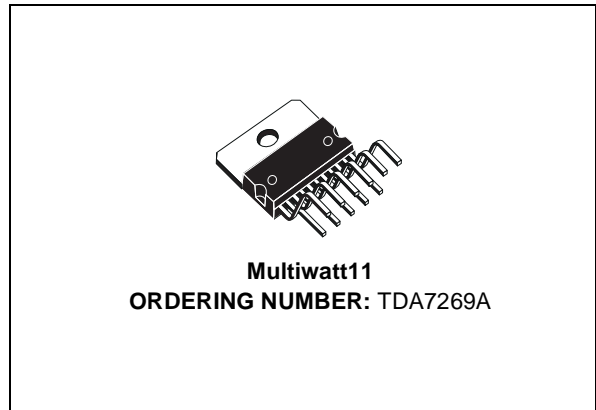




## 14W+14W STEREO AMPLIFIER WITH MUTE & ST-BY

- WIDE SUPPLY VOLTAGE RANGE UP TO +20V
- SPLIT SUPPLY
- HIGH OUTPUT POWER 14+14W @THD = 10%,  $R_L = 8\Omega$ ,  $V_S = \pm 16V$
- NO POP AT TURN-ON/OFF
- MUTE (POP FREE)
- STANDBY FEATURE (LOW  $I_q$ )
- SHORT CIRCUIT PROTECTION TO GND
- THERMAL OVERLOAD PROTECTION

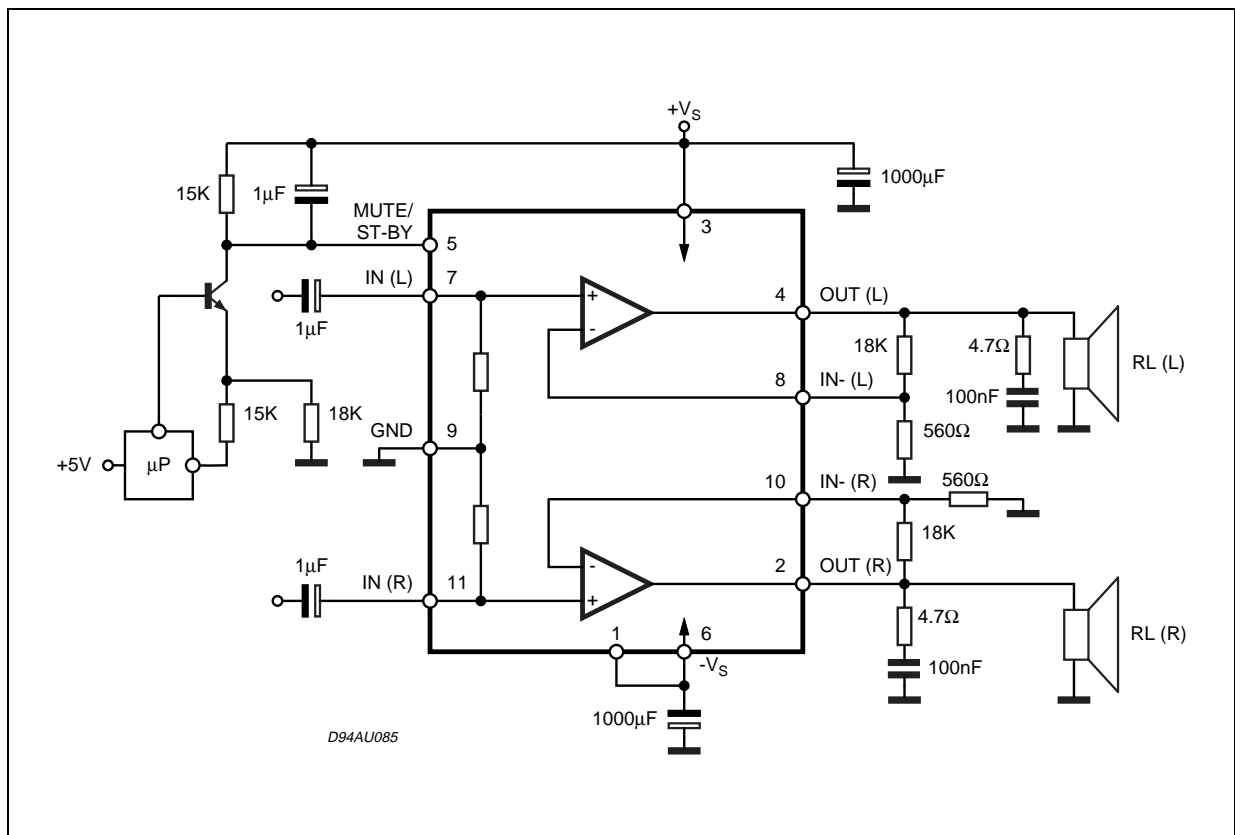


### DESCRIPTION

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

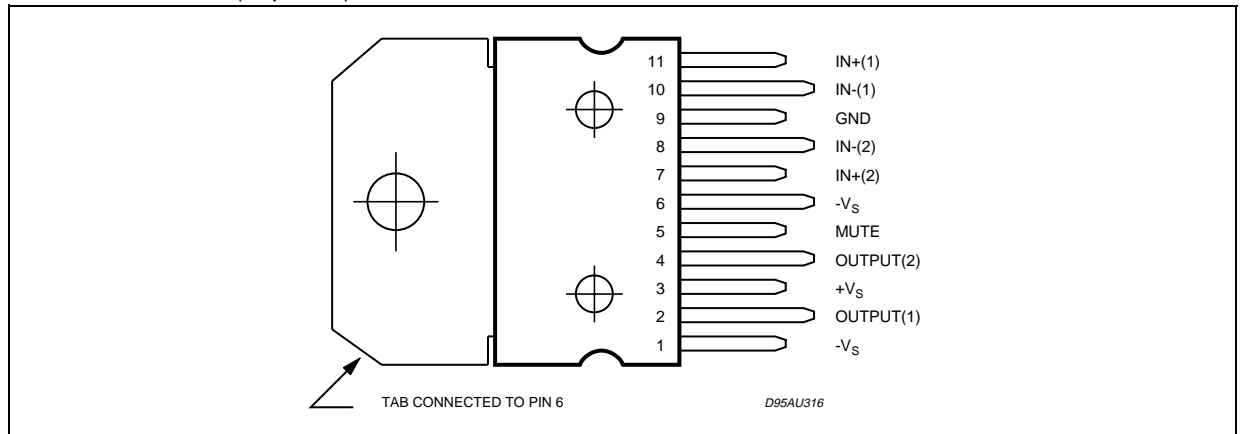


# TDA7269A

## 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	$^\circ\text{C}$

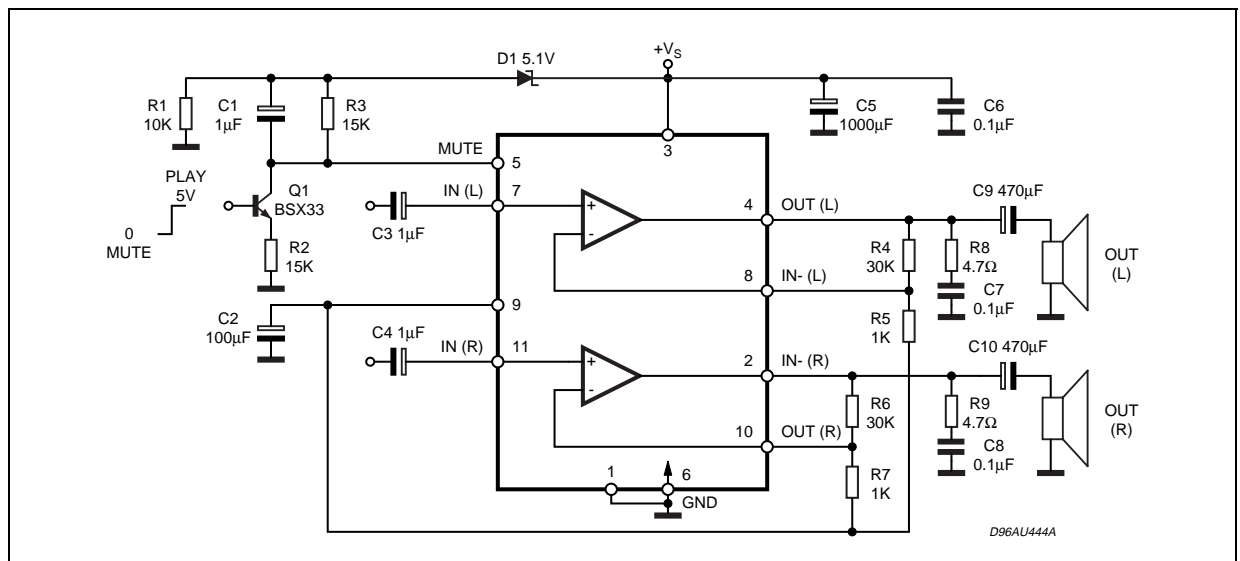
## PIN CONNECTION (Top view)



## THERMAL DATA

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

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%; $R_L = 8\Omega$ ; $V_S = \pm 12.5V$ ; $R_L = 4\Omega$ ;	12 8	14 10		W W
		THD = 1%; $R_L = 8\Omega$ ; $V_S = \pm 12.5V$ ; $R_L = 4\Omega$ ;	9 6	11 7.5		W 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 $7W$ ; $f = 100Hz$ to $15KHz$ ;			0.7	%
		$R_L = 4\Omega$ ; $P_O = 1W$ ; $f = 1KHz$ ;		0.02		%
		$R_L = 4\Omega$ ; $V_S = \pm 10V$ ; $P_O = 0.1$ to $5W$ ; $f = 100Hz$ to $15KHz$ ;			1	%
$C_T$	Cross Talk	$f = 1KHz$ ; $f = 10KHz$ ;	50	70 60		dB 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 $f = 20Hz$ to $22KHz$		3 4	8	$\mu V$ $\mu V$
$R_i$	Input Resistance		15	20		K $\Omega$
SVR	Supply Voltage Rejection (each channel)	$f = 100Hz$ ; $V_R = 0.5V$		60		dB
$T_j$	Thermal Shut-down Junction Temperature			145		$^\circ C$
<b>MUTE FUNCTION [ref +<math>V_S</math>] (*)</b>						
$V_{TMUTE}$	Mute /Play threshold		-7	-6	-5	V
$A_{MUTE}$	Mute Attenuation		60	70		dB
<b>STAND-BY FUNCTIONS [ref: +<math>V_S</math>] (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.**

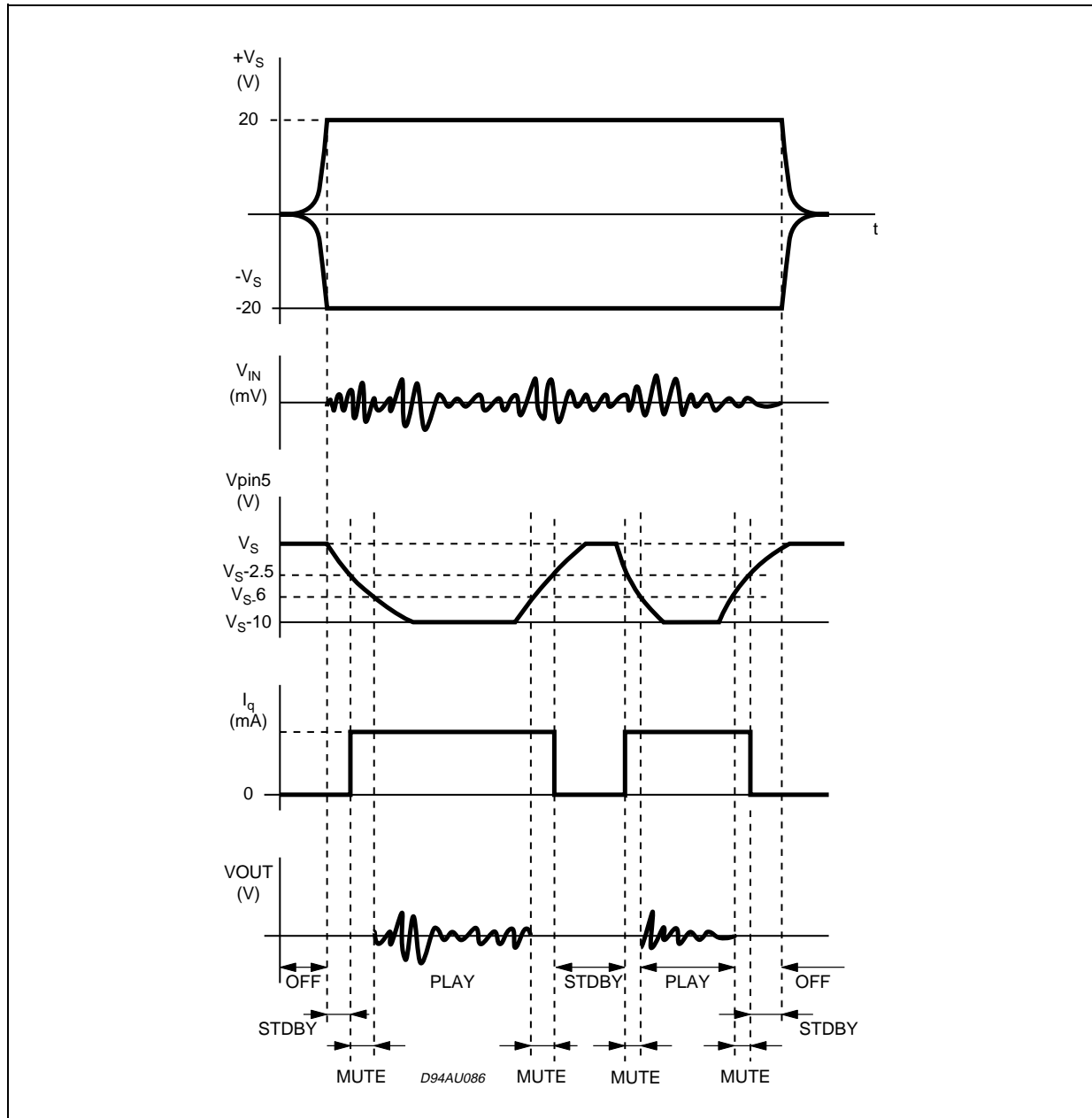
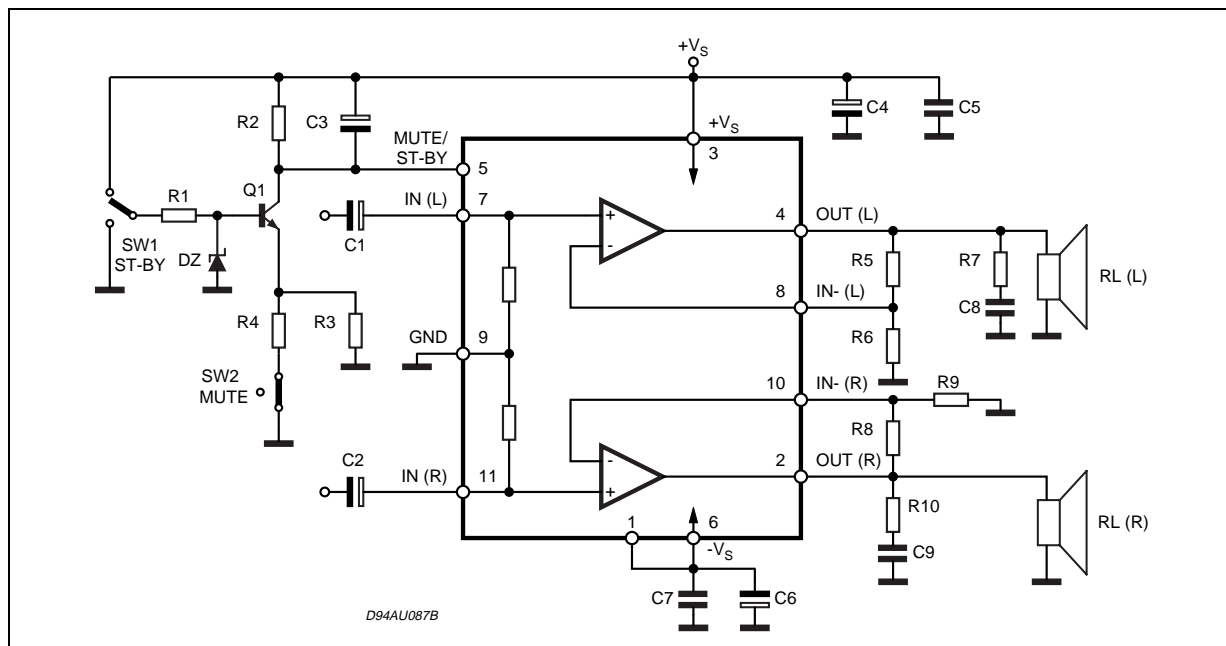


Figure 4. Test and Application Circuit (Stereo Configuration)

**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 Vs) :

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

The detected characteristics of THD vs Pout are shown in figg: 7, 8 and 9 for the different load impedances. With Rload = 8ohm , Vs =  $\pm 14V$  the maximum output power obtainable is 30W at THD = 10% (fig. 9). With Rload = 6ohm , Vs =  $\pm 12V$  the maximum output power obtainable is 28W at THD = 10% (fig. 8). With Rload = 4ohm , Vs =  $\pm 10V$  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**

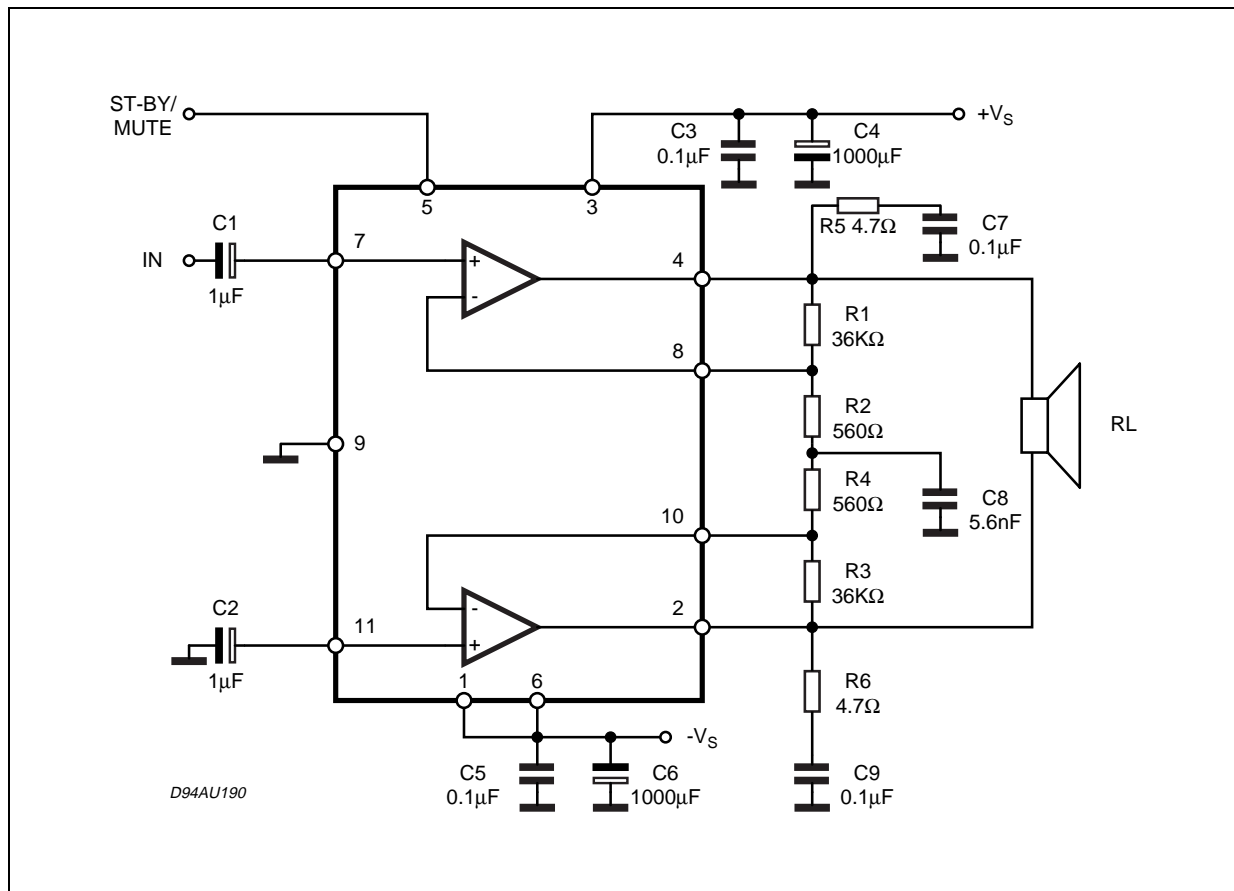


Figure 6. Single Power Supply Application Diagram

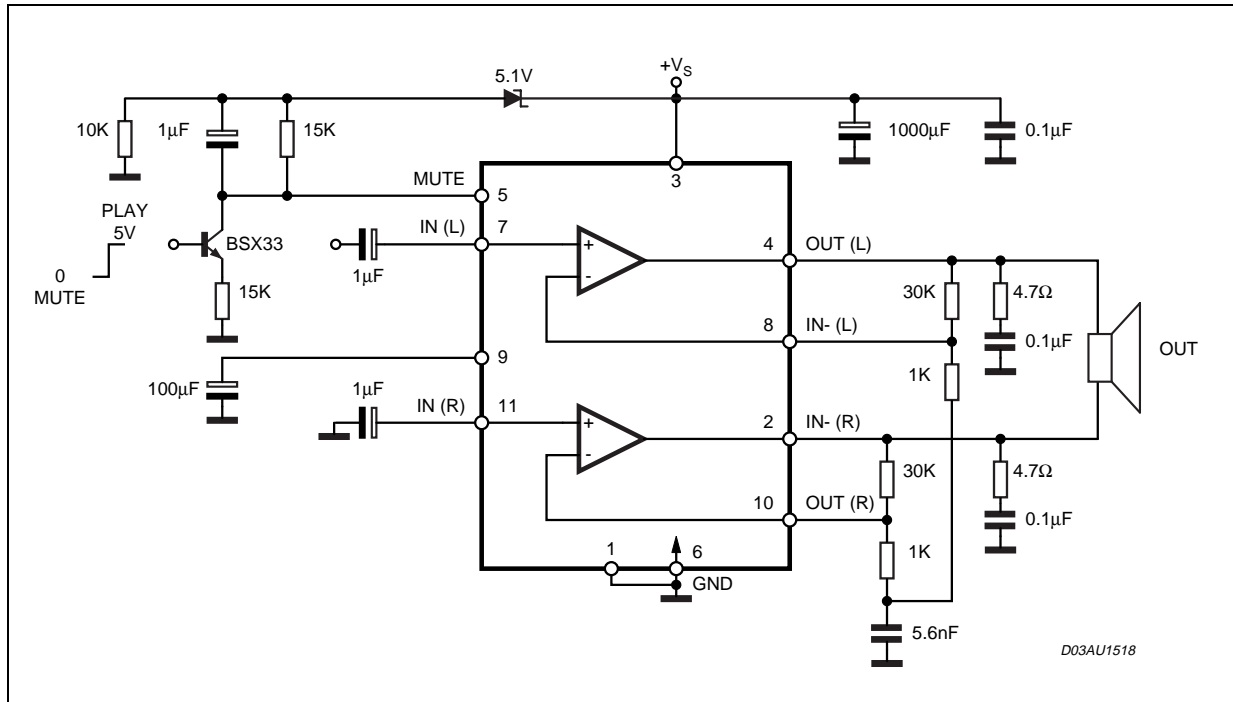


Figure 7. Distortion vs Output Power

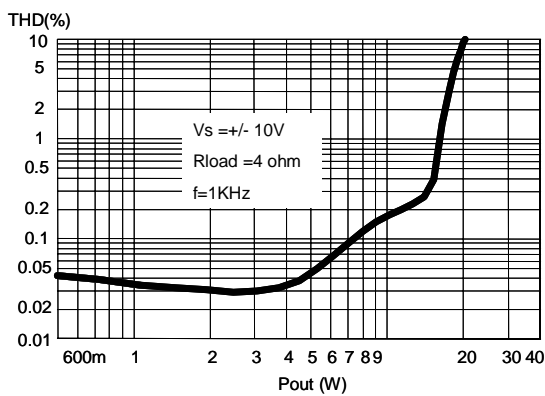


Figure 9. Distortion vs Output Power

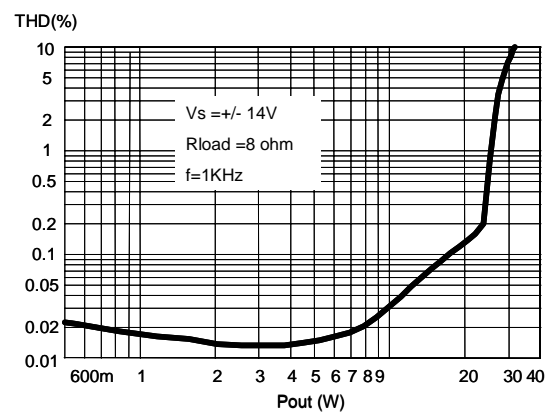
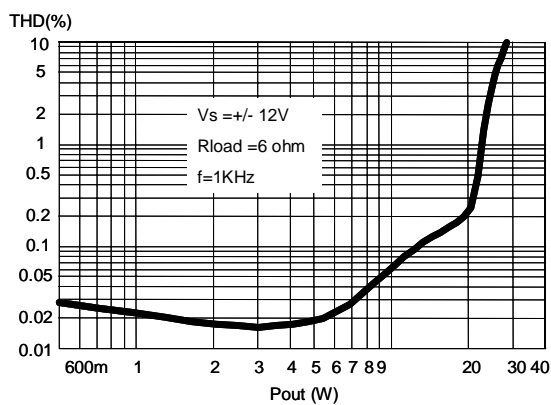
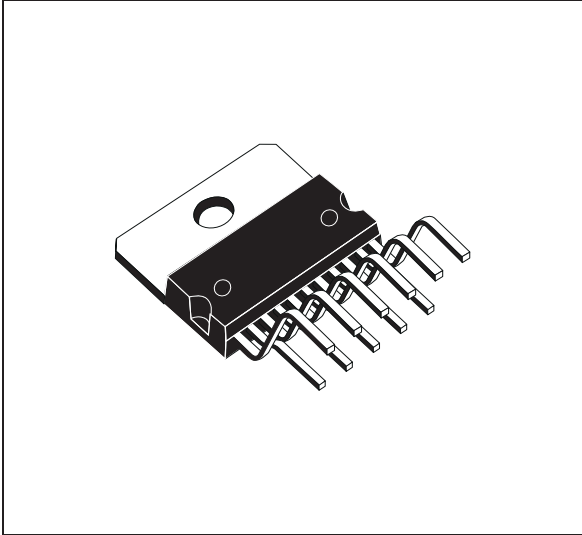


Figure 8. Distortion vs Output Power

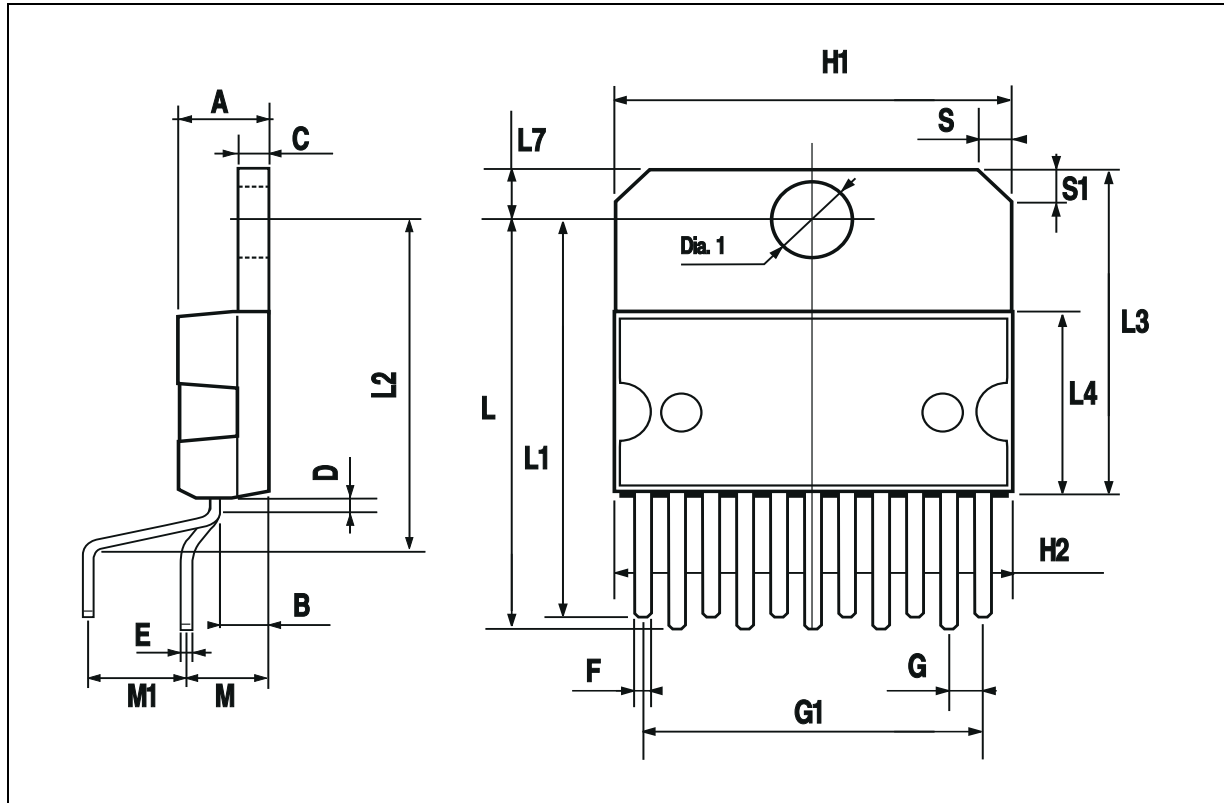


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			5			0.197
B			2.65			0.104
C			1.6			0.063
D		1			0.039	
E	0.49		0.55	0.019		0.022
F	0.88		0.95	0.035		0.037
G	1.45	1.7	1.95	0.057	0.067	0.077
G1	16.75	17	17.25	0.659	0.669	0.679
H1	19.6			0.772		
H2			20.2			0.795
L	21.9	22.2	22.5	0.862	0.874	0.886
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**





Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics  
© 2002 STMicroelectronics - All Rights Reserved

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco -  
Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.  
<http://www.st.com>