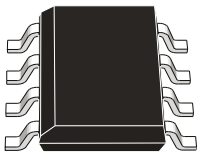
# TDA2822D

Datasheet

## Dual low voltage power amplifier



SO8

### Features

- Supply voltage down to 1.8 V
- Low crossover distortion
- Low quiescent current
- Bridge or stereo configuration

### Description

The TDA2822D is a monolithic integrated circuit in 8 lead (SO-8) package. It is intended for use as a dual audio power amplifier in portable cassette players, radios and CD players.

| Product status link |
| --- |
| TDA2822D |

| Ordering information |
| --- |
| TDA2822D013TR |

# 1 Application circuit

Figure 1. Application circuit

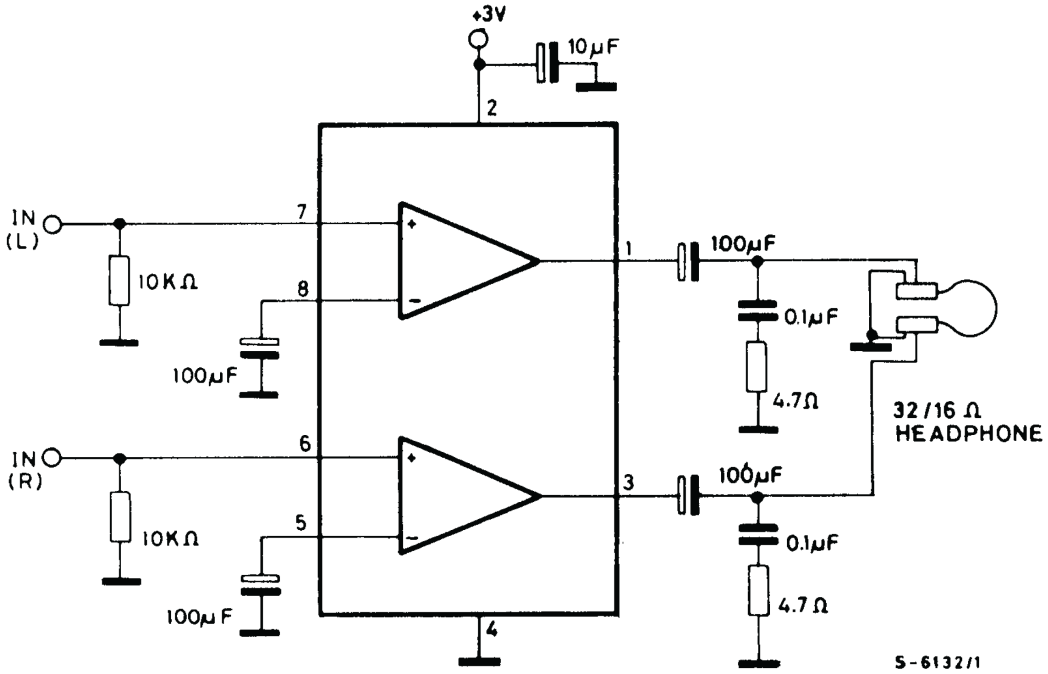



Figure 2. Stereo application and test circuit

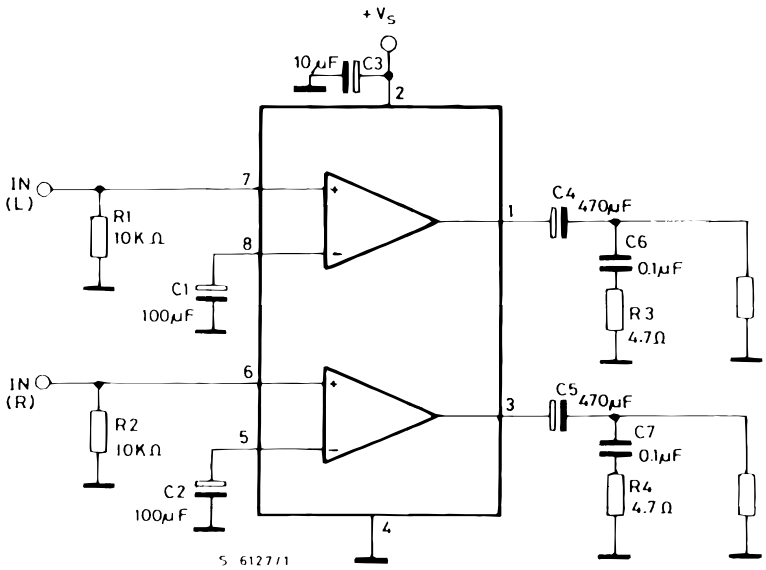
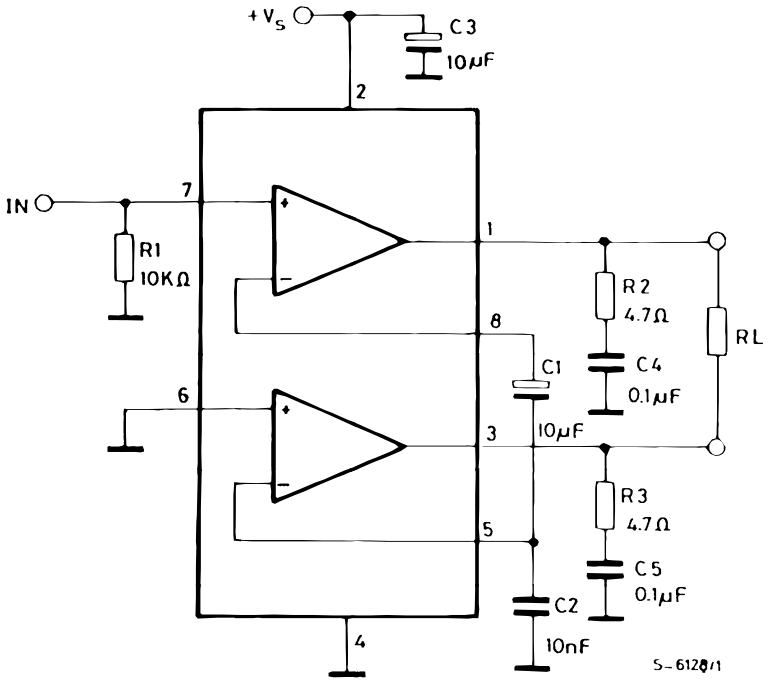
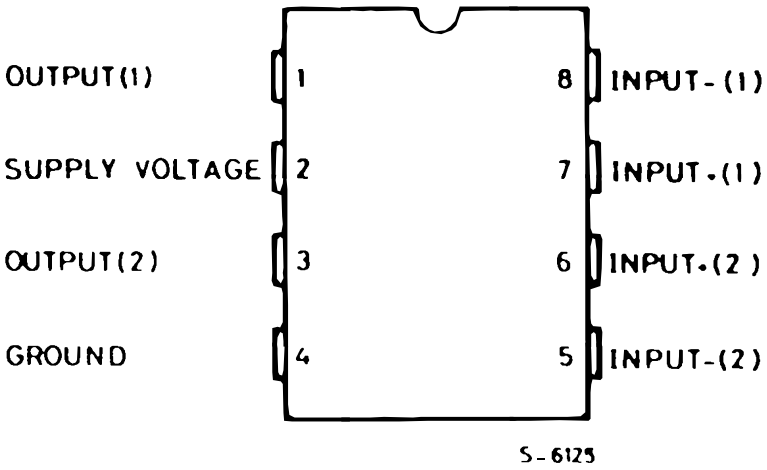


Figure 3. **Bridge application and test circuit**



## 2 Pin connection

Figure 4. **Pin connection**



# 3 Absolute maximum ratings

**Table 1. Absolute maximum ratings**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_S$ | Supply voltage | 15 | V |
| $I_O$ | Peak output | 1 | A |
| $P_{tot}$ | Total power dissipation $T_{amb}$ = 50 °C | 0.5 | W |
| $T_{stg}$ | Storage and junction temperature | -40 to 150 | °C |
| $T_j$ | | | |

**Table 2. Thermal data**

| Symbol | Description | Value | Unit |
|---|---|---|---|
| $R_{thj\text{-}amb}$ | Thermal resistance junction-ambient max. | 200 | °C/W |

# 4 Electrical characteristics

($V_S$ = 6 V; Tamb = 25 °C, unless otherwise specified.
STEREO (see Figure 2. Stereo application and test circuit).

**Table 3. Electrical characteristics (stereo)**

| Symbol | Parameter | Test conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $V_S$ | Supply voltage | | | 1.8 | | 15 | V |
| $I_d$ | Total quiescent drain current | | | | | 15 | mA |
| $V_O$ | Quiescent output voltage | | | | 2.7 | | V |
| | | $V_S$ = 3 V | | | 1.2 | | V |
| $I_b$ | Input bias current | | | | 100 | | nA |
| $P_O$ | Output power (each channel) (f = 1 kHz, d = 10%) | $R_L$ = 32 Ω | $V_S$= 9 V | | 300 | | mW |
| | | | $V_S$= 6 V | | 120 | | |
| | | | $V_S$ = 4.5 V | | 60 | | |
| | | | $V_S$ = 3 V | | 20 | | |
| | | | $V_S$ = 2 V | | 5 | | |
| | | $R_L$ = 16 Ω | $V_S$ = 6 V | 170 | 220 | | mW |
| | | $R_L$ = 8 Ω | $V_S$ = 6 V | 300 | 380 | | mW |
| | | $R_L$ = 4 Ω | $V_S$ = 4.5 V | | 320 | | mW |
| | | | $V_S$ = 3 V | | 110 | | |
| d | Distortion | $R_L$ = 32 Ω | $P_O$ = 40 mW | | 0.2 | | % |
| | | $R_L$=16 Ω | $P_O$ = 75 mW | | 0.2 | | % |
| | | $R_L$ = 8 Ω | $P_O$ = 150 mW | | 0.2 | | % |
| $G_V$ | Closed loop voltage gain | f = 1 kHz | | 36 | 39 | 41 | dB |
| $\Delta G_V$ | Channel balance | | | | | 1 | dB |
| $R_i$ | Input resistance | f = 1 kHz | | 100 | | | kΩ |
| $e_N$ | Total input noise | $R_s$ = 10 kΩ, B = curve A | | | 2 | | µV |
| | | $R_s$ = 10 kΩ, B = 22 Hz to 22 kHz | | | 2.5 | | µV |
| SVR | Supply voltage rejection | f = 100 Hz, C1 = C2 = 100 F | | 24 | 30 | | dB |
| $C_s$ | Channel separation | f = 1 kHz | | | 50 | | dB |

Bridge (see Figure 3. Bridge application and test circuit).

**Table 4. Electrical characteristics (bridge)**

| Symbol | Parameter | Test conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $V_S$ | Supply voltage | | | 1.8 | | 15 | V |
| $I_d$ | Total quiescent drain current | $R_L$ = ∞ | | | | 15 | mA |
| $V_{OS}$ | Output offset voltage between the outputs | $R_L$ = 8 Ω | | | | ±80 | mV |
| $I_b$ | Input bias current | | | | 100 | | nA |
| $P_O$ | Output power (f = 1 kHz, d = 10%) | $R_L$ = 32 Ω | $V_S$ = 9 V | 1000 | | | mW |
| | | | $V_S$ = 6 V | 320 | 400 | | |
| | | | $V_S$ = 4.5 V | | 200 | | |
| | | | $V_S$ = 3 V | 50 | 65 | | |
| | | | $V_S$ = 2 V | | 8 | | |
| | | $R_L$ = 16 Ω | $V_S$ = 6 V | | 800 | | mW |
| | | | $V_S$ = 3 V | | 120 | | |
| | | $R_L$ = 8 Ω | $V_S$ = 4.5 V | | 700 | | mW |
| | | | $V_S$ = 3 V | | 220 | | |
| | | $R_L$ = 4 Ω | $V_S$ = 3 V | | 350 | | mW |
| | | | $V_S$ = 2 V | | 80 | | |
| d | Distortion | $R_L$ = 8 Ω | $P_O$ = 0.5 mW, f = 1 kHz | | 0.2 | | % |
| $G_V$ | Closed loop voltage gain | f = 1 kHz | | | 39 | | dB |
| $R_i$ | Input resistance | f = 1 kHz | | 100 | | | kΩ |
| $e_N$ | Total input noise | $R_s$ =10 kΩ, B = curve A | | | 2.5 | | μV |
| | | $R_s$ = 10 kΩ, B = 22 Hz to 22 kHz | | | 3 | | |
| SVR | Supply voltage rejection | f = 100 Hz | | | 40 | | dB |
| B | Power bandwidth (-3 dB) | $R_L$ = 8 kΩ, $P_O$ = 1 W | | | 120 | | kHz |

Figure 5. Supply voltage rejection vs. frequency

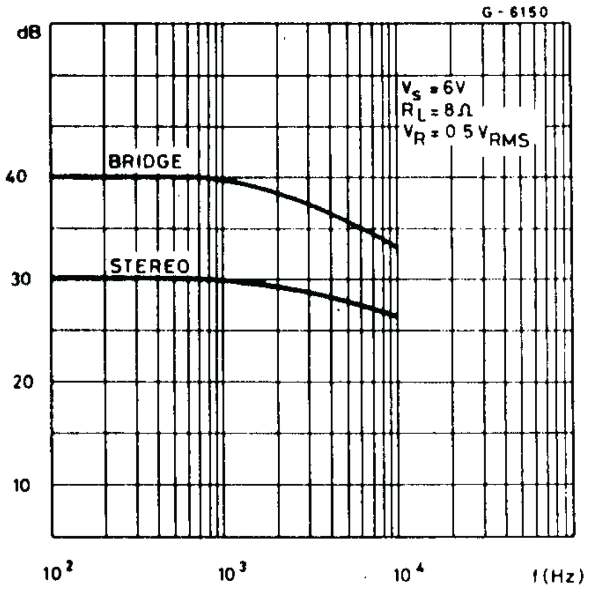



Figure 6. Output power vs. supply voltage (THD= 10%, f=1 kHz stereo)

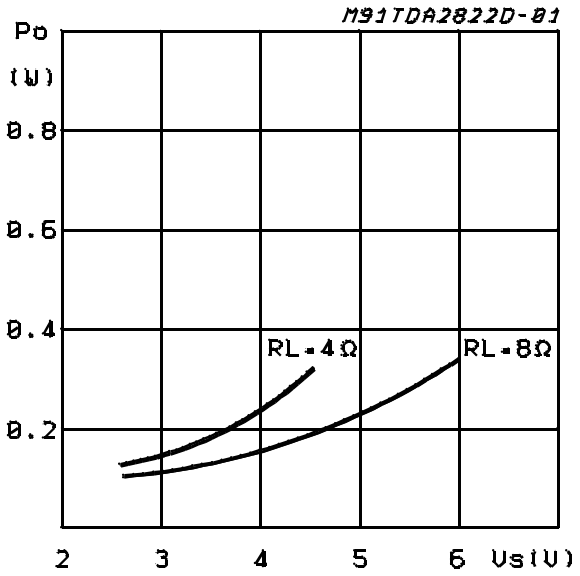



Figure 7. Total power dissipation vs. output power (bridge, RL=8 Ω)

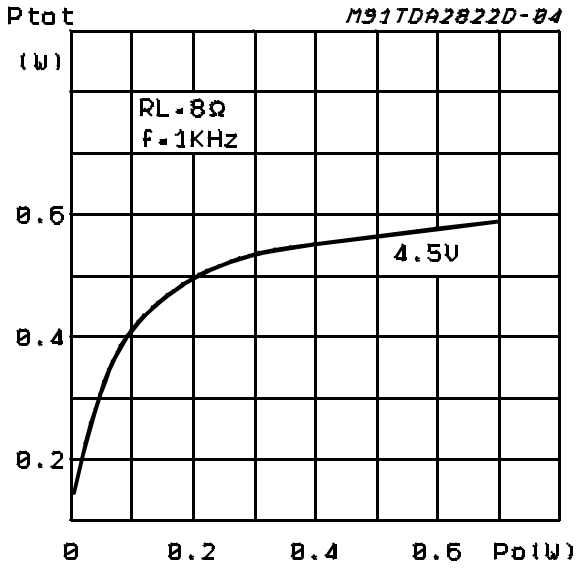
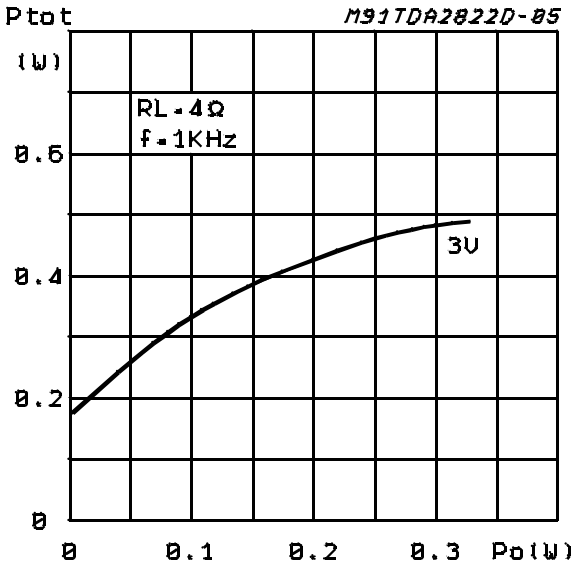



Figure 8. Total power dissipation vs. output power (bridge, RL=4 Ω )



# 5 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

## 5.1 SO8 package information

**Figure 9. SO8 package outline**

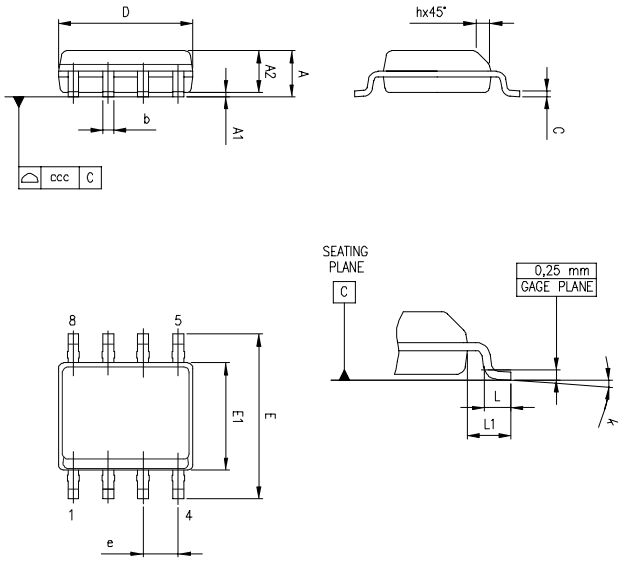



**Table 5. SO-8 mechanical data**

| Dim. | mm | | | Inches | | |
|---|---|---|---|---|---|---|
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | | | 1.75 | | | 0.069 |
| A1 | 0.1 | | 0.25 | 0.004 | | 0.01 |
| A2 | 1.25 | | | 0.049 | | |
| b | 0.28 | | 0.48 | 0.011 | | 0.019 |
| c | 0.17 | | 0.23 | 0.007 | | 0.01 |
| D | 4.8 | 4.9 | 5 | 0.189 | 0.193 | 0.197 |
| E | 5.8 | 6 | 6.2 | 0.228 | 0.236 | 0.244 |
| E1 | 3.8 | 3.9 | 4 | 0.15 | 0.154 | 0.157 |
| e | | 1.27 | | | 0.05 | |
| h | 0.25 | | 0.5 | 0.01 | | 0.02 |
| L | 0.4 | | 1.27 | 0.016 | | 0.05 |
| L1 | | 1.04 | | | 0.04 | |
| k | | | 8 ° | | | 8 ° |
| ccc | | | 0.1 | | | 0.004 |

## Revision history

Table 6. **Document revision history**

| Date | Version | Changes |
|---|---|---|
| 05-Sep-2003 | 1 | No history because of migration. |
| 19-Sep-2016 | 2 | |
| 28-Aug-2020 | 3 | Updated the ordering information table in cover page. |

# Contents

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