

**TOSHIBA****MICROWAVE SEMICONDUCTOR  
TECHNICAL DATA**

MICROWAVE POWER GaAs FET

**TIM1213-10****FEATURES :****■ HIGH POWER** $P_{1dB} = 40.5 \text{ dBm}$  at 12.7 GHz to 13.2 GHz**■ BROAD BAND INTERNALLY MATCHED****■ HIGH GAIN** $G_{1dB} = 6.0 \text{ dB}$  at 12.7 GHz to 13.2 GHz**■ HERMETICALLY SEALED PACKAGE****RF PERFORMANCE SPECIFICATIONS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1dB Compression Point	$P_{1dB}$	$V_{DS} = 9 \text{ V}$ $f = 12.7 - 13.2 \text{ GHz}$	dBm	40.0	40.5	—
Power Gain at 1dB Compression Point	$G_{1dB}$		dB	5.0	6.0	—
Drain Current	$I_{DS}$		A	—	4.0	5.0
Power Added Efficiency	$\eta_{add}$		%	—	23	—
Channel-Temperature Rise	$\Delta T_{ch}$	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	°C	—	—	90

**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	$V_{DS} = 3 \text{ V}$ $I_{DS} = 4.8 \text{ A}$	mS	—	2800	—
Pinch-off Voltage	$V_{GSoff}$	$V_{DS} = 3 \text{ V}$ $I_{DS} = 145 \text{ mA}$	V	-2	-3.5	-5
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 3 \text{ V}$ $V_{GS} = 0 \text{ V}$	A	—	10.0	11.5
Gate-Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -145 \mu\text{A}$	V	-5	—	—
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	°C/W	—	2.0	2.5

Recommended Gate Resistance( $R_g$ ) :  $R_g = R_{g1}(50 \Omega) + R_{g2}(50 \Omega) = 100 \Omega$  (MAX.)

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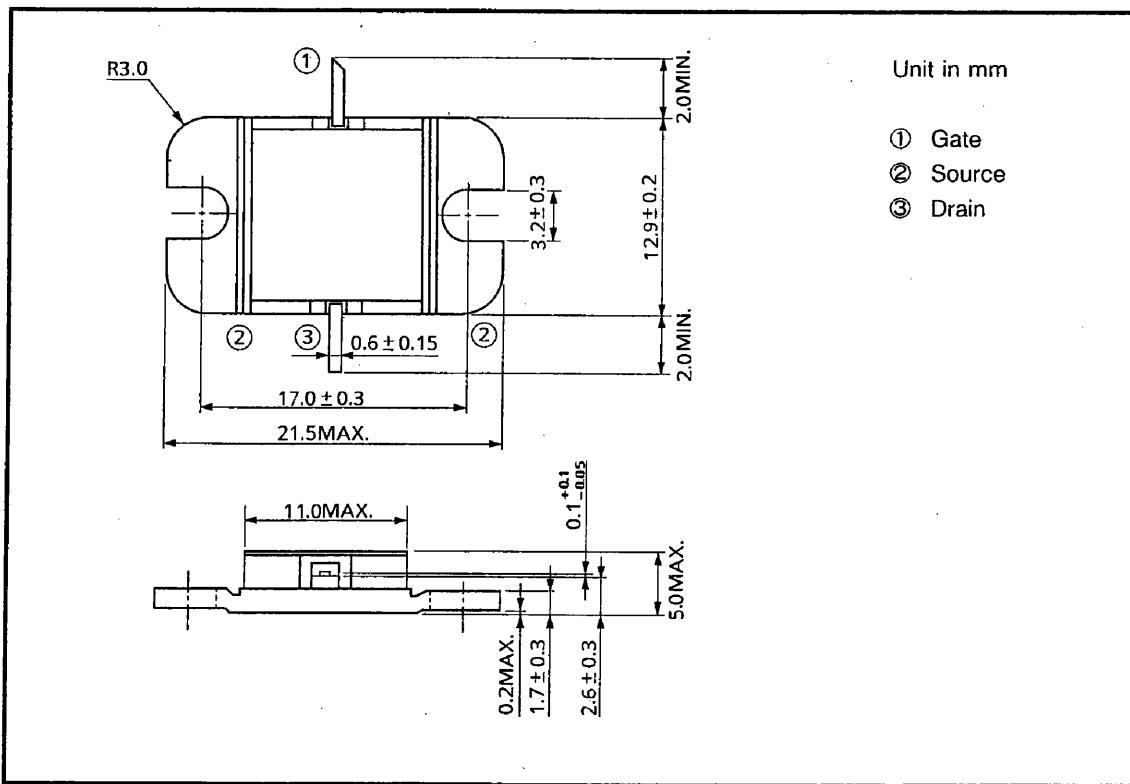


# TIM1213-10

## ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	UNIT	RATING
Drain-Source Voltage	V <sub>DS</sub>	V	15
Gate-Source Voltage	V <sub>GS</sub>	V	-5
Drain Current	I <sub>DS</sub>	A	11.5
Total Power Dissipation (T <sub>C</sub> = 25°C)	P <sub>T</sub>	W	60
Channel Temperature	T <sub>ch</sub>	°C	175
Storage Temperature	T <sub>stg</sub>	°C	-65~175

## PACKAGE OUTLINE (2-11C1B)

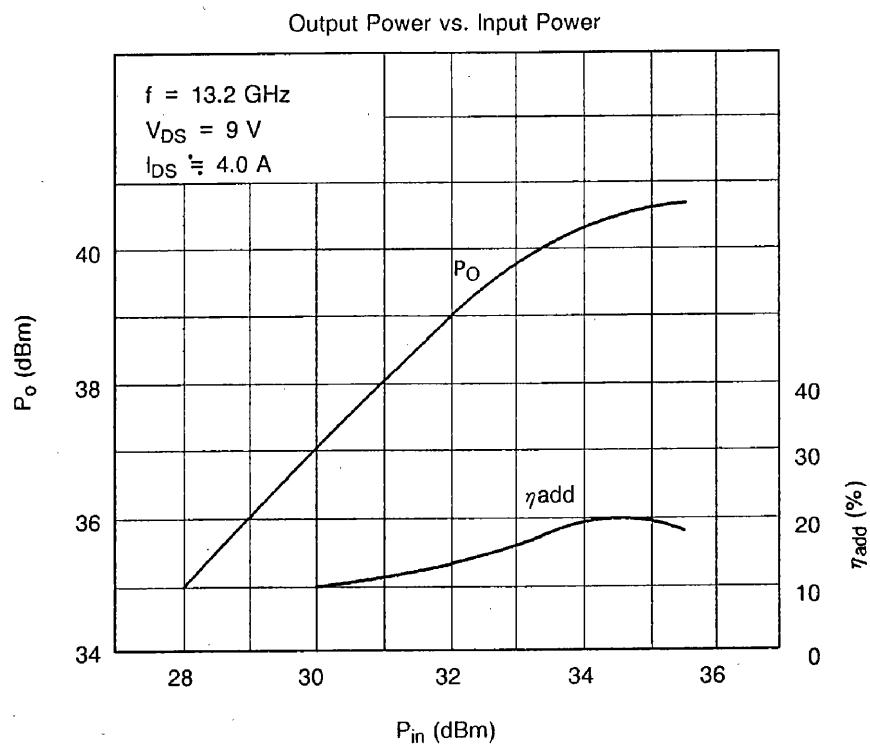
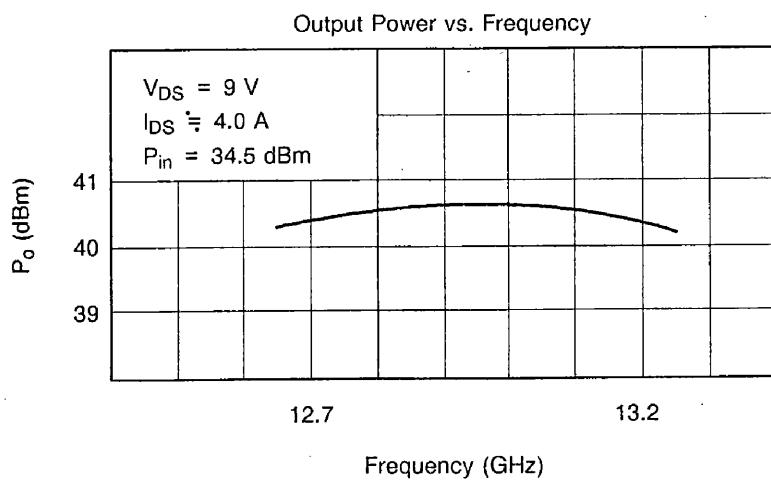


### HANDLING PRECAUTIONS FOR PACKAGED TYPE

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

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## RF PERFORMANCES



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**POWER DISSIPATION VS. CASE TEMPERATURE**

