

8W CAR RADIO AUDIO AMPLIFIER

NOT FOR NEW DESIGN

The TDA2002 is a class B audio power amplifier in Pentawatt® package designed for driving low impedance loads (down to 1.6Ω).

The device provides a high output current capability (up to 3.5A), very low harmonic and cross-over distortion.

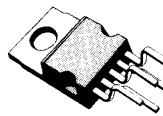
In addition, the device offers the following features:

- very low number of external components
- assembly ease, due to Pentawatt® power package with no electrical insulation requirement
- space and cost saving
- high reliability
- flexibility in use

Protection against:

- a) short circuit;
- b) thermal over range;
- c) fortuitous open ground;
- d) load dump voltage surge.

See TDA2003 for more complete information.

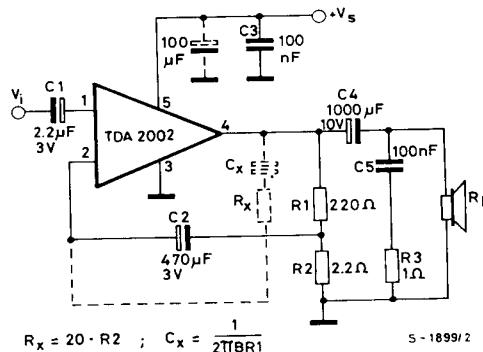


Pentawatt

ORDER CODE: TDA2002H (Hor. Pentawatt)
 TDA2002V (Ver. Pentawatt)

ABSOLUTE MAXIMUM RATINGS

| | | | |
|----------------|--|------------|------------------|
| V_s | Peak supply voltage (50 ms) | 40 | V |
| V_s | DC supply voltage | 28 | V |
| V_s | Operating supply voltage | 18 | V |
| I_o | Output peak current (repetitive) | 3.5 | A |
| I_o | Output peak current (non repetitive) | 4.5 | A |
| P_{tot} | Power dissipation at $T_{case} = 90^\circ\text{C}$ | 15 | W |
| T_{stg}, T_j | Storage and junction temperature | -40 to 150 | $^\circ\text{C}$ |

Fig. 1 - Application circuit


$$R_x = 20 \cdot R_2 ; \quad C_x = \frac{1}{2\pi R_1 R_2}$$

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ELECTRICAL CHARACTERISTICS ($V_s = 14.4V$, $T_{amb} = 25^\circ C$ unless otherwise specified)

| Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|-----------|-----------------|------|------|------|------|
|-----------|-----------------|------|------|------|------|

DC CHARACTERISTICS (Refer to DC test circuit)

| | | | | | | |
|-------|----------------------------------|--|-----|-----|-----|----|
| V_s | Supply voltage | | 8 | | 18 | V |
| V_o | Quiescent output voltage (pin 4) | | 6.1 | 6.9 | 7.7 | V |
| I_d | Quiescent drain current (pin 5) | | | 45 | 80 | mA |

AC CHARACTERISTICS (Refer to AC test circuit, $G_v = 40$ dB)

| | | | | | | |
|-------------|----------------------------|--|---|---|-----------------------|----------------------|
| P_o | Output power | $d = 10\%$ $V_s = 16V$ | $f = 1$ kHz $R_L = 4\Omega$ $R_L = 2\Omega$ $R_L = 4\Omega$ $R_L = 2\Omega$ | 4.8 7 | 5.2 8 6.5 10 | W W W W |
| V_i (rms) | Input saturation voltage | | | 300 | | mV |
| V_i | Input sensitivity | | $P_o = 0.5W$ $P_o = 0.5W$ $P_o = 5.2W$ $P_o = 8W$ | $f = 1$ kHz $R_L = 4\Omega$ $R_L = 2\Omega$ $R_L = 4\Omega$ $R_L = 2\Omega$ | 15 11 55 50 | mV mV mV mV |
| B | Frequency response (-3 dB) | $R_L = 4\Omega$ | $P_o = 1W$ | 40 to 15 000 | | |
| d | Distortion | | $f = 1$ kHz $P_o = 0.05$ to $3.5W$ $P_o = 0.05$ to $5W$ | | 0.2 0.2 | % % |
| R_i | Input resistance (pin 1) | $f = 1$ kHz | | 70 | 150 | k Ω |
| G_v | Voltage gain (open loop) | $R_L = 4\Omega$ | $f = 1$ kHz | | 80 | dB |
| G_v | Voltage gain (closed loop) | $R_L = 4\Omega$ | $f = 1$ kHz | 39.3 | 40 | 40.5 |
| e_N | Input noise voltage (*) | | | | 4 | μV |
| i_N | Input noise current (*) | | | | 60 | pA |
| η | Efficiency | | $f = 1$ kHz $P_o = 5.2W$ $P_o = 8W$ | | 68 58 | % % |
| SVR | Supply voltage rejection | $R_L = 4\Omega$ $R_g = 10 k\Omega$ $f_{ripple} = 100$ Hz | | 30 | 35 | dB |

(*) Filter with noise bandwidth: 22 Hz to 22 KHz.