

TOSHIBA

MICROWAVE SEMICONDUCTOR TECHNICAL DATA

MICROWAVE POWER GaAs FE

TIM5053-35SL

FEATURES :

■ LOW INTERMODULATION DISTORTION

$IM_3 = -45\text{dBc}$ at $P_o = 35.0\text{dBm}$

■ HIGH POWER

$P_{1\text{dB}} = 45.5\text{dBm}$ at 5.0 to 5.3GHz

■ HIGH EFFICIENCY

$\eta_{\text{add}} = 38\%$ at 5.0 to 5.3GHz

■ HIGH GAIN

$G_{1\text{dB}} = 9.0\text{dB}$ at 5.0 to 5.3GHz

■ 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	$P_{1\text{dB}}$	$V_{\text{DS}} = 10\text{ V}$ $f = 5.0 - 5.3\text{GHz}$	dBm	45.0	45.5	—
Power Gain at 1 dB Compression Point	$G_{1\text{dB}}$		dB	8.0	9.0	—
Drain Current	I_{DS}		A	—	8.0	9.0
Power Added Efficiency	η_{add}		%	—	38	—
3rd Order Intermodulation Distortion	IM_3	Note 1	dBc	-42	-45	—
Channel-Temperature Rise	ΔT_{ch}	$V_{\text{DS}} \times I_{\text{DS}} \times R_{\text{th}} (\text{c-c})$	$^\circ\text{C}$	—	—	100

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

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Transconductance	g_m	$V_{\text{DS}} = 3\text{ V}$ $I_{\text{DS}} = 10.5\text{A}$	mS	—	6500	—
Pinch-off Voltage	V_{GSoff}	$V_{\text{DS}} = 3\text{ V}$ $I_{\text{DS}} = 140\text{mA}$	V	-1.0	-2.5	-4.0
Saturated Drain Current	I_{DSS}	$V_{\text{DS}} = 3\text{ V}$ $V_{\text{GS}} = 0\text{ V}$	A	—	20	26
Gate-Source Breakdown Voltage	V_{GSO}	$I_{\text{GS}} = -420\mu\text{A}$	V	-5	—	—
Thermal Resistance	$R_{\text{th}} (\text{c-c})$	Channel to Case	$^\circ\text{C/W}$	—	1.0	1.3

Note 1 : 2 tone Test $P_{\text{out}} = 35\text{dBm}$ Single Carrier Level.

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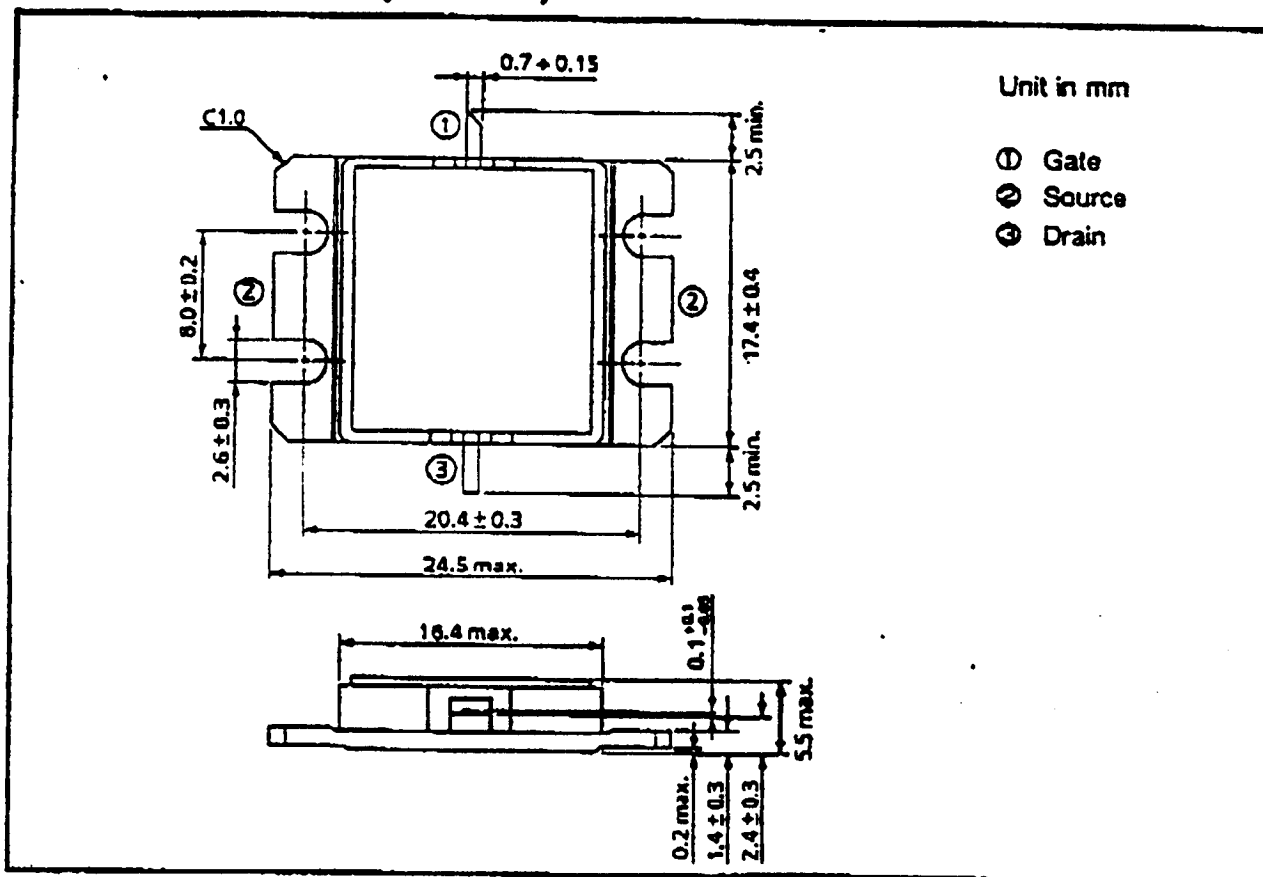
★ The information contained herein may be changed without prior notice. It is therefore advisable to contact TOSHIBA before proceeding with the design of equipment incorporating this product.



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	26
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	P_T	W	115
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-85~175

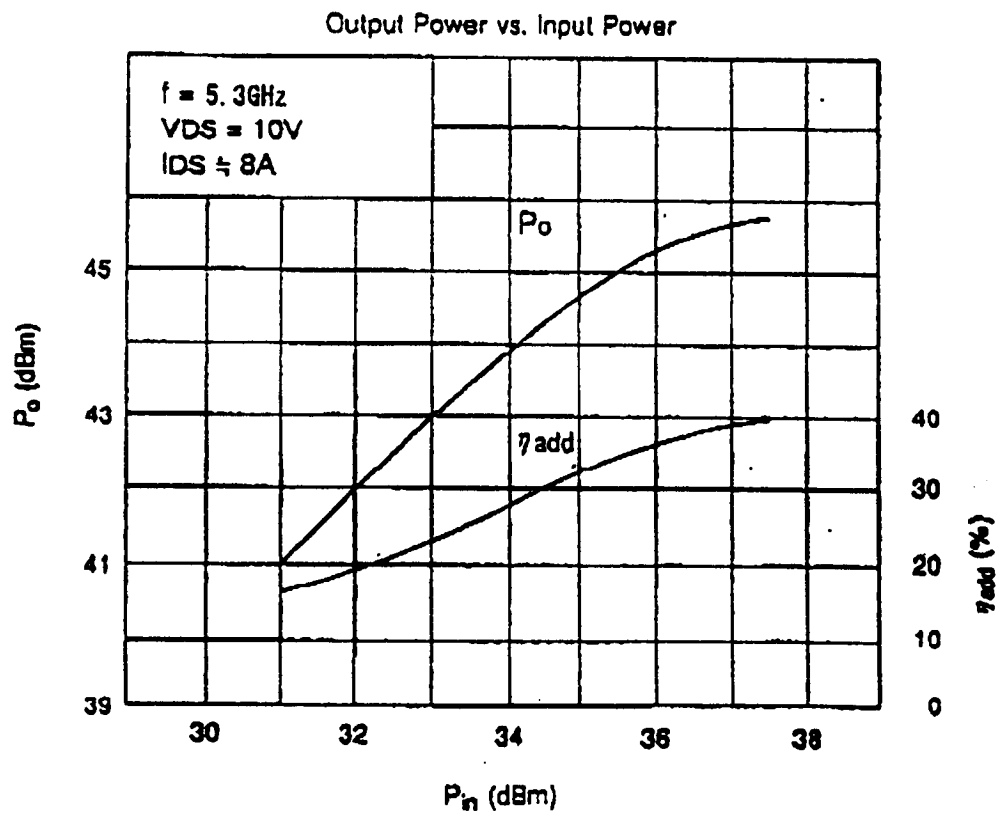
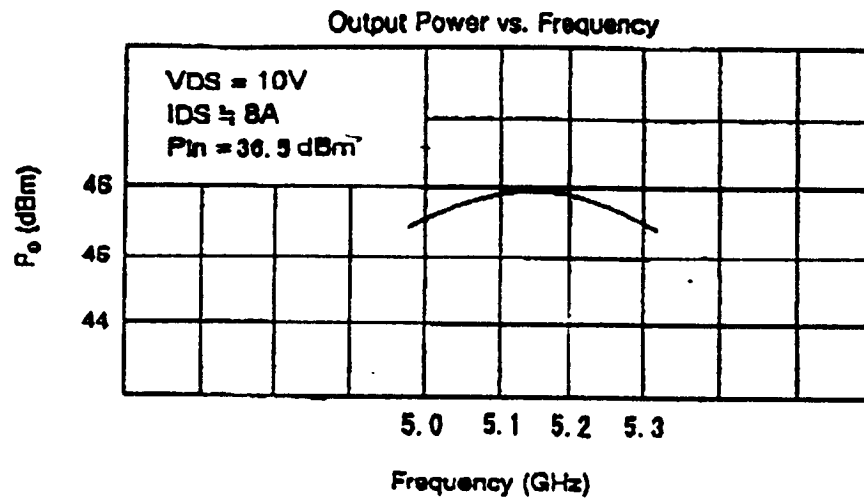
PACKAGE OUTLINE (2-16G1B)

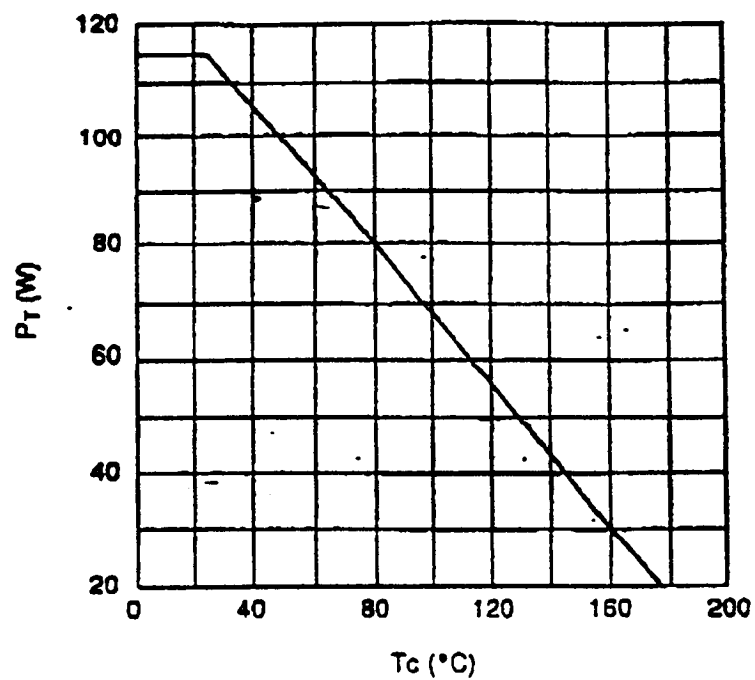


HANDLING PRECAUTIONS FOR PACKAGED TYPE

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

RF PERFORMANCES



POWER DISSIPATION VS. CASE TEMPERATURE**IM₃ VS. OUTPUT POWER CHARACTERISTICS**