

**TOSHIBA**

MICROWAVE SEMICONDUCTOR

## TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM6472-35SL

## FEATURES:

## ■ LOW INTERMODULATION DISTORTION

IM<sub>3</sub> = -45 dBc at P<sub>o</sub> 35.0 dBm

## ■ HIGH POWER

P<sub>1dB</sub> = 45.5 dBm at 6.4 to 7.2 GHz

## ■ HIGH EFFICIENCY

 $\eta_{add}$  = 37% at 6.4 to 7.2 GHz

## ■ HIGH GAIN

G<sub>1dB</sub> = 8.0dB at 6.4 to 7.2 GHz

## ■ BROAD BAND INTERNALLY MATCHED

## ■ HERMETICALLY SEALED PACKAGE

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

| CHARACTERISTICS                        | SYMBOL           | CONDITION                                                | UNIT | MIN. | TYP. | MAX. |
|----------------------------------------|------------------|----------------------------------------------------------|------|------|------|------|
| Output Power at 1 dB Compression Point | P <sub>1dB</sub> | V <sub>DS</sub> = 10V<br>f = 6.4~7.2GHz                  | dBm  | 45.0 | 45.5 | -    |
| Power Gain at 1 dB Compression Point   | G <sub>1dB</sub> |                                                          | dB   | 7.0  | 8.0  | -    |
| Drain Current                          | I <sub>DS</sub>  |                                                          | A    | -    | 8.0  | 9.0  |
| Gain Flatness                          | $\Delta G$       |                                                          | dB   | -    | -    | ±0.8 |
| Power Added Efficiency                 | $\eta_{add}$     |                                                          | %    | -    | 37   | -    |
| 3rd Order Intermodulation Distortion   | IM <sub>3</sub>  | Note 1                                                   | dBc  | -42  | -45  | -    |
| Channel Temperature Rise               | $\Delta T_{ch}$  | V <sub>DS</sub> × I <sub>DS</sub> × R <sub>th(c-c)</sub> | °C   | -    | -    | 100  |

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTICS               | SYMBOL               | CONDITION                                       | UNIT | MIN. | TYP. | MAX. |
|-------------------------------|----------------------|-------------------------------------------------|------|------|------|------|
| Trans-conductance             | gm                   | V <sub>DS</sub> = 3V<br>I <sub>DS</sub> = 10.5A | mS   | -    | 6500 | -    |
| Pinch-off Voltage             | V <sub>GSoff</sub>   | V <sub>DS</sub> = 3V<br>I <sub>DS</sub> = 140mA | V    | -1.0 | -2.5 | -4.0 |
| Saturated Drain Current       | I <sub>DSS</sub>     | V <sub>DS</sub> = 3V<br>V <sub>GS</sub> = 0V    | A    | -    | 20   | 26   |
| Gate-Source Breakdown Voltage | V <sub>GS0</sub>     | I <sub>GS</sub> = -420 $\mu$ A                  | V    | -5   | -    | -    |
| Thermal Resistance            | R <sub>th(c-c)</sub> | Channel to Case                                 | °C/W | -    | 1.0  | 1.3  |

Note 1: 2 tone Test Pout = 35dBm Single Carrier Level.

Recommended Gate Resistance(R<sub>g</sub>) : R<sub>g</sub> = R<sub>g1</sub>(10  $\Omega$ ) + R<sub>g2</sub>(18  $\Omega$ ) = 28  $\Omega$  (MAX.)

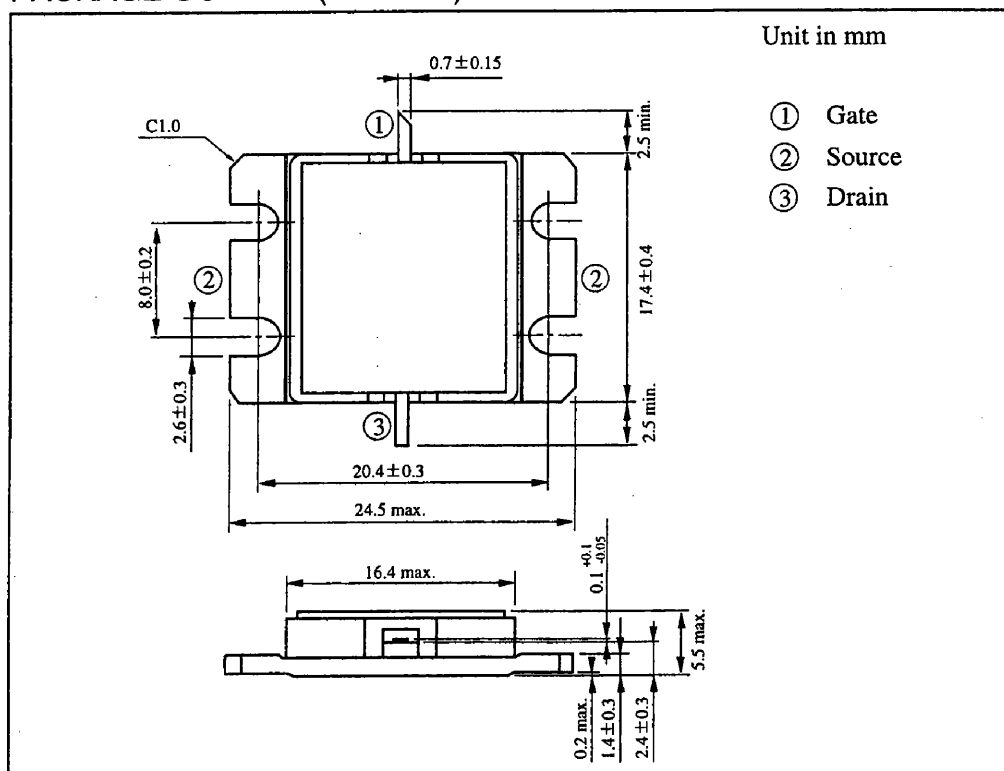
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# TIM6472-35SL

## 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    | 26      |
| Total Power Dissipation<br>(Tc=25°C) | P <sub>T</sub>   | W    | 115     |
| Channel Temperature                  | T <sub>ch</sub>  | °C   | 175     |
| Storage Temperature                  | T <sub>stg</sub> | °C   | -65~175 |

## PACKAGE OUTLINE (2-16G1B)

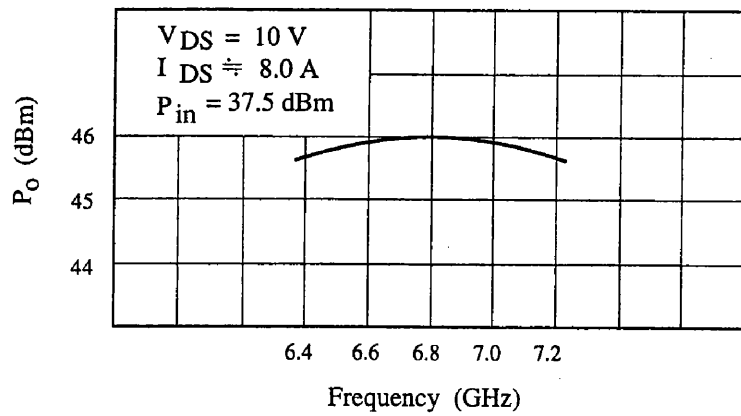


## HANDLING PRECAUTIONS FOR PACKAGED TYPE

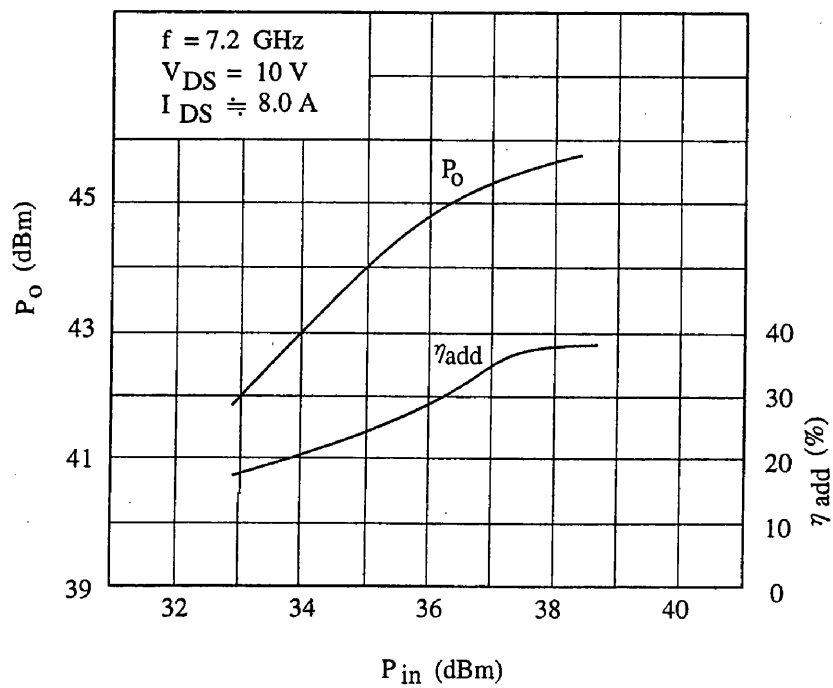
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

## RF PERFORMANCES

Output Power vs. Frequency

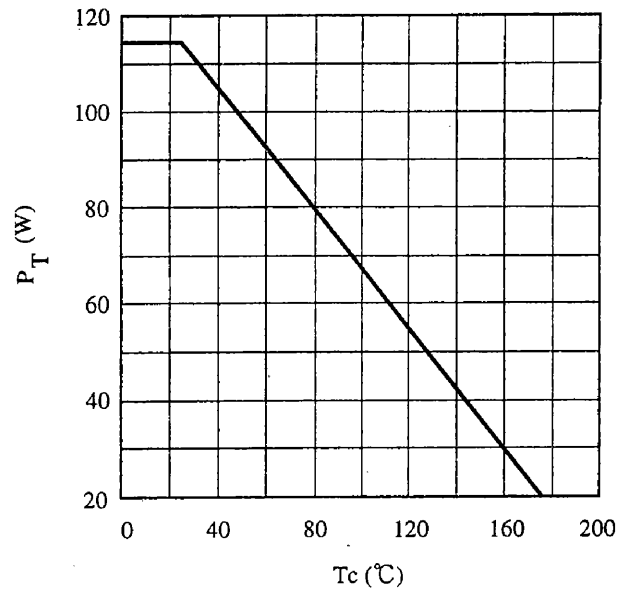


Output Power vs. Input Power



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## POWER DISSIPATION VS. CASE TEMPERATURE



## IM<sub>3</sub> VS. OUTPUT POWER CHARACTERISTICS

