

**FEATURES**

- **LOW INTERMODULATION DISTORTION**  
 IM3=-45 dBc at Pout= 25.5dBm  
 Single Carrier Level
- **HIGH POWER**  
 P1dB=36.5dBm at 7.1GHz to 7.9GHz
- **HIGH GAIN**  
 G1dB=7.5dB at 7.1GHz to 7.9GHz
- **BROAD BAND INTERNALLY MATCHED FET**
- **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= 7.1 to 7.9GHz           | dBm  | 35.5 | 36.5 | —    |
| Power Gain at 1dB Gain Compression Point         | G1dB   |  | dB   | 6.5  | 7.5  | —    |
| Drain Current                                    | IDS1   |  | A    | —    | 1.1  | 1.3  |
| Gain Flatness                                    | ΔG     |  | dB   | —    | —    | ±0.6 |
| Power Added Efficiency                           | ηadd   |  | %    | —    | 33   | —    |
| 3 <sup>rd</sup> Order Intermodulation Distortion | IM3    | Two-Tone Test<br>Po=25.5dBm            | dBc  | -42  | -45  | —    |
| Drain Current                                    | IDS2   | (Single Carrier Level)                 | A    | —    | 1.1  | 1.3  |
| Channel Temperature Rise                         | ΔTch   | (VDS X IDS + Pin - P1dB)<br>X Rth(c-c) | °C   | —    | —    | 80   |

**Recommended Gate Resistance(Rg): 150 Ω (Max.)**

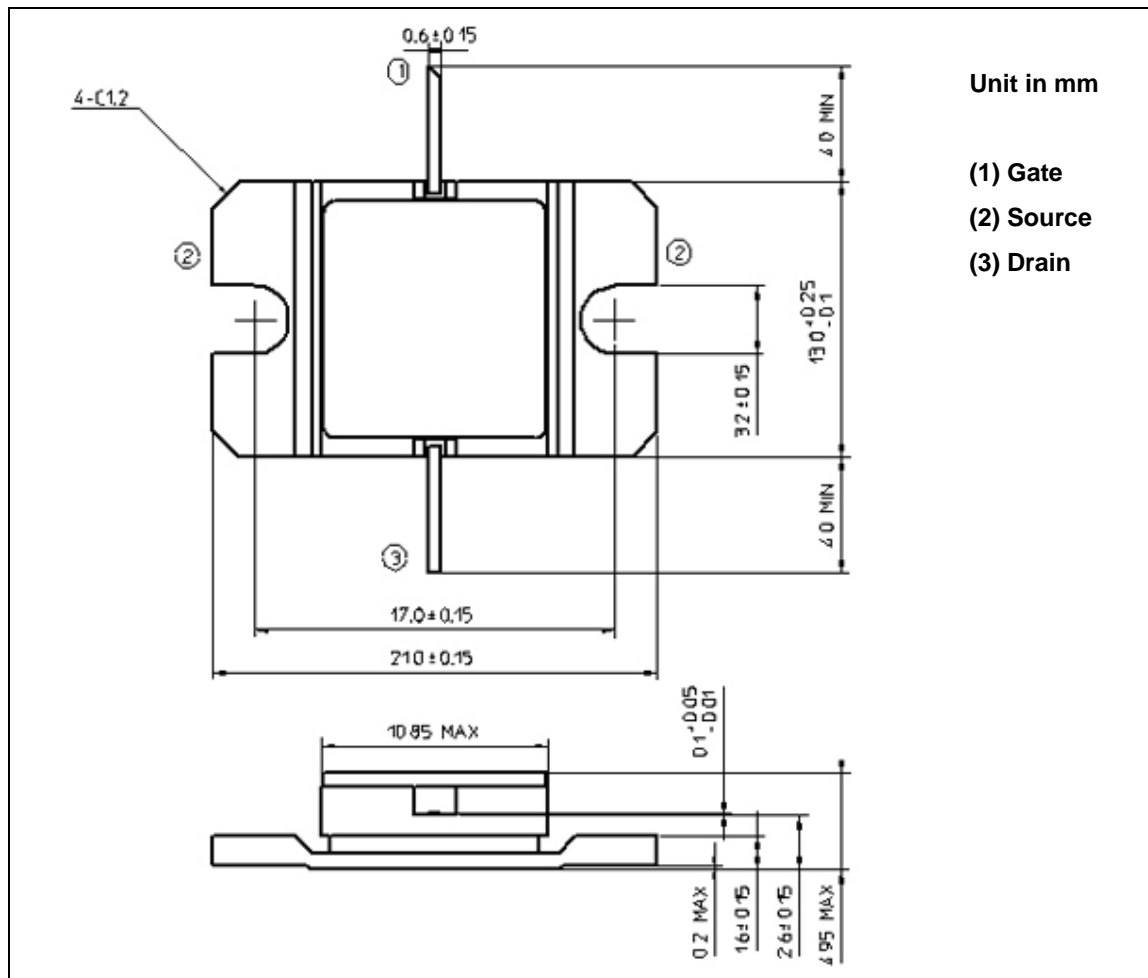
**ELECTRICAL CHARACTERISTICS ( Ta= 25°C )**

| CHARACTERISTICS               | SYMBOL   | CONDITIONS           | UNIT | MIN. | TYP. | MAX. |
|-------------------------------|----------|----------------------|------|------|------|------|
| Transconductance              | gm       | VDS= 3V<br>IDS= 1.5A | mS   | —    | 900  | —    |
| Pinch-off Voltage             | VGSoff   | VDS= 3V<br>IDS= 15mA | V    | -1.0 | -2.5 | -4.0 |
| Saturated Drain Current       | IDSS     | VDS= 3V<br>VGS= 0V   | A    | —    | 2.6  | —    |
| Gate-Source Breakdown Voltage | VGSO     | IGS= -50μA           | V    | -5   | —    | —    |
| Thermal Resistance            | Rth(c-c) | Channel to Case      | °C/W | —    | 4.5  | 6.5  |

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

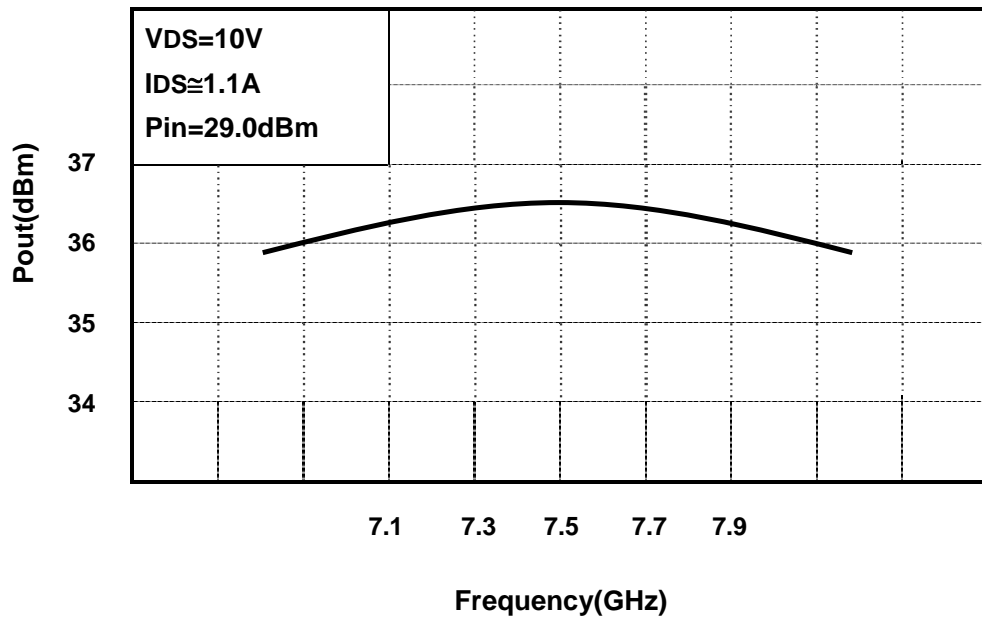
| CHARACTERISTICS                     | SYMBOL | UNIT | RATING      |
|-------------------------------------|--------|------|-------------|
| Drain-Source Voltage                | VDS    | V    | 15          |
| Gate-Source Voltage                 | VGS    | V    | -5          |
| Drain Current                       | IDS    | A    | 3.5         |
| Total Power Dissipation (Tc= 25 °C) | PT     | W    | 23.1        |
| Channel Temperature                 | Tch    | °C   | 175         |
| Storage Temperature                 | Tstg   | °C   | -65 to +175 |

**PACKAGE OUTLINE (2-11D1B)****HANDLING PRECAUTIONS FOR PACKAGE MODEL**

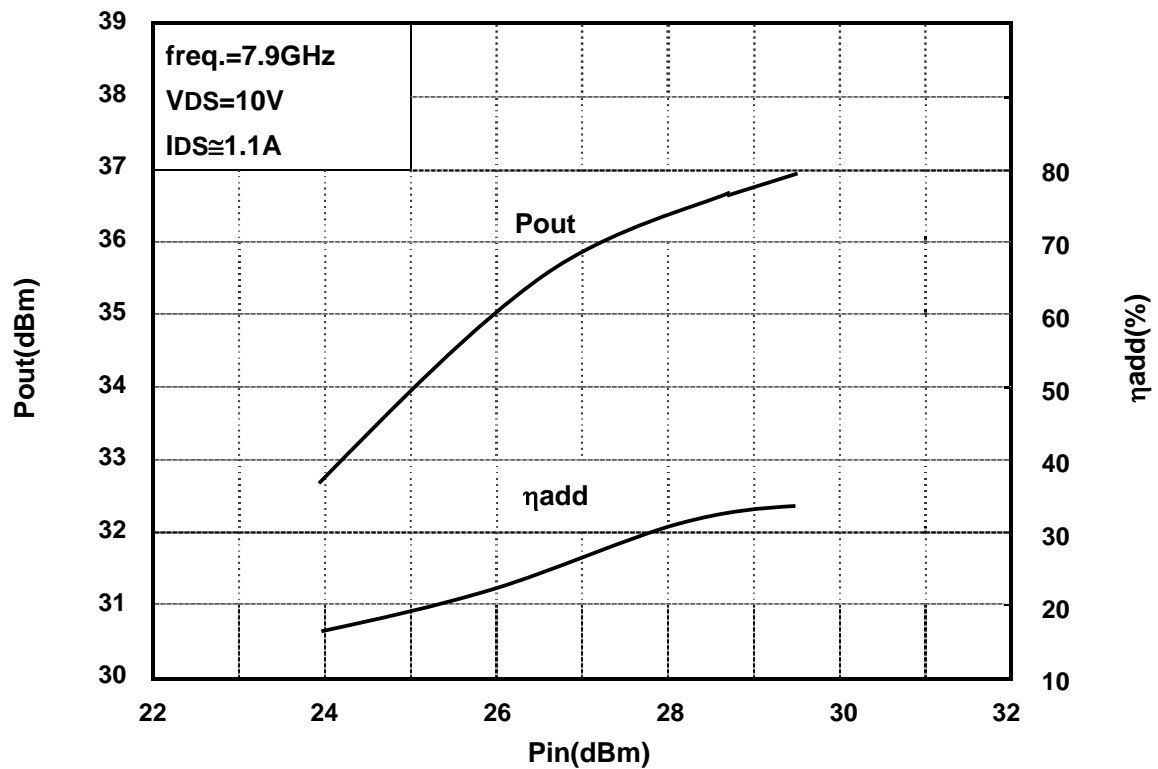
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

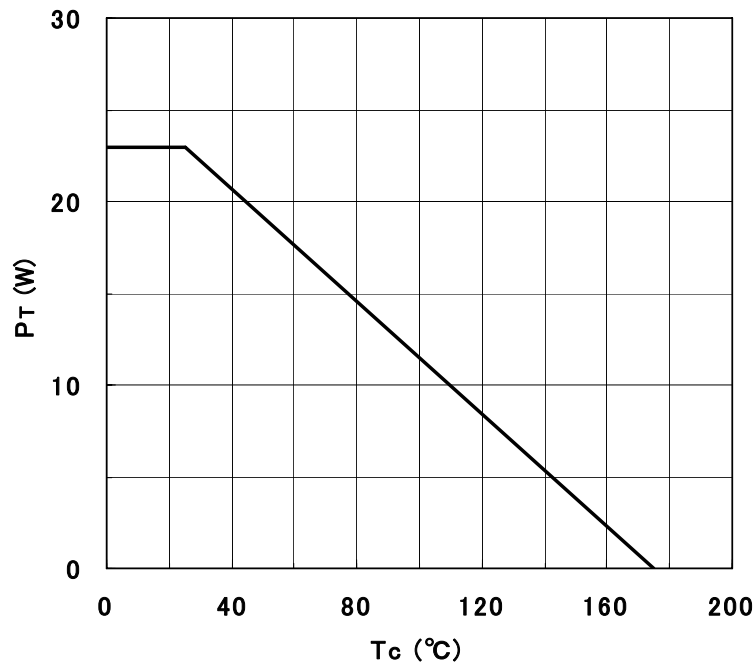
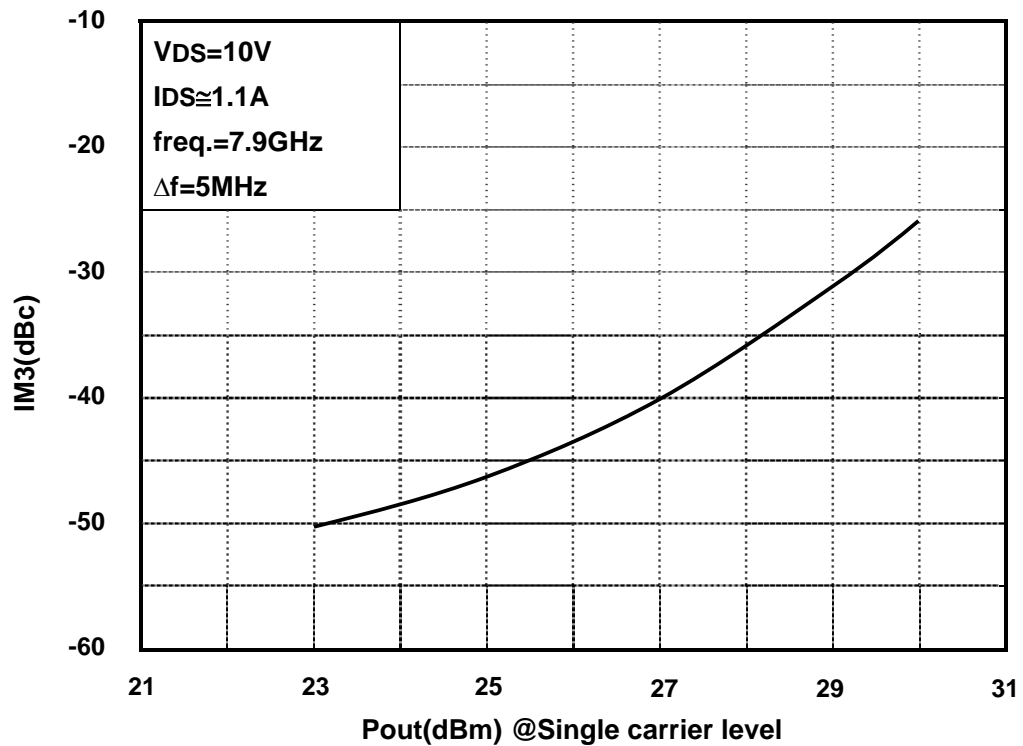
## RF PERFORMANCE

Output Power (Pout) vs. Frequency



Output Power(Pout) vs. Input Power(Pin)



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

# TOSHIBA

## MICROWAVE SEMICONDUCTOR

### TECHNICAL DATA

## MICROWAVE POWER GaAs FET

### TIM7179-4UL

#### FEATURES

##### ■ HIGH POWER

P1dB=36.5dBm at 7.1GHz to 7.9GHz

##### ■ HIGH GAIN

G1dB= 9.0dB at 7.1GHz to 7.9GHz

##### ■ BROAD BAND INTERNALLY MATCHED FET

##### ■ 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 = 7.1 to 7.9GHz          | dBm                          | 35.5 | 36.5 | —    |
| Power Gain at 1dB Gain Compression Point   | G1dB   |  | dB                           | 8.0  | 9.0  | —    |
| Drain Current                              | IDS1   |  | A                            | —    | 1.1  | 1.3  |
| Gain Flatness                              | ΔG     |  | dB                           | —    | —    | ±0.6 |
| Power Added Efficiency                     | ηadd   |  | %                            | —    | 35   | —    |
| 3rd Order Intermodulation Distortion       | IM3    |  | Two-Tone Test<br>Po= 25.5dBm | dBc  | -44  | -47  |
| Drain Current                              | IDS2   | (Single Carrier Level)                 | A                            | —    | 1.1  | 1.3  |
| Channel Temperature Rise                   | ΔTch   | (VDS X IDS + Pin - P1dB)<br>X Rth(c-c) | °C                           | —    | —    | 80   |

Recommended gate resistance(Rg) : Rg= 150 Ω(MAX.)

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

| CHARACTERISTICS               | SYMBOL   | CONDITIONS           | UNIT | MIN. | TYP. | MAX. |
|-------------------------------|----------|----------------------|------|------|------|------|
| Transconductance              | gm       | VDS= 3V<br>IDS= 1.5A | mS   | —    | 900  | —    |
| Pinch-off Voltage             | VGSoff   | VDS= 3V<br>IDS= 15mA | V    | -1.0 | -2.5 | -4.0 |
| Saturated Drain Current       | IDSS     | VDS= 3V<br>VGS= 0V   | A    | —    | 2.6  | —    |
| Gate-Source Breakdown Voltage | VGSO     | IGS= -50μA           | V    | -5   | —    | —    |
| Thermal Resistance            | Rth(c-c) | Channel to Case      | °C/W | —    | 4.5  | 6.0  |

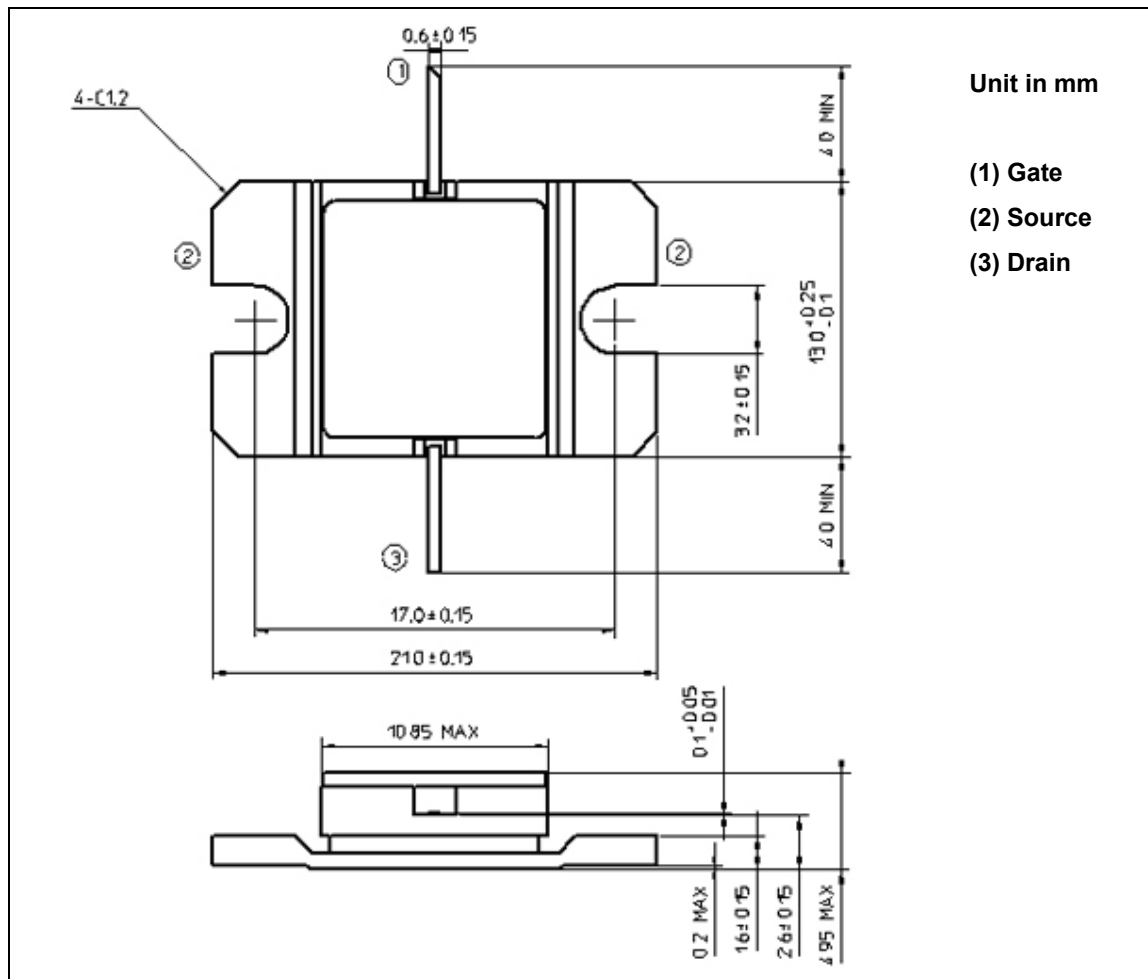
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TOSHIBA CORPORATION

Rev. Jun. 2006

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

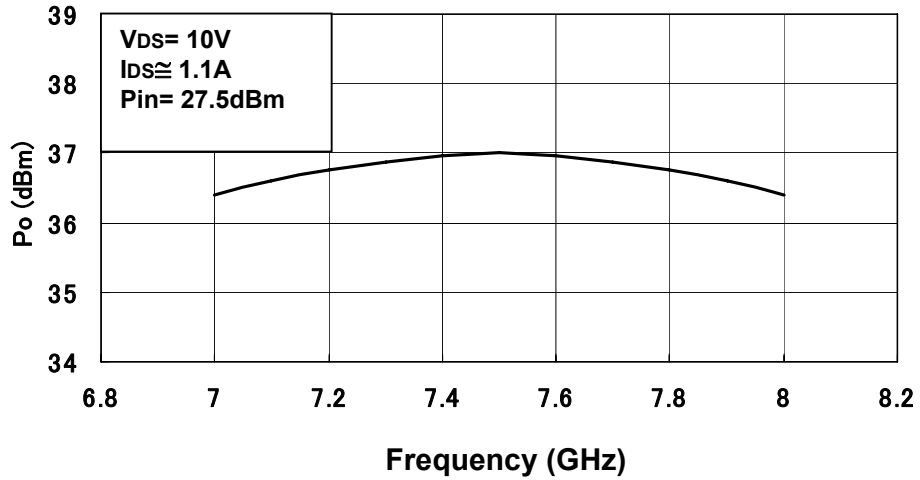
| CHARACTERISTICS                     | SYMBOL | UNIT | RATING      |
|-------------------------------------|--------|------|-------------|
| Drain-Source Voltage                | VDS    | V    | 15          |
| Gate-Source Voltage                 | VGS    | V    | -5          |
| Drain Current                       | IDS    | A    | 3.5         |
| Total Power Dissipation (Tc= 25 °C) | PT     | W    | 25          |
| Channel Temperature                 | Tch    | °C   | 175         |
| Storage                             | Tstg   | °C   | -65 to +175 |

**PACKAGE OUTLINE (2-11D1B)****HANDLING PRECAUTIONS FOR PACKAGE MODEL**

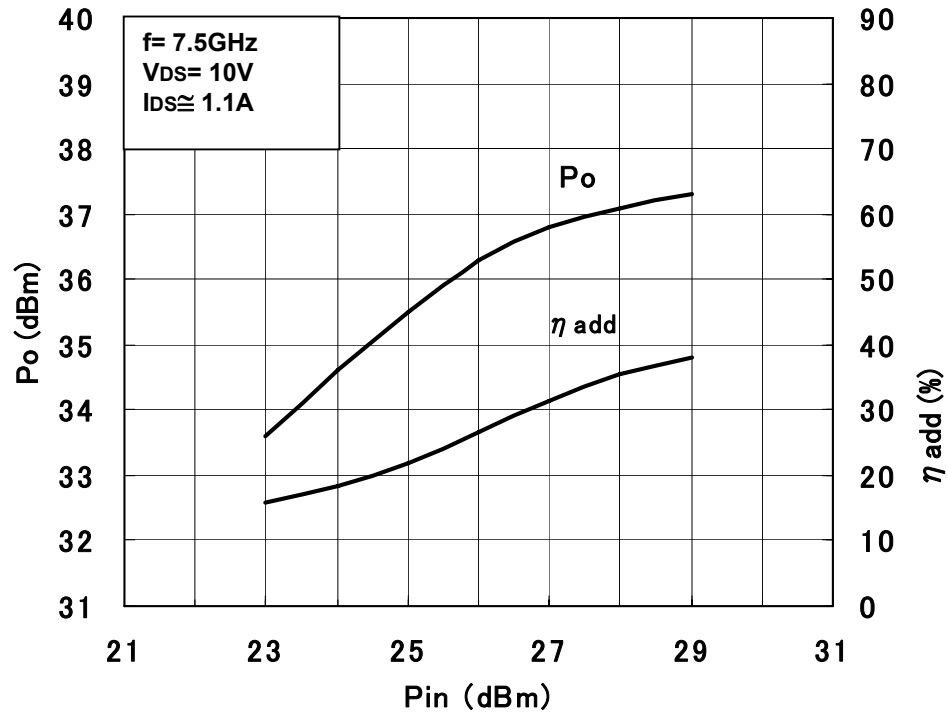
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

## RF PERFORMANCE

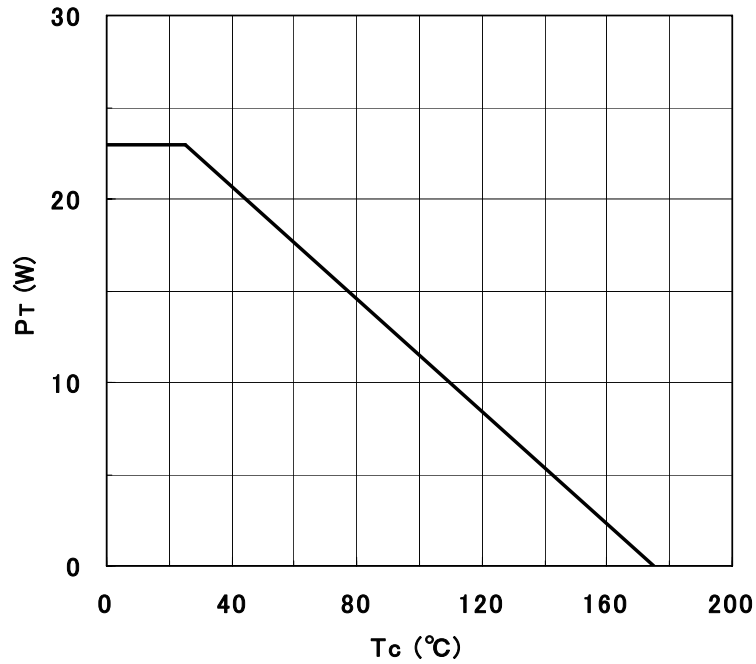
Output Power vs. Frequency



Output Power vs. Input Power



Power Dissipation vs. Case Temperature



IM3 vs. Output Power Characteristics

