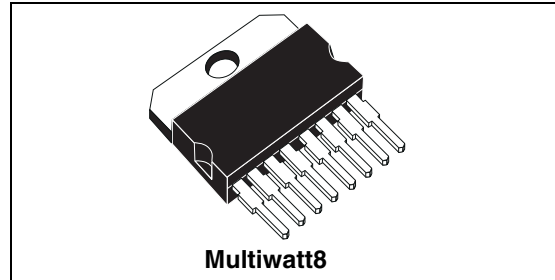


## 25 W + 25 W stereo amplifier with mute and standby

### Features

- Wide supply voltage range (up to  $\pm 22.5$  V)
- Split supply
- High output power
  - 25 W + 25 W into  $8 \Omega$
  - with  $V_S = \pm 20$  V and THD = 10%
- No “pop” at turn on/off
- Mute (“pop”-free)
- Standby feature (low  $I_Q$ )
- Few external components
- Short-circuit protection
- Thermal overload protection



### Description

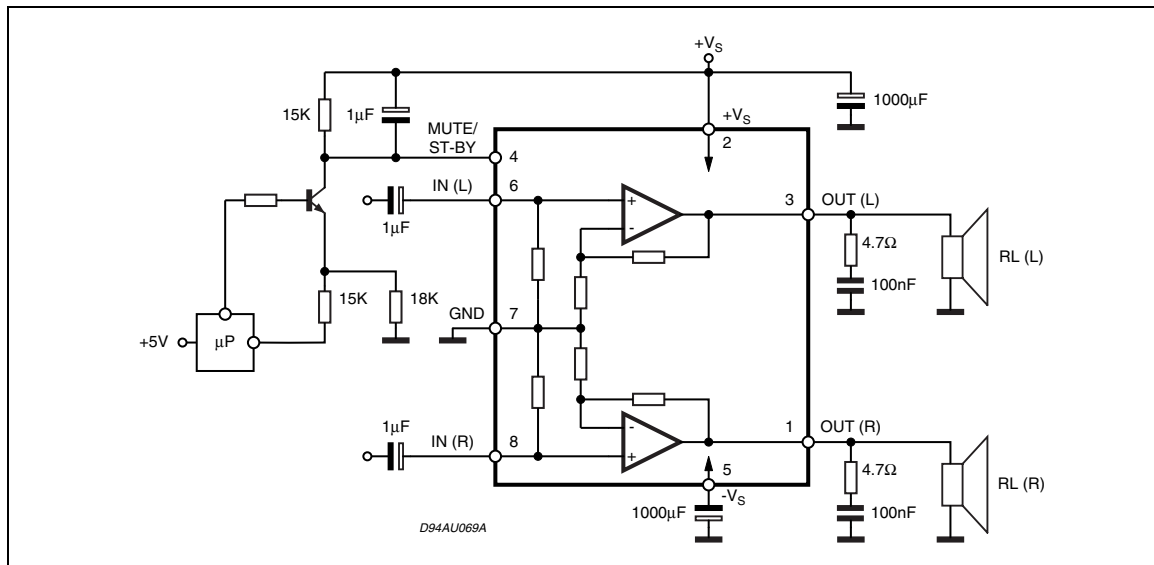
The TDA7264 is class-AB dual audio power amplifier assembled in a Multiwatt package.

It is specially designed for high-quality sound applications such as hi-fi music centers and stereo TV sets.

**Table 1. Device summary**

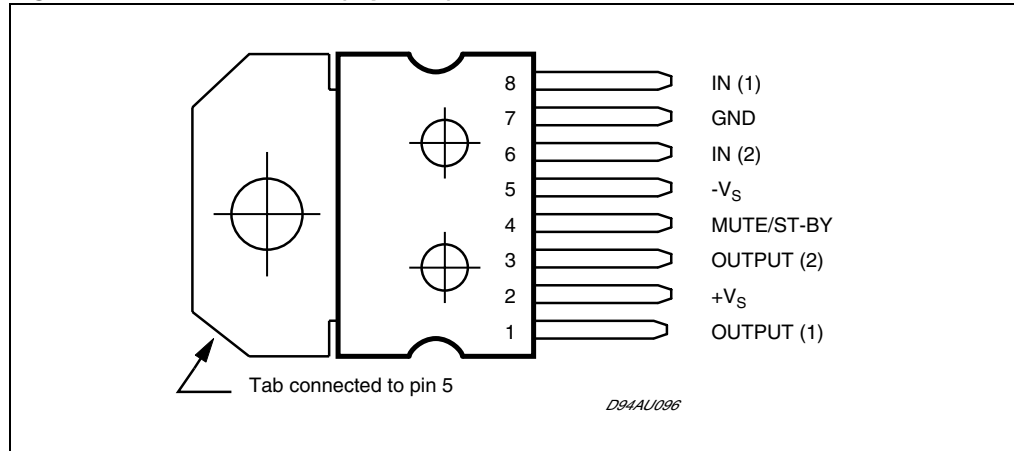
Order code	Operating temperature	Package	Packaging
TDA7264	0 to 70 °C	Multiwatt8	Tube

**Figure 1. Applications circuit**



# 1 Pin description

Figure 2. Pin connection (top view)



## 2 Electrical specifications

### 2.1 Absolute maximum ratings

**Table 2. Absolute maximum ratings**

Symbol	Parameter	Value	Unit
$V_S$	DC supply voltage	$\pm 25$	V
$I_O$	Output Peak Current (internally limited)	4.5	A
$P_{tot}$	power Dissipation $T_{case} = 70^\circ\text{C}$	30	W
$T_{op}$	Operating temperature	-20 to 85	$^\circ\text{C}$
$T_j$	Junction temperature	-40 to 150	$^\circ\text{C}$
$T_{stg}$	Storage temperature	-40 to 150	$^\circ\text{C}$

### 2.2 Thermal data

**Table 3. Thermal data**

Symbol	Parameter	Min	Typ	Max	Unit
$R_{th\ j-case}$	Thermal resistance, junction to case	-	-	2	$^\circ\text{C/W}$

### 2.3 Electrical specifications

Unless otherwise stated, the results in [Table 4](#) below are given for the conditions:  $V_S = \pm 20\text{ V}$ ,  $R_L$  (load) = 8  $\Omega$ ,  $R_S$  (source) = 50  $\Omega$ ,  $f = 1\text{ kHz}$ , and  $T_{amb} = 25^\circ\text{C}$ . See also the applications circuit in [Figure 12 on page 9](#).

**Table 4. Electrical specifications**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_S$	Supply voltage range	-	$\pm 5$	-	$\pm 22.5$	V
$I_q$	Total quiescent current	-	-	80	130	mA
$P_{OM}$	Music output power <sup>(1)</sup>	THD = 10%, $R_L = 8\ \Omega$ , $V_S = \pm 22.5\text{ V}$	-	32	-	W
$P_O$	Output power	THD = 10%: $R_L = 8\ \Omega$ , $V_S = \pm 20\text{ V}$ $R_L = 4\ \Omega$ , $V_S = \pm 16\text{ V}$	20	25 25	-	W
		THD = 1%: $R_L = 8\ \Omega$ , $V_S = \pm 20\text{ V}$ $R_L = 4\ \Omega$ , $V_S = \pm 16\text{ V}$	-	20 20	-	

Table 4. Electrical specifications (continued)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
THD	Total harmonic distortion	$P_O = 1 \text{ W}$ , $f = 1 \text{ kHz}$ , $R_L = 8 \Omega$ , $V_S = \pm 20 \text{ V}$ ,	-	0.02	-	%
		$P_O = 0.1 \text{ to } 15 \text{ W}$ , $f = 100 \text{ Hz to } 15 \text{ kHz}$ , $R_L = 8 \Omega$ , $V_S = \pm 20 \text{ V}$	-	-	0.5	
		$P_O = 1 \text{ W}$ , $f = 1 \text{ kHz}$ , $R_L = 4 \Omega$ , $V_S = \pm 16 \text{ V}$ ,	-	0.03	-	
		$P_O = 0.1 \text{ to } 12 \text{ W}$ , $f = 100 \text{ Hz to } 15 \text{ kHz}$ , $R_L = 4 \Omega$ , $V_S = \pm 16 \text{ V}$	-	-	1.0	
$C_T$	Crosstalk	$f = 1 \text{ kHz}$ $f = 10 \text{ kHz}$	-	70 60	-	dB
SR	Slew rate	-	-	10	-	V/ $\mu$ s
$G_V$	Closed-loop voltage gain	-	29	30	31	dB
$\Delta G_V$	Voltage gain matching	-	-	0.2	-	dB
eN	Total input noise	A curve $f = 20 \text{ Hz to } 22 \text{ kHz}$	-	2.5 3.5	8	$\mu$ V
$R_i$	Input resistance	-	15	20	-	k $\Omega$
SVRR	Supply voltage rejection ratio	$f_r = 100 \text{ Hz}$ , $V_r = 0.5 \text{ V}$	-	60	-	dB
$T_j$	Junction temperature at thermal shut-down	-	-	145	-	$^{\circ}$ C
Mute mode (see also <a href="#">Table 5 on page 8</a> )						
$V_{T\_MUTE}$	Mute/play threshold	-	-7	-6	-5	V
$A_{MUTE}$	Mute attenuation	-	60	90	-	dB
Standby mode (see also <a href="#">Table 5 on page 8</a> )						
$V_{T\_STBY}$	Standby/mute threshold	-	-3.5	-2.5	-1.5	V
$A_{STBY}$	Standby attenuation	-	-	110	-	dB
$I_{q\_STBY}$	Quiescent current in standby	-	-	3	-	mA

1. FULL POWER up to  $V_S = \pm 22.5 \text{ V}$  with  $R_L = 8 \Omega$  and  $V_S = \pm 16 \text{ V}$  with  $R_L = 4 \Omega$ .  
MUSIC POWER is the maximum power which the amplifier is capable of producing across the rated load resistance (regardless of non-linearity) 1 s after the application of a sinusoidal input signal of frequency 1 kHz.

### 3 Characterization curves

Figure 3. Quiescent current vs Supply Voltage

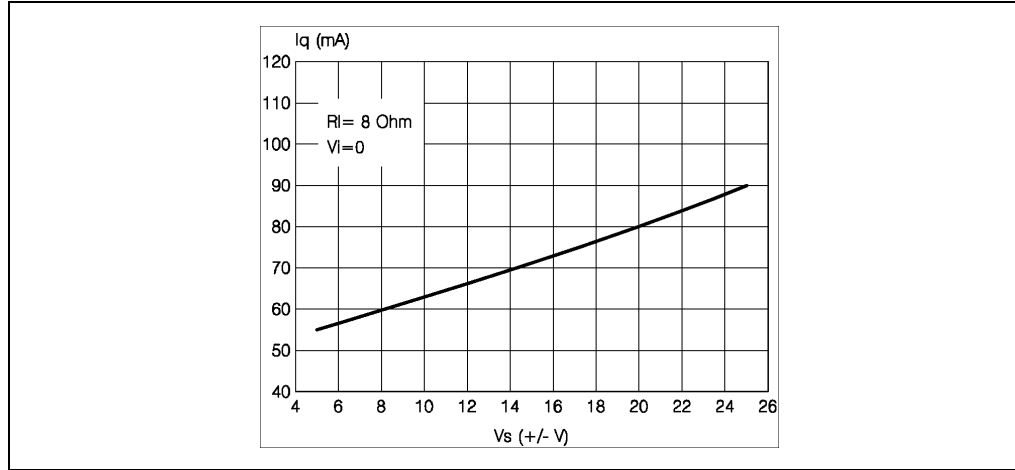
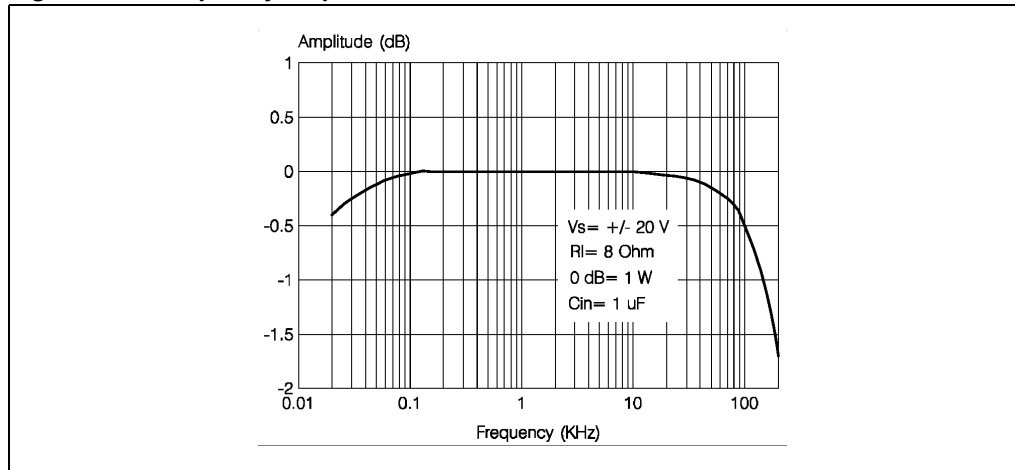
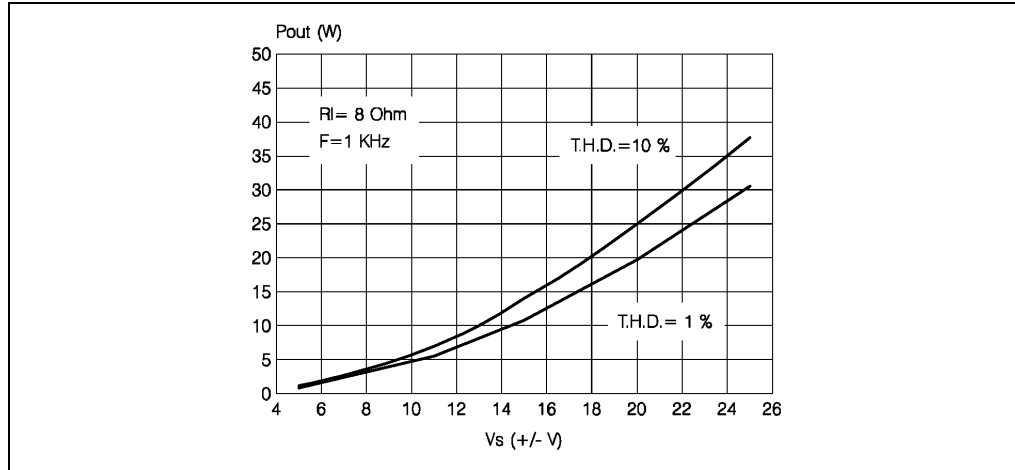


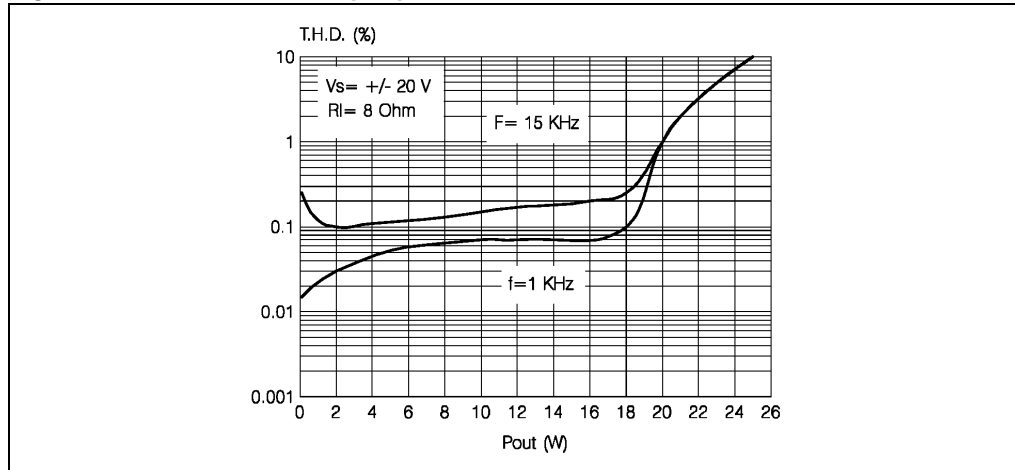
Figure 4. Frequency response



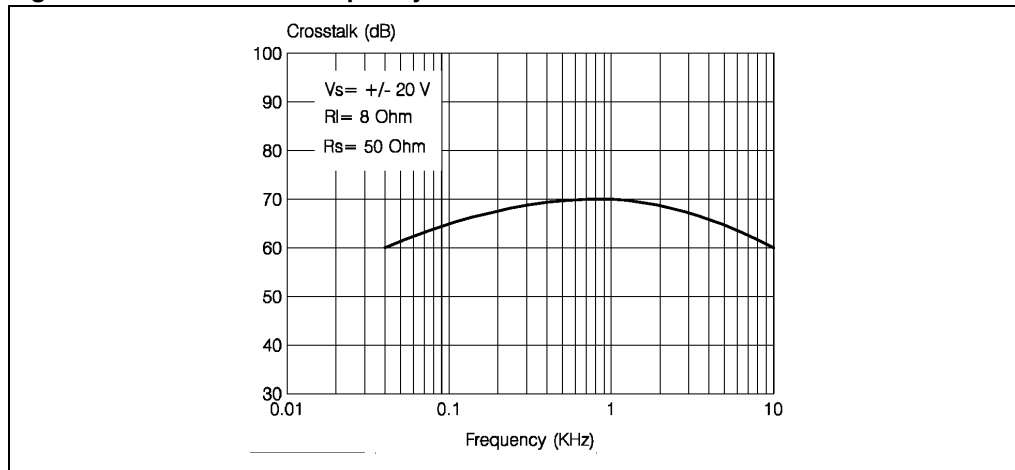
**Figure 5. Output power vs supply voltage**



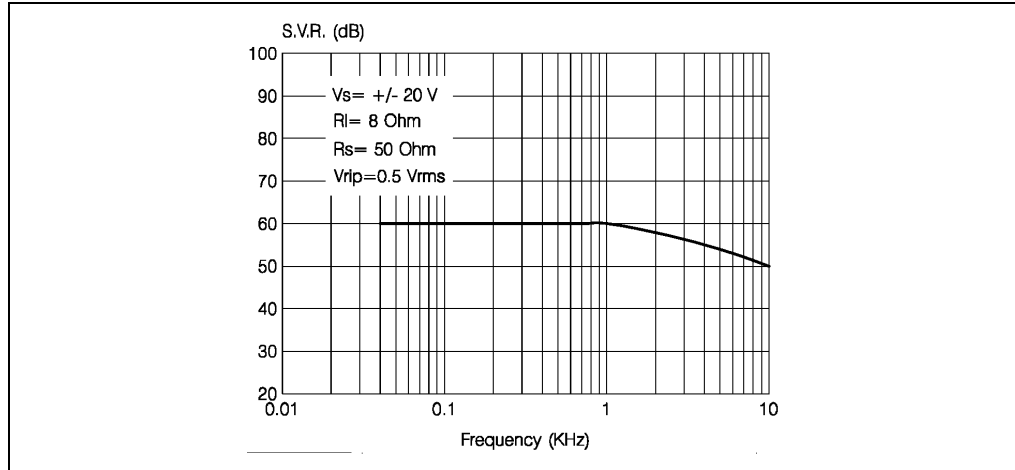
**Figure 6. Distortion vs output power**



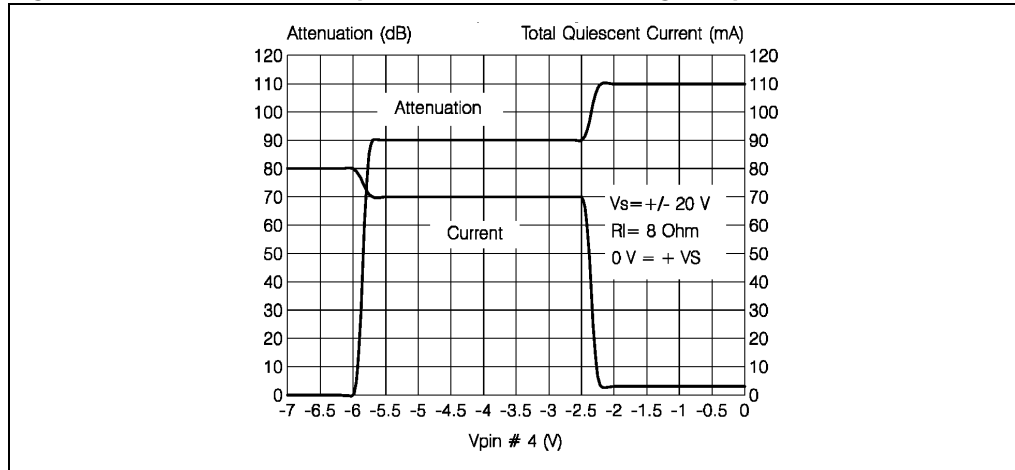
**Figure 7. Crosstalk vs frequency**



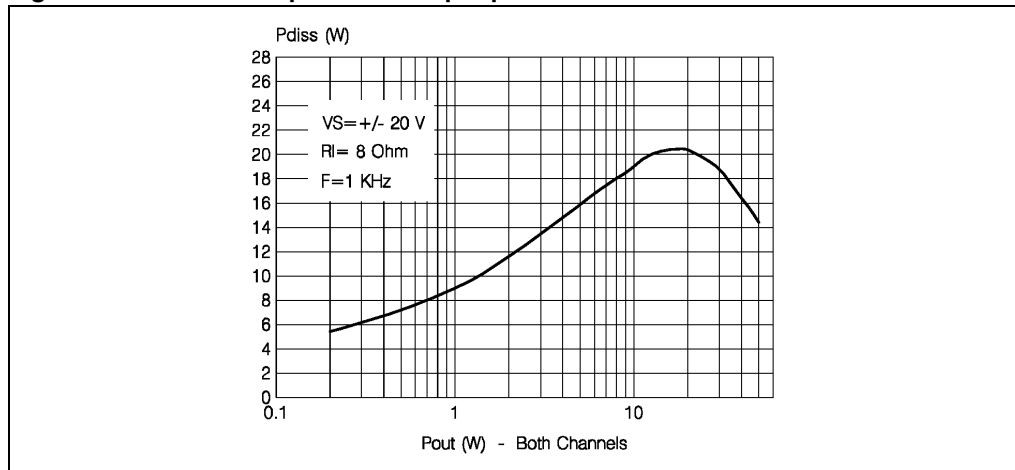
**Figure 8. SVRR vs frequency**



**Figure 9. Attenuation and quiescent current vs voltage on pin 4**



**Figure 10. Power dissipation vs output power**



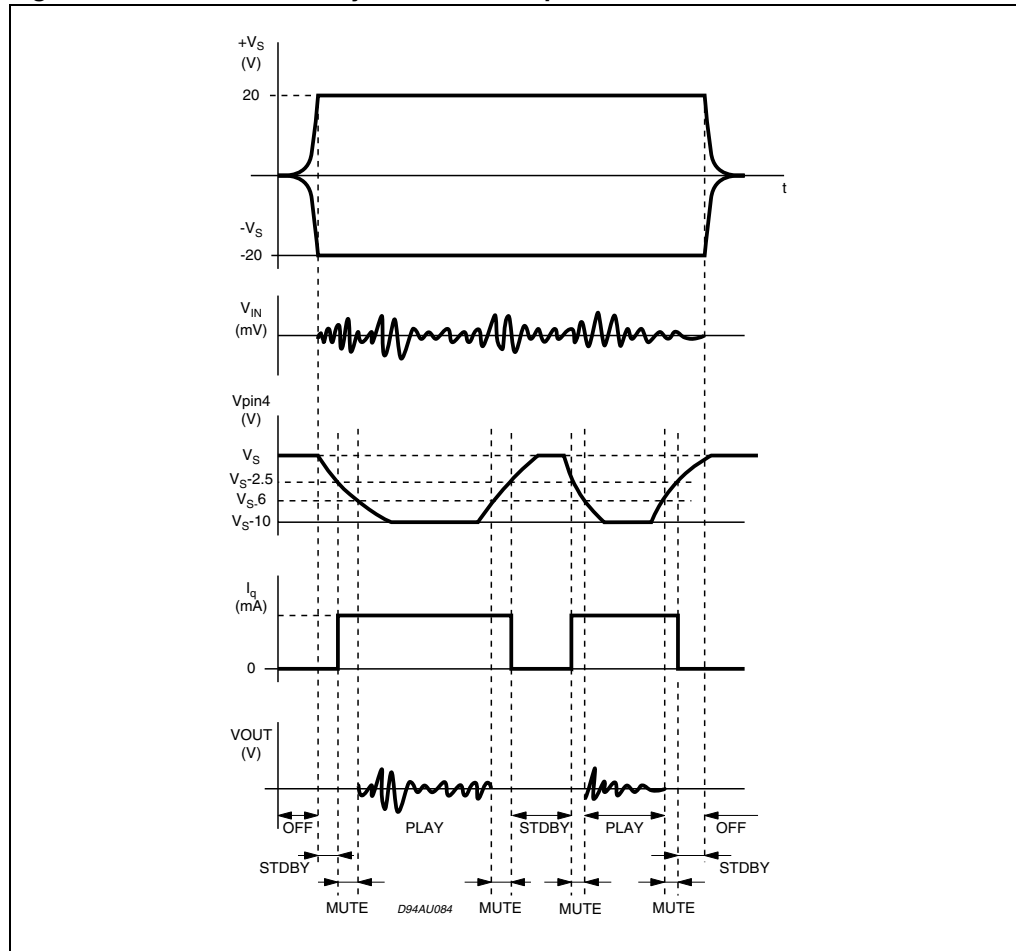
## 4 Mute and standby modes

Pin 4 (MUTE/STANDBY) controls the amplifier status by two different thresholds referenced to  $+V_S$  as given in [Table 5](#) below. See also [Table 4: Electrical specifications on page 3](#).

**Table 5. Mute and standby thresholds on pin 5**

Nominal voltage on pin 4, $V_{PIN4}$	Mode	Remarks
$> +V_S - 2.5\text{ V}$	Standby	Output stages turned off
$> +V_S - 6.0\text{ V}, < +V_S - 2.5\text{ V}$	Mute	Output stages turned on, amplifiers muted
$< +V_S - 6.0\text{ V}$	Play	Amplifiers active

**Figure 11. Mute and standby thresholds on pin 4**





# 5 Applications information

Figure 12. Schematic of demo board

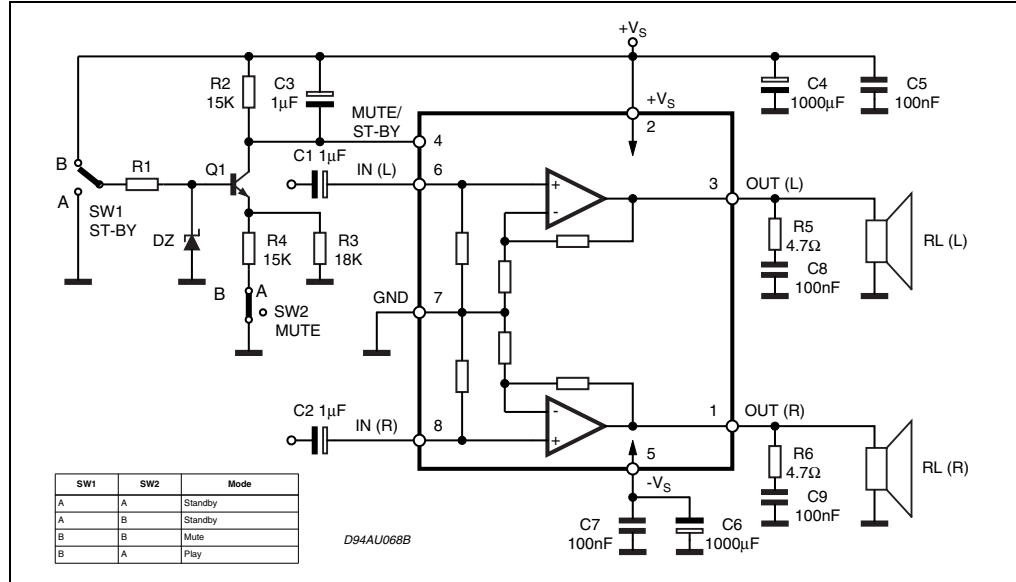
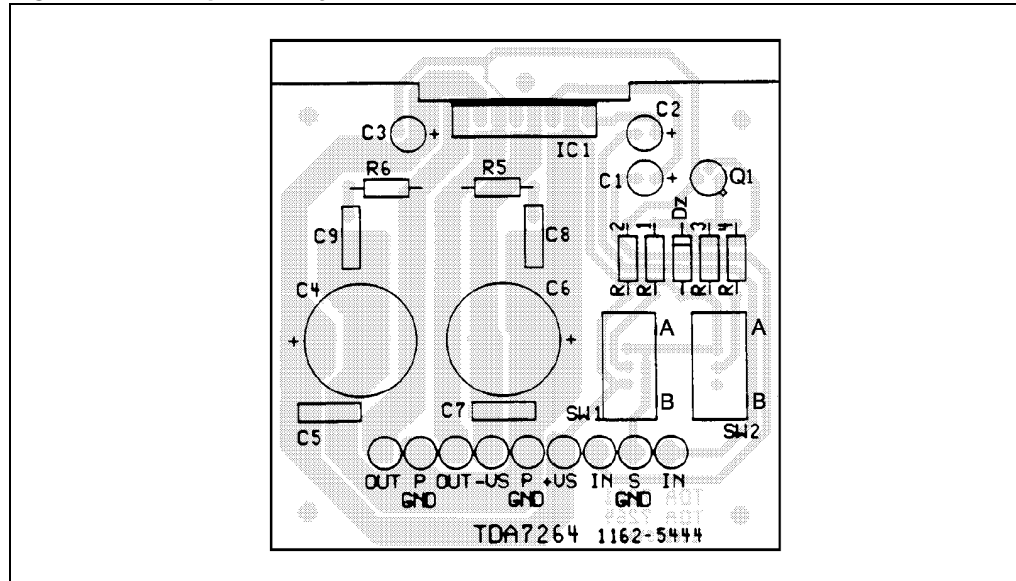


Figure 13. Component layout of demo-board



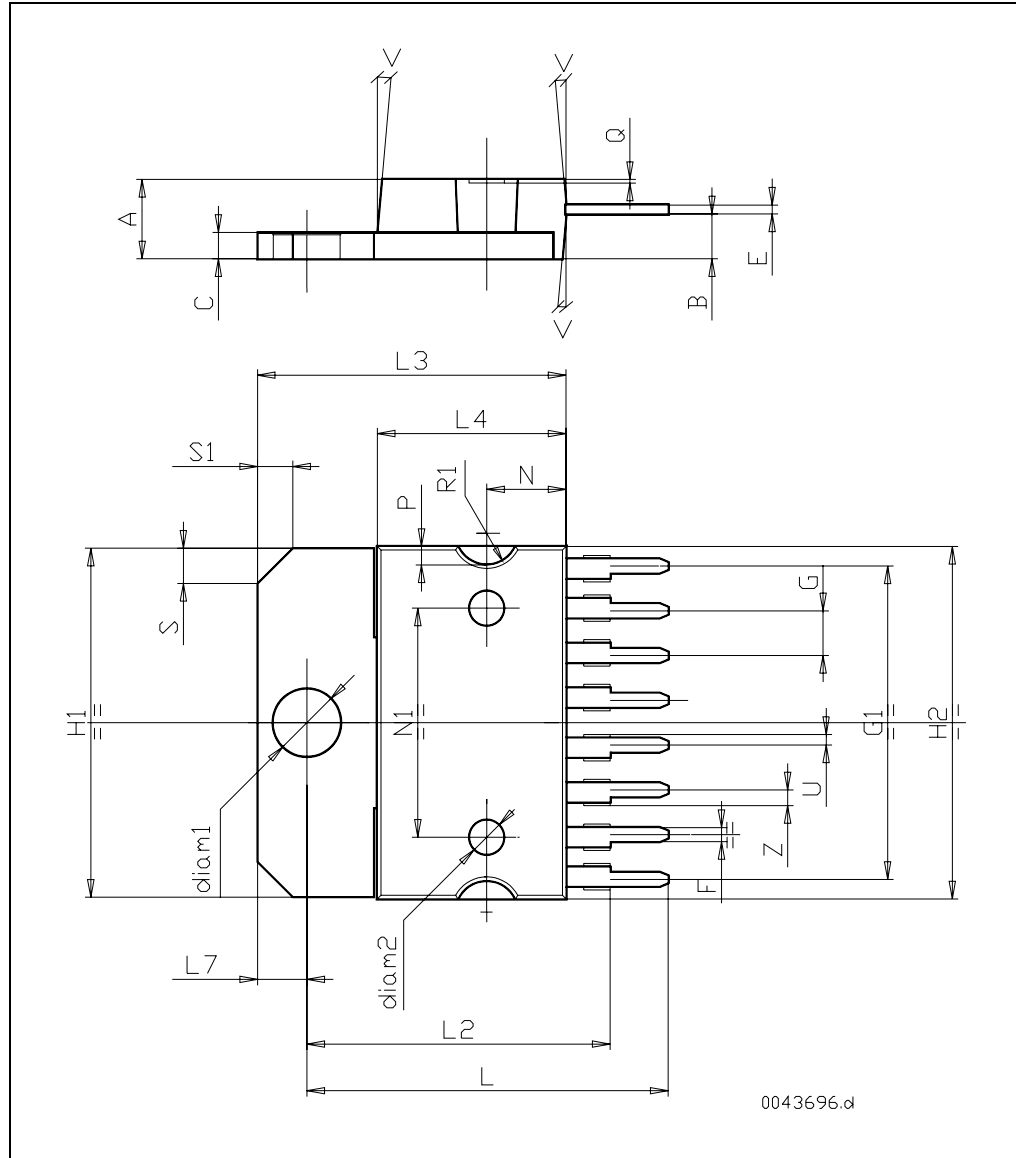
**Table 6. Recommended component values for demo board**

Component	Recommended value	Purpose	Larger than recommended value	Smaller than recommended value
R1	10 k $\Omega$	Mute circuit	Decrease in DZ biasing current	-
R2	15 k $\Omega$	Mute circuit	V <sub>PIN4</sub> shifted downwards	V <sub>PIN4</sub> shifted upwards
R3	18 k $\Omega$	Mute circuit	V <sub>PIN4</sub> shifted upwards	V <sub>PIN4</sub> shifted downwards
R4	15 k $\Omega$	Mute circuit	V <sub>PIN4</sub> shifted upwards	V <sub>PIN4</sub> shifted downwards
R5, R6	4.7 $\Omega$	Frequency stability	Danger of oscillation	Danger of oscillation
C1, C2	1 $\mu$ F	Input AC coupling	-	Higher low-frequency cutoff
C3	1 $\mu$ F	Standby/mute time constant	Longer on/off time	Shorter on/off time
C4, C6	1000 $\mu$ F	Supply voltage decoupling	-	Danger of oscillation
C5, C7	0.1 $\mu$ F	Supply voltage decoupling	-	Danger of oscillation
C8, C9	0.1 $\mu$ F	Frequency stability	-	-
Dz	5.1 V	Mute circuit	-	-
Q1	BC107	Mute circuit	-	-

## 6 Package mechanical data

The TDA7264 comes in a 8-pin Multiwatt package with pin 5 internally connected to the metal tab.

**Figure 14. Multiwatt8 outline drawing**



In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK<sup>®</sup> packages, depending on their level of environmental compliance. ECOPACK<sup>®</sup> specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK<sup>®</sup> is an ST trademark.

Table 7. Multiwatt8 package dimensions

Reference	Dimensions in mm			Dimensions in inches		
	Min	Typ	Max	Min	Typ	Max
A	-	-	5.00	-	-	0.197
B	-	-	2.65	-	-	0.104
C	-	-	1.60	-	-	0.063
E	0.49	-	0.55	0.019	-	0.22
F	0.78	-	0.85	0.031	-	0.033
G	2.40	2.54	2.68	0.094	0.100	0.106
G1	17.64	17.78	17.92	0.694	0.700	0.706
H1	19.60	-	-	0.772	-	-
H2	-	-	20.20	-	-	0.787
L	20.35	-	20.65	0.801	-	0.813
L2	17.05	17.20	17.35	0.671	0.677	0.683
L3	17.25	17.50	17.75	0.679	0.689	0.699
L4	10.30	10.70	10.90	0.406	0.421	0.429
L7	2.65	-	2.90	0.104	-	0.114
N	-	-	-	-	-	-
N1	-	-	-	-	-	-
P	-	-	-	-	-	-
Q	-	-	-	-	-	-
R1	-	-	-	-	-	-
S	1.90	-	2.60	0.075	-	0.102
S1	1.90	-	2.60	0.075	-	0.102
U	0.40	-	0.55	0.016	-	0.022
V	-	5 deg	-	-	5 deg	-
Z	0.70	-	0.85	-	-	0.033
Diam.1	3.65	-	3.85	0.144	-	0.152
Diam.2	-	-	-	-	-	-

## 7 Revision history

Table 8. Document revision history

Date	Revision	Changes
Jan-2004	5	First issue in EDOCS
01-Jul-2009	6	Removed references to TDA7264A

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