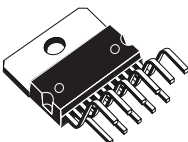


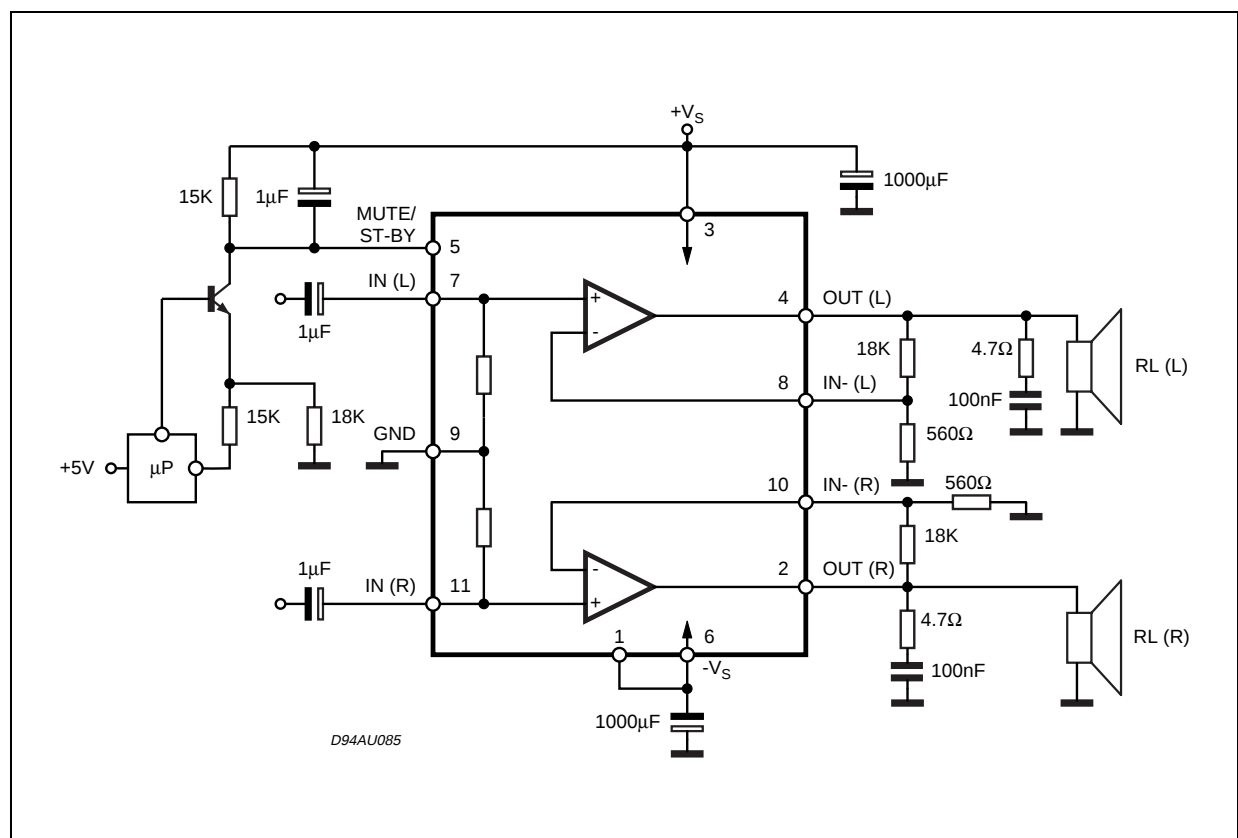
# 14W+14W STEREO AMPLIFIER WITH MUTE & ST-BY

- 
- Multiwatt11**  
**ORDERING NUMBER: TDA7269A**

The TDA7269A is class AB Dual Audio Power amplifier assembled in the Multiwatt package, specially de-

signed for high quality sound application as Hi-Fi music centers and stereo TV sets.

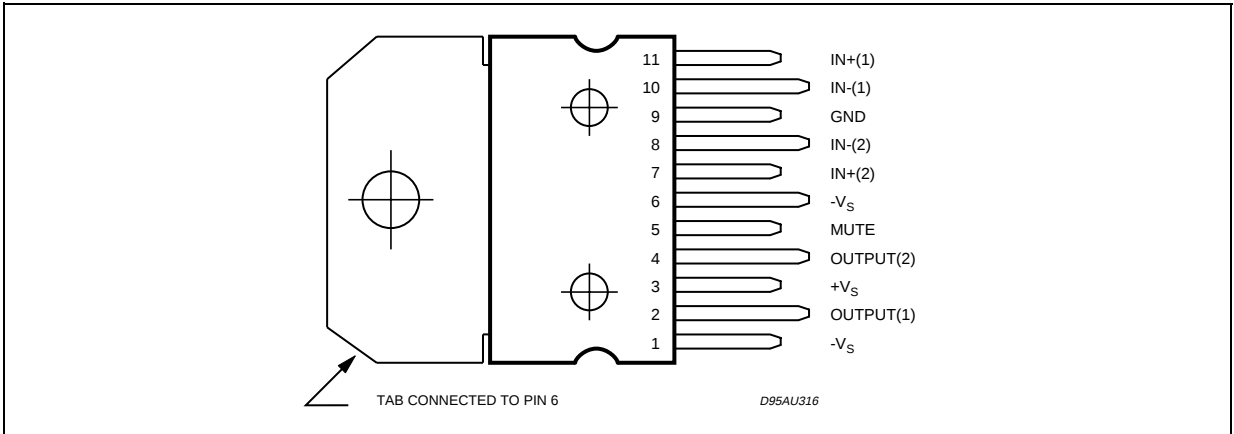
### Figure 1. Typical Application Circuit



ABSOLUTE MAXIMUM RATINGS

| Symbol         | Parameter                                                  | Value      | Unit               |
|----------------|------------------------------------------------------------|------------|--------------------|
| $V_S$          | DC Supply Voltage                                          | $\pm 22$   | V                  |
| $I_O$          | Output Power Current (internally limited)                  | 3          | A                  |
| $P_{tot}$      | Total Power Dissipation ( $T_{amb} = 70^{\circ}\text{C}$ ) | 40         | W                  |
| $T_{op}$       | Operating Temperature                                      | 0 to 70    | $^{\circ}\text{C}$ |
| $T_{stg}, T_j$ | Storage and Junction Temperature                           | -40 to 150 | $^{\circ}\text{C}$ |

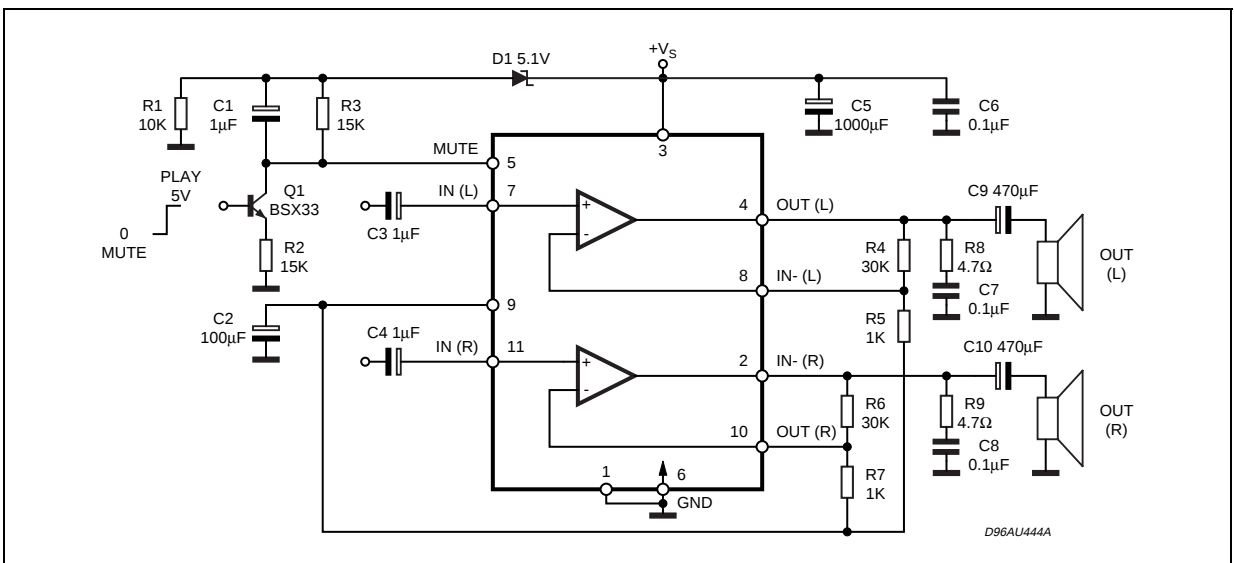
PIN CONNECTION (Top view)



THERMAL DATA

| Symbol           | Parameter                        | Value    | Unit                 |
|------------------|----------------------------------|----------|----------------------|
| $R_{th\ j-case}$ | Thermal Resistance Junction-case | Max. 2.8 | $^{\circ}\text{C/W}$ |

Figure 2. Single Supply Application



**ELECTRICAL CHARACTERISTICS** (Refer to the test circuit  $V_S = \pm 16V$ ;  $R_L = 8\Omega$ ;  $R_S = 50\Omega$ ;  $G_V = 30dB$ ,  
 $f = 1KHz$ ;  $T_{amb} = 25^\circ C$ , unless otherwise specified)

| Symbol                                                                  | Parameter                                  | Test Condition                                                                           | Min.    | Typ.      | Max.     | Unit               |
|-------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------|---------|-----------|----------|--------------------|
| $V_S$                                                                   | Supply Voltage Range                       | $R_L = 8\Omega$                                                                          | $\pm 5$ |           | $\pm 20$ | V                  |
|                                                                         |                                            | $R_L = 4\Omega$                                                                          | $\pm 5$ |           | $\pm 15$ | V                  |
| $I_q$                                                                   | Total Quiescent Current                    |                                                                                          |         | 60        | 100      | mA                 |
| $V_{OS}$                                                                | Input Offset Voltage                       |                                                                                          | -25     |           | 25       | mV                 |
| $I_b$                                                                   | Non Inverting Input Bias Current           |                                                                                          |         | 500       |          | nA                 |
| $P_O$                                                                   | Output Power                               | THD = 10%;<br>$R_L = 8\Omega$ ;<br>$V_S = \pm 12.5V$ ; $R_L = 4\Omega$ ;                 | 12<br>8 | 14<br>10  |          | W<br>W             |
|                                                                         |                                            | THD = 1%;<br>$R_L = 8\Omega$ ;<br>$V_S = \pm 12.5V$ ; $R_L = 4\Omega$ ;                  | 9<br>6  | 11<br>7.5 |          | W<br>W             |
| THD                                                                     | Total Harmonic Distortion                  | $R_L = 8\Omega$ ; $P_O = 1W$ ; $f = 1KHz$ ;                                              |         | 0.03      |          | %                  |
|                                                                         |                                            | $R_L = 8\Omega$ ; $P_O = 0.1$ to $7W$ ;<br>$f = 100Hz$ to $15KHz$ ;                      |         |           | 0.7      | %                  |
|                                                                         |                                            | $R_L = 4\Omega$ ; $P_O = 1W$ ; $f = 1KHz$ ;                                              |         | 0.02      |          | %                  |
|                                                                         |                                            | $R_L = 4\Omega$ ; $V_S = \pm 10V$ ;<br>$P_O = 0.1$ to $5W$ ;<br>$f = 100Hz$ to $15KHz$ ; |         |           | 1        | %                  |
| $C_T$                                                                   | Cross Talk                                 | $f = 1KHz$ ;<br>$f = 10KHz$ ;                                                            | 50      | 70<br>60  |          | dB<br>dB           |
| SR                                                                      | Slew Rate                                  |                                                                                          | 6.5     | 10        |          | V/ $\mu s$         |
| $G_{OL}$                                                                | Open Loop Voltage Gain                     |                                                                                          |         | 80        |          | dB                 |
| $e_N$                                                                   | Total Output Noise                         | A Curve<br>$f = 20Hz$ to $22KHz$                                                         |         | 3<br>4    | 8        | $\mu V$<br>$\mu V$ |
| $R_i$                                                                   | Input Resistance                           |                                                                                          | 15      | 20        |          | K $\Omega$         |
| SVR                                                                     | Supply Voltage Rejection<br>(each channel) | $f = 100Hz$ ; $V_R = 0.5V$                                                               |         | 60        |          | dB                 |
| $T_j$                                                                   | Thermal Shut-down Junction<br>Temperature  |                                                                                          |         | 145       |          | $^\circ C$         |
| <b>MUTE FUNCTION [ref +V<sub>S</sub>] (*)</b>                           |                                            |                                                                                          |         |           |          |                    |
| $V_{TMUTE}$                                                             | Mute /Play threshold                       |                                                                                          | -7      | -6        | -5       | V                  |
| $A_{MUTE}$                                                              | Mute Attenuation                           |                                                                                          | 60      | 70        |          | dB                 |
| <b>STAND-BY FUNCTIONS [ref: +V<sub>S</sub>] (only for Split Supply)</b> |                                            |                                                                                          |         |           |          |                    |
| $V_{TST-BY}$                                                            | Stand-by Mute threshold                    |                                                                                          | -3.5    | -2.5      | -1.5     | V                  |
| $A_{ST-BY}$                                                             | Stand-by Attenuation                       |                                                                                          |         | 110       |          | dB                 |
| $I_{qST-BY}$                                                            | Quiescent Current @ Stand-by               |                                                                                          |         | 3         | 6        | mA                 |

(\*) In mute condition the current drawn from Pin 5 must be  $\leq 650\mu A$

### MUTE STAND-BY FUNCTION

The pin 5 (MUTE/STAND-BY) controls the amplifier status by two different thresholds, referred to  $+V_S$ .

- When  $V_{pin5}$  higher than  $+V_S - 2.5V$  the amplifier is in Stand-by mode and the final stage generators are off.
- When  $V_{pin5}$  between  $+V_S - 2.5V$  and  $+V_S - 6V$  the final stage current generators are switched on and the amplifier is in mute mode.
- When  $V_{pin5}$  is lower than  $+V_S - 6V$  the amplifier is play mode.

Figure 3.

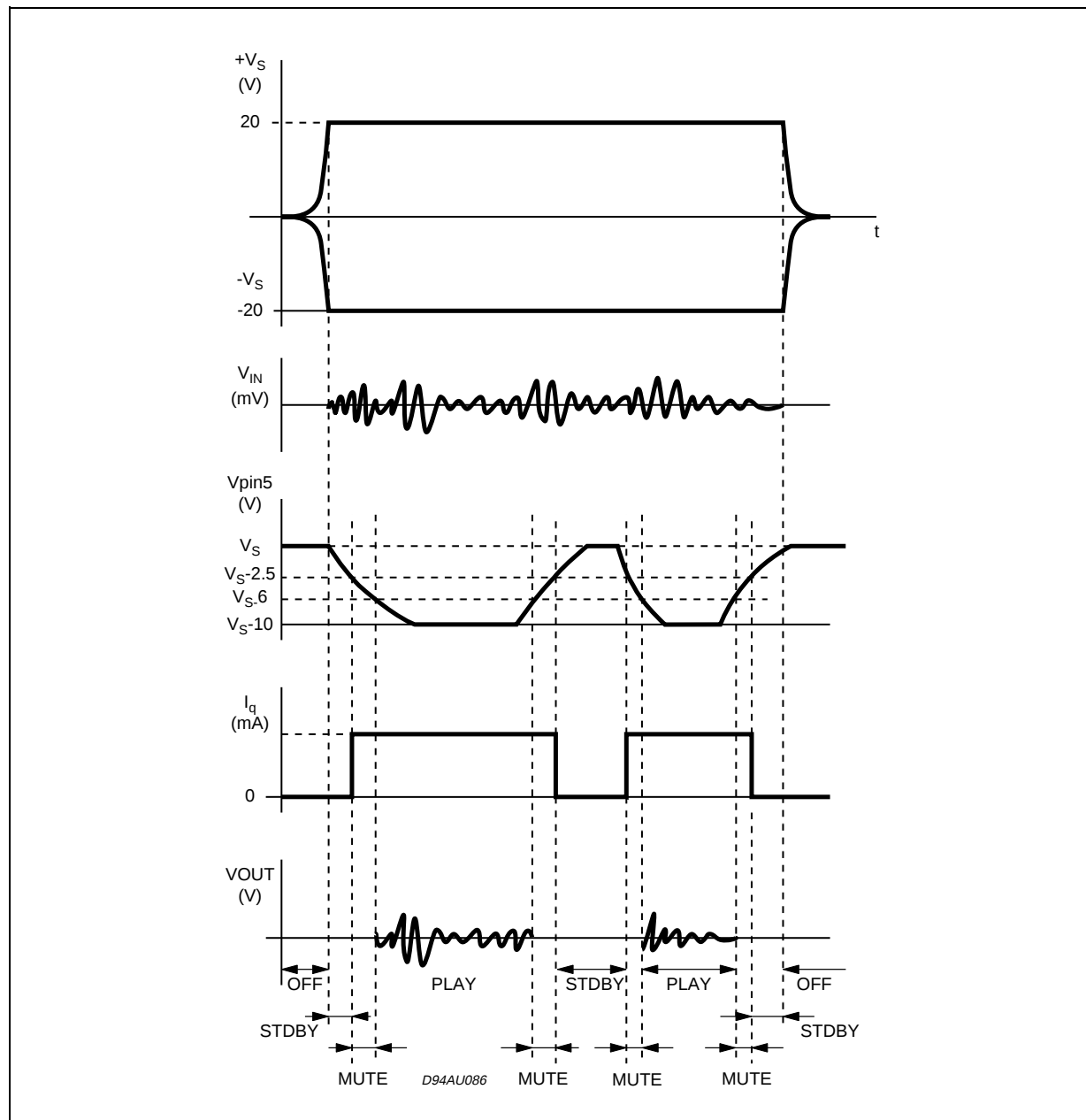
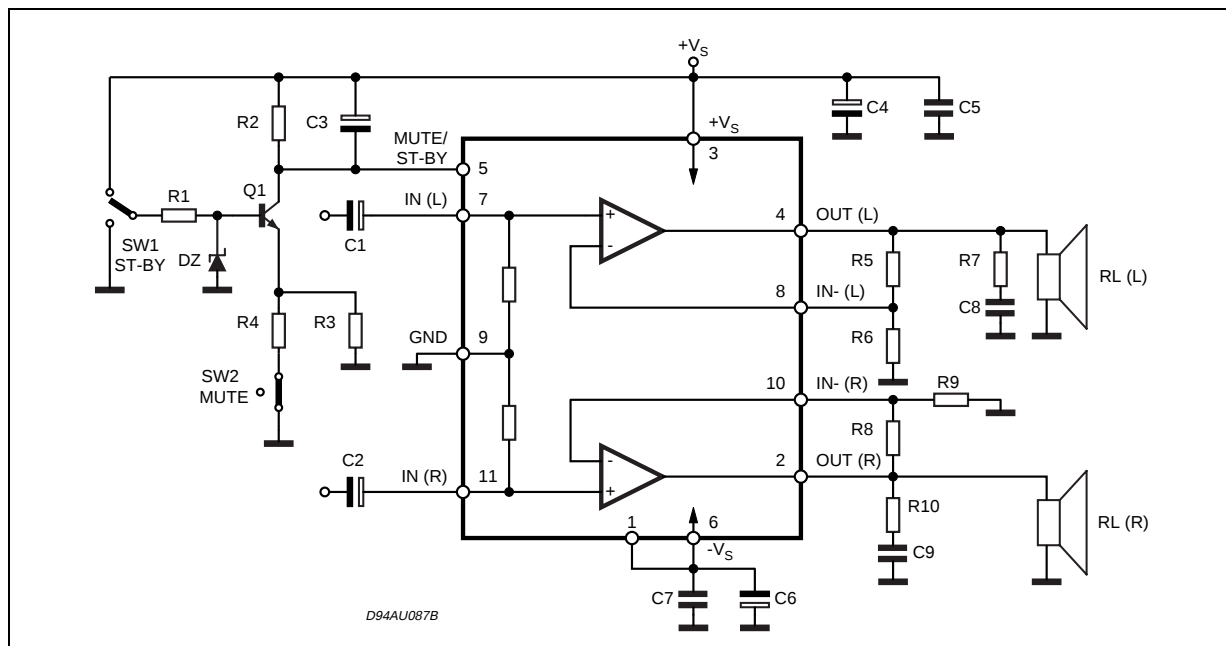


Figure 4. Test and Application Circuit (Stereo Configuration)

**APPLICATION SUGGESTIONS** (Demo Board Schematic)

The recommended values of the external components are those shown the demoboard schematic different values can be used, the following table can help the designer.

| COMPONENT | SUGGESTION VALUE | PURPOSE                      | LARGER THAN RECOMMENDED VALUE        | SMALLER THAN RECOMMENDED VALUE       |
|-----------|------------------|------------------------------|--------------------------------------|--------------------------------------|
| R1        | 10K $\Omega$     | Mute Circuit                 | Increase of Dz Biasing Current       |                                      |
| R2        | 15K $\Omega$     | Mute Circuit                 | V <sub>pin #5</sub> Shifted Downward | V <sub>pin #5</sub> Shifted Upward   |
| R3        | 18K $\Omega$     | Mute Circuit                 | V <sub>pin #5</sub> Shifted Upward   | V <sub>pin #5</sub> Shifted Downward |
| R4        | 15K $\Omega$     | Mute Circuit                 | V <sub>pin #5</sub> Shifted Upward   | V <sub>pin #5</sub> Shifted Downward |
| R5, R8    | 18K $\Omega$     | Closed Loop Gain Setting (*) | Increase of Gain                     |                                      |
| R6, R9    | 560 $\Omega$     |                              | Decrease of Gain                     |                                      |
| R7, R10   | 4.7 $\Omega$     | Frequency Stability          | Danger of Oscillations               | Danger of Oscillations               |
| C1, C2    | 1 $\mu$ F        | Input DC Decoupling          |                                      | Higher Low Frequency Cutoff          |
| C3        | 1 $\mu$ F        | St-By/Mute Time Constant     | Larger On/Off Time                   | Smaller On/Off Time                  |
| C4, C6    | 1000 $\mu$ F     | Supply Voltage Bypass        |                                      | Danger of Oscillations               |
| C5, C7    | 0.1 $\mu$ F      | Supply Voltage Bypass        |                                      | Danger of Oscillations               |
| C8, C9    | 0.1 $\mu$ F      | Frequency Stability          |                                      |                                      |
| Dz        | 5.1V             | Mute Circuit                 |                                      |                                      |

(\*) Closed loop gain has to be  $\geq 25$ dB

### BRIDGE APPLICATION

Another application suggestion concerns the Bridge configuration, where the two power amplifiers are connected as shown by the schematic diagrams of figure 5 "Split Power Supply", and figure 6 "Single Power Supply".

This application shows, however, some operative limits due to dissipation and current capability of the output stage.

For this reason we recommend to use the TDA7269A in BTL with the following supply voltages depending on the used load impedance (for the single supply consider double  $V_s$ ):

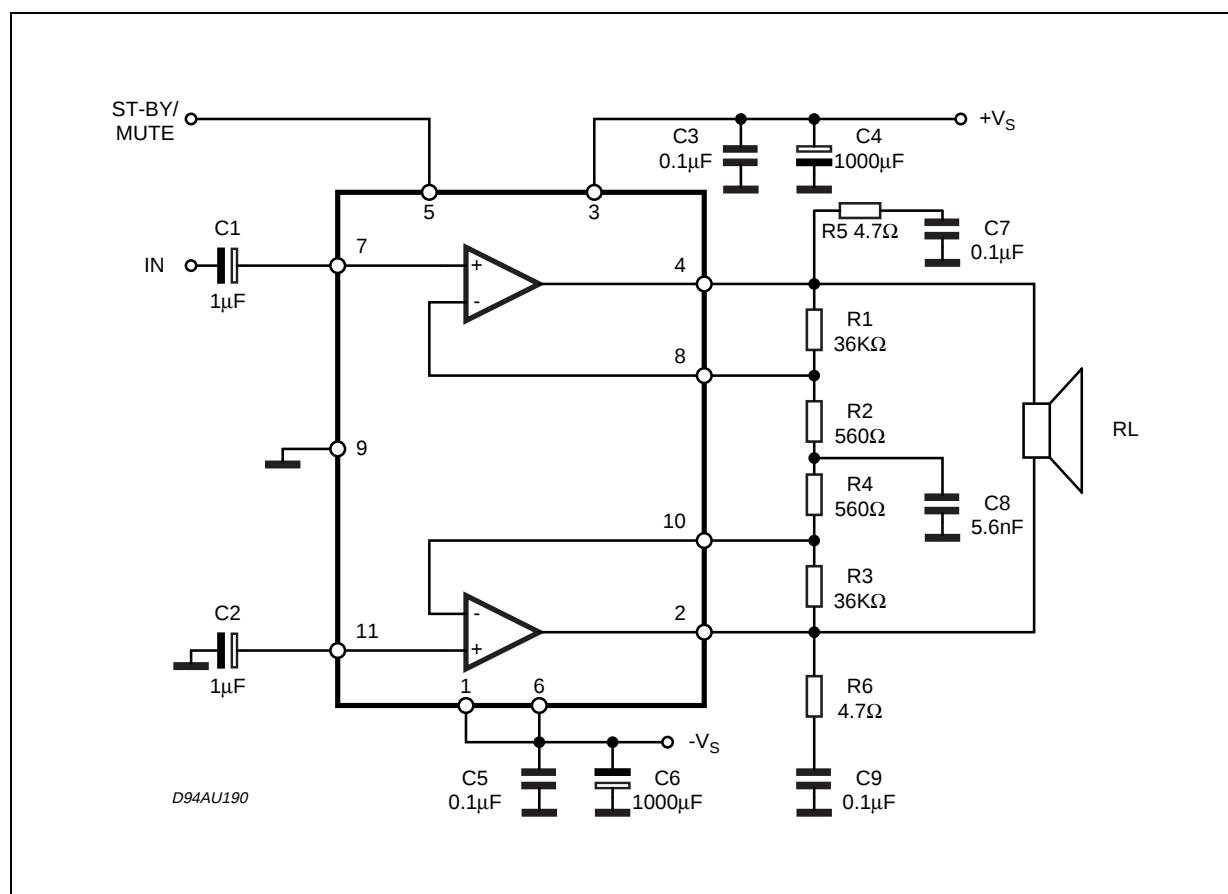
| $\pm V_s$ (V) | Rload (ohm) |
|---------------|-------------|
| 14            | 8           |
| 11            | 6           |
| 10            | 4           |

The detected characteristics of THD vs  $P_{out}$  are shown in figg: 7, 8 and 9 for the different load impedances.

With  $R_{load} = 8\text{ohm}$ ,  $V_s = \pm 14\text{V}$  the maximum output power obtainable is 30W at THD = 10% (fig. 9). With  $R_{load} = 6\text{ohm}$ ,  $V_s = \pm 12\text{V}$  the maximum output power obtainable is 28W at THD = 10% (fig. 8). With  $R_{load} = 4\text{ohm}$ ,  $V_s = \pm 10\text{V}$  the maximum output power obtainable is 20W at THD=10% (fig. 7).

We suggest not to exceed the suggested supply voltages in order to avoid the current limiter intervention.

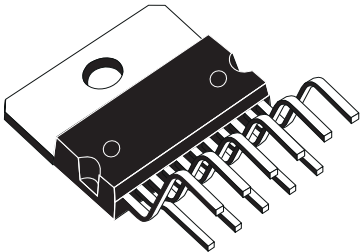
**Figure 5. Split Power Supply Application Diagram**



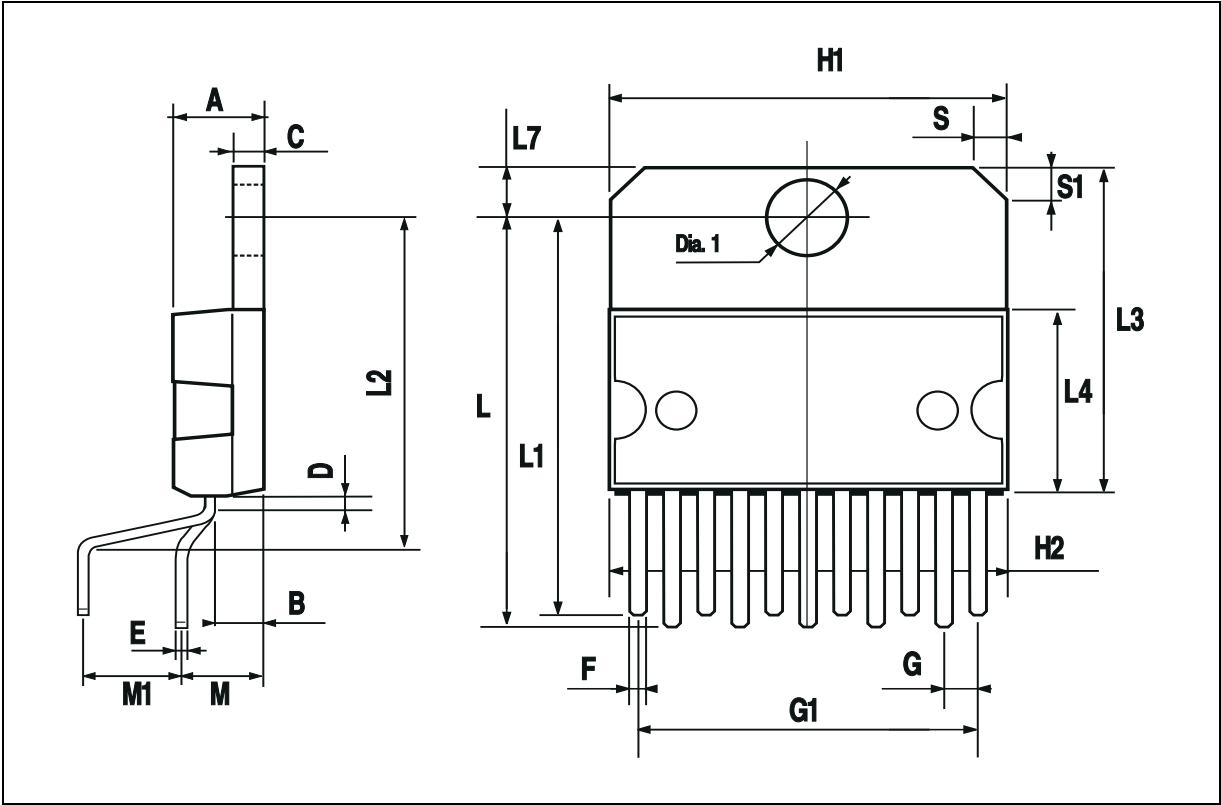


| DIM. | mm    |      |       | inch  |       |       |
|------|-------|------|-------|-------|-------|-------|
|      | MIN.  | TYP. | MAX.  | MIN.  | TYP.  | MAX.  |
| A    |       |      | 5     |       |       | 0.197 |
| B    |       |      | 2.65  |       |       | 0.104 |
| C    |       |      | 1.6   |       |       | 0.063 |
| D    |       | 1    |       |       | 0.039 |       |
| E    | 0.49  |      | 0.55  | 0.019 |       | 0.022 |
| F    | 0.88  |      | 0.95  | 0.035 |       | 0.037 |
| G    | 1.45  | 1.7  | 1.95  | 0.057 | 0.067 | 0.077 |
| G1   | 16.75 | 17   | 17.25 | 0.659 | 0.669 | 0.679 |
| H1   | 19.6  |      |       | 0.772 |       |       |
| H2   |       |      | 20.2  |       |       | 0.795 |
| L    | 21.9  | 22.2 | 22.5  | 0.862 | 0.874 | 0.886 |
| L1   | 21.7  | 22.1 | 22.5  | 0.854 | 0.87  | 0.886 |
| L2   | 17.4  |      | 18.1  | 0.685 |       | 0.713 |
| L3   | 17.25 | 17.5 | 17.75 | 0.679 | 0.689 | 0.699 |
| L4   | 10.3  | 10.7 | 10.9  | 0.406 | 0.421 | 0.429 |
| L7   | 2.65  |      | 2.9   | 0.104 |       | 0.114 |
| M    | 4.25  | 4.55 | 4.85  | 0.167 | 0.179 | 0.191 |
| M1   | 4.73  | 5.08 | 5.43  | 0.186 | 0.200 | 0.214 |
| S    | 1.9   |      | 2.6   | 0.075 |       | 0.102 |
| S1   | 1.9   |      | 2.6   | 0.075 |       | 0.102 |
| Dia1 | 3.65  |      | 3.85  | 0.144 |       | 0.152 |

**OUTLINE AND  
MECHANICAL DATA**



**Multiwatt11 V**



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