# INTEGRATED CIRCUIT
# GENERAL PURPOSE AMPLIFIER

# TAA293

The TAA293 is a general purpose medium frequency integrated circuit amplifier. In order to ensure maximum flexibility a number of the internal elements are brought out to individual external connectors, thus enabling many different circuit configurations to be used.

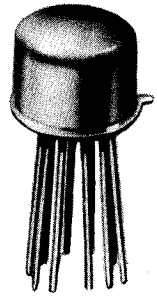
| QUICK REFERENCE DATA | | |
|---|---|---|
| Supply voltage (nominal) | +6.0 | V |
| Small signal current gain of first transistors (typ.) $-I_E = 1.0mA$, $V_{8-1} = 1.0V$ | 80 | |
| Transducer power gain (typ.) | 80 | dB |
| Noise figure (typ.) 30 to 15000Hz | 5.0 | dB |
| Frequency response to -3.0dB (typ.) | 600 | kHz |
| Operating ambient temperature range | 0 to +70 | °C |

OUTLINE AND DIMENSIONS

Similar to J.E.D.E.C. TO-74

B.S. 3934 SO-44A/SB10-1

For details see page 3



## RATINGS

Limiting values of operation according to the absolute maximum system.

### Electrical

#### Voltage

| | | |
|---|---|---|
| Pins 9-1, 8-1, 8-10, 9-3, 9-4, 8-4, 7-4, 6-4, 5-4 max. | 7.0 | V |
| Pins 1-10, 3-2 max. | 6.0 | V |

#### Current

| | | |
|---|---|---|
| Pin 4 max. | -40 | mA |
| Pin 5 max. | 40 | mA |
| Pin 1 max. | -20 | mA |
| Pin 8 max. | 20 | mA |
| Pin 3 max. | -10 | mA |
| Pins 10 and 2 max. | 10 | mA |

#### Power

| | | |
|---|---|---|
| $P_{tot}$ max. (see curve on page 5) up to $T_{amb} = 55^{o}C$ | 160 | mW |
| up to $T_{amb} = 70^{o}C$ | 100 | mW |

#### Temperature

| | | |
|---|---|---|
| $T_{stg}$ | -25 to +100 | $^{o}C$ |
| $T_{amb}$ max. operating | 70 | $^{o}C$ |

## ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{o}C$ unless otherwise stated)

| | Min. | Typ. | Max. | |
|---|---|---|---|---|
| Small signal current gain of first transistor $-I_E = 1.0mA$ | 30 | 80 | - | |
| Saturation voltage of last transistor at $I_{pin\ 5} = 24mA$ | - | - | 2.0 | V |
| Noise figure at $I_{pin\ 1} = 0.1mA$, $R_s = 2.0k\Omega$, B = 30 to 15 000Hz | - | 6.0 | 10 | dB |
| Transducer gain | - | 80 | - | dB |
| Output power at $d_{tot} = 10\%$ | 10 | - | - | mW |

NOTE

Transducer power gain $= \frac{\text{Output power to specified load}}{\text{Power available from source}} = 10\log\frac{P_{out}}{P_s}$ dB

Where $P_s = \frac{(e_s)^2}{4R_s}$ (i.e. the power available from voltage $e_s$ of source resistance $R_s$)

$P_{out}$ = Power to the specified load resistance $R_L$

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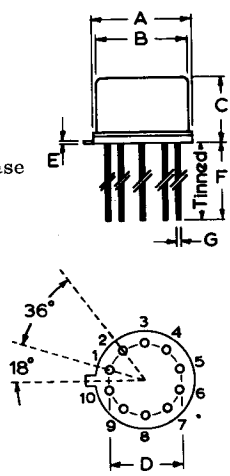
B.S. 3934 SO-44/SB10-1

Pins

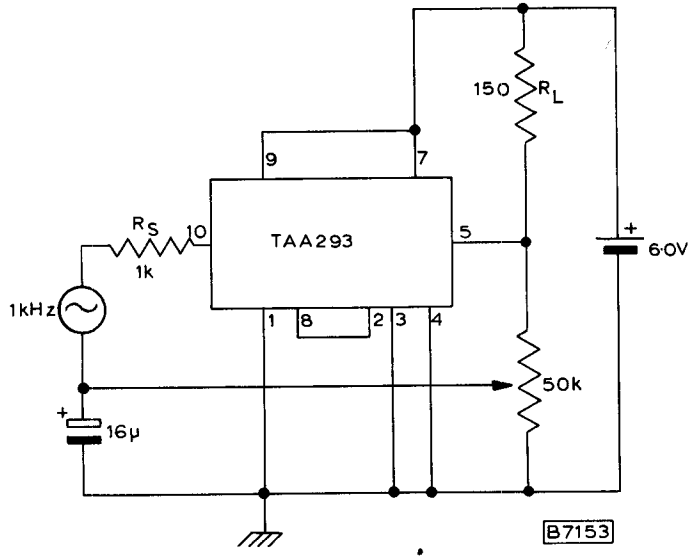
1. External
2. circuit
3. connections
4. Substrate and case
5. Output
6. Output collector load
7. Supply voltage
8. External circuit
9. connections
10. Input



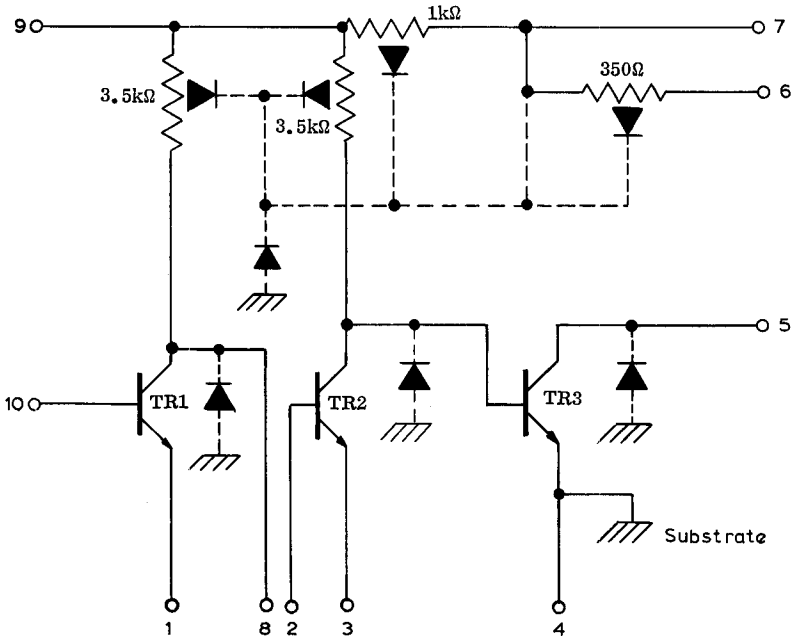

| | Millimetres | | |
|---|---|---|---|
| | Min. | Nom. | Max. |
| A | 8.64 | 8.90 | 9.40 |
| B | 7.75 | 8.15 | 8.51 |
| C | - | - | 5.33 |
| D | - | 5.08 | - |
| E | - | 0.40 | - |
| F | 12.7 | - | - ← |
| G | - | 0.43 | - |

10 pins on 360° spaced equally

TEST CIRCUIT



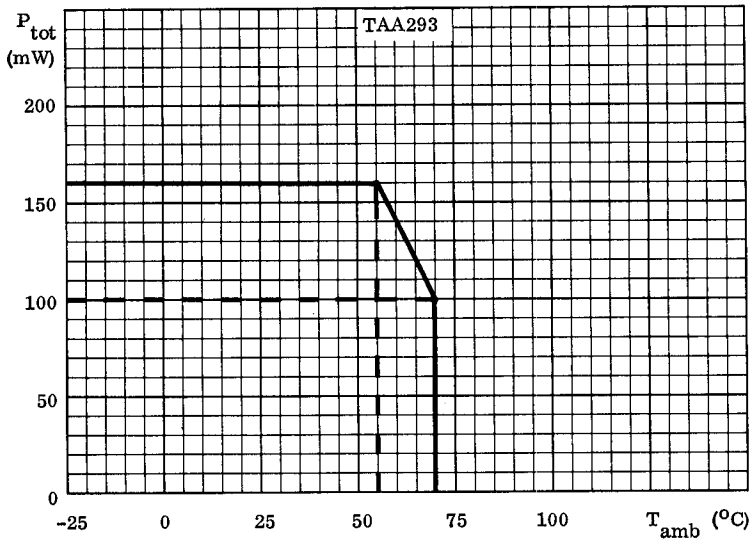
EQUIVALENT CIRCUIT




The diodes shown dotted represent the internal diode connections to the substrate, therefore, the circuit potentials should be arranged so that these diodes are always reverse biassed.

SOLDERING AND WIRING RECOMMENDATIONS

1. Devices may be soldered directly into a circuit with a soldering iron at a maximum iron temperature of 245°C for a time of up to 10 seconds at least 1.5mm from the seal. At an iron temperature of 245 to 400°C the maximum soldering time is 5 seconds at least 5mm from the seal.
2. These devices may be dip-soldered at a solder temperature of 245°C for a maximum soldering time of 5 seconds. The case temperature during dip-soldering must not at any time exceed the maximum storage temperature. These recommendations apply to a device mounted flush on a board having punched-through holes, or spaced at least 1.5mm above a board having plated-through holes.
3. Care should be taken not to bend the leads nearer than 1.5mm from the seal.
4. If devices are stored at temperatures above 100°C before incorporation into equipment, some deterioration of the external surface is likely to occur which may make soldering into the circuit difficult. Under these circumstances the leads should be retinned using a suitable activated flux.




TOTAL DISSIPATION PLOTTED AGAINST AMBIENT TEMPERATURE