

TOSHIBA**MICROWAVE SEMICONDUCTOR
TECHNICAL DATA**

MICROWAVE POWER GaAs FET

T1M7179-16SL**FEATURES :**■ **LOW INTERMODULATION DISTORTION**

$IM_3 = -45 \text{ dBc}$ at $P_o = 31.5 \text{ dBm}$,
Single Carrier Level

■ **HIGH POWER**

$P_{1dB} = 42.5 \text{ dBm}$ at 7.1 GHz to 7.9 GHz

■ **HIGH EFFICIENCY**

$\eta_{add} = 31 \%$ at 7.1 GHz to 7.9 GHz

■ **HIGH GAIN**

$G_{1dB} = 6.5 \text{ dB}$ 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	41.5	42.5	—
Power Gain at 1 dB Compression Point	G_{1dB}		dB	5.5	6.5	—
Drain Current	I_{DS}		A	—	4.4	5.0
Gain Flatness	ΔG		dB	—	—	± 0.8
Power Added Efficiency	η_{add}		%	—	31	—
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	$V_{DS} = 3 \text{ V}$ $I_{DS} = 6.0 \text{ A}$	mS	—	3600	—
Pinch-off Voltage	V_{GSoff}	$V_{DS} = 3 \text{ V}$ $I_{DS} = 60 \text{ mA}$	V	-1	-2.5	-4.0
Saturated Drain Current	I_{DSS}	$V_{DS} = 3 \text{ V}$ $V_{GS} = 0 \text{ V}$	A	—	10.5	14.0
Gate-Source Breakdown Voltage	V_{GS0}	$I_{DS} = -200 \mu\text{A}$	V	-5	—	—
Thermal Resistance	$R_{th} (c-c)$	Channel to Case	$^\circ\text{C/W}$	—	1.5	2.0

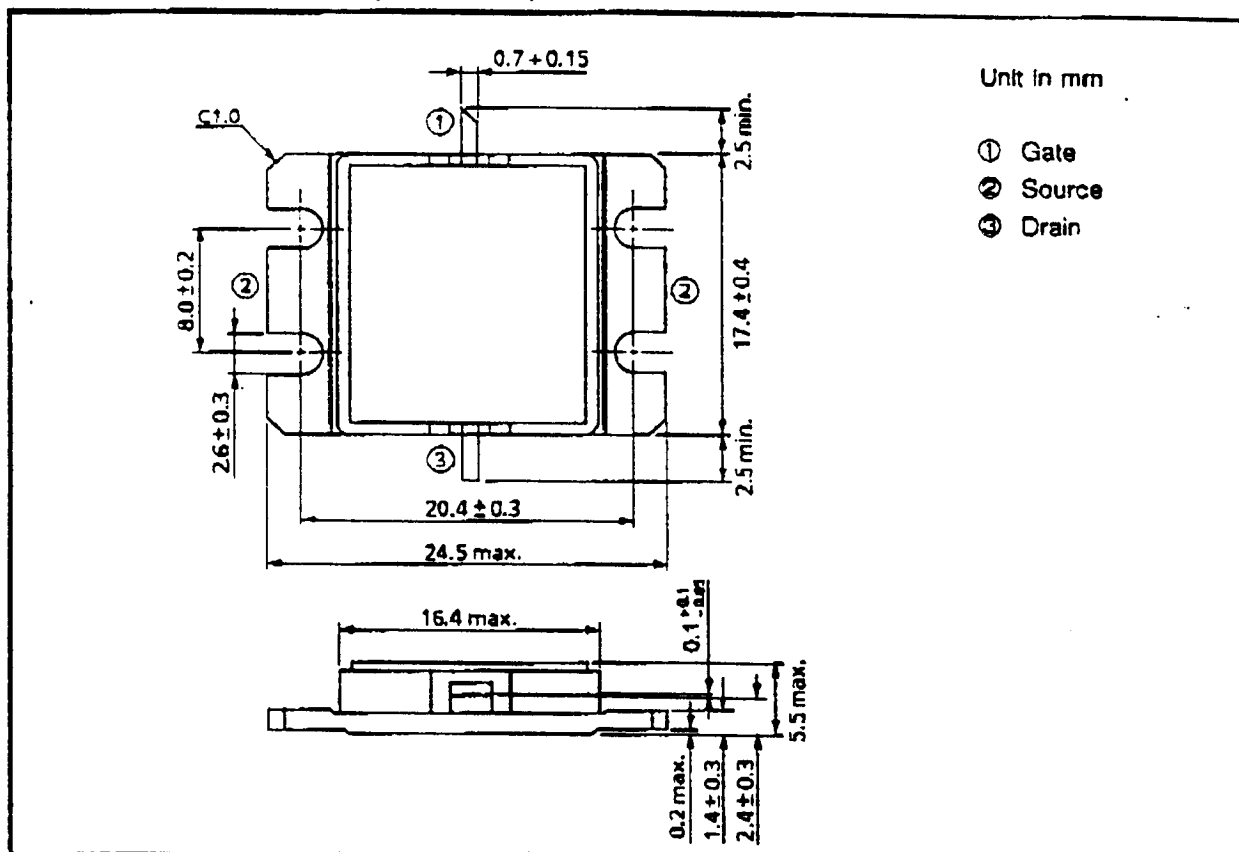
Note 1 : 2 tone Test $P_{out} = 31.5 \text{ dBm}$ Single Carrier Level.

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

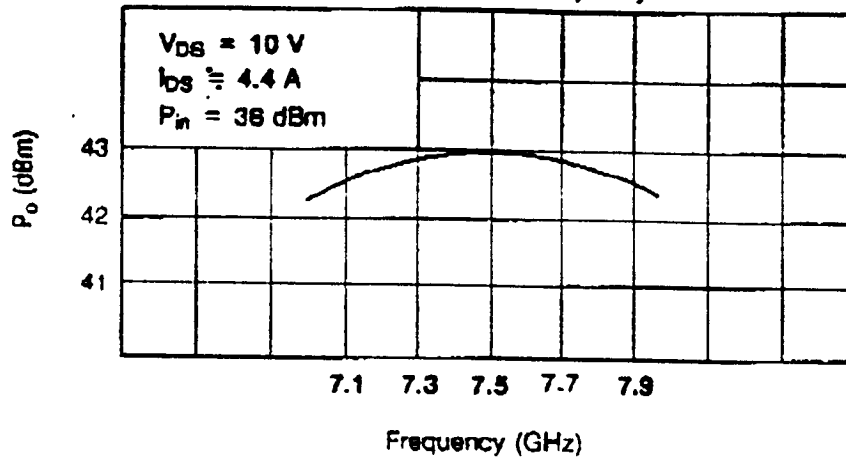
CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_{DS}	A	14
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	P_T	W	75
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-65 ~ 175

PACKAGE OUTLINE (2-16G1B)**HANDLING PRECAUTIONS FOR PACKAGED TYPE**

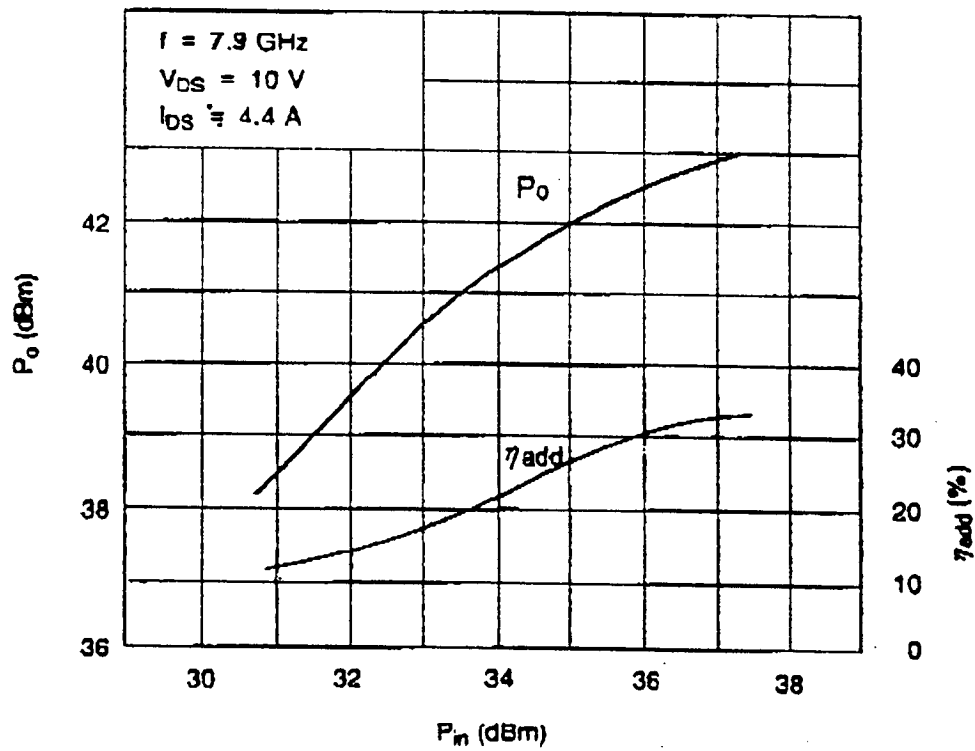
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C .

RF PERFORMANCES

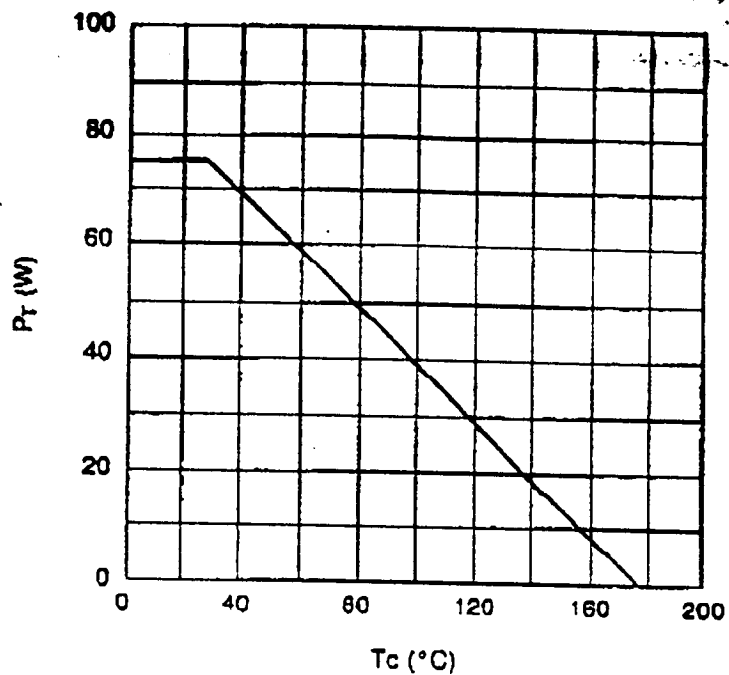
Output Power vs. Frequency



Output Power vs. Input Power



POWER DISSIPATION VS. CASE TEMPERATURE



IM₃ VS. OUTPUT POWER CHARACTERISTICS

