# 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.

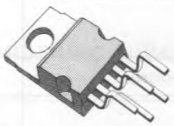
In addition, the device offers the following features:

- 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.**



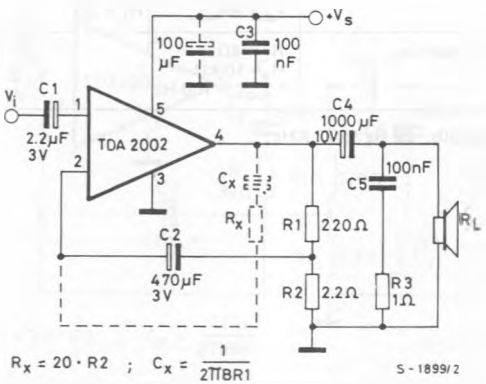
**Pentawatt**

**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 $T_{case} = 90°C$ | 15 | W |
| $T_{stg}, T_j$ | Storage and junction temperature | -40 to 150 | °C |

Fig. 1 - Application circuit



## ELECTRICAL CHARACTERISTICS ($V_s$= 14.4V, $T_{amb}$= 25°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% f = 1 kHz $R_L$= 4Ω<br>$R_L$= 2Ω<br>$V_s$ = 16V $R_L$= 4Ω<br>$R_L$= 2Ω | 4.8<br>7 | 5.2<br>8<br>6.5<br>10 | | W<br>W<br>W<br>W |
| $V_{i\,(rms)}$ | Input saturation voltage | | 300 | | | mV |
| $V_i$ | Input sensitivity | f = 1 kHz<br>$P_o$ = 0.5W $R_L$= 4Ω<br>$P_o$ = 0.5W $R_L$= 2Ω<br>$P_o$ = 5.2W $R_L$= 4Ω<br>$P_o$= 8W $R_L$= 2Ω | | 15<br>11<br>55<br>50 | | mV<br>mV<br>mV<br>mV |
| B | Frequency response (-3 dB) | $R_L$= 4Ω $P_o$= 1W | 40 to 15 000 | | | Hz |
| d | Distortion | f = 1 kHz<br>$P_o$ = 0.05 to 3.5W $R_L$= 4Ω<br>$P_o$ = 0.05 to 5W $R_L$= 2Ω | | 0.2<br>0.2 | | %<br>% |
| $R_i$ | Input resistance (pin 1) | f = 1 kHz | 70 | 150 | | kΩ |
| $G_V$ | Voltage gain (open loop) | $R_L$= 4Ω f = 1 kHz | | 80 | | dB |
| $G_V$ | Voltage gain (closed loop) | $R_L$= 4Ω f = 1 kHz | 39.3 | 40 | 40.5 | dB |
| $e_N$ | Input noise voltage (*) | | | 4 | | μV |
| $i_N$ | Input noise current (*) | | | 60 | | pA |
| η | Efficiency | f = 1 kHz<br>$P_o$ = 5.2W $R_L$= 4Ω<br>$P_o$ = 8W $R_L$= 2Ω | | 68<br>58 | | %<br>% |
| SVR | Supply voltage rejection | $R_L$= 4Ω<br>$R_g$= 10 kΩ<br>$f_{ripple}$= 100 Hz | 30 | 35 | | dB |

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