

TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM5964-8LC

FEATURES:

■ LOW INTERMODULATION DISTORTION

IM₃ = -45 dBc at P_o = 28 dBm,
Single Carrier Level

■ HIGH POWER

P_{1dB} = 39 dBm at 5.9 GHz to 6.4 GHz

■ HIGH GAIN

G_{1dB} = 9.0 dB at 5.9 GHz to 6.4 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 1 dB Compression Point | P _{1dB} | V _{DS} = 10V f = 5.9~6.4GHz | dBm | 38.0 | 39.0 | - |
| Power Gain at 1 dB Compression Point | G _{1dB} | | dB | 8.0 | 9.0 | - |
| Drain Current | I _{DS1} | | A | - | 2.2 | 2.8 |
| Gain Flatness | ΔG | | dB | - | - | ±0.6 |
| Power Added Efficiency | η _{add} | | % | - | 32 | - |
| 3rd Order Intermodulation Distortion | IM ₃ | Note 1 | dBc | -42 | -45 | - |
| Drain Current | I _{DS2} | | A | - | 2.2 | 2.8 |
| Channel Temperature Rise | ΔT _{ch} | V _{DS} × I _{DS} × R _{th(c-c)} | °C | - | - | 80 |

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

| CHARACTERISTICS | SYMBOL | CONDITION | UNIT | MIN. | TYP. | MAX. |
|-------------------------------------|----------------------|--|------|------|------|------|
| Trans- conductance | g _m | V _{DS} = 3V I _{DS} = 3.0A | mS | - | 1800 | - |
| Pinch-off Voltage | V _{GSoff} | V _{DS} = 3V I _{DS} = 40mA | V | -2 | -3.5 | -5.0 |
| Saturated Drain Current | I _{DSS} | V _{DS} = 3V V _{GS} = 0V | A | - | 5.8 | 7.5 |
| Gate-Source Breakdown Voltage | V _{GSO} | I _{GS} = -120 μA | V | -5 | - | - |
| Thermal Resistance | R _{th(c-c)} | Channel to Case | °C/W | - | 2.3 | 3.5 |

Note 1: 2 tone Test P_{out} = 28 dBm Single Carrier Level.

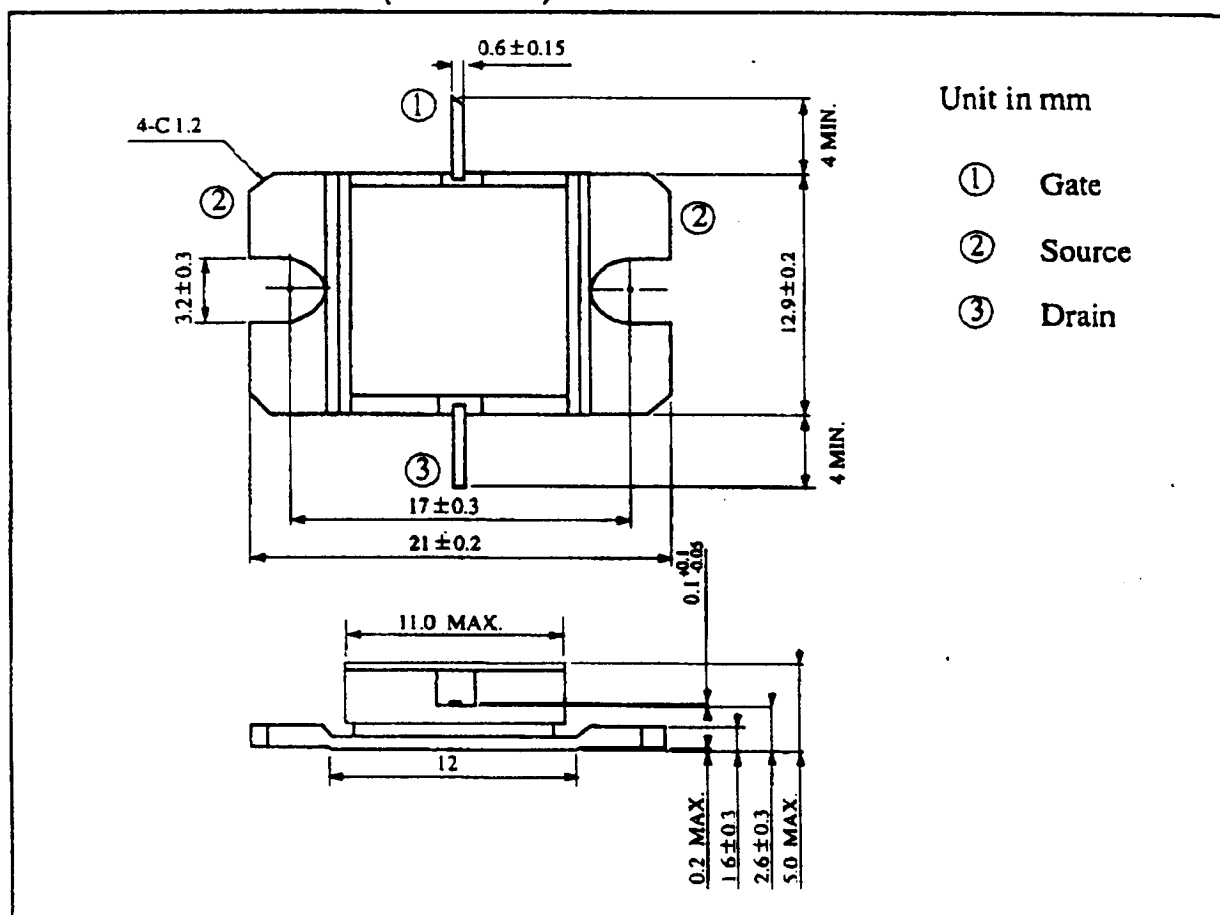
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ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

| CHARACTERISTICS | SYMBOL | UNIT | RATING |
|---|-----------|------------------|---------|
| Drain-Source Voltage | V_{DS} | V | 15 |
| Gate-Source Voltage | V_{GS} | V | -5 |
| Drain Current | I_{DS} | A | 8 |
| Total Power Dissipation ($T_c=25^\circ\text{C}$) | P_T | W | 37.5 |
| Channel Temperature | T_{ch} | $^\circ\text{C}$ | 175 |
| Storage Temperature | T_{stg} | $^\circ\text{C}$ | -65~175 |

PACKAGE OUTLINE (2-11D1B)

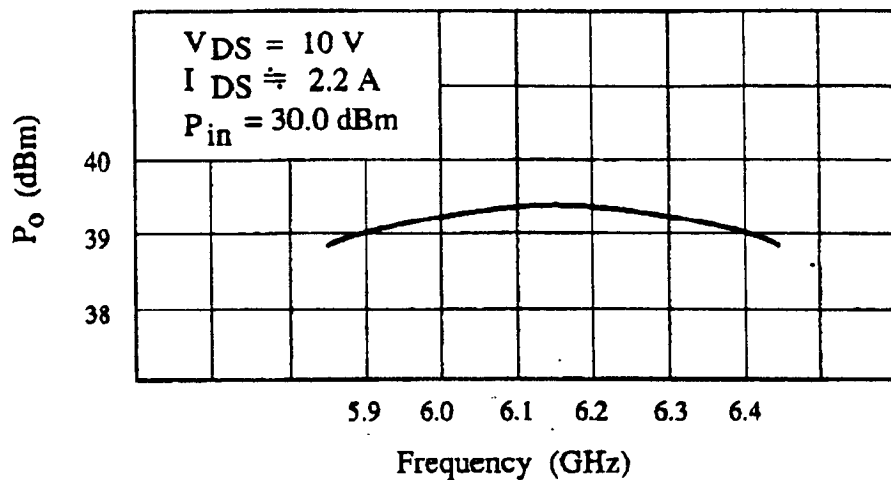


HANDLING PRECAUTIONS FOR PACKAGED TYPE

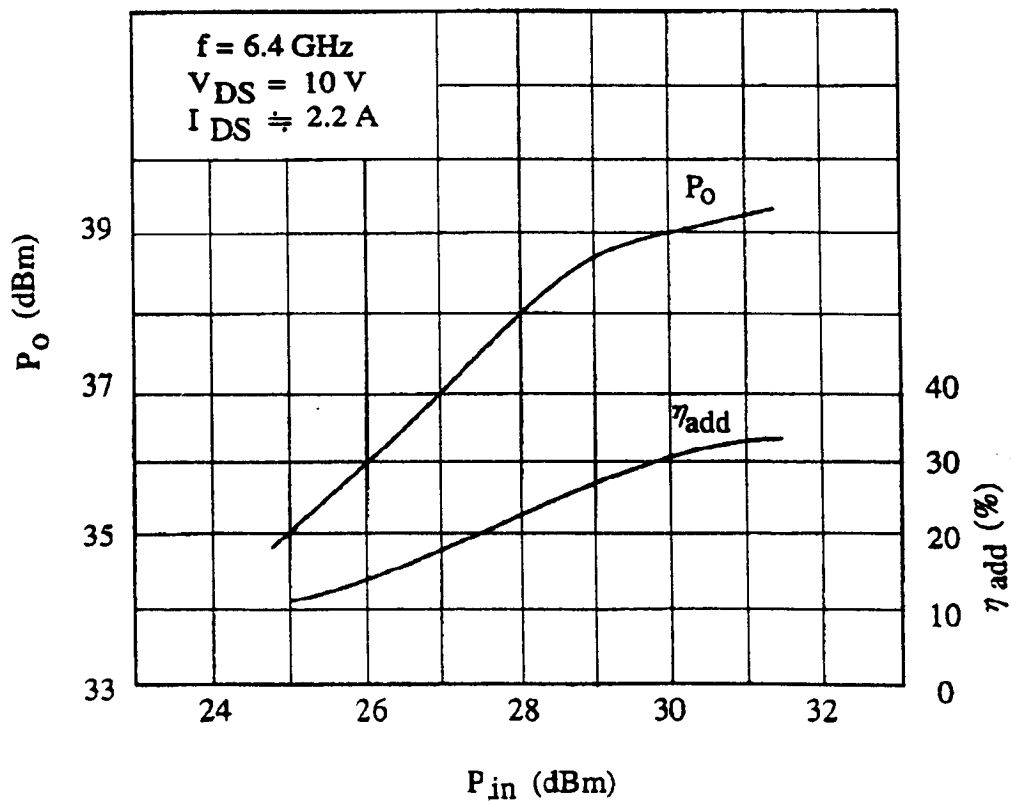
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C .

RF PERFORMANCES

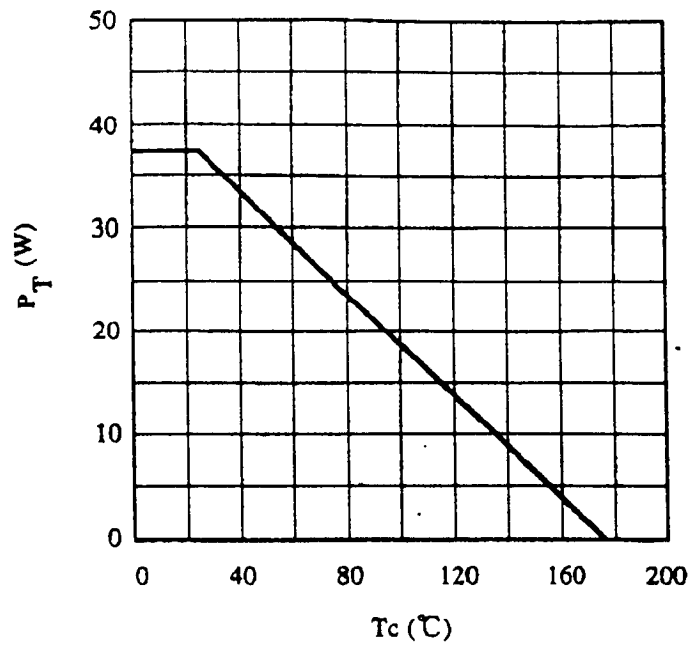
Output Power vs. Frequency



Output Power vs. Input Power



POWER DISSIPATION VS. CASE TEMPERATURE



IM₃ VS. OUTPUT POWER CHARACTERISTICS

