

HYBRID V.H.F./U.H.F. WIDE-BAND AMPLIFIER

Three-stage wide-band amplifier in the hybrid technique, designed for use in MATV systems, and as general purpose amplifier for v.h.f. and u.h.f. applications requiring a high output level. The OM337A needs an external collector-coil and blocking capacitor, whereas, the OM337 has these components built-in.

QUICK REFERENCE DATA

| | | |
|--|----------------------|--------------------------|
| Frequency range | f | 40 to 860 MHz |
| Source and load (characteristic) impedance | $R_s = R_l = Z_o =$ | 75 Ω |
| Transducer gain | $G_{tr} = s_f ^2$ | typ. 26 dB |
| Flatness of frequency response | $\pm \Delta s_f ^2$ | typ. 1 dB |
| Output voltage at -60 dB intermodulation distortion (DIN45004, 3-tone); $f = 470$ MHz | $V_{o(rms)}$ | typ. 112 dB μ V |
| Noise figure | F | typ. 9,8 dB |
| D.C. supply voltage | V_B | = 24 V \pm 10% |
| Operating mounting-base temperature | T_{mb} | -30 to +100 $^{\circ}$ C |

ENCAPSULATION 9-pin, in-line, resin-coated body on a right-angled metal mounting tab, see **MECHANICAL DATA**

OM337 OM337A

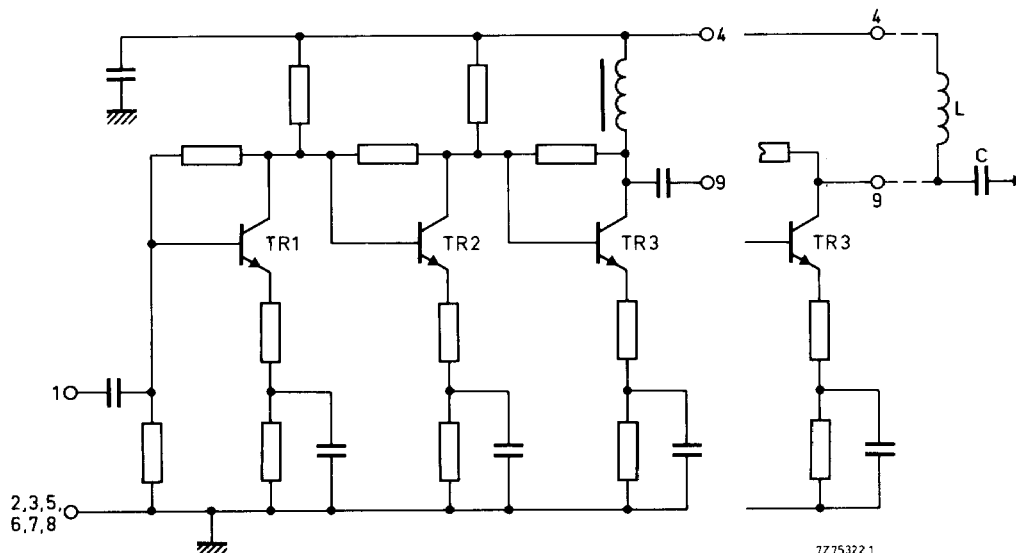


Fig. 1 Circuit diagram.

RATINGS Limiting values in accordance with the Absolute Maximum System (IEC134)

| | | |
|--------------------------------------|--------------------|----------------|
| Operating mounting-base temperature | T_{mb} | -30 to +100 °C |
| Storage temperature | T_{stg} | -40 to +125 °C |
| D.C. supply voltage | V_B | max. 28 V |
| Peak voltages on pin 1 | V_{1M} | max. 28 V |
| | $-V_{1M}$ | max. 24 V |
| Peak voltages on pin 9 | V_{9M} | max. 28 V |
| | $-V_{9M}$ | max. 4 V |
| Peak incident powers on pins 1 and 9 | P_{11M}, P_{19M} | max. 100 mW |

CHARACTERISTICS

Measuring conditions

| | | |
|--|---------------|-----------------|
| V.H.F.—U.H.F. test socket | catalogue no. | 3504 110 01830* |
| Mounting base temperature | T_{mb} | = 25 °C |
| D.C. supply voltage | V_B | = 24 V |
| Source impedance and load impedance | R_s, R_l | = 75 Ω |
| Characteristic impedance of h.f. connections | Z_o | = 75 Ω |
| Frequency range | f | = 40 to 860 MHz |

Performance

| | | |
|--------------------------------|----------------------|------------------------------|
| Supply current | I_B | 110 to 120 mA typ. 115 mA |
| Transducer gain | $G_{tr} = s_f ^2$ | 23 to 29 dB typ. 26 dB |
| Flatness of frequency response | $\pm \Delta s_f ^2$ | typ. 1 dB |
| Individual maximum v.s.w.r. | VSWR _(i) | typ. 2,3 ** |
| | VSWR _(o) | typ. 1,8 ** |
| Back attenuation | $ s_r ^2$ | typ. 44 dB |
| | $ s_r ^2$ | typ. 41 dB |
| | $ s_r ^2$ | typ. 43 dB |

* This socket can be made available for customer reference purposes.

** Highest value, for a sample, occurring in the frequency range.

Output voltage

• at -60 dB intermodulation distortion

(DIN45004, par. 6.3: 3-tone)

$f = 40\text{--}230$ MHz

$f = 470$ MHz

$f = 860$ MHz

| | | |
|--------------|------|----------------|
| $V_{o(rms)}$ | > | 113 dB μ V |
| | typ. | 114 dB μ V |
| $V_{o(rms)}$ | typ. | 112 dB μ V |
| $V_{o(rms)}$ | typ. | 110 dB μ V |

Noise figure

channel 2

channel 65

| | | |
|---|------|--------|
| F | typ. | 7 dB |
| F | typ. | 9,8 dB |

| | | |
|---------------|----------------|----------------|
| s-parameters: | $s_f = s_{21}$ | $s_i = s_{11}$ |
| | $s_r = s_{12}$ | $s_o = s_{22}$ |

OPERATING CONDITIONS

Mounting-base temperature range

T_{mb} -30 to +100 °C

D.C. supply voltage

V_B = 24 V \pm 10%

Frequency range

f 40 to 860 MHz

Source impedance and load impedance

R_s, R_l = 75 Ω

THERMAL DATA

- The maximum permissible temperature at the mounting base is 100 °C.
- When the mounting tab is screwed to a double-sided printed-circuit board with dimensions 37 mm x 51 mm, its temperature will be 57 °C above the temperature of the surrounding free air.
- When a heatsink is fixed to the mounting tab and the pins are soldered into a double-sided printed-circuit board with dimensions 37 mm x 51 mm, the tab will reach the temperatures stated in the following table.

Notes:

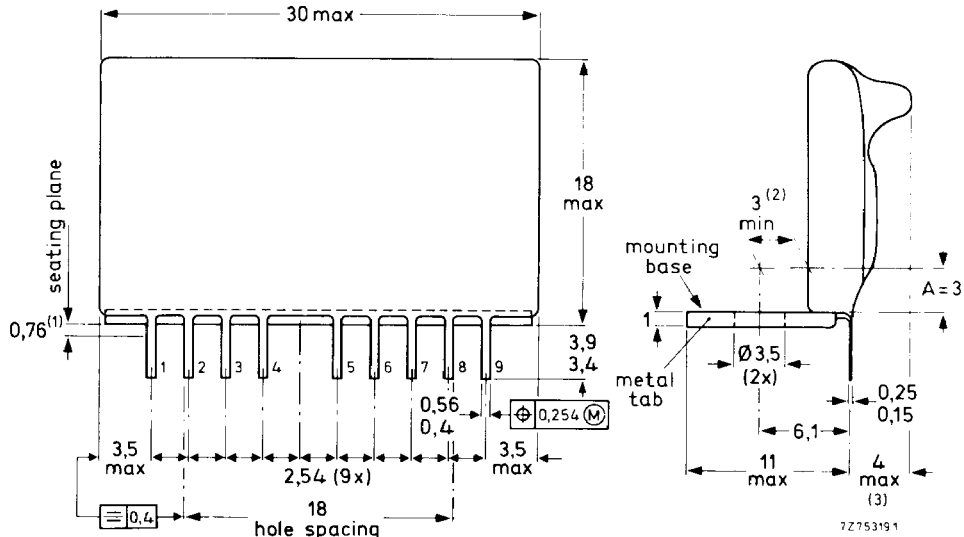
- When the device is fixed only to a heatsink, not to a printed-circuit board, the values of the second column of the table should be increased by 2 °C and those of the third column decreased by 2 °C.
- The user is free to realize proper cooling by using differently shaped sinks, or, preferably, by fixing the tab to any convenient part of the equipment (e.g. a wall of the metal cabinet).

| heatsink data thickness 1 mm | $T_{mb} - T_{amb}$ °C | T_{amb} max °C |
|--|--------------------------|---------------------|
| Bright aluminium heatsink L-shaped bar; length 100 mm, height 65 mm | 27,5 | 72,5 |
| Blackened aluminium heatsink L-shaped bar; length 50 mm, height 70 mm | 26,5 | 73,5 |

MECHANICAL DATA

Dimensions in mm

The amplifier is resin coated and has a metal mounting tab at a right angle to the encapsulated part.



- (1) Tolerance applies within this zone.
- (2) Distance applies within zone A.
- (3) For the OM337A: 3 mm maximum.

Fig. 2 Encapsulation.

Terminal connections

- 1 = Input
- 2, 3, 5, 6, 7, 8 = Common, connected to mounting tab
- 4 = Supply (+)
- 9 = Output

Soldering recommendations

Hand soldering

Maximum contact time for a soldering-iron temperature of 260 °C up to the seating plane is 5 s.

Dip or wave soldering

260 °C is the maximum permissible temperature of the solder; it must not be in contact with the joint for more than 5 seconds. The total contact time of successive solder waves must not exceed 5 seconds. The device may be mounted against the printed-circuit board, but the temperature of the device must not exceed 125 °C. If the printed-circuit board has been pre-heated, forced cooling may be necessary immediately after soldering to keep the temperature below the allowable limit.

Mounting recommendations

The module should preferably be mounted on a double-sided printed-circuit board, see the following example. An example is also given of heatsink mounting.

Input and output should be connected to 75 Ω tracks.

The connections to the common pins should be as close to the seating plane as possible.

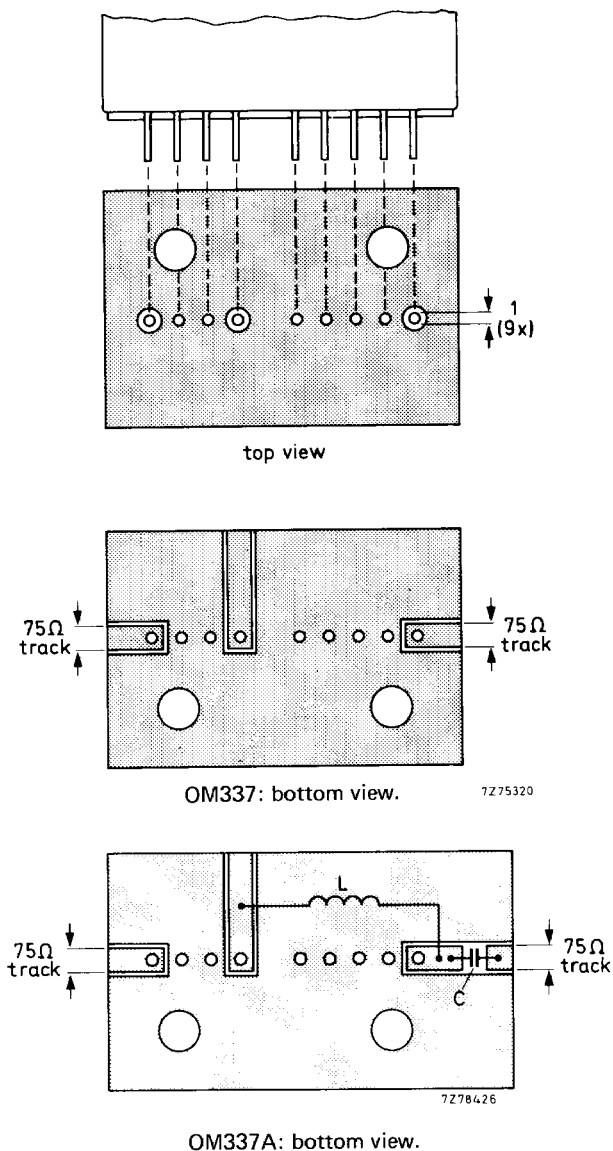


Fig. 3 Printed-circuit board holes and tracks for the OM337 and OM337A.

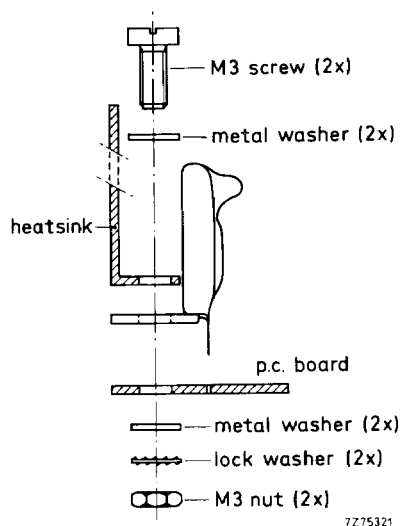


Fig. 4 Example of heatsink mounting.

$L > 5 \mu\text{H}$; e.g. catalogue no. 3122 108 20150 or 27 turns enamelled Cu wire (0,3 mm) wound on a ferrite core with a diameter of 1,6 mm.
 $C > 220 \text{ pF}$ ceramic capacitor.

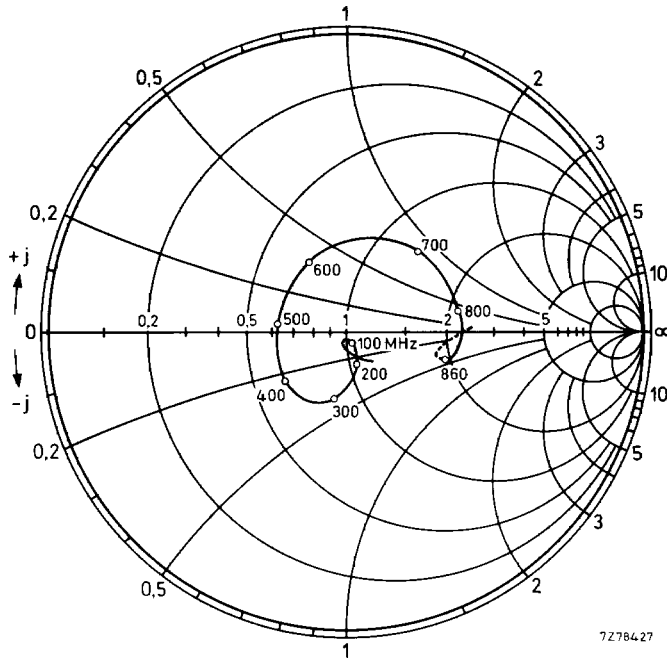


Fig. 5 Input impedance derived from input reflection coefficient s_i , co-ordinates in ohm x 75; typical values.

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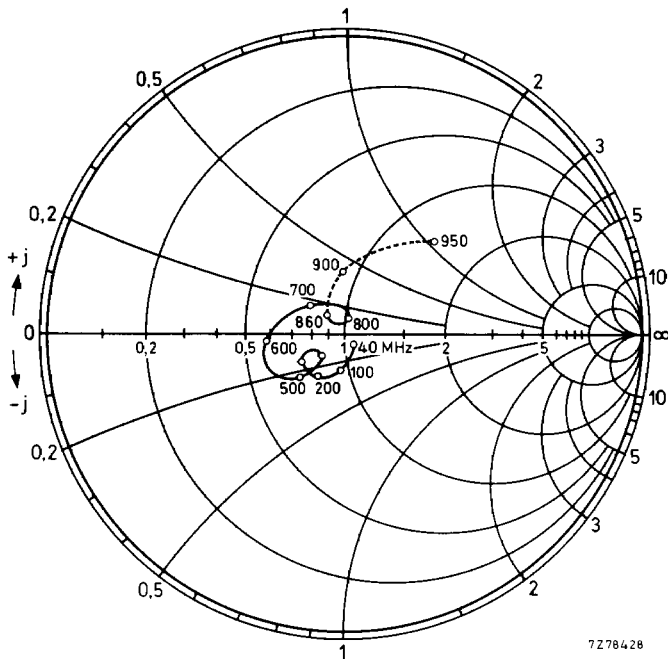


Fig. 6 Output impedance derived from output reflection coefficient s_o , co-ordinates in ohm x 75; typical values.

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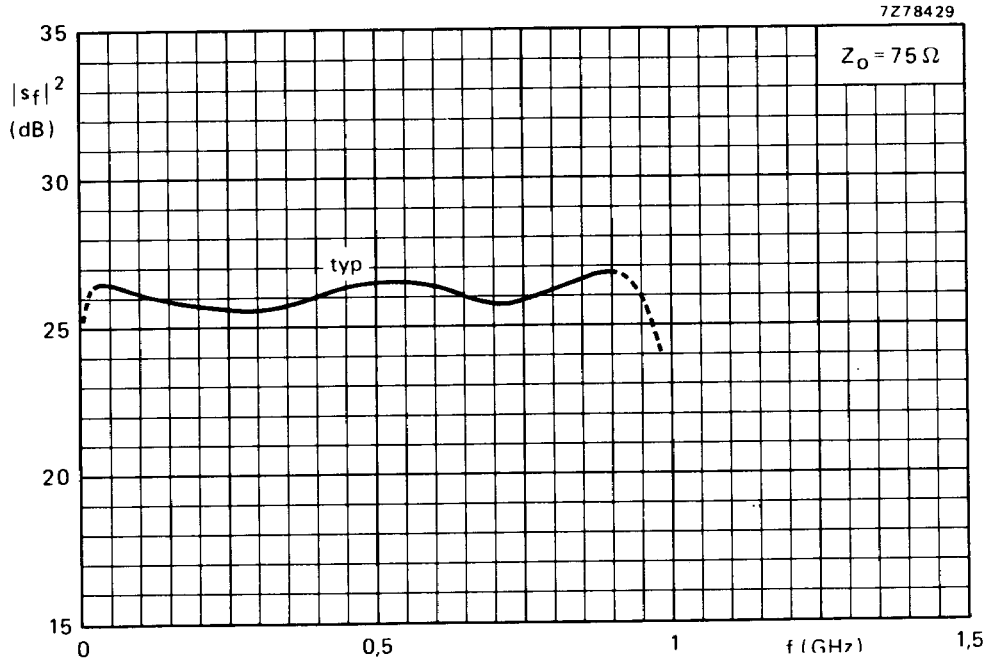


Fig. 7 Transducer gain as a function of frequency.