

TPM1919-40

FEATURES :

■ HIGH POWER

$P_{1dB} = 46.0 \text{ dBm}$ at 1.9 GHz

■ HIGH GAIN

$G_{1dB} = 13 \text{ dB}$ at 1.9 GHz

■ PARTIALLY MATCHED TYPE

■ 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} | $V_{DS} = 10 \text{ V}$ $f = 1.9 \text{ GHz}$ | dBm | 45.0 | 46.0 | — |
| Power Gain at 1dB Compression Point | G_{1dB} | | dB | 12.0 | 13.0 | — |
| Drain Current | I_{DS} | | A | — | 8.0 | 9.0 |
| Power Added Efficiency | η_{add} | | % | — | 47 | — |
| Channel-Temperature Rise | ΔT_{ch} | | $V_{DS} \times I_{DS} \times R_{th(c-c)}$ | $^\circ\text{C}$ | — | — |

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

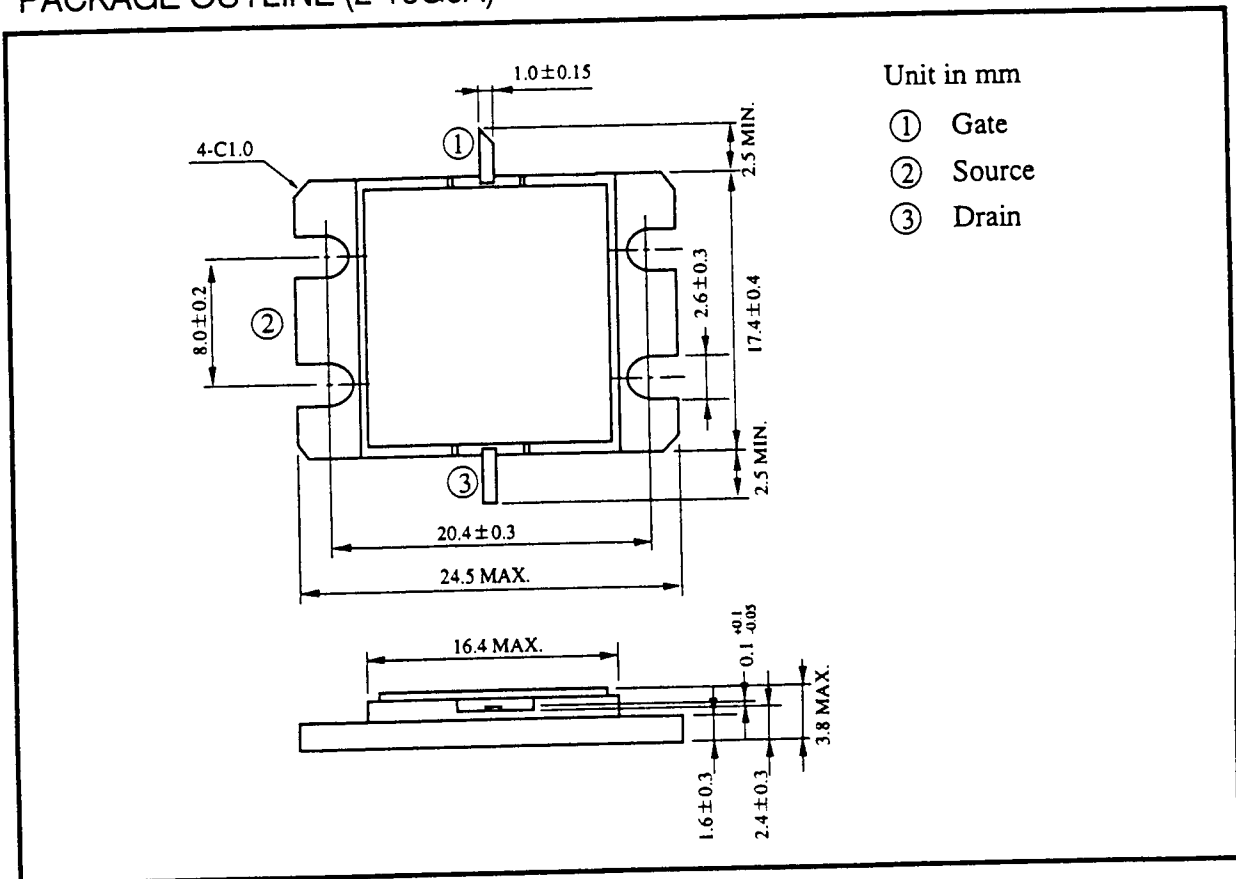
| CHARACTERISTICS | SYMBOL | CONDITION | UNIT | MIN. | TYP. | MAX. |
|-------------------------------|---------------|---|--------------------|------|------|------|
| Transconductance | g_m | $V_{DS} = 3 \text{ V}$ $I_{DS} = 8.0 \text{ A}$ | mS | — | 8000 | — |
| Pinch-off Voltage | V_{GSoff} | $V_{DS} = 3 \text{ V}$ $I_{DS} = 170 \text{ mA}$ | V | -1.0 | -2.5 | -4.0 |
| Saturated Drain Current | I_{DSS} | $V_{DS} = 3 \text{ V}$ $V_{GS} = 0 \text{ V}$ | A | — | 20 | 26 |
| Gate-Source Breakdown Voltage | V_{GSO} | $I_{GS} = -500 \mu\text{A}$ | V | -5 | — | — |
| Thermal Resistance | $R_{th(c-c)}$ | Channel to Case | $^\circ\text{C/W}$ | — | 0.8 | 1.2 |

* RECOMMENDED GATE RESISTANCE (R_g) : $R_g = 30 \Omega$ (MAX.)

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 | 26 |
| Total Power Dissipation (T _C = 25°C) | P _T | W | 100 |
| Channel Temperature | T _{ch} | °C | 175 |
| Storage Temperature | T _{stg} | °C | -65~175 |

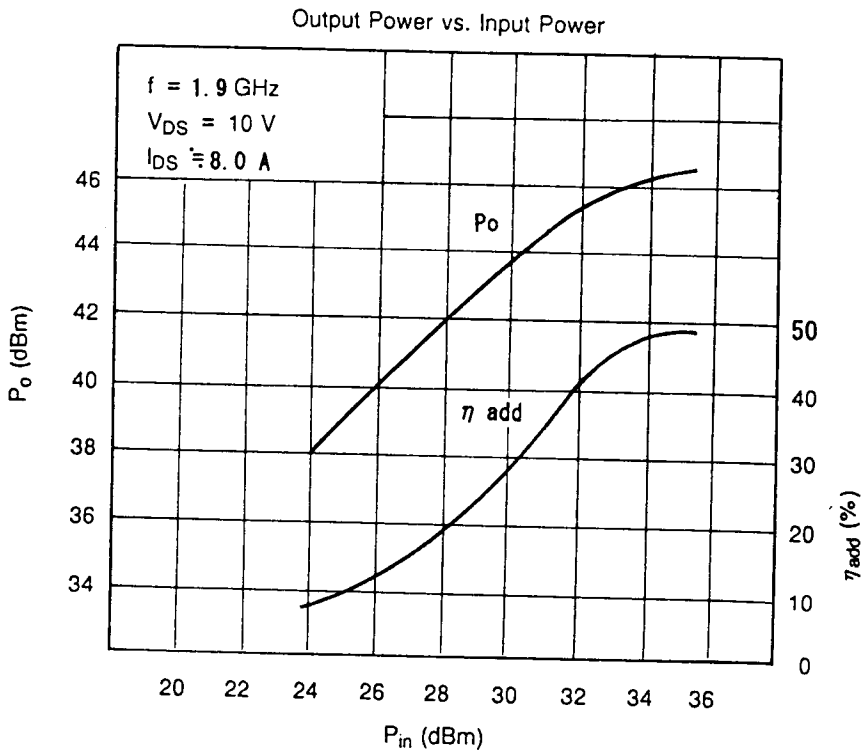
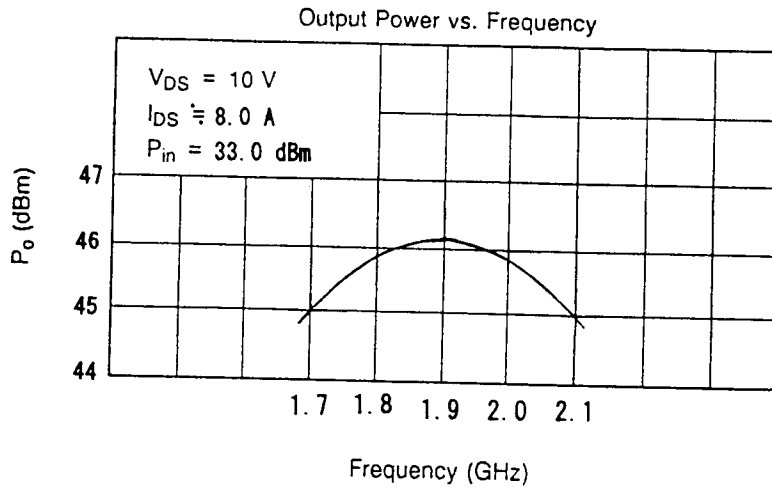
PACKAGE OUTLINE (2-16G6A)



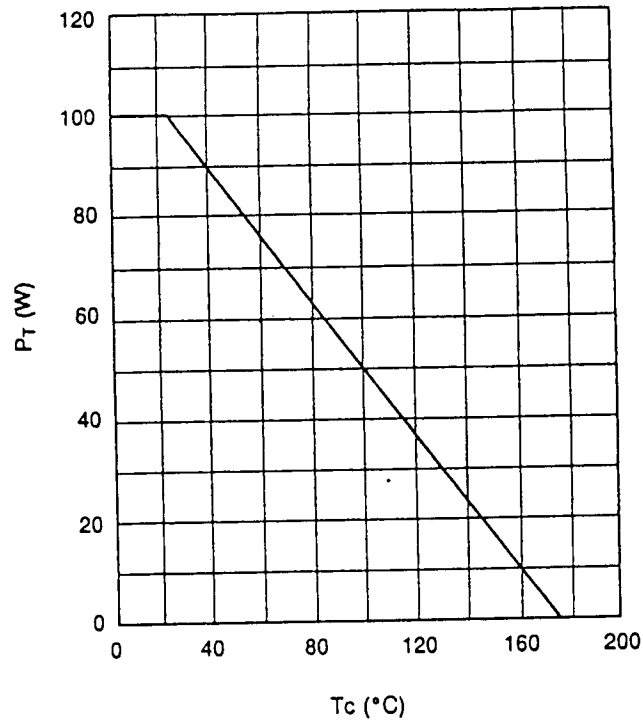
HANDLING PRECAUTIONS FOR PACKAGED TYPE

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

RF PERFORMANCES



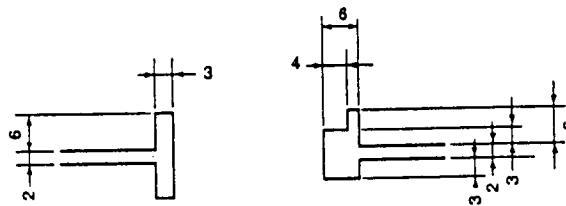
POWER DISSIPATION VS. CASE TEMPERATURE



DRAWING OF MATCHING NETWORK

INPUT

OUTPUT



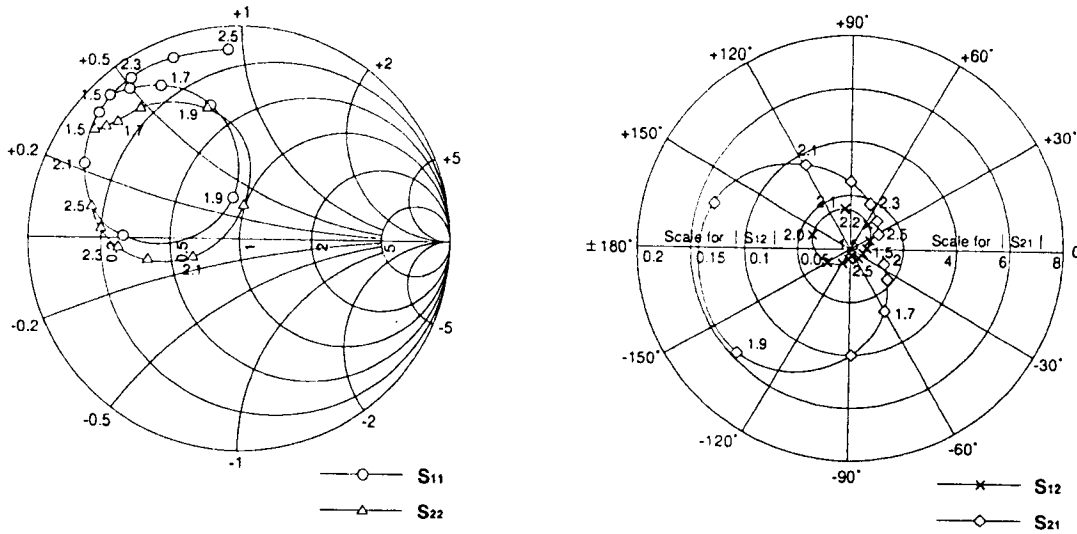
Unit in mm

Substrate Material : Teflon ($\epsilon r = 2.8$)
 Thickness : 0.76mm

**TPM1919-40 S-PARAMETERS
(MAGN.and ANGLES)**

$V_{DS} = 10V, I_{DS} = 8A$

$f = 1.5 \sim 2.5GHz$



| FREQUENCY (MHz) | S_{11} | | S_{21} | | S_{12} | | S_{22} | |
|--------------------|----------|-----|----------|------|----------|------|----------|------|
| | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 1500 | 0.913 | 133 | 1.392 | -23 | 0.007 | -75 | 0.856 | 144 |
| 1600 | 0.881 | 127 | 1.848 | -39 | 0.010 | -95 | 0.827 | 141 |
| 1700 | 0.810 | 118 | 2.614 | -60 | 0.015 | -118 | 0.800 | 137 |
| 1800 | 0.641 | 103 | 3.966 | -89 | 0.024 | -150 | 0.771 | 128 |
| 1900 | 0.201 | 100 | 5.791 | -137 | 0.038 | 160 | 0.631 | 105 |
| 2000 | 0.551 | 179 | 5.406 | 162 | 0.039 | 98 | 0.172 | 83 |
| 2100 | 0.820 | 155 | 3.628 | 119 | 0.028 | 54 | 0.235 | -160 |
| 2200 | 0.891 | 139 | 2.483 | 90 | 0.020 | 24 | 0.445 | -167 |
| 2300 | 0.906 | 125 | 1.817 | 67 | 0.016 | 2 | 0.574 | -176 |
| 2400 | 0.906 | 111 | 1.421 | 47 | 0.013 | -18 | 0.657 | 176 |
| 2500 | 0.895 | 94 | 1.179 | 28 | 0.012 | -36 | 0.721 | 168 |