

# TOSHIBA

## MICROWAVE SEMICONDUCTOR

### TECHNICAL DATA

## MICROWAVE POWER GaAs FET

### TIM1414-4LA

### PRELIMINARY

#### FEATURES

##### ■ HIGH POWER

P1dB=36.5dBm at 14.0GHz to 14.5GHz

##### ■ HIGH GAIN

G1dB=6.5dB at 14.0GHz to 14.5GHz

##### ■ BROAD BAND INTERNALLY MATCHED

##### ■ HERMETICALLY SEALED PACKAGE

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

| CHARACTERISTICS                                  | SYMBOL           | CONDITION                        | UNIT | MIN. | TYP. | MAX. |
|--|------------------|----------------------------------|------|------|------|------|
| Output Power at 1dB Compression Point            | P1dB             | VDS= 9V<br>f= 14.0 to 14.5GHz    | dBm  | 36.0 | 36.5 | —    |
| Power Gain at 1dB Compression Point              | G1dB             |                                  | dB   | 6.0  | 6.5  | —    |
| Drain Current                                    | IDS1             |                                  | A    | —    | 1.7  | 2.2  |
| Gain Flatness                                    | ΔG               |                                  | dB   | —    | —    | ±0.8 |
| Power Added Efficiency                           | η <sub>add</sub> |                                  | %    | —    | 23   | —    |
| 3 <sup>rd</sup> Order Intermodulation Distortion | IM3              | NOTE                             | dBc  | -42  | -45  | —    |
| Drain Current                                    | IDS2             |                                  | A    | —    | 1.7  | 2.2  |
| Channel Temperature Rise                         | ΔT <sub>ch</sub> | VDS X IDS X R <sub>th(c-c)</sub> | °C   | —    | —    | 70   |

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

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

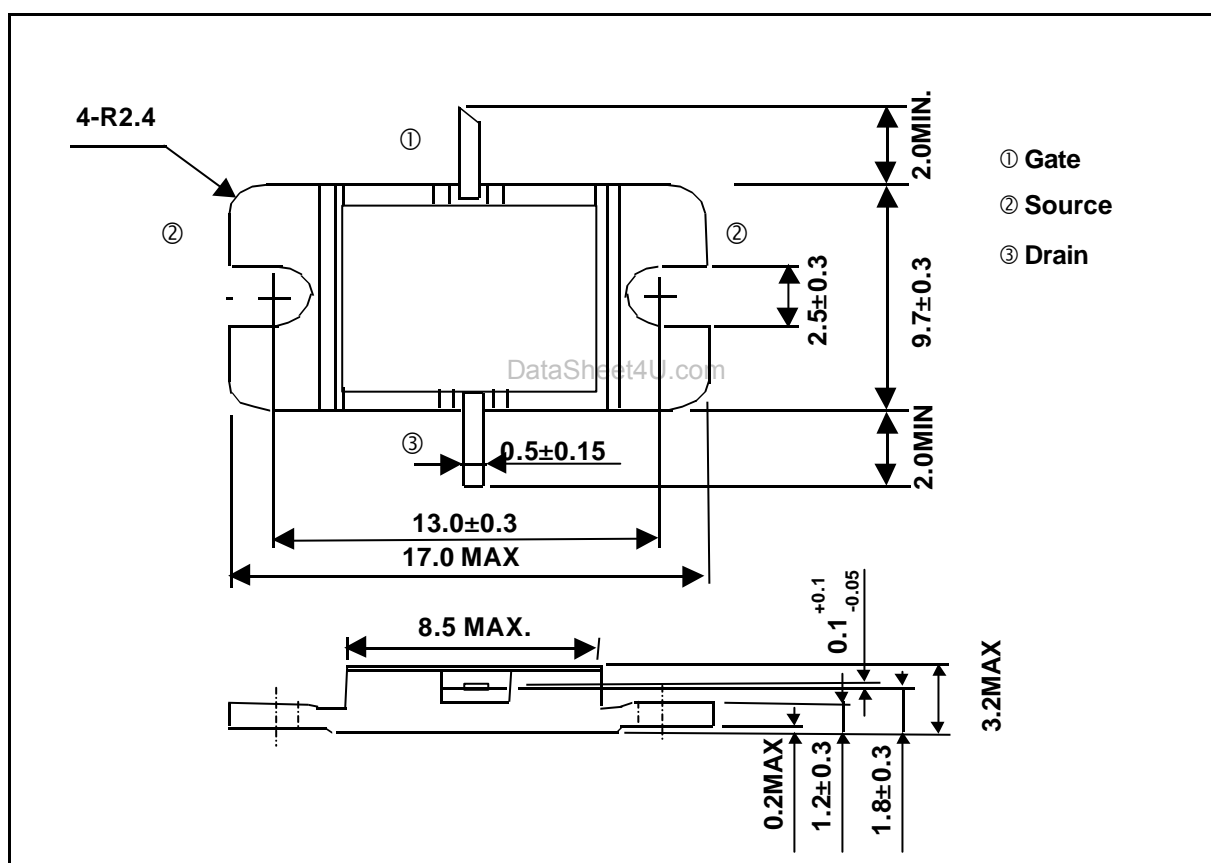
| CHARACTERISTICS               | SYMBOL               | CONDITION            | UNIT | MIN. | TYP. | MAX. |
|-------------------------------|----------------------|----------------------|------|------|------|------|
| Transconductance              | gm                   | VDS= 3V<br>IDS= 2.0A | mS   | —    | 1200 | —    |
| Pinch-off Voltage             | VGS <sub>off</sub>   | VDS= 3V<br>IDS= 60mA | V    | -2.0 | -3.5 | -5.0 |
| Saturated Drain Current       | IDSS                 | VDS= 3V<br>VGS= 0V   | A    | —    | 4.0  | 5.2  |
| Gate-Source Breakdown Voltage | VGSO                 | IGS= -60μA           | V    | -5   | —    | —    |
| Thermal Resistance            | R <sub>th(c-c)</sub> | Channel to Case      | °C/W | —    | 2.9  | 3.5  |

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

| CHARACTERISTICS                     | SYMBOL | UNIT | RATING      |
|-------------------------------------|--------|------|-------------|
| Drain-Source Voltage                | VDS    | V    | 15          |
| Gate-Source Voltage                 | VGS    | V    | -5          |
| Drain Current                       | IDS    | A    | 5.2         |
| Total Power Dissipation (Tc= 25 °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.