# TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

#### FEATURES

HIGH POWERT

P1dB=36.5dBm at 14.0GHz to 14.5GHz

HIGH GAIN

G1dB=6.5dB at 14.0GHz to 14.5GHz

#### MICROWAVE POWER GaAs FET TIM1414-4LA PRELIMINARY

- BROAD BAND INTERNALLY MATCHED
- HERMETICALLY SEALED PACKAGE

#### **RF PERFORMANCE SPECIFICATIONS** $(Ta = 25^{\circ}C)$

| CHARACTERISTICS                       | SYMBOL       | CONDITION            | UNIT | MIN. | TYP. | MAX. |
|---------------------------------------|--------------|----------------------|------|------|------|------|
| Output Power at 1dB                   | P1dB         |                      | dBm  | 36.0 | 36.5 |      |
| Compression Point                     |              |                      |      |      |      |      |
| Power Gain at 1dB                     | G1dB         | VDS= 9V              | dB   | 6.0  | 6.5  |      |
| Compression Point                     |              | f= 14.0 to 14.5GHz   |      |      |      |      |
| Drain Current                         | IDS1         |                      | А    |      | 1.7  | 2.2  |
| Gain Flatness                         | $\Delta G$   |                      | dB   |      |      | ±0.8 |
| Power Added Efficiency                | $\eta_{add}$ |                      | %    |      | 23   |      |
| 3 <sup>rd</sup> Order Intermodulation | IM3          |                      | dBc  | -42  | -45  |      |
| Distortion                            |              | NOTE                 |      |      |      |      |
| Drain Current                         | IDS2         |                      | А    |      | 1.7  | 2.2  |
| Channel Temperature Rise              | $\Delta Tch$ | VDS X IDS X Rth(c-c) | °C   |      |      | 70   |

NOTE : Two Tone Test, Po=25dBm (Single Carrier Level)

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

| CHARACTERISTICS         | SYMBOL   | CONDITION       | UNIT | MIN. | TYP. | MAX. |
|-------------------------|----------|-----------------|------|------|------|------|
| Transconductance        | gm       | VDS= 3V         | mS   | _    | 1200 |      |
|                         |          | IDS= 2.0A       |      |      |      |      |
| Pinch-off Voltage       | VGSoff   | VDS= 3V         | V    | -2.0 | -3.5 | -5.0 |
|                         |          | IDS= 60mA       |      |      |      |      |
| Saturated Drain Current | IDSS     | VDS= 3V         | Α    | _    | 4.0  | 5.2  |
|                         |          | VGS= 0V         |      |      |      |      |
| Gate-Source Breakdown   | Vgso     | IGS= -60μΑ      | V    | -5   |      |      |
| Voltage                 |          |                 |      |      |      |      |
| Thermal Resistance      | Rth(c-c) | Channel to Case | °C/W |      | 2.9  | 3.5  |

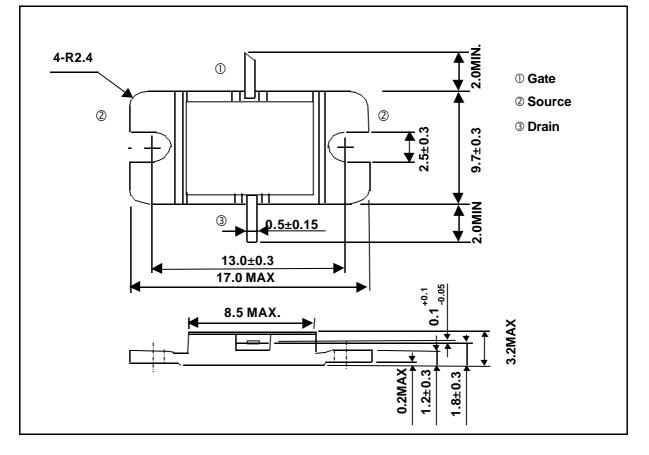
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The information contained herein is subject to change without prior notice. It is therefor advisable to contact TOSHIBA before proceeding with design of equipment incorporating this product.

### ABSOLUTE MAXIMUM RATINGS ( $Ta = 25^{\circ}C$ )

| CHARACTERISTICS                               | SYMBOL | UNIT | RATING      |
|---|--------|------|-------------|
| Drain-Source Voltage                          | VDS    | V    | 15          |
| Gate-Source Voltage                           | VGS    | V    | -5          |
| Drain Current                                 | IDS    | А    | 5.2         |
| Total Power Dissipation (Tc= 25 $^{\circ}$ C) | PT     | W    | 30          |
| Channel Temperature                           | Tch    | °C   | 175         |
| Storage Temperature                           | Tstg   | °C   | -65 to +175 |

## PACKAGE OUTLINE (2-9D1B)



#### HANDLING PRECAUTIONS FOR PACKAGED TYPE

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