-Source Breakdown Voltage	V_{GSO}	$I_{GS} = -350 \mu\text{A}$	V	-5	-	-
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	$^\circ \text{C/W}$	-	1.0	1.3

Note 1: 2 tone Test $P_{out} = 34.5 \text{ dBm}$ Single Carrier Level.

Recommended Gate Resistance(R_g) : $R_g = R_{g1}(10 \Omega) + R_{g2}(18 \Omega) = 28 \Omega \text{ (MAX.)}$

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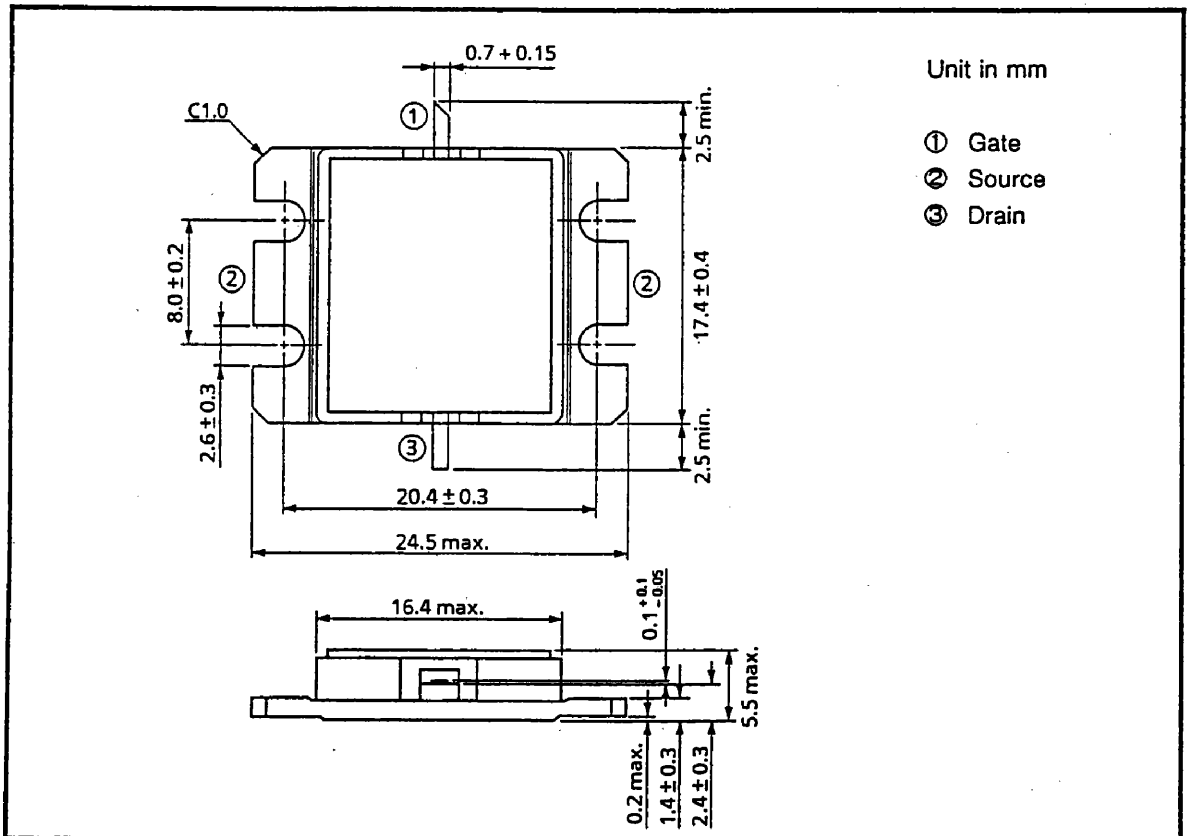


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ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_{DS}	A	22
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	P_T	W	115
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{slg}	$^\circ\text{C}$	-65~175

PACKAGE OUTLINE (2-16G1B)

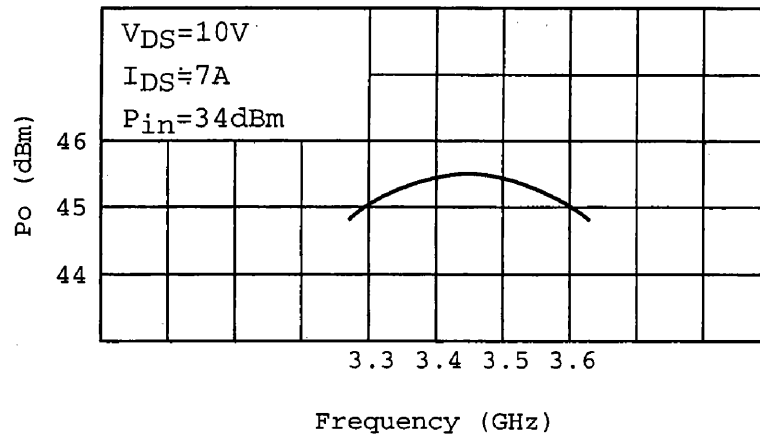


HANDLING PRECAUTIONS FOR PACKAGED TYPE

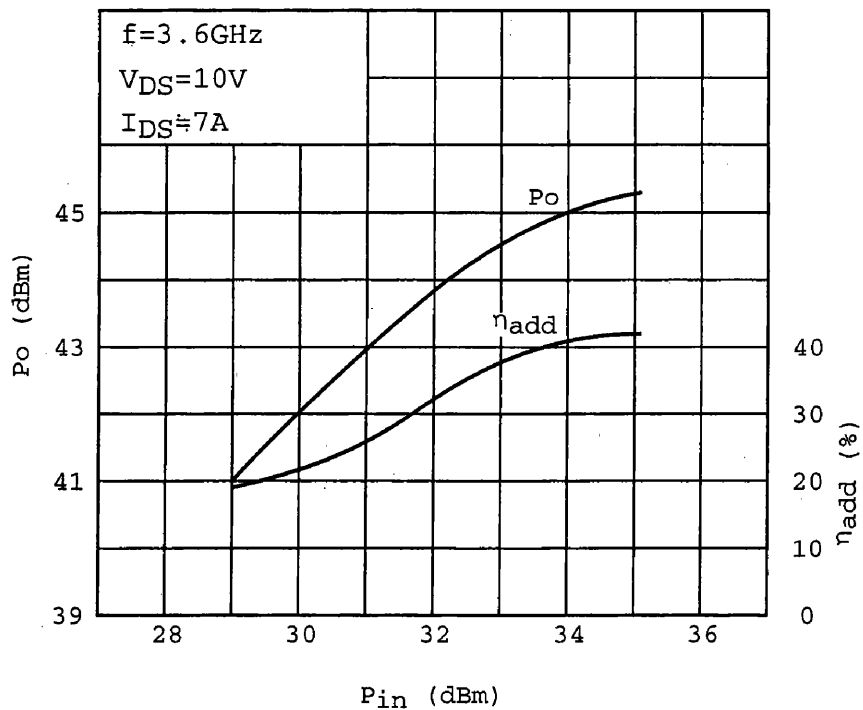
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C .

RF PERFORMANCES.

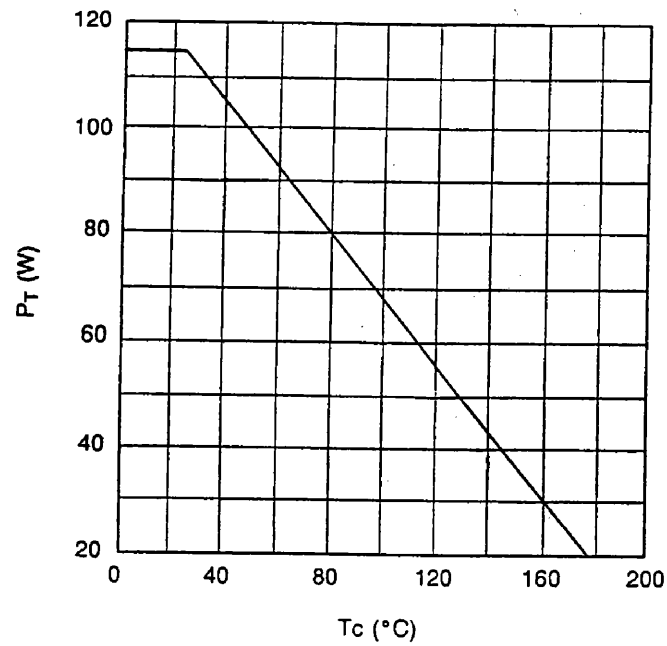
Output Power vs. Frequency



Output Power vs. Input Power



POWER DISSIPATION VS. CASE TEMPERATURE



IM₃ VS. OUTPUT POWER CHARACTERISTICS

