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

### Features

- High power
  - $P_{1dB}$ = 36.0 dBm at 6.4 GHz to 7.2 GHz
- High gain
  - $G_{1dB}$ = 8.5 dB at 6.4 GHz to 7.2 GHz
- Broad band internally matched
- Hermetically sealed package

### RF Performance Specifications ($T_a$ = 25° C)

| Characteristics | Symbol | Condition | Unit | Min. | Typ. | Max |
|---|---|---|---|---|---|---|
| Output Power at 1dB Compression Point | $P_{1dB}$ | $V_{DS}$ = 10V<br>f = 6.4 ~ 7.2 GHz | dBm | 35.0 | 36.0 | – |
| Power Gain at 1dB Compression Point | $G_{1dB}$ | | dB | 7.0 | 8.0 | – |
| Drain Current | $I_{DS}$ | | A | – | 1.1 | 1.5 |
| Power Added Efficiency | $\eta_{add}$ | | % | – | 30 | – |
| Channel-Temperature Rise | $\Delta T_{ch}$ | $V_{DS} x I_{DS} x R_{th}$(c-c) | °C | – | – | 80 |

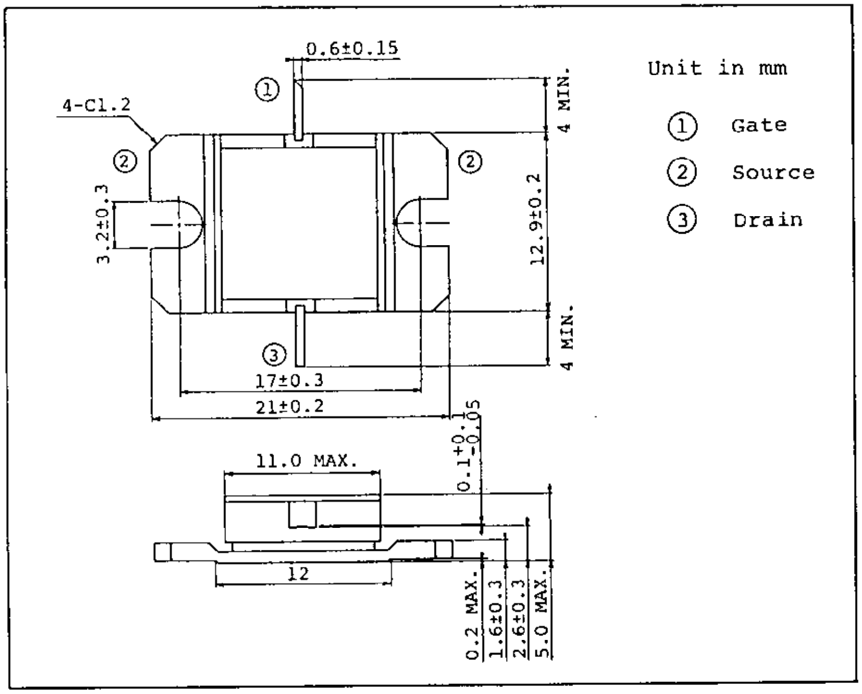
### Electrical Characteristics ($T_a$ = 25° C)

| Characteristic | Symbol | Condition | Unit | Min. | Typ. | Max |
|---|---|---|---|---|---|---|
| Trans-conductance | gm | $V_{DS}$ = 3V<br>$I_{DS}$ = 1.5A | mS | – | 900 | – |
| Pinch-off Voltage | $V_{GSoff}$ | $V_{DS}$ = 3V<br>$I_{DS}$ = 20mA | V | -2 | -3.5 | -5 |
| Saturated Drain Current | $I_{DSS}$ | $V_{DS}$ = 3V<br>$V_{GS}$ = 0V | A | – | 2.9 | 3.8 |
| Gate to Source Breakdown Voltage | $V_{GSO}$ | $I_{GS}$ = -60 μA | V | -5 | – | – |
| Thermal Resistance | $R_{th\ (c-c)}$ | Channel to case | °C/W | – | 4.0 | 6.0 |

## Absolute Maximum Ratings ($T_a$ = 25° C)

| Characteristic | Symbol | Unit | Rating |
|---|---|---|---|
| Drain Source Voltage | $V_{DS}$ | V | 15 |
| Gate Source Voltage | $V_{GS}$ | V | -5 |
| Drain Current | $I_D$ | A | 4 |
| Total Power Dissipation (Tc = 25°C) | $P_T$ | W | 20 |
| Channel Temperature | $T_{ch}$ | ˚C | 175 |
| Storage Temperature | $T_{stg}$ | ˚C | -65~175 |

## Package Outline (2-11D1B)

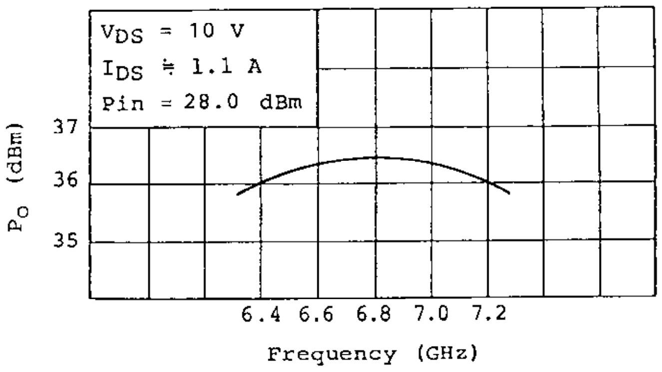


## Handling Precautions for Packaged Type

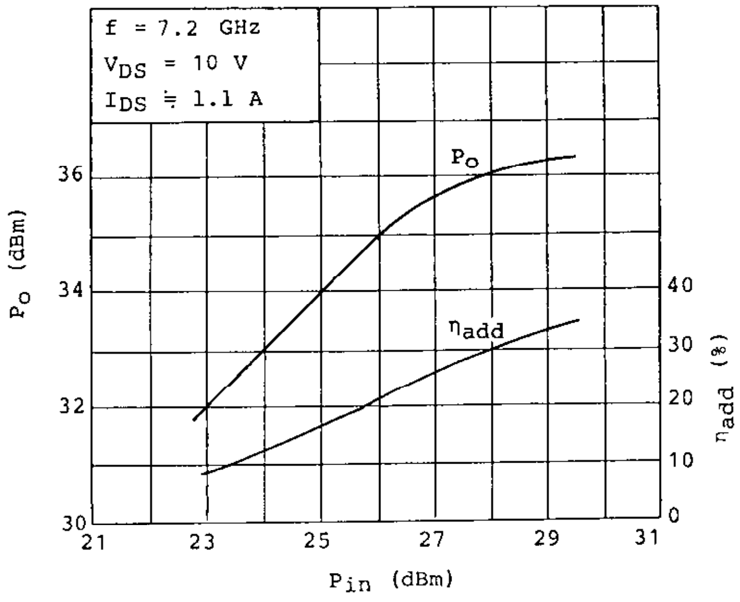
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

## RF Performances

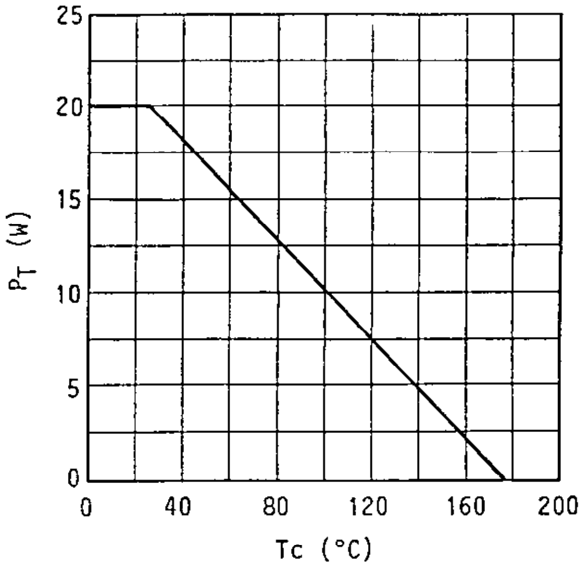
Output Power vs. Frequency



Output Power vs. Input Power

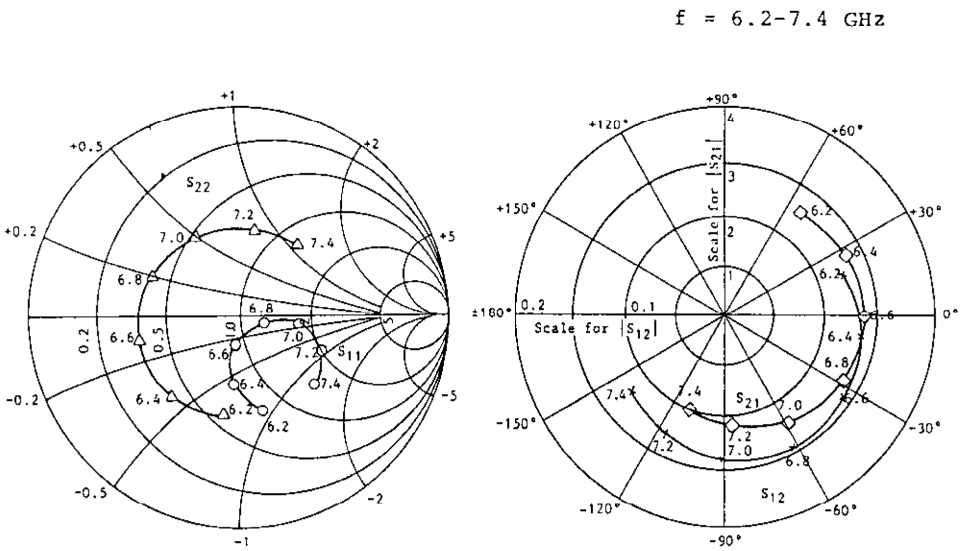


## Power Dissipation vs. Case Temperature



## TIM6472-4 S-Parameters
## (MAGN. and ANGLES)

$V_{DS}$ = 10 V, $I_{DS}$ = 1.0 A



| FREQUENCY (GHz) | $S_{11}$ | | $S_{12}$ | | $S_{21}$ | | $S_{22}$ | |
|---|---|---|---|---|---|---|---|---|
| 6.2 | 0.46 | -78 | 0.125 | 20 | 2.62 | 55 | 0.49 | -102 |
| 6.4 | 0.32 | -97 | 0.137 | -8 | 2.71 | 28 | 0.50 | -134 |
| 6.6 | 0.15 | -102 | 0.145 | -35 | 2.75 | 0 | 0.50 | -166 |
| 6.8 | 0.11 | -16 | 0.148 | -63 | 2.70 | -29 | 0.46 | 157 |
| 7.0 | 0.28 | -9 | 0.145 | -92 | 2.51 | -60 | 0.43 | 118 |
| 7.2 | 0.41 | -23 | 0.135 | -118 | 2.26 | -86 | 0.42 | 80 |
| 7.4 | 0.47 | -43 | 0.124 | -141 | 2.04 | -111 | 0.43 | 51 |