

FEATURES :

- HIGH POWER
 $P_{1dB} = 38.5 \text{ dBm}$ at 14.0 GHz to 14.5 GHz
- BROAD BAND INTERNALLY MATCHED
- HIGH GAIN
 $G_{1dB} = 6.5 \text{ dB}$ at 14.0 GHz to 14.5 GHz
- HERMETICALLY SEALED PACKAGE

RF PERFORMANCE SPECIFICATIONS ($T_a = 25^\circ\text{C}$)

| CHARACTERISTICS | SYMBOL | CONDITION | UNIT | MIN. | TYP. | MAX. |
|---------------------------------------|-----------------|--|------------------|------|------|------|
| Output Power at 1dB Compression Point | P_{1dB} | $V_{DS} = 9 \text{ V}$ $f = 14.0 \sim 14.5 \text{ GHz}$ | dBm | 37.5 | 38.5 | — |
| Power Gain at 1dB Compression Point | G_{1dB} | | dB | 5.5 | 6.5 | — |
| Drain Current | I_{DS} | | A | — | 2.25 | 2.75 |
| Power Added Efficiency | η_{add} | | % | — | 27 | — |
| Channel-Temperature Rise | ΔT_{ch} | $V_{DS} \times I_{DS} \times R_{th(c-c)}$ | $^\circ\text{C}$ | — | — | 80 |

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

| CHARACTERISTICS | SYMBOL | CONDITION | UNIT | MIN. | TYP. | MAX. |
|-------------------------------|---------------|--|--------------------|------|------|------|
| Transconductance | g_m | $V_{DS} = 3 \text{ V}$ $I_{DS} = 2.4 \text{ A}$ | mS | — | 1500 | — |
| Pinch-off Voltage | V_{GSoff} | $V_{DS} = 3 \text{ V}$ $I_{DS} = 72 \text{ mA}$ | V | -1.5 | -3.0 | -4.5 |
| Saturated Drain Current | I_{DSS} | $V_{DS} = 3 \text{ V}$ $V_{GS} = 0 \text{ V}$ | A | — | 5.0 | 5.7 |
| Gate-Source Breakdown Voltage | V_{GSO} | $I_{GS} = -72 \mu\text{A}$ | V | -5 | — | — |
| Thermal Resistance | $R_{th(c-c)}$ | Channel to Case | $^\circ\text{C/W}$ | — | 3.0 | 3.7 |

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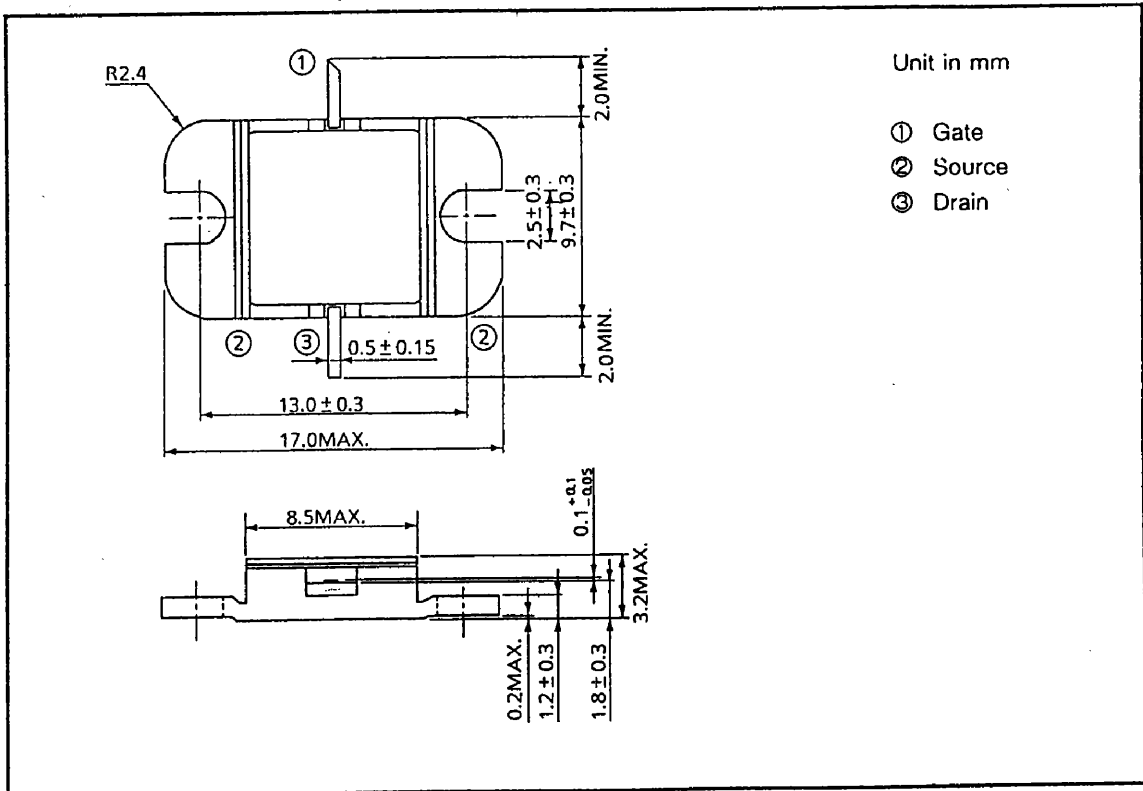


TIM1414-7

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTICS | SYMBOL | UNIT | RATING |
|---|------------------|------|---------|
| Drain-Source Voltage | V _{DS} | V | 15 |
| Gate-Source Voltage | V _{GS} | V | -5 |
| Drain Current | I _{DS} | A | 5.7 |
| Total Power Dissipation (T _C = 25°C) | P _T | W | 30 |
| Channel Temperature | T _{ch} | °C | 175 |
| Storage Temperature | T _{slg} | °C | -65~175 |

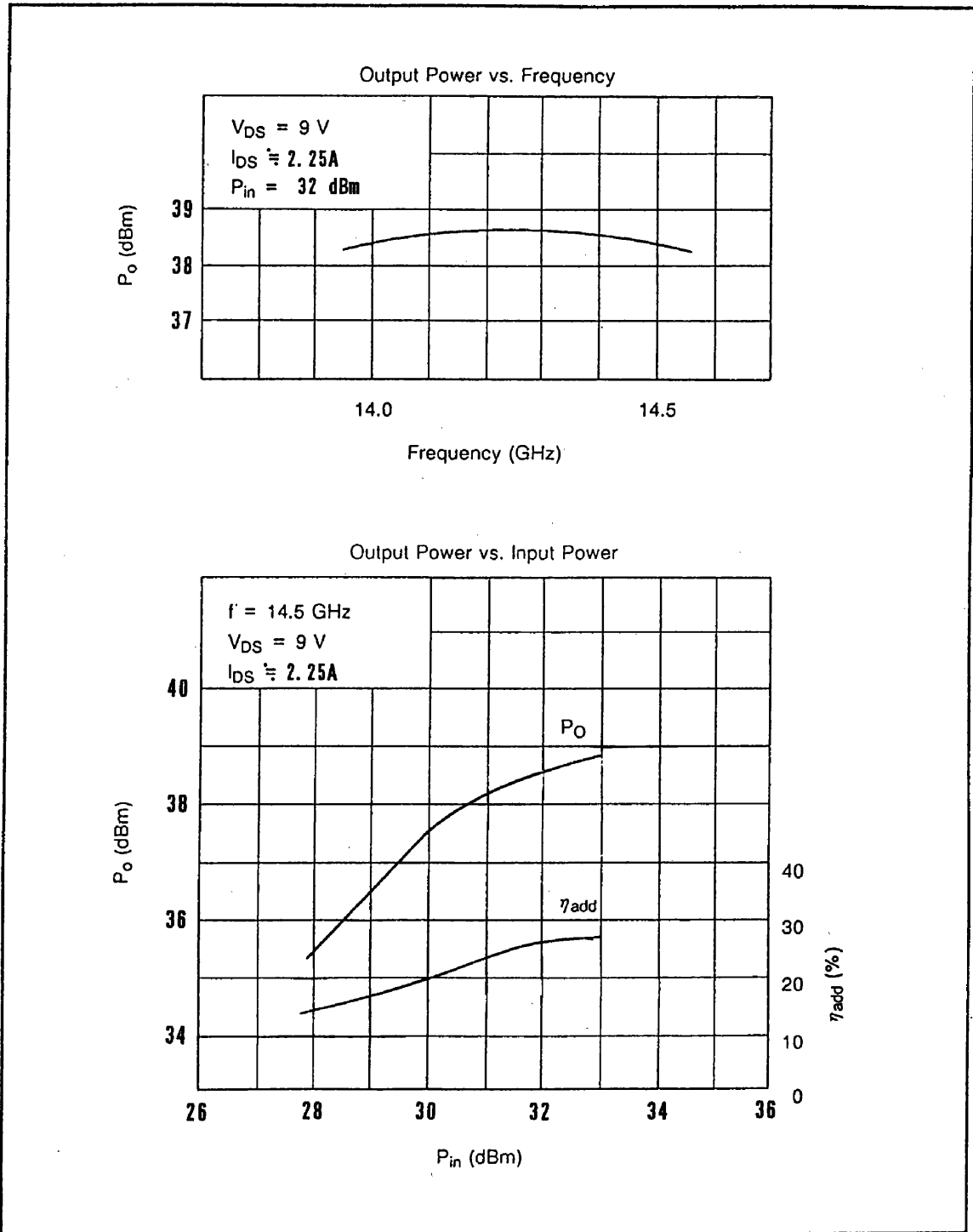
PACKAGE OUTLINE (2-9D1B)



HANDLING PRECAUTIONS FOR PACKAGED TYPE

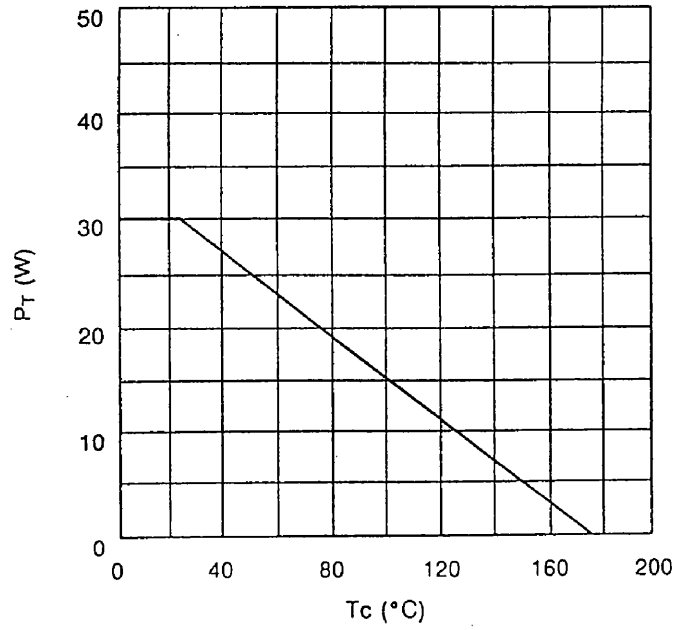
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCES



TIM1414-7

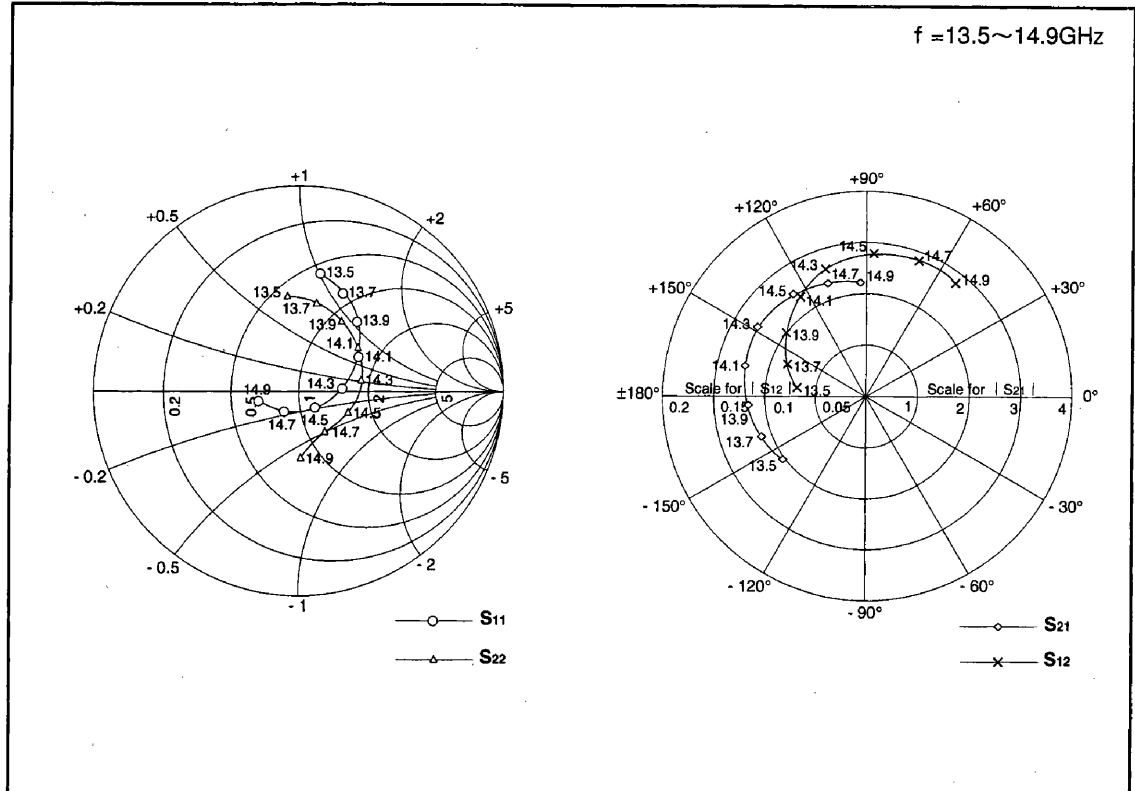
POWER DISSIPATION VS. CASE TEMPERATURE



TIM1414-7

TIM1414-7 S-PARAMETERS (MAGN.and ANGLES)

$V_{DS} = 9V, I_{DS} = 2.25A$



| FREQUENCY (GHz) | S ₁₁ | | S ₂₁ | | S ₁₂ | | S ₂₂ | |
|--------------------|-----------------|------|-----------------|------|-----------------|-----|-----------------|-----|
| | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 13.5 | 0.58 | 80 | 2.04 | -143 | 0.068 | 173 | 0.47 | 97 |
| 13.7 | 0.52 | 66 | 2.20 | -159 | 0.083 | 158 | 0.44 | 79 |
| 13.9 | 0.44 | 50 | 2.32 | -176 | 0.100 | 142 | 0.40 | 59 |
| 14.1 | 0.33 | 30 | 2.45 | 166 | 0.116 | 124 | 0.36 | 37 |
| 14.3 | 0.21 | 4 | 2.53 | 148 | 0.130 | 108 | 0.31 | 11 |
| 14.5 | 0.11 | -45 | 2.45 | 126 | 0.139 | 87 | 0.26 | -22 |
| 14.7 | 0.12 | -127 | 2.32 | 109 | 0.141 | 69 | 0.23 | -56 |
| 14.9 | 0.20 | -167 | 2.22 | 93 | 0.140 | 52 | 0.32 | -88 |