

TOSHIBA

MICROWAVE SEMICONDUCTOR TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM7179-4SL

FEATURES :

■ LOW INTERMODULATION DISTORTION

$IM_3 = -45 \text{ dBc}$ at $P_o = 25.5 \text{ dBm}$,
Single Carrier Level

■ HIGH POWER

$P_{1dB} = 36.5 \text{ dBm}$ at 7.1 GHz to 7.9 GHz

■ HIGH EFFICIENCY

$\eta_{add} = 33 \%$ at 7.1 GHz to 7.9 GHz

■ HIGH GAIN

$G_{1dB} = 7.5 \text{ dB}$ at 7.1 GHz to 7.9 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 1 dB Compression Point	P_{1dB}	$V_{DS} = 10 \text{ V}$ $f = 7.1 - 7.9 \text{ GHz}$	dBm	35.5	36.5	—
Power Gain at 1 dB Compression Point	G_{1dB}		dB	6.5	7.5	—
Drain Current	I_{DS}		A	—	1.1	1.3
Gain Flatness	ΔG		dB	—	—	± 0.6
Power Added Efficiency	η_{add}		%	—	33	—
3rd Order Intermodulation Distortion	IM_3	Note 1	dBc	-42	-45	—
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.
Transconductance	g_m	$V_{DS} = 3 \text{ V}$ $I_{DS} = 1.5 \text{ A}$	mS	—	900	—
Pinch-off Voltage	V_{GSoff}	$V_{DS} = 3 \text{ V}$ $I_{DS} = 15 \text{ mA}$	V	-1	-2.5	-4.0
Saturated Drain Current	I_{DSS}	$V_{DS} = 3 \text{ V}$ $V_{GS} = 0 \text{ V}$	A	—	2.8	3.5
Gate-Source Breakdown Voltage	V_{GSO}	$I_{GS} = -50 \mu\text{A}$	V	-5	—	—
Thermal Resistance	$R_{th} (c-c)$	Channel to Case	$^\circ\text{C/W}$	—	4.5	6.5

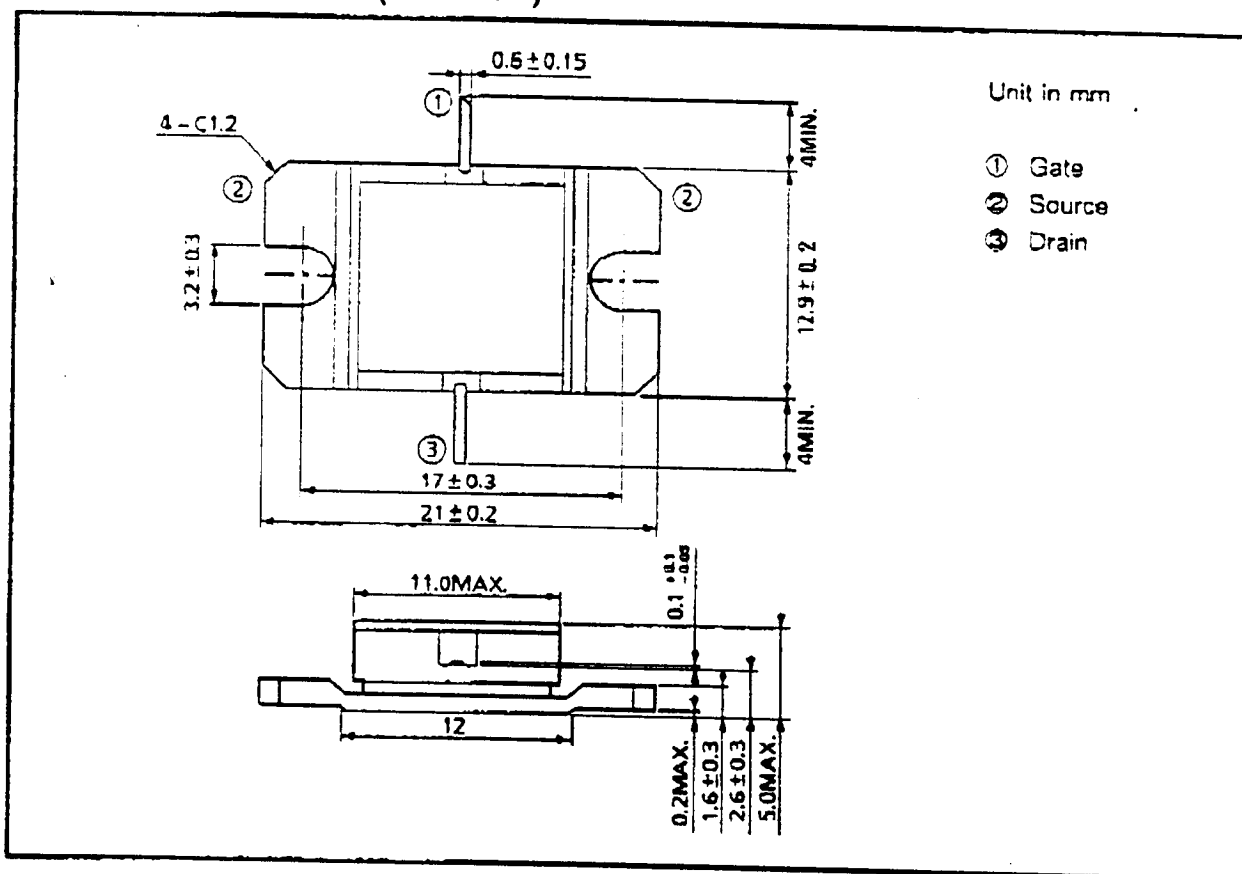
Note 1 : 2 tone Test $P_{out} = 25.5 \text{ dBm}$ Single Carrier Level.

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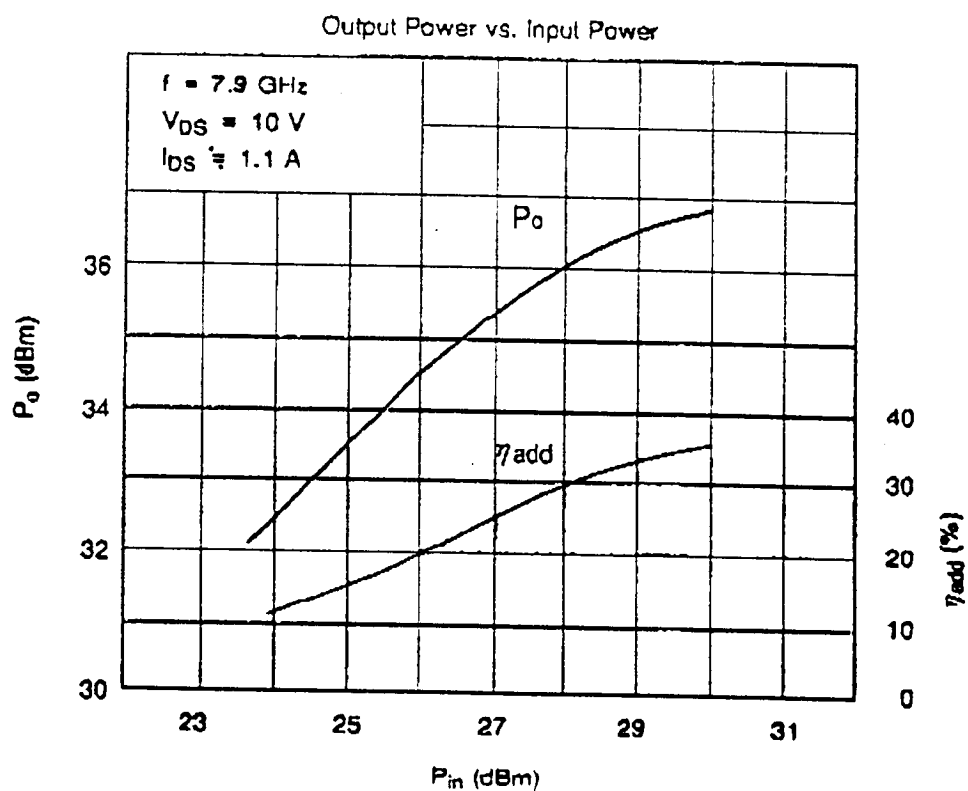
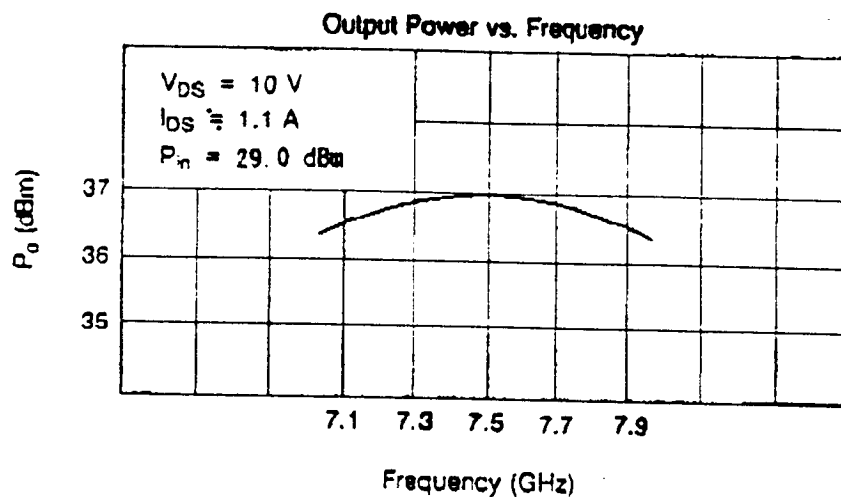
ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

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

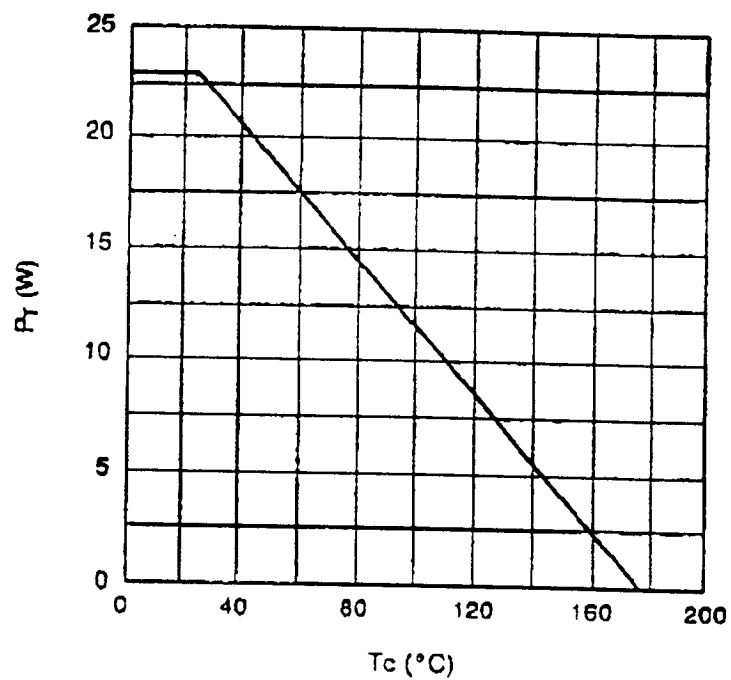
PACKAGE OUTLINE (2-11D1B)**HANDLING PRECAUTIONS FOR PACKAGED TYPE**

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

