

# 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.

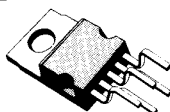
In addition, the device offers the following features:

- 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:

- short circuit;
- thermal over range;
- fortuitous open ground;
- load dump voltage surge.

See TDA2003 for more complete information.



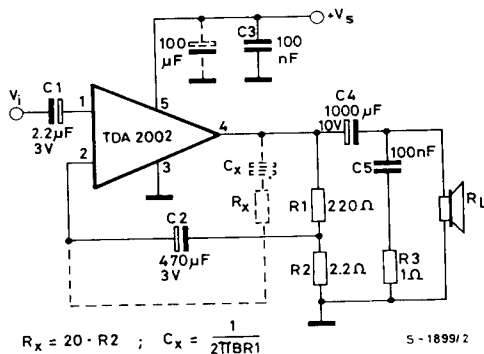
**Pentawatt**

**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



**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 <sub>o</sub>      | Output power                  | d = 10%<br><br>V <sub>s</sub> = 16V   | f = 1 kHz<br>R <sub>L</sub> = 4Ω<br>R <sub>L</sub> = 2Ω<br><br>R <sub>L</sub> = 4Ω<br>R <sub>L</sub> = 2Ω | 4.8<br>7     | 5.2<br>8<br><br>6.5<br>10 | W<br>W<br><br>W<br>W |    |
| V <sub>i(rms)</sub> | Input saturation voltage      |   |   | 300          |                           | mV                   |    |
| V <sub>i</sub>      | Input sensitivity             | P <sub>o</sub> = 0.5W<br>P <sub>o</sub> = 0.5W<br>P <sub>o</sub> = 5.2W<br>P <sub>o</sub> = 8W                    | f = 1 kHz<br>R <sub>L</sub> = 4Ω<br>R <sub>L</sub> = 2Ω<br>R <sub>L</sub> = 4Ω<br>R <sub>L</sub> = 2Ω     |              | 15<br>11<br>55<br>50      | mV<br>mV<br>mV<br>mV |    |
| B                   | Frequency response<br>(-3 dB) | R <sub>L</sub> = 4Ω   | P <sub>o</sub> = 1W   | 40 to 15 000 |                           | Hz                   |    |
| d                   | Distortion                    | f = 1 kHz<br>P <sub>o</sub> = 0.05 to 3.5W R <sub>L</sub> = 4Ω<br>P <sub>o</sub> = 0.05 to 5W R <sub>L</sub> = 2Ω |   |              | 0.2<br>0.2                | %<br>%               |    |
| R <sub>i</sub>      | Input resistance (pin 1)      | f = 1 kHz   |   | 70           | 150                       | kΩ                   |    |
| G <sub>V</sub>      | Voltage gain (open loop)      | R <sub>L</sub> = 4Ω   | f = 1 kHz   |              | 80                        | dB                   |    |
| G <sub>V</sub>      | Voltage gain (closed loop)    | R <sub>L</sub> = 4Ω   | f = 1 kHz   | 39.3         | 40                        | 40.5                 | dB |
| e <sub>N</sub>      | Input noise voltage (*)       |   |   |              | 4                         | μV                   |    |
| i <sub>N</sub>      | Input noise current (*)       |   |   |              | 60                        | pA                   |    |
| η                   | Efficiency                    | P <sub>o</sub> = 5.2W<br>P <sub>o</sub> = 8W  | f = 1 kHz<br>R <sub>L</sub> = 4Ω<br>R <sub>L</sub> = 2Ω   |              | 68<br>58                  | %<br>%               |    |
| SVR                 | Supply voltage rejection      | R <sub>L</sub> = 4Ω<br>R <sub>g</sub> = 10 kΩ<br>f <sub>ripple</sub> = 100 Hz                                     |   | 30           | 35                        | dB                   |    |

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