

TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM3742-4L-341

FEATURES :

- LOW INTERMODULATION DISTORTION
 $IM_3 = -45 \text{ dBc}$ at $P_o = 25 \text{ dBm}$,
 Single Carrier Level
- HIGH GAIN
 $G_{1dB} = 10.0 \text{ dB}$ at 3.7 GHz to 3.6 GHz
- BROAD BAND INTERNALLY MATCHED
- HERMETICALLY SEALED PACKAGE
- HIGH POWER
 $P_{1dB} = 36 \text{ dBm}$ at 3.3 GHz to 3.6 GHz

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	35.0	36.0	-
Power Gain at 1dB Compression Point	G_{1dB}		dB	9.0	10.0	-
Drain Current	I_{DS1}		A	-	1.1	1.5
Gain Flatness	ΔG		dB	-	-	± 0.6
Power Added Efficiency	η_{add}		%	-	33	-
3rd Order Intermodulation Distortion	IM_3	Note 1	dBc	-42	-45	-
Drain Current	I_{DS2}		A	-	1.1	1.5
Channel-Temperature Rise	ΔT_{ch}	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	$^\circ \text{C}$	-	-	80

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

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	g_m	$V_{DS} = 3 \text{ V}$ $I_{DS} = 1.5 \text{ A}$	mS	-	900	-
Pinch-off Voltage	V_{GSoff}	$V_{DS} = 3 \text{ V}$ $I_{DS} = 20 \text{ mA}$	V	-2	-3.5	-5.0
Saturated Drain Current	I_{DSS}	$V_{DS} = 3 \text{ V}$ $V_{GS} = 0 \text{ V}$	A	-	2.9	3.8
Gate-Source Breakdown Voltage	V_{GSO}	$I_{GS} = -60 \mu \text{ A}$	V	-5	-	-
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	$^\circ \text{C/W}$	-	4	6

Note 1: 2 tone Test $P_{out} = 25 \text{ dBm}$ Single Carrier Level.

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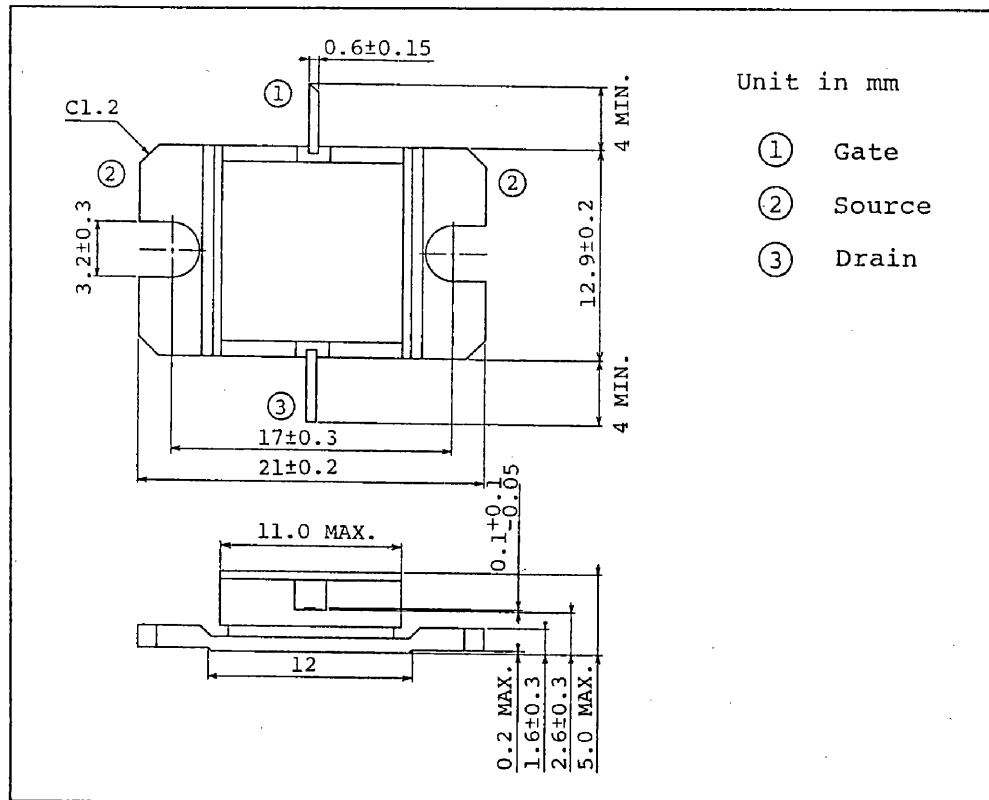
TOSHIBA CORPORATION

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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	4
Total Power Dissipation ($T_c=25^\circ\text{C}$)	P_T	W	20
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-65~175

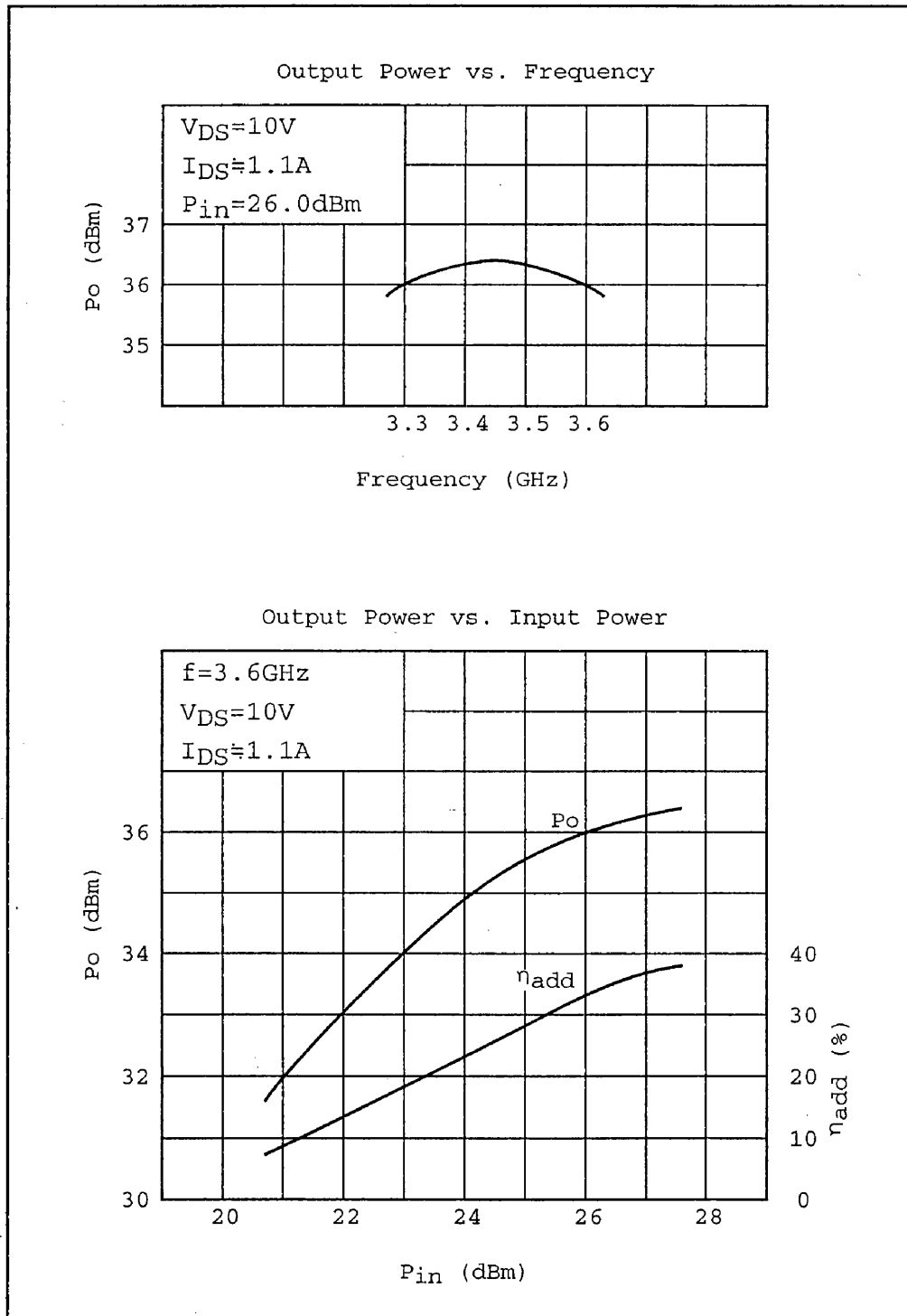
PACKAGE OUTLINE (2-11D1B)



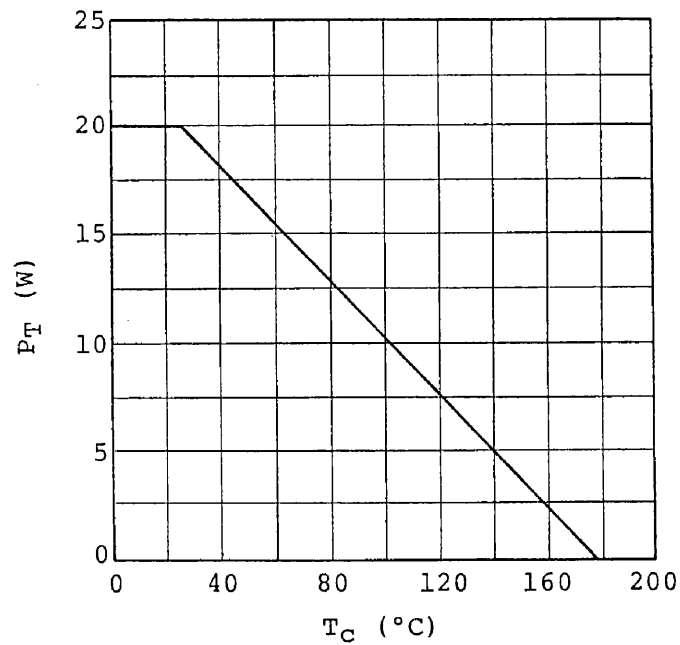
HANDLING PRECAUTIONS FOR PACKAGED TYPE

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

RF PERFORMANCES.



POWER DISSIPATION VS. CASE TEMPERATURE



IM₃ VS. OUTPUT POWER CHARACTERISTICS

