

# TOSHIBA

## MICROWAVE SEMICONDUCTOR

### TECHNICAL DATA

## MICROWAVE POWER GaAs FET

### TIM4450-16UL

### FEATURES

#### n HIGH POWER

P1dB=42.5dBm at 4.4GHz to 5.0GHz

#### n HIGH GAIN

G1dB=10.0dB at 4.4GHz to 5.0GHz

#### n BROAD BAND INTERNALLY MATCHED FET

#### n HERMETICALLY SEALED PACKAGE

### RF PERFORMANCE SPECIFICATIONS (Ta= 25°C)

| CHARACTERISTICS                            | SYMBOL | CONDITIONS                             | UNIT | MIN. | TYP. | MAX. |
|--------------------------------------------|--------|----------------------------------------|------|------|------|------|
| Output Power at 1dB Gain Compression Point | P1dB   | VDS= 10V<br>f = 4.4 to 5.0GHz          | dBm  | 41.5 | 42.5 | —    |
| Power Gain at 1dB Gain Compression Point   | G1dB   |                                        | dB   | 9.0  | 10.0 | —    |
| Drain Current                              | IDS1   |                                        | A    | —    | 4.4  | 5.0  |
| Gain Flatness                              | ΔG     |                                        | dB   | —    | —    | ±0.6 |
| Power Added Efficiency                     | ηadd   |                                        | %    | —    | 36   | —    |
| 3rd Order Intermodulation Distortion       | IM3    | Two-Tone Test<br>Po= 31.5dBm           | dBc  | -44  | -47  | —    |
| Drain Current                              | IDS2   | (Single Carrier Level)                 | A    | —    | 4.4  | 5.0  |
| Channel Temperature Rise                   | ΔTch   | (VDS × IDS + Pin – P1dB)<br>× Rth(c-c) | °C   | —    | —    | 80   |

Recommended gate resistance(Rg) : Rg= 100 W(MAX.)

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

| CHARACTERISTICS               | SYMBOL   | CONDITIONS           | UNIT | MIN. | TYP. | MAX. |
|-------------------------------|----------|----------------------|------|------|------|------|
| Transconductance              | gm       | VDS= 3V<br>IDS= 6.0A | mS   | —    | 3600 | —    |
| Pinch-off Voltage             | VGSoff   | VDS= 3V<br>IDS= 60mA | V    | -1.0 | -2.5 | -4.0 |
| Saturated Drain Current       | IDSS     | VDS= 3V<br>VGS= 0V   | A    | —    | 10.5 | —    |
| Gate-Source Breakdown Voltage | VGSO     | IGS= -200μA          | V    | -5   | —    | —    |
| Thermal Resistance            | Rth(c-c) | Channel to Case      | °C/W | —    | 1.5  | 1.8  |

u 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 results from its use, No license is granted by implication or otherwise under any patent or patent rights of TOSHIBA or others.

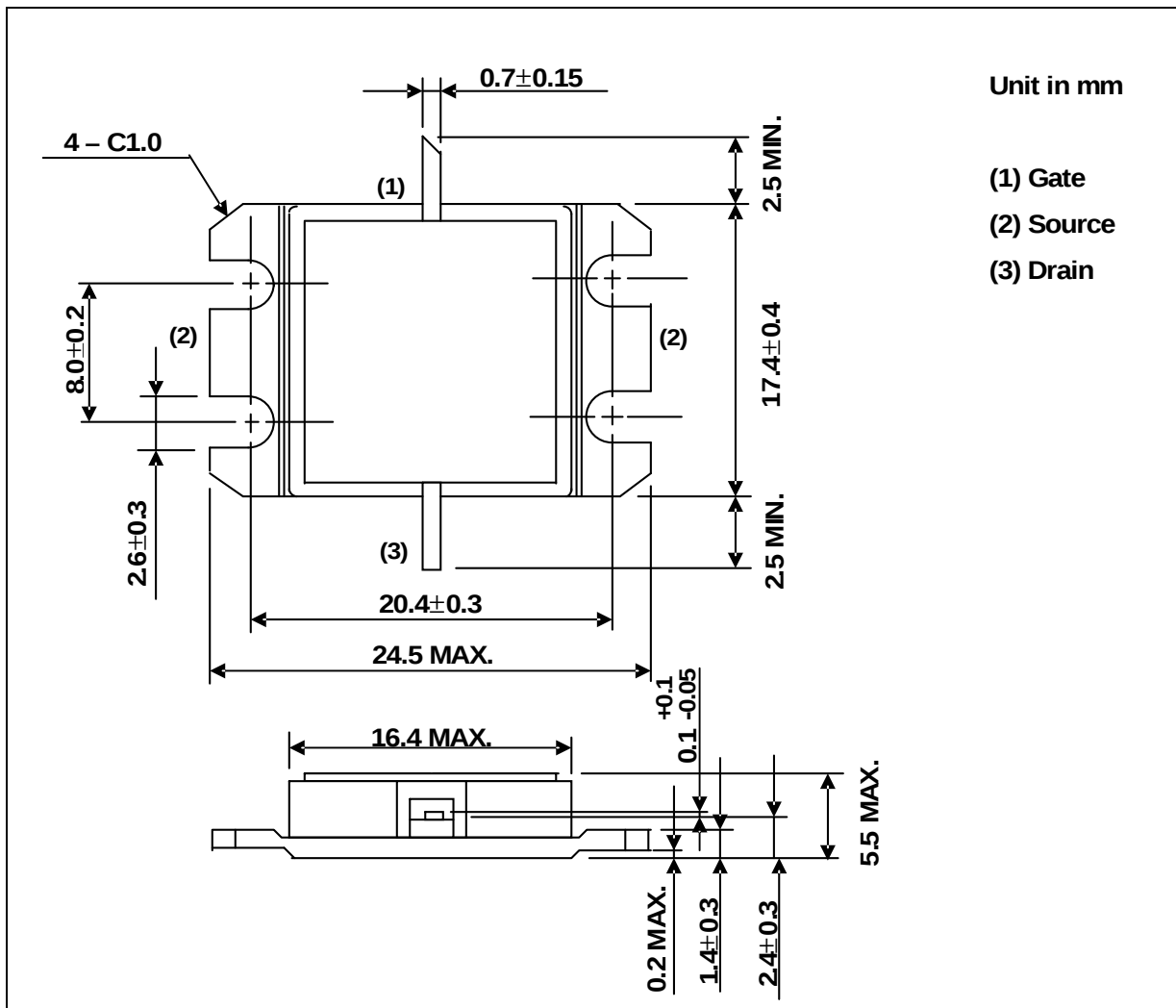
The information contained herein is subject to change without prior notice. It is therefor advisable to contact TOSHIBA before proceeding with design of equipment incorporating this product.

TOSHIBA CORPORATION

Rev. Jun. 2006

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

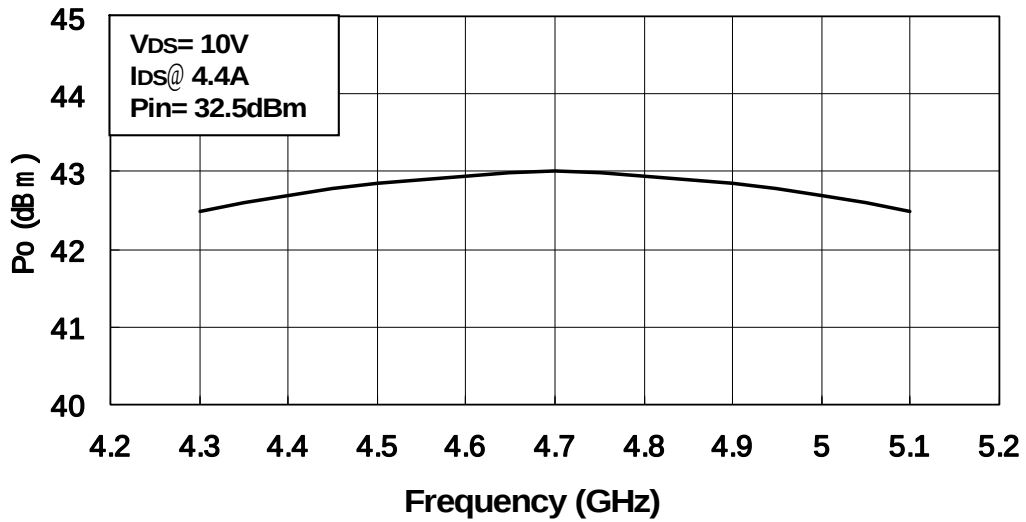
| CHARACTERISTICS                     | SYMBOL           | UNIT | RATING      |
|-------------------------------------|------------------|------|-------------|
| Drain-Source Voltage                | V <sub>DS</sub>  | V    | 15          |
| Gate-Source Voltage                 | V <sub>GS</sub>  | V    | -5          |
| Drain Current                       | I <sub>DS</sub>  | A    | 14          |
| Total Power Dissipation (Tc= 25 °C) | PT               | W    | 83.3        |
| Channel Temperature                 | T <sub>ch</sub>  | °C   | 175         |
| Storage                             | T <sub>stg</sub> | °C   | -65 to +175 |

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

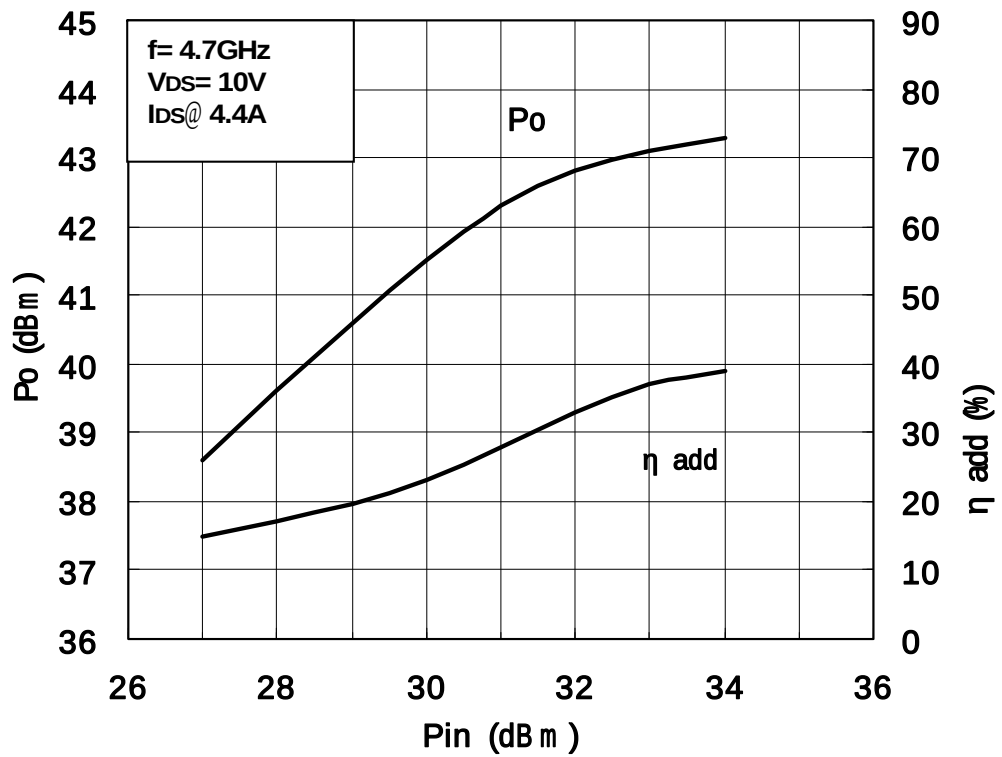
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

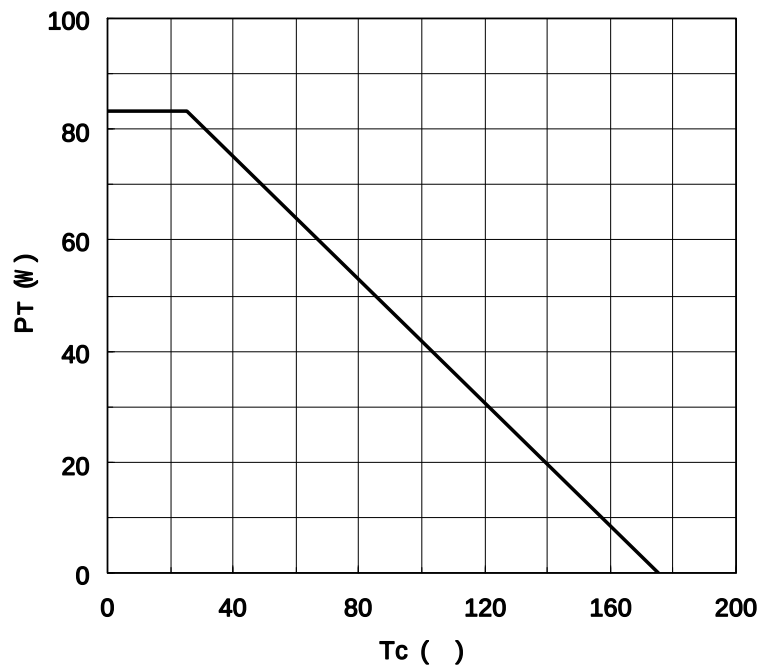
## RF PERFORMANCE

Output Power vs. Frequency



Output Power vs. Input Power



**Power Dissipation vs. Case Temperature****IM3 vs. Output Power Characteristics**