



## TDA7299

### SOUND 2W MONO AMPLIFIER

- CAN DELIVER 2W THD 10% 12V/8Ω
- INTERNAL FIXED GAIN 20dB
- NO BOUCHEROT CELL
- THERMAL PROTECTION
- AC SHORT CIRCUIT PROTECTION
- SVR CAPACITOR FOR BETTER RIPLE REJECTION
- LOW TURN-ON/OFF POP
- STAND-BY MODE

#### DESCRIPTION

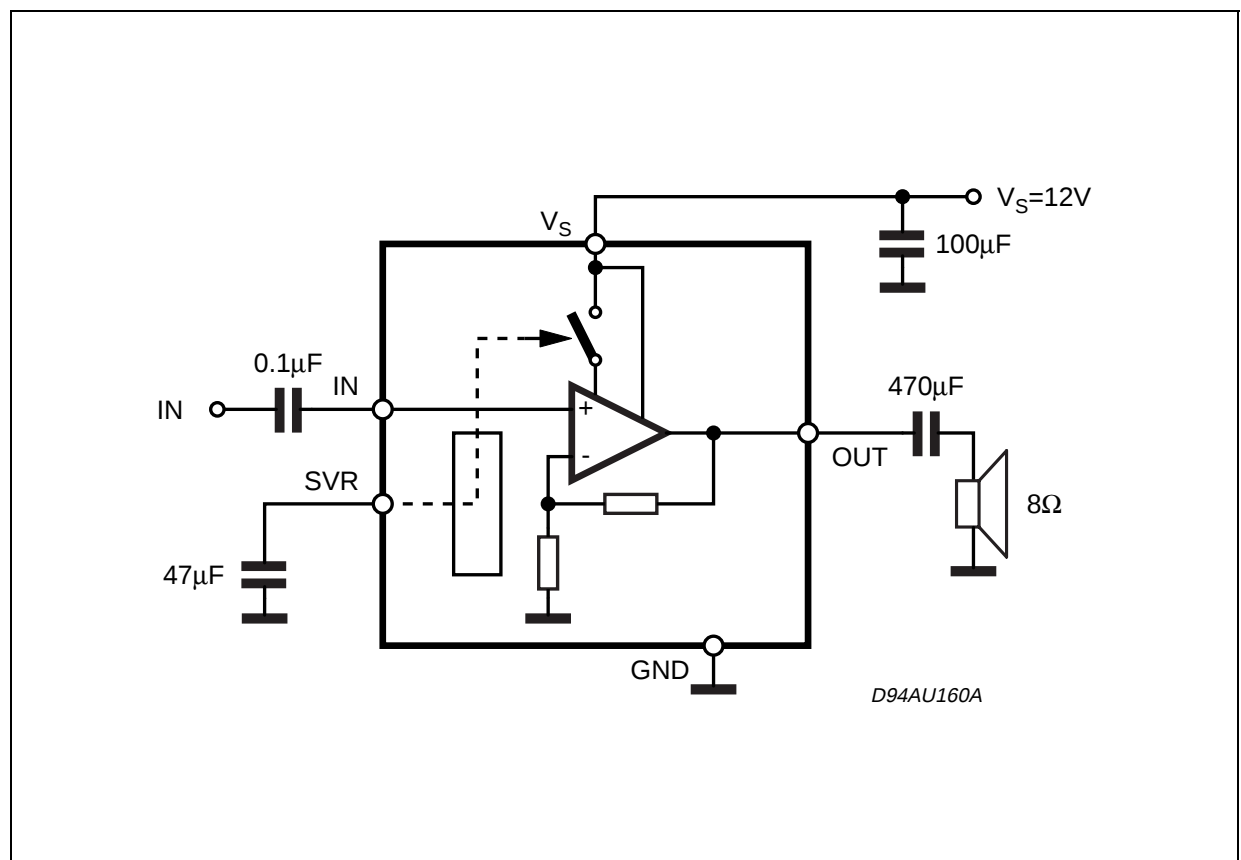
The device TDA7299 is a new technology Mono Audio Amplifier in SO package specially designed for 12V sound cards application.

Thanks to the fully complementary output configura-



tion the device delivers a rail voltage swing without need of bootstrap capacitors.

#### BLOCK DIAGRAM

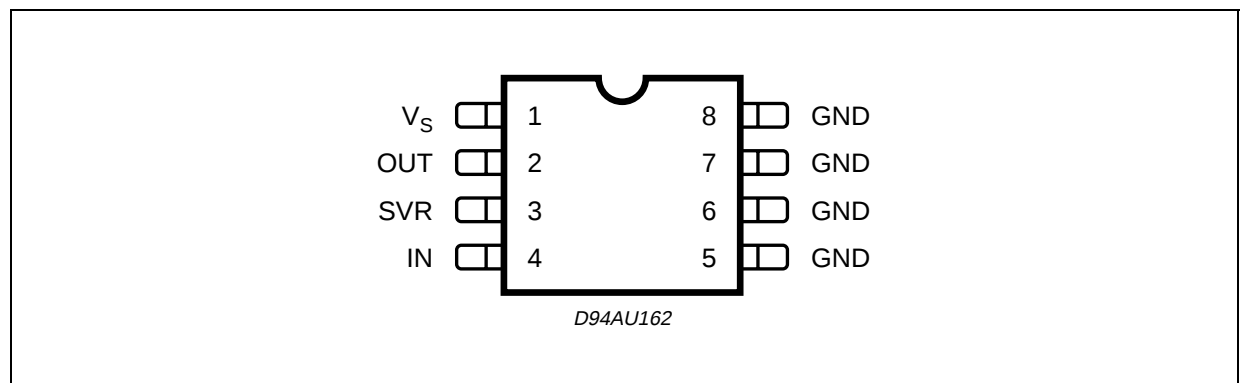


## TDA7299

### ABSOLUTE MAXIMUM RATINGS

| Symbol           | Parameter                   | Value      | Unit |
|------------------|-----------------------------|------------|------|
| V <sub>S</sub>   | Operating Supply Voltage    | 18         | V    |
| I <sub>O</sub>   | Output Put Peak Current     | 1.5        | A    |
| T <sub>op</sub>  | Operating Temperature Range | 0 to 70    | °C   |
| T <sub>j</sub>   | Junction Temperature        | 150        | °C   |
| T <sub>stg</sub> | Storage Temperature Range   | -40 to 125 | °C   |

### PIN CONNECTION (Top view)



### THERMAL DATA

| Symbol                 | Parameter                                       | Value | Unit |
|------------------------|-------------------------------------------------|-------|------|
| R <sub>th j-amb</sub>  | Thermal Resistance Junction to ambient (on PCB) | 80    | °C/W |
| R <sub>th j-case</sub> | Thermal Resistance Junction to case             | 20    | °C/W |

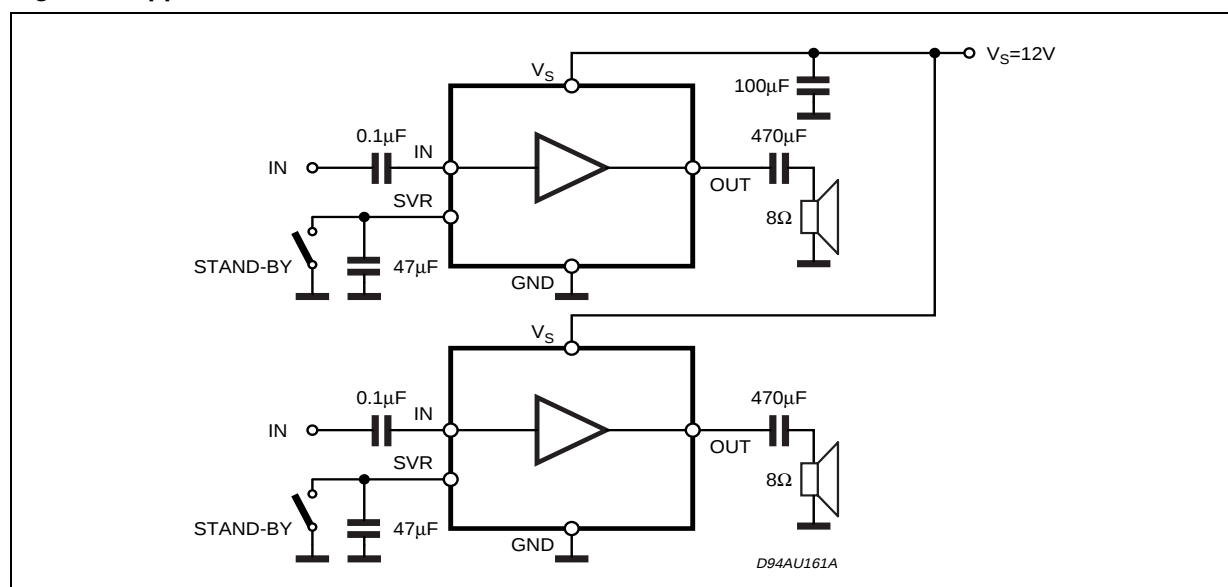
### ELECTRICAL CHARACTERISTICS

(T<sub>amb</sub> = 25°C; V<sub>S</sub> = 12V; R<sub>L</sub> = 8Ω; f = 1KHz; unless otherwise specified.)

| Symbol          | Parameter                | Test Condition                                        | Min. | Typ. | Max. | Unit |
|-----------------|--------------------------|-------------------------------------------------------|------|------|------|------|
| V <sub>S</sub>  | Supply Voltage Range     |                                                       | 4.5  |      | 18   | V    |
| I <sub>S</sub>  | Quiescent Current        |                                                       |      | 20   | 30   | mA   |
| I <sub>sb</sub> | Stand-By Current         | Pin 2 shorted to GND                                  |      |      | 0.3  | mA   |
| V <sub>O</sub>  | Quiescent Output Voltage |                                                       |      | 6    |      | V    |
| A <sub>V</sub>  | Voltage Gain             |                                                       |      | 20   |      | dB   |
| R <sub>IN</sub> | Input Impedance          |                                                       | 50   | 100  |      | KΩ   |
| P <sub>O</sub>  | Output Power             | THD = 10%                                             | 1.8  | 2    |      | W    |
|                 |                          | R <sub>L</sub> = 4Ω, V <sub>S</sub> = 8.5V, THD = 10% |      | 2    |      | W    |

**ELECTRICAL CHARACTERISTICS** (continued)(T<sub>amb</sub> = 25°C; V<sub>S</sub> = 12V; R<sub>L</sub> = 8Ω; f = 1KHz; unless otherwise specified.)

| Symbol          | Parameter                 | Test Condition                                                | Min. | Typ. | Max. | Unit |
|-----------------|---------------------------|---------------------------------------------------------------|------|------|------|------|
| P <sub>ot</sub> | Transient Output Power *) | V <sub>i</sub> = 400mVp, THD < 2%, R <sub>L</sub> = 4Ω        |      | 2    |      | W    |
| THD             | Distortion                | P <sub>O</sub> = 1W                                           |      |      | 1    | %    |
| SVR             | Supply Voltage Rejection  | V <sub>ripple</sub> = 150mVrms;<br>F <sub>ripple</sub> = 1KHz |      | 50   |      | dB   |
| E <sub>i</sub>  | Input Noise Voltage       | R <sub>g</sub> = 10KΩ; BW = 20Hz to 20KHz                     |      | 1.5  | 5    | μV   |
| V <sub>sb</sub> | Stand-By Enable Voltage   |                                                               |      |      | 1    | V    |

\*) Limited by the R<sub>TH</sub> of the package**Figure 1. Application Circuit****APPLICATION HINTS:**

For 12V supply and 8Ω speaker application, its maximum power dissipation is about 1.8W.

Assuming that max ambient temperature is 70°C, required thermal resistance of the device and heat dissipating means must be equal to (150 - 70)/1.8 = 45°C/W.

Junction to pin thermal resistance of the package is about 20°C/W. That means external heat sink of about 25°C/W is required.

Cu ground plane of PCB can be used as heat dissipating means.

Stand-By switches must be able to discharge C<sub>SVR</sub> current.

Figure 2. On Board Copper Area

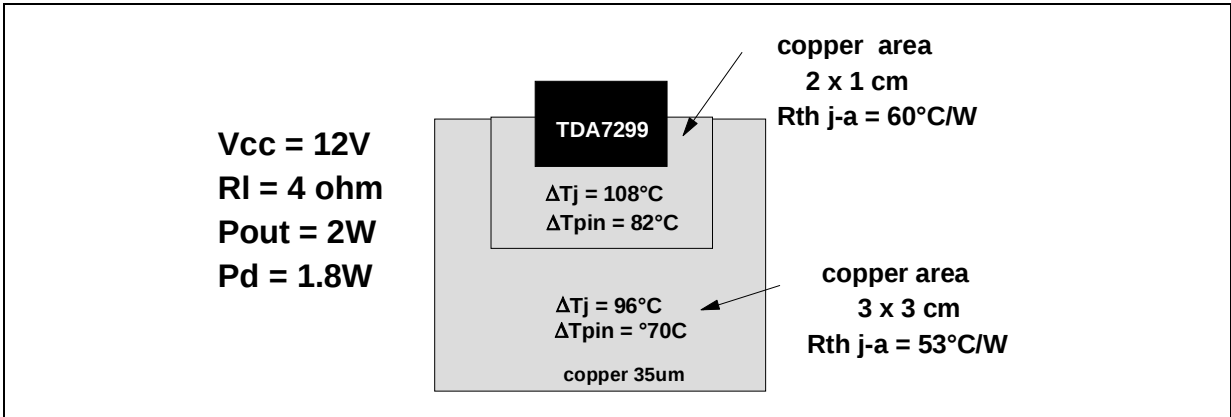


Figure 3.  $P_{out}$  vs Supply Voltage ( $R_{load} = 8\ \Omega$ )

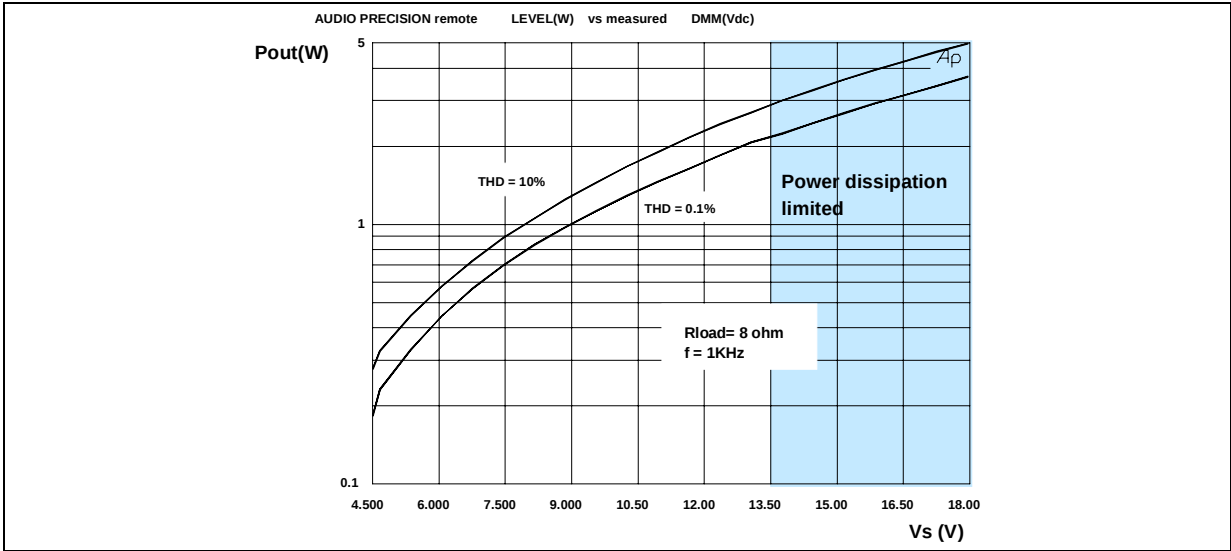


Figure 4.  $P_{out}$  vs Supply Voltage ( $R_{load} = 4\ \Omega$ )

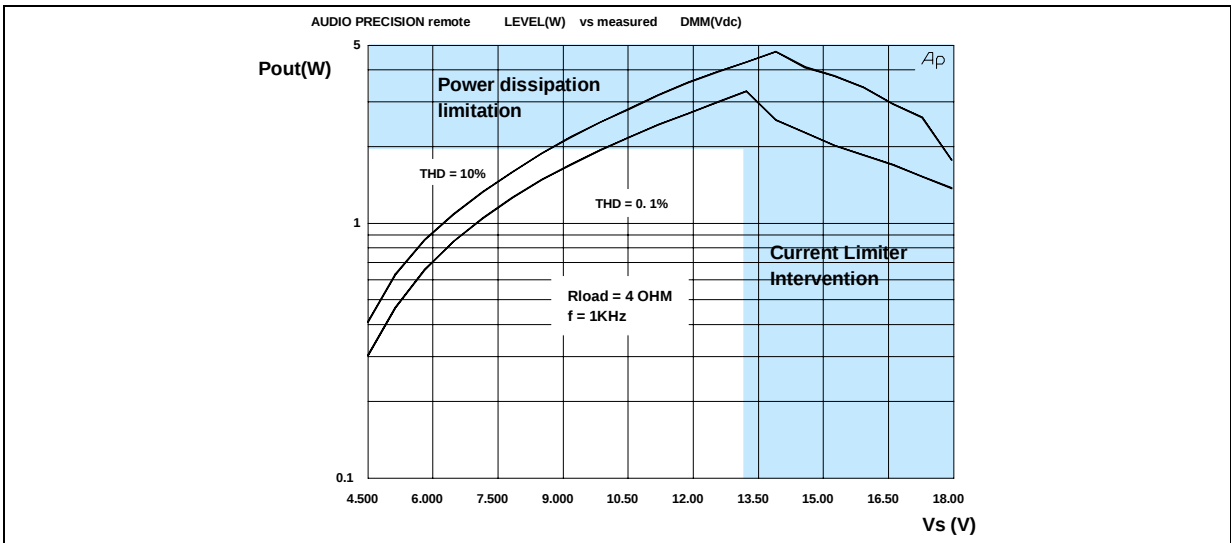
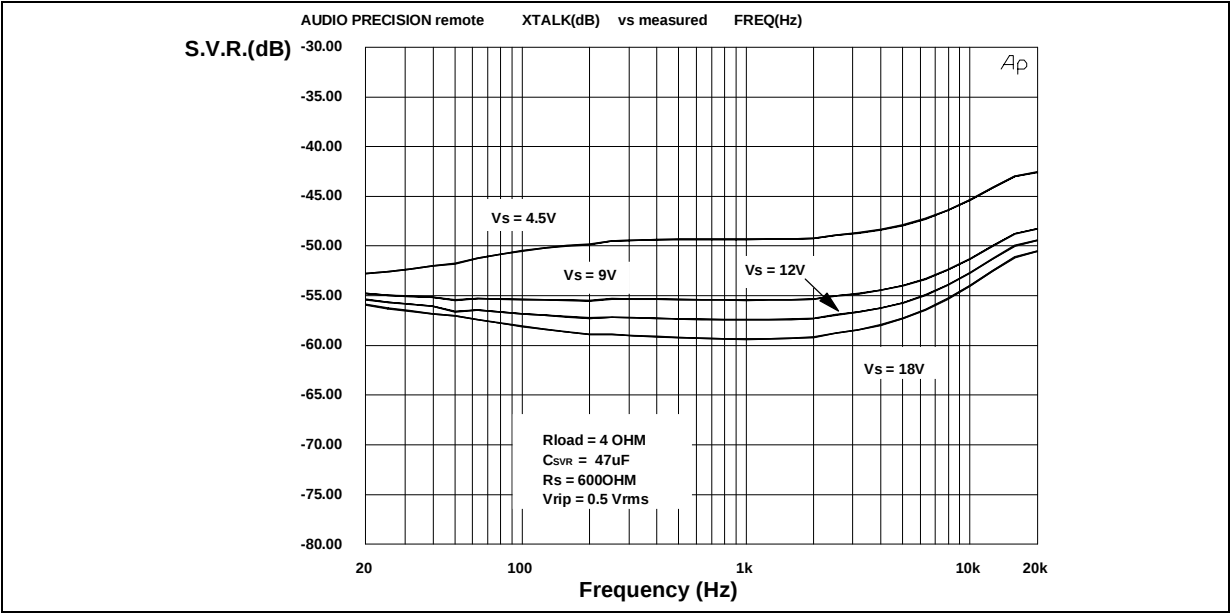


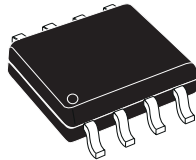
Figure 5. SVR vs Frequency



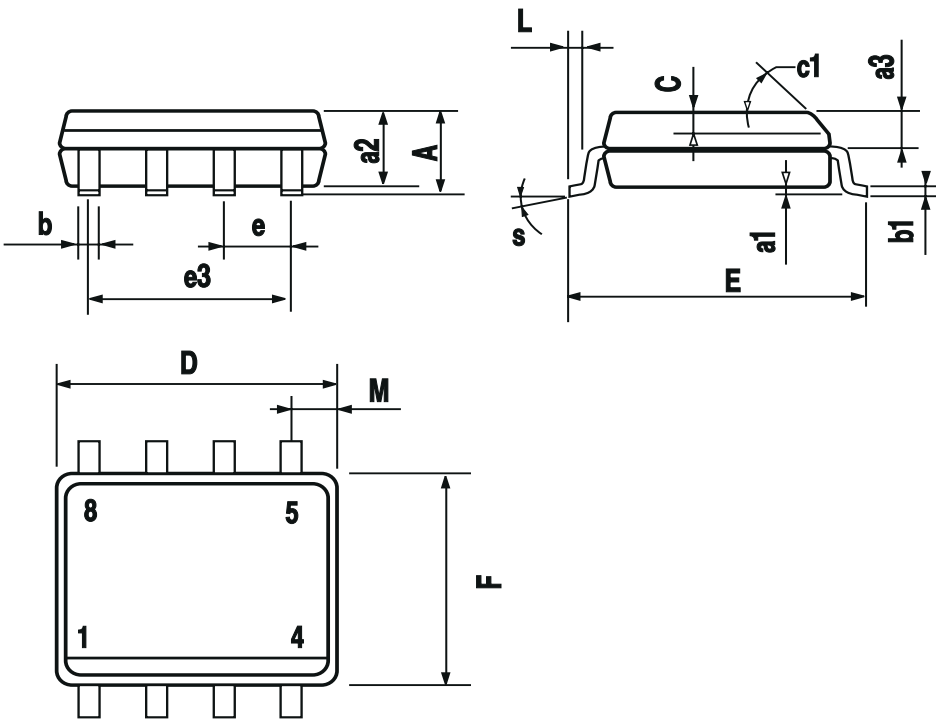
| DIM.  | mm         |      |      | inch  |       |       |
|-------|------------|------|------|-------|-------|-------|
|       | MIN.       | TYP. | MAX. | MIN.  | TYP.  | MAX.  |
| A     |            |      | 1.75 |       |       | 0.069 |
| a1    | 0.1        |      | 0.25 | 0.004 |       | 0.010 |
| a2    |            |      | 1.65 |       |       | 0.065 |
| a3    | 0.65       |      | 0.85 | 0.026 |       | 0.033 |
| b     | 0.35       |      | 0.48 | 0.014 |       | 0.019 |
| b1    | 0.19       |      | 0.25 | 0.007 |       | 0.010 |
| C     | 0.25       |      | 0.5  | 0.010 |       | 0.020 |
| c1    | 45° (typ.) |      |      |       |       |       |
| D (1) | 4.8        |      | 5.0  | 0.189 |       | 0.197 |
| E     | 5.8        |      | 6.2  | 0.228 |       | 0.244 |
| e     |            | 1.27 |      |       | 0.050 |       |
| e3    |            | 3.81 |      |       | 0.150 |       |
| F (1) | 3.8        |      | 4.0  | 0.15  |       | 0.157 |
| L     | 0.4        |      | 1.27 | 0.016 |       | 0.050 |
| M     |            |      | 0.6  |       |       | 0.024 |
| S     | 8° (max.)  |      |      |       |       |       |

(1) D and F do not include mold flash or protrusions. Mold flash or protrusions shall not exceed 0.15mm (.006inch).

**OUTLINE AND  
MECHANICAL DATA**



**SO8**



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