

### Low Distortion Internally Matched Power GaAs FETs (C-Band)

#### Features

- Low intermodulation distortion
  - $IM_3 = -45$  dBc at  $P_o = 34.5$  dBm,
  - Single carrier level
- High power
  - $P_{1dB} = 45.0$  dBm at 7.9 GHz to 8.4 GHz
- High gain
  - $G_{1dB} = 6.0$  dB at 7.9 GHz to 8.4 GHz
- Broad band internally matched
- Hermetically sealed package

#### RF Performance Specifications ( $T_a = 25^\circ C$ )

| Characteristics                       | Symbol          | Condition                                 | Unit       | Min. | Typ. | Max       |
|---------------------------------------|-----------------|---|------------|------|------|-----------|
| Output Power at 1dB Compression Point | $P_{1dB}$       | $V_{DS} = 10V$<br>$f = 7.9 \sim 8.4$ GHz  | dBm        | 44.0 | 45.0 | –         |
| Power Gain at 1dB Compression Point   | $G_{1dB}$       |   | dB         | 5.0  | 6.0  | –         |
| Drain Current                         | $I_{DS1}$       |   | A          | –    | 8.0  | 9.0       |
| Gain Flatness                         | $\Delta G$      |   | dB         | –    | –    | $\pm 0.8$ |
| Power Added Efficiency                | $\eta_{add}$    |   | %          | –    | 30   | –         |
| 3rd Order Intermodulation Distortion  | $IM_3$          | Note 1                                    | dBc        | -42  | -45  | –         |
| Drain Current                         | $I_{DS2}$       |   | A          | –    | 8.0  | 9.0       |
| Channel-Temperature Rise              | $\Delta T_{ch}$ | $V_{DS} \times I_{DS} \times R_{th}(c-c)$ | $^\circ C$ | –    | –    | 80        |

#### Electrical Characteristics ( $T_a = 25^\circ C$ )

| Characteristic                | Symbol        | Condition                         | Unit         | Min. | Typ. | Max  |
|-------------------------------|---------------|-----------------------------------|--------------|------|------|------|
| Trans-conductance             | gm            | $V_{DS} = 3V$<br>$I_{DS} = 10.5A$ | mS           | –    | 6300 | –    |
| Pinch-off Voltage             | $V_{GSoff}$   | $V_{DS} = 3V$<br>$I_{DS} = 140mA$ | V            | -2.0 | -3.5 | -5.0 |
| Saturated Drain Current       | $I_{DSS}$     | $V_{DS} = 3V$<br>$V_{GS} = 0V$    | A            | –    | 20   | 26   |
| Gate-Source Breakdown Voltage | $V_{GSO}$     | $I_{GS} = -420\mu A$              | V            | -5   | –    | –    |
| Thermal Resistance            | $R_{th}(c-c)$ | Channel to case                   | $^\circ C/W$ | –    | 0.8  | 1.0  |

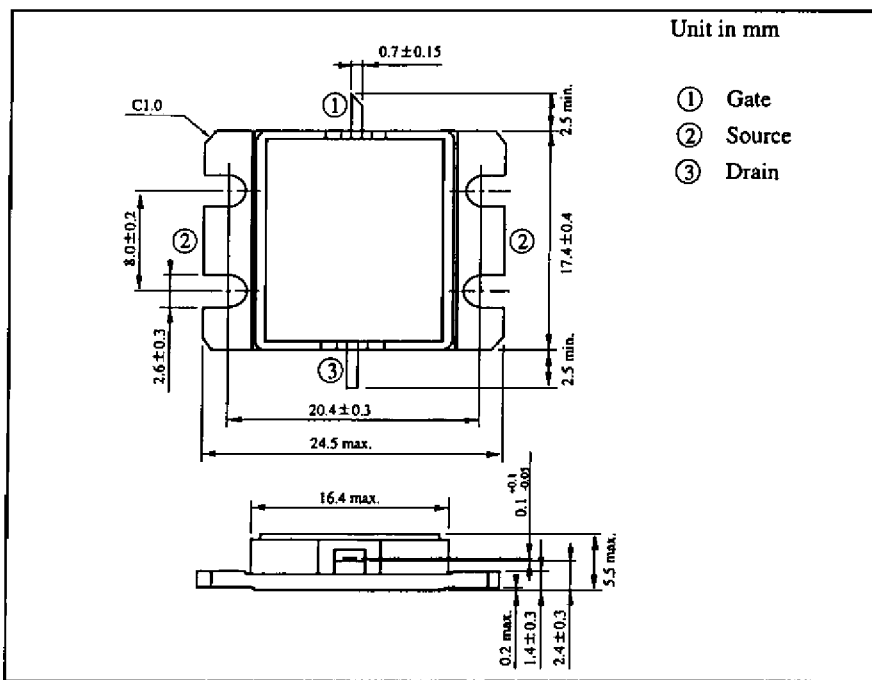
Note 1: 2 tone Test Pout = 34.5dBm Single Carrier Level.

The information contained here is subject to change without notice.  
 The information contained herein is presented only as 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. These TOSHIBA products are intended for usage in general electronic equipments (office equipment, communication equipment, measuring equipment, domestic electrification, etc.) Please make sure that you consult with us before you use these TOSHIBA products in equipments which require high quality and/or reliability, and in equipments which could have major impact to the welfare of human life (atomic energy control, spaceship, traffic signal, combustion control, all types of safety devices, etc.). TOSHIBA cannot accept liability to any damage which may occur in case these TOSHIBA products were used in the mentioned equipments without prior consultation with TOSHIBA.

**Absolute Maximum Ratings (Ta = 25° C)**

| Characteristic                                  | 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    | 26      |
| Total Power Dissipation (T <sub>c</sub> = 25°C) | P <sub>T</sub>   | W    | 120     |
| Channel Temperature                             | T <sub>ch</sub>  | °C   | 175     |
| Storage Temperature                             | T <sub>stg</sub> | °C   | -65~175 |

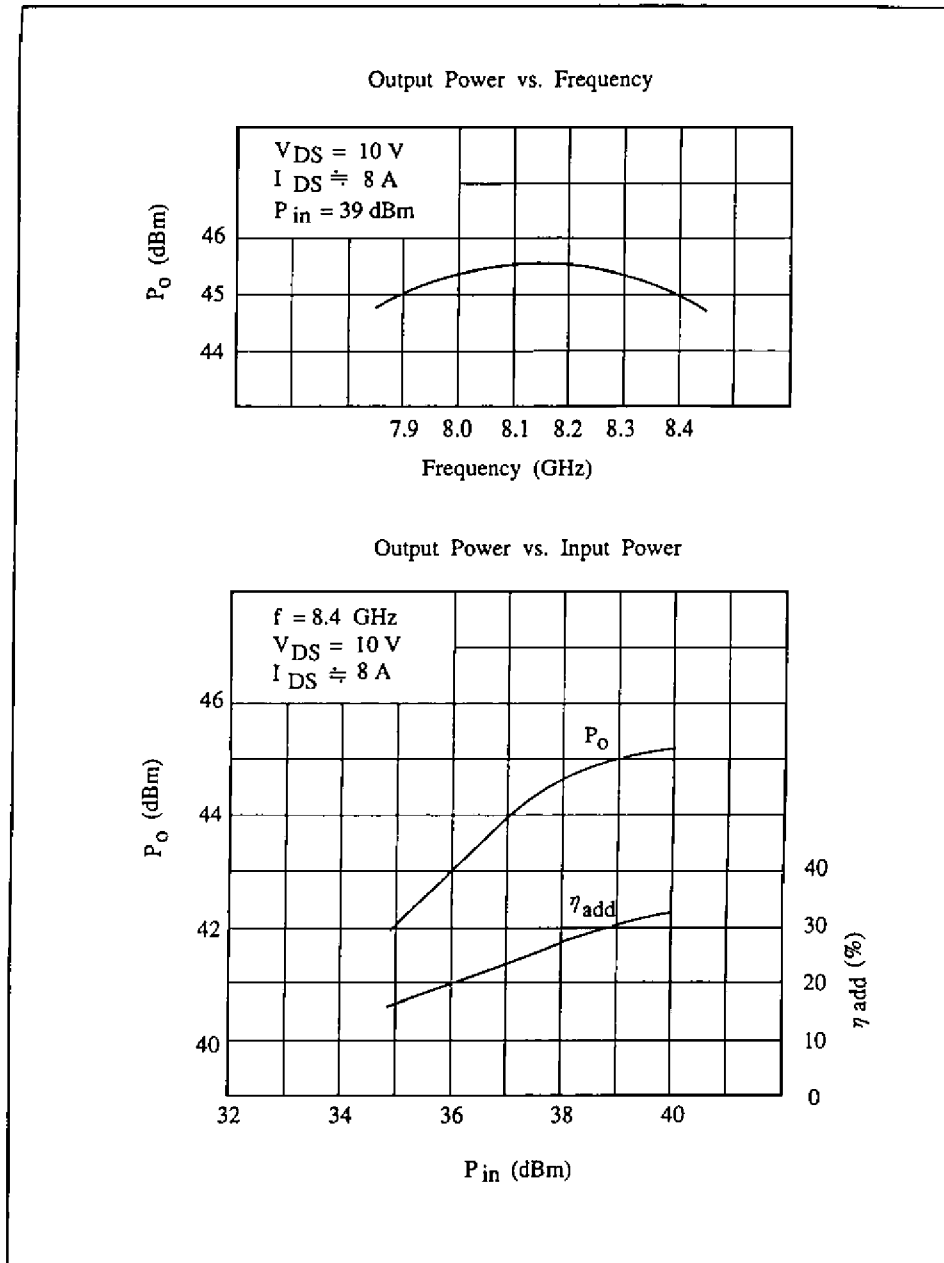
**Package Outline (2-16G1B)**



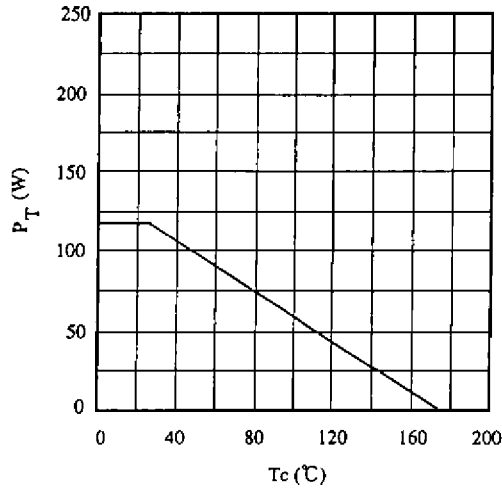
**Handling Precautions for Packaged Type**

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

## RF Performances



Power Dissipation vs. Case Temperature



$IM_3$  vs. Output Power Characteristics

