

TOSHIBA

MICROWAVE SEMICONDUCTOR TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM3742-16SL

PRELIMINARY

FEATURES :

- LOW INTERMODULATION DISTORTION
 $IM_3 = -45$ dBc at $P_o = 31.5$ dBm,
Single Carrier Level
- HIGH GAIN
 $G_{1dB} = 9.5$ dB at 3.7 GHz to 4.2 GHz
- BROAD BAND INTERNALLY MATCHED
- HIGH POWER
 $P_{1dB} = 42.5$ dBm at 3.7GHz to 4.2GHz
- 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}	$V_{DS} = 10\text{ V}$ $f = 3.7 - 4.2\text{ GHz}$	dBm	41.5	42.5	—
Power Gain at 1 dB Compression Point	G_{1dB}		dB	8.5	9.5	—
Drain Current	I_{DS}		A	—	4.4	5.0
Gain Flatness	ΔG		dB	—	—	± 0.8
Power Added Efficiency	η_{add}		%	—	36	—
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 ($T_a = 25^\circ\text{C}$)

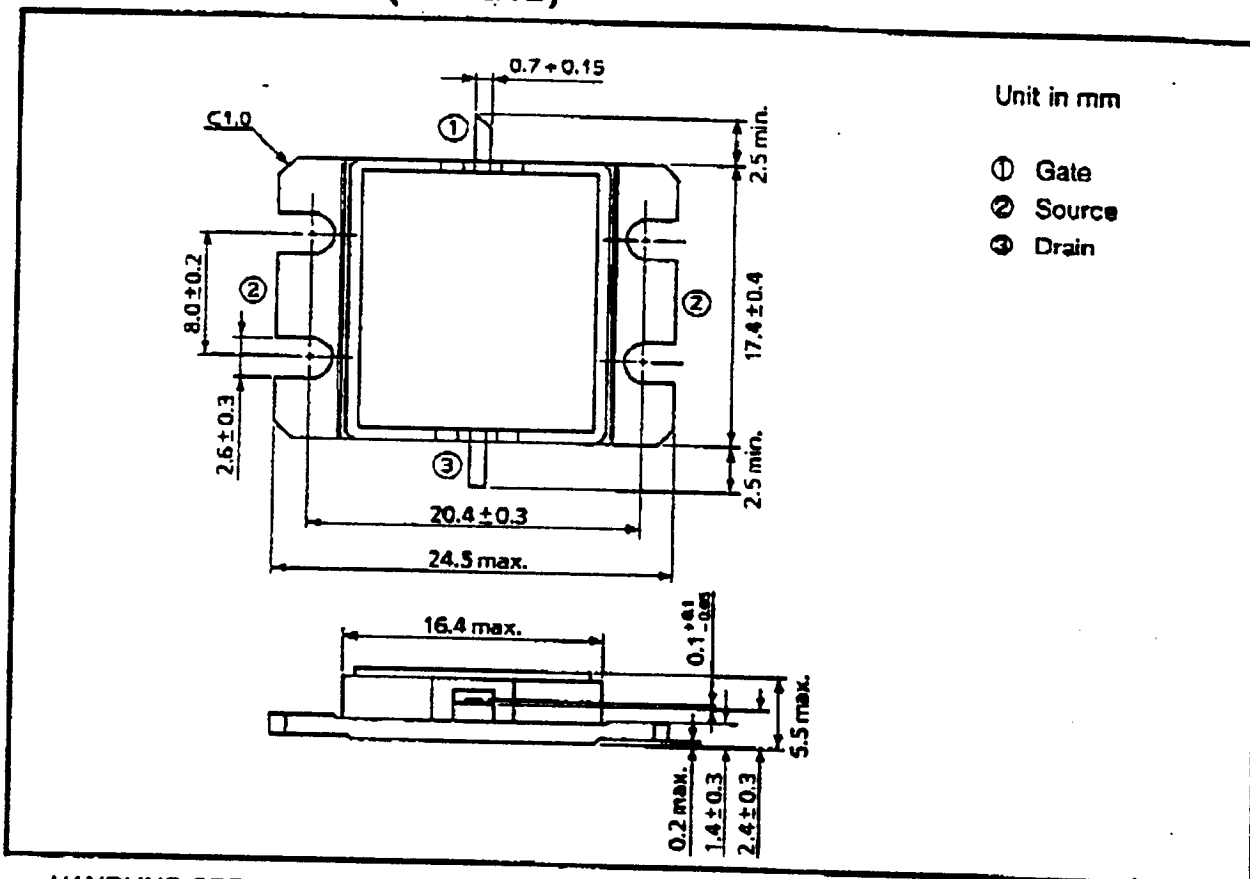
CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Transconductance	g_m	$V_{DS} = 3\text{ V}$ $I_{DS} = 6.0\text{ A}$	mS	—	3600	—
Pinch-off Voltage	$V_{GS(off)}$	$V_{DS} = 3\text{ V}$ $I_{DS} = 60\text{ mA}$	V	-1	-2.5	-4.0
Saturated Drain Current	I_{DSS}	$V_{DS} = 3\text{ V}$ $V_{GS} = 0\text{ V}$	A	—	10.5	14.0
Gate-Source Breakdown Voltage	V_{GS0}	$I_{GS} = -200\text{ }\mu\text{A}$	V	-5	—	—
Thermal Resistance	$R_{th} (c-c)$	Channel to Case	$^\circ\text{C/W}$	—	1.5	2.0

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

- ★ The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of TOSHIBA or others.
- ★ 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.

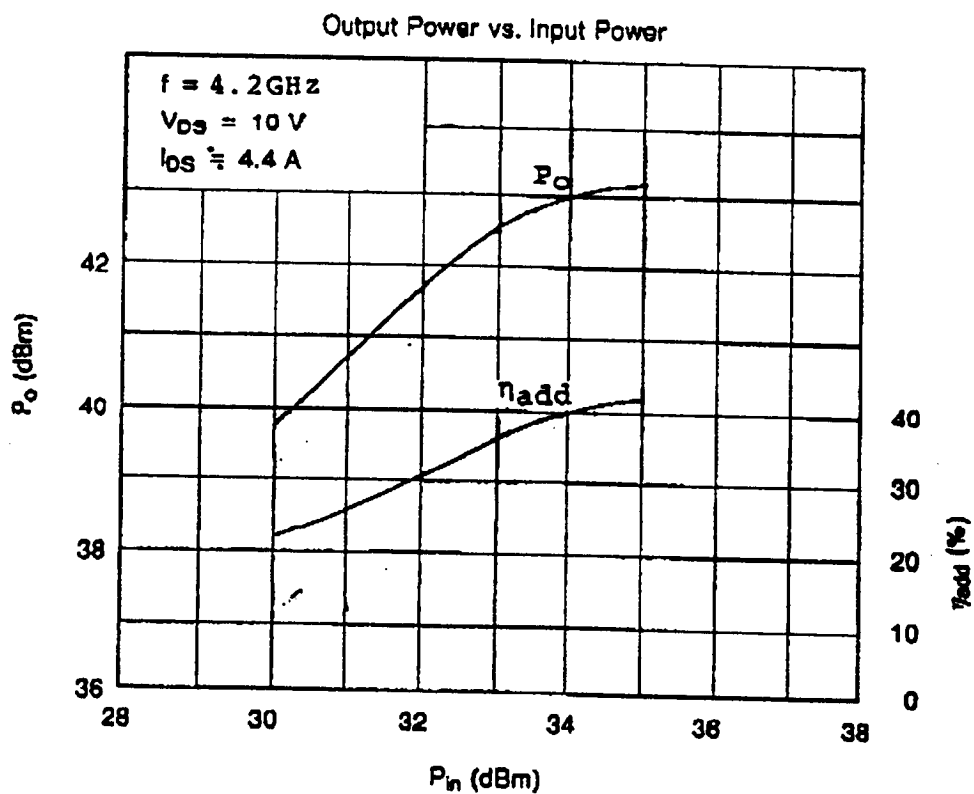
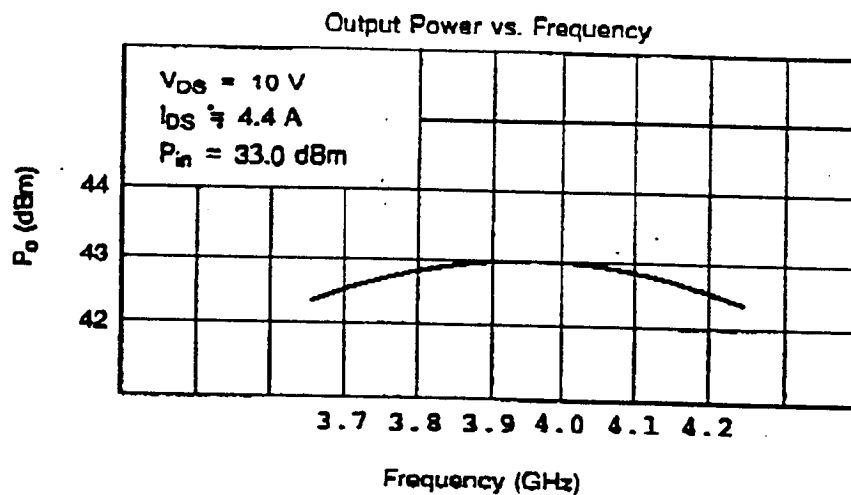
ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

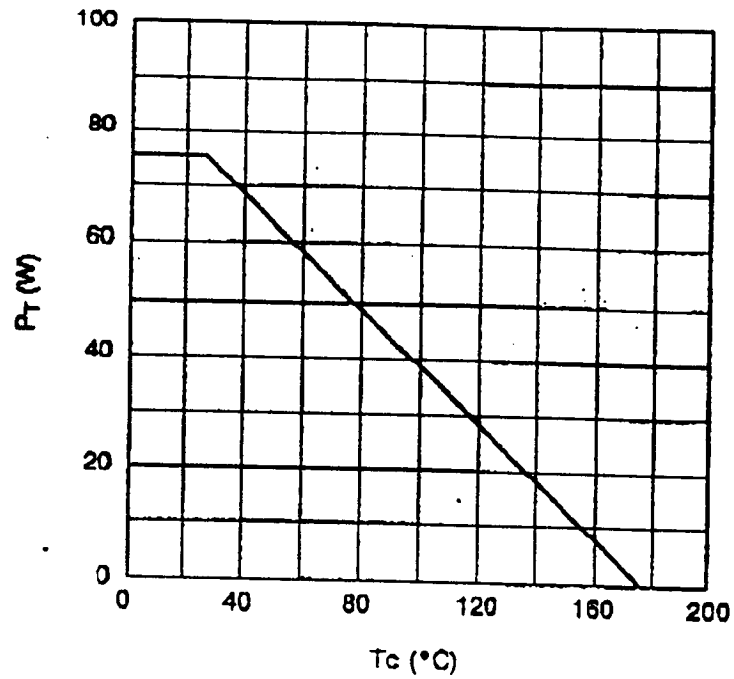
CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_{DS}	A	14
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	P_T	W	75
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-65~175

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



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