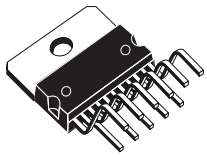
TDA7265B

30 W + 30 W stereo amplifier with mute and standby

Features

- Wide-range supply voltage (up to ± 35 V ABS max.)
- Split supply
- High output power
- 30 W + 30 W at THD=10%, R_L = 8 Ω, V_S ± 23 V
- 25 W + 25 W at THD=1%, R_L = 8 Ω, V_S ± 23 V
- No “pop” at turn-on/off
- Mute (“pop-free”)
- Standby feature (low I_Q)
- Short-circuit protection
- Thermal overload protection



Multiwatt11 (vertical)

Description

The TDA7265B is class-AB dual audio power amplifier assembled in the Multiwatt package, especially designed for high-quality sound applications such as home entertainment systems and stereo TV sets.

The device is pin-to-pin compatible with the TDA7265, TDA7269A and TDA7292.

Table 1. Device summary

Order code	Package	Packing
TDA7265B	Multiwatt11 (vertical)	Tube

Figure 1. Typical application circuit in split supply

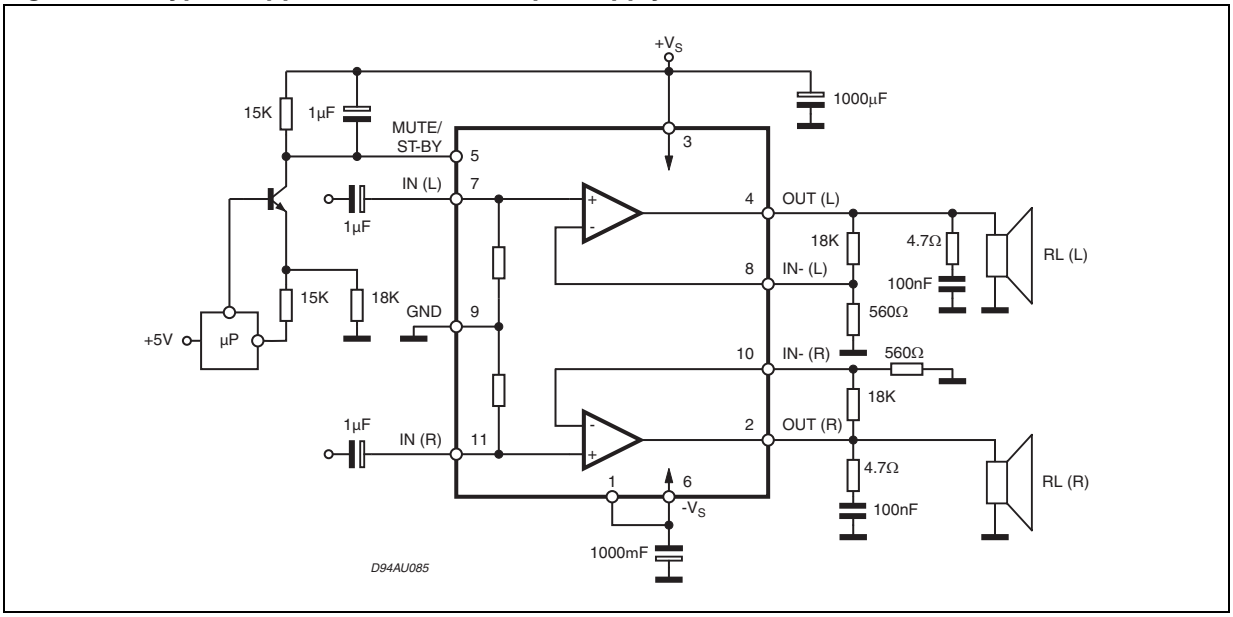


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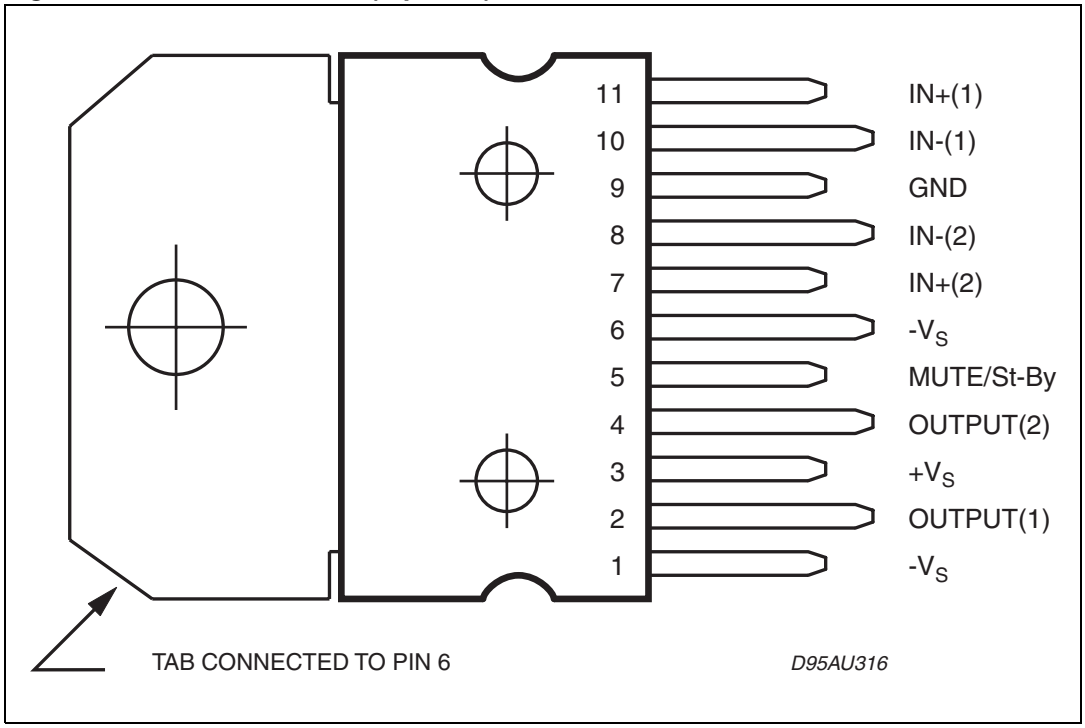
Figure 2. Pin connections (top view)



2 Electrical specifications

2.1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Description	Value	Unit
V_S	DC supply voltage	±35	V
I_O	Output peak current (internally limited)	5	A
P_{tot}	Power dissipation T_{case} = 70 °C	40	W
T_{op}	Operating temperature	-20 to 85	°C
T_{stg}, T_j	Storage and junction temperature	-40 to +150	°C

2.2 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
$R_{th\ j\ case}$	Thermal resistance junction-casetyp.	1.5	°C/W

2.3 Electrical characteristics

Refer to the test circuit, V_S = ± 23 V; R_L = 8 Ω; R_s = 50 Ω; G_V = 30 dB; f = 1 kHz; Tamb = 25 °C, unless otherwise specified.

Table 4. Electrical characteristcs

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
V_S	Supply range		±8		±33	V
I_q	Total quiescent current			50	130	mA
V_{OS}	Input offset voltage		–20		+20	mV
I_b	Non-inverting input bias current			500		nA
P_O	Output power	THD = 10%; R_L = 8 Ω		30		W
		THD = 1%; R_L = 8 Ω		25		W
I_{Peak}	Output peak current	(Internally limited)	3.6	4		A
THD	Total harmonic distortion	R_L = 8 Ω, Po = 1 W		0.02		%
C_T	Crosstalk	f = 1 kHz		70		dB
SR	Slew rate			11		V/ms
Gol	Open-loop voltage gain			80		dB
e_N	Total input noise	F = 20 Hz – 22 kHz		4		µV
Ri	Input resistance			20		kΩ

Table 4. Electrical characteristcs (continued)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
SVR	Supply voltage rejection			75		dB
Tj	Thermal shutdown			145		°C
Mute function { ref.: +Vs }						
VTmute	Mute / play threshold		-7	-6	-5	V
Am	Mute attenuation			75		dB
Standby function { ref.: +Vs }						
VTst-by	Standby / mute threshold		-3.5	-2.5	-1.5	V
Ast-by	Standby attenuation			110		dB
I_q	Quiescent current at standby			8		mA

3 Typical operating characteristics

Figure 3. Quiescent current vs. supply voltage

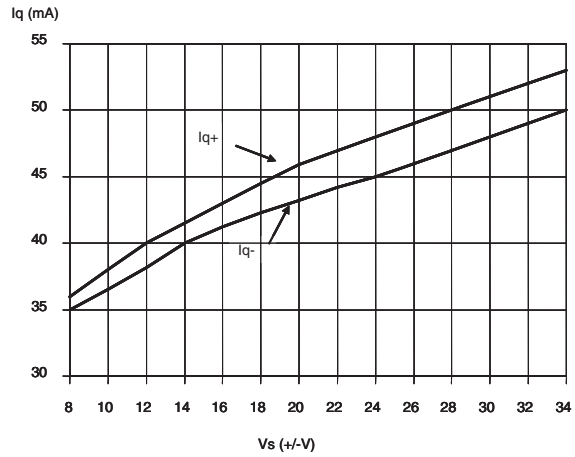


Figure 4. Frequency response

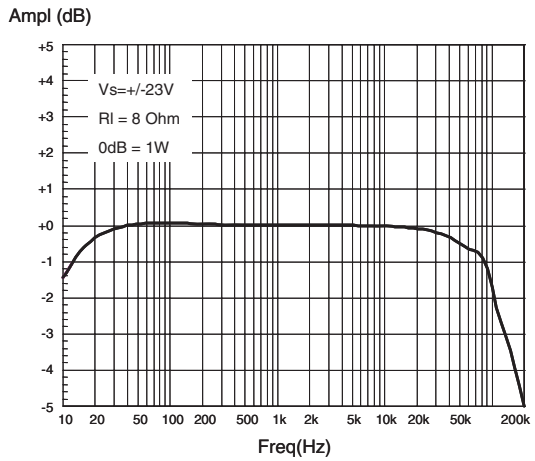


Figure 5. THD vs. output power

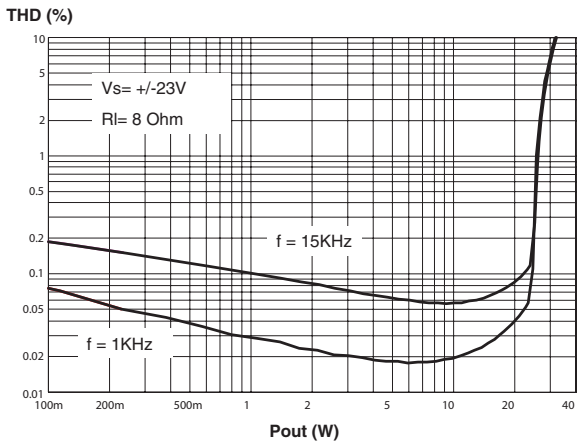


Figure 6. Output power vs. supply voltage

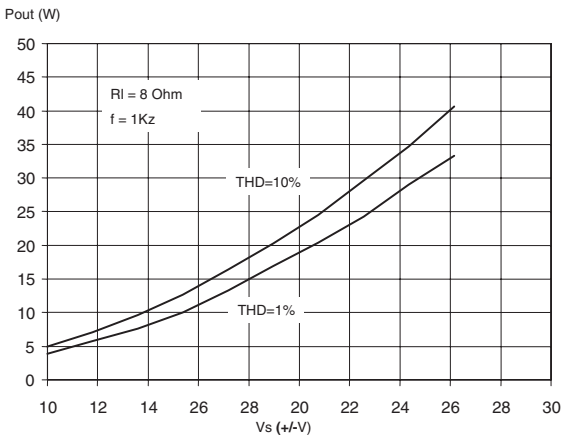


Figure 7. Quiescent current vs. pin 5 voltage

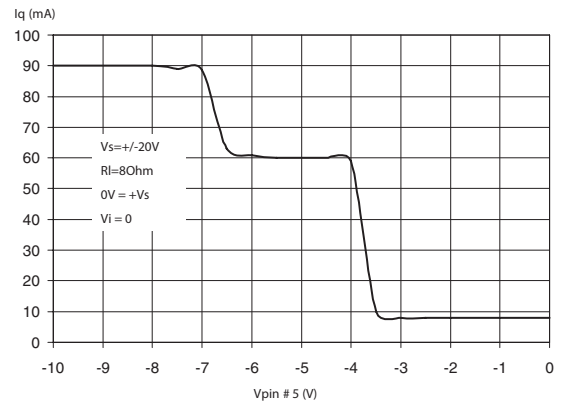


Figure 8. Attenuation vs. pin 5 voltage

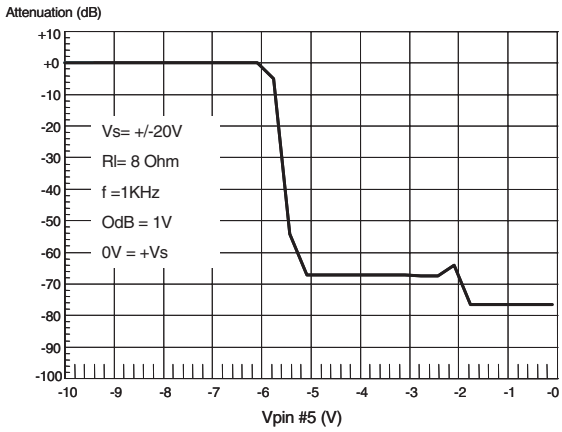


Figure 9. Crosstalk vs. frequency

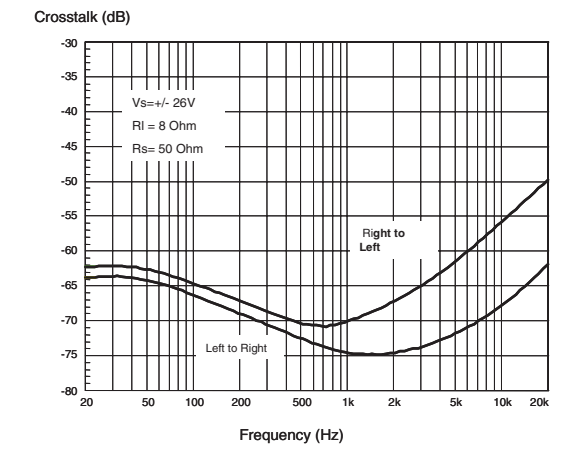
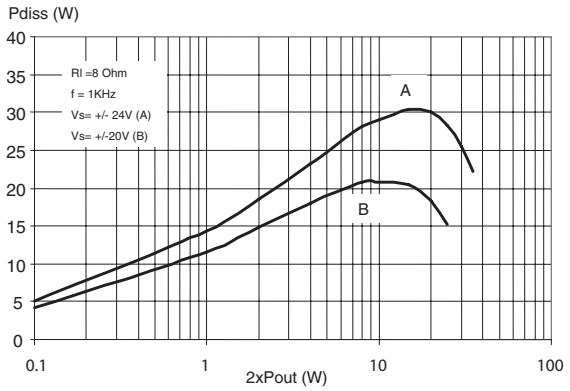


Figure 10. Power dissipation vs. output power

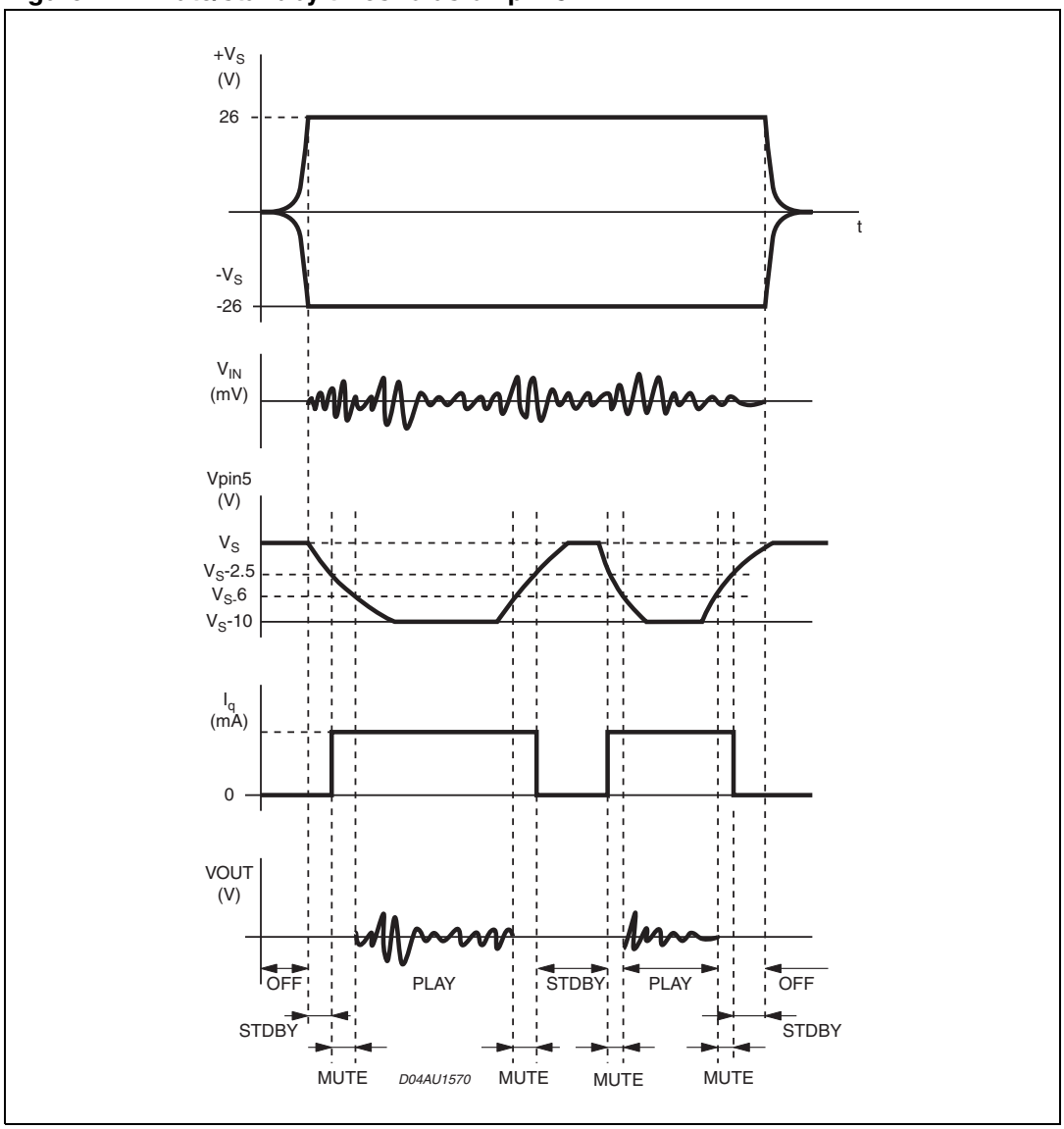


4 Mute standby function

Pin 5 (MUTE/St-By) controls the amplifier status using two different thresholds with reference to $+V_S$:

- when V_{pin5} is greater than or equal to $+V_S$ - 2.5 V, the amplifier is in standby mode and the final stage generators are off
- when V_{pin5} is between $+V_S$ - 2.5V and $+V_S$ 6 V, the final stage current generators are switched on and the amplifier is in mute mode
- when V_{pin5} is less than $+V_S$ - 6 V, the amplifier is in play mode.

Figure 11. Mute/standby thresholds on pin 5



5 Applications

5.1 Stereo configuration circuit and PCB layout

Figure 12. Test and application circuit (stereo configuration)

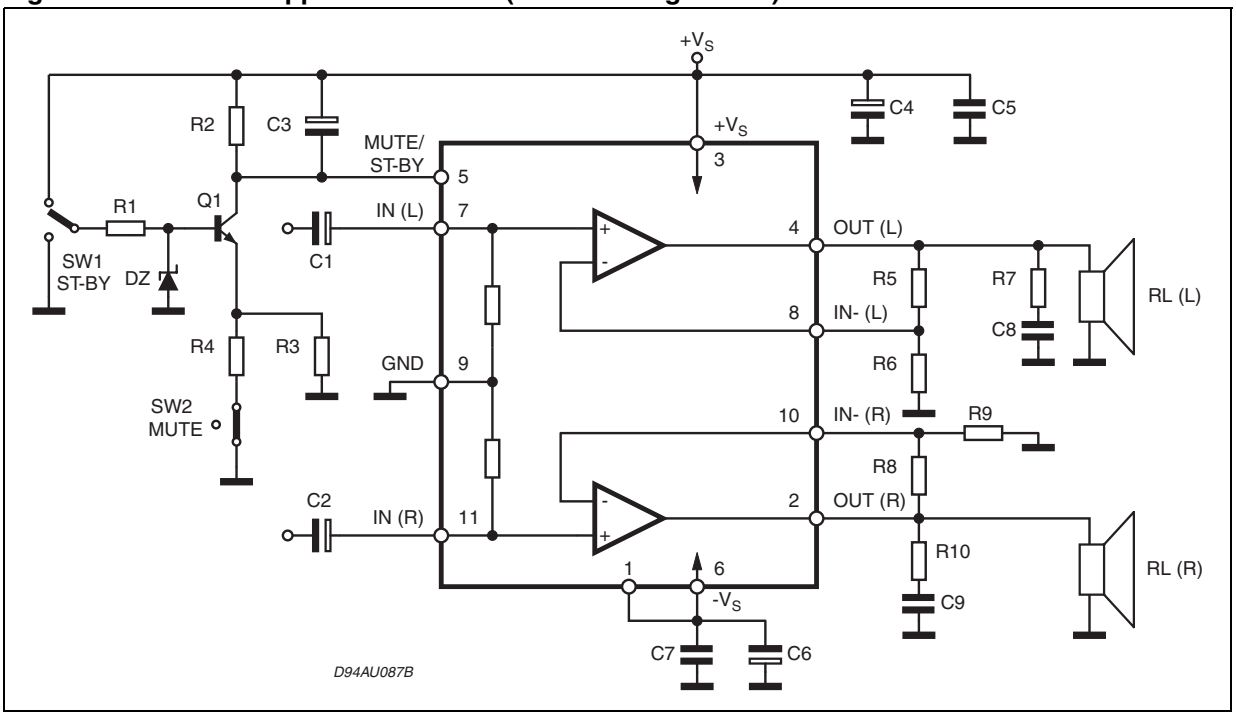


Figure 13. Soldering side (bottom)

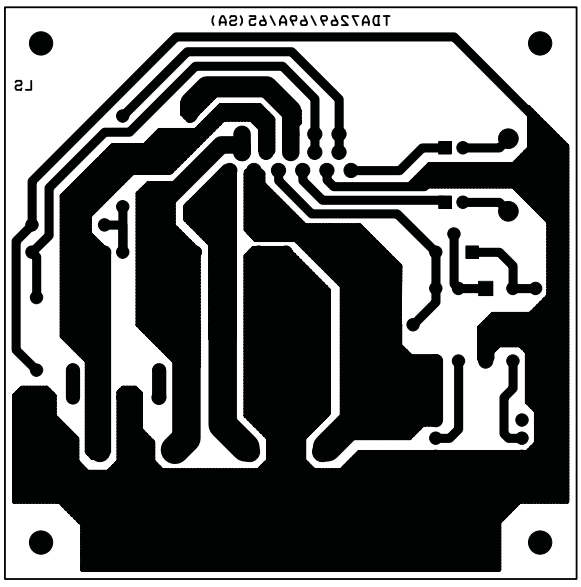


Figure 14. Component side (top)

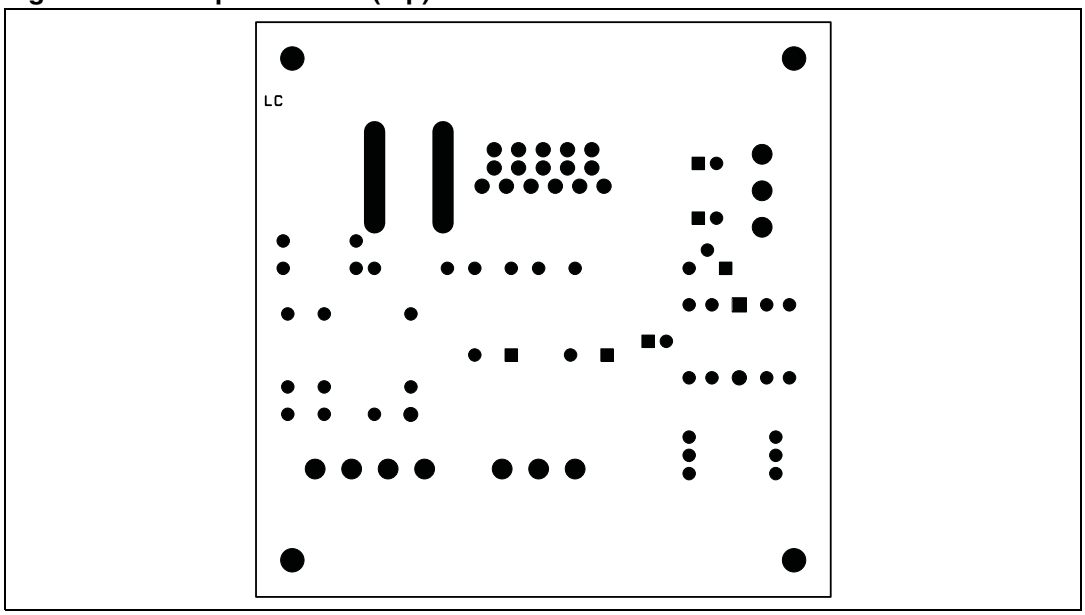
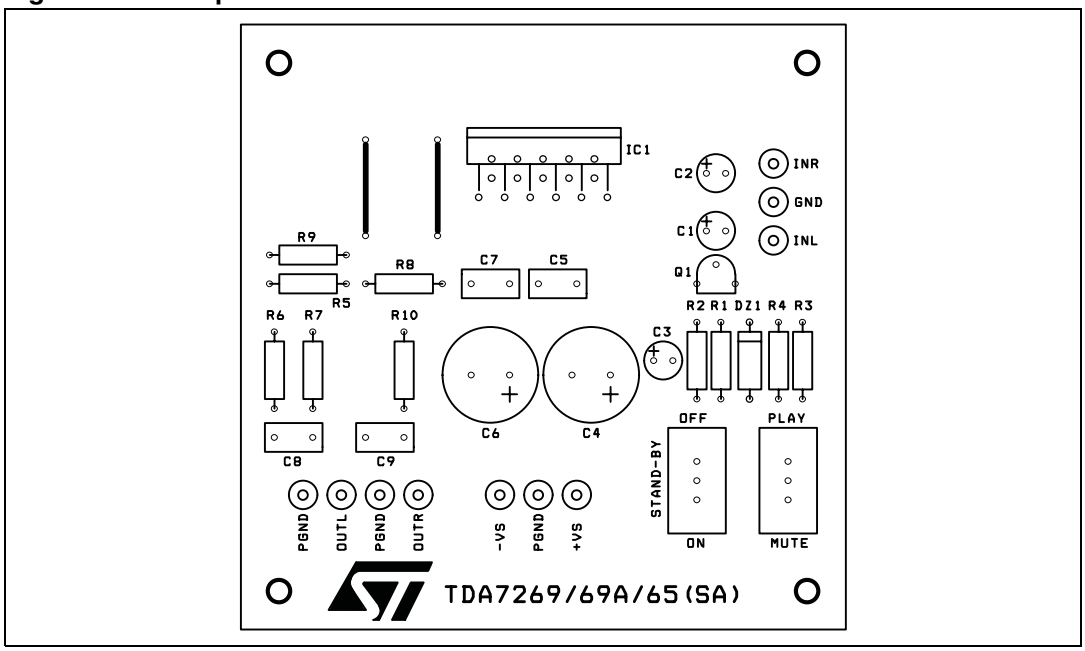


Figure 15. Components



5.2 Application suggestions for stereo configuration

The recommended values of the external components are those shown in the application circuit of *Figure 12*. If different values are used, the following table can be helpful.

Table 5. Recommended values of the external components in the TDA7265B demonstration board schematic

Component	Recomm. value	Purpose	Larger than recommended value	Smaller than recommended value
R1	10 kΩ	Mute circuit	Increase of Dz biasing current	
R2	15 kΩ	Mute circuit	V_{pin} # 5 shifted downward	V_{pin} # 5 shifted upward
R3	18 kΩ	Mute circuit	V_{pin} # 5 shifted upward	V_{pin} # 5 shifted downward
R4	15 kΩ	Mute circuit	V_{pin} # 5 shifted upward	V_{pin} # 5 shifted downward
R5, R8	18 kΩ	Closed-loop gain setting(1)	Increase of gain	
R6, R9	560 Ω		Decrease of gain	
R7, R10	4.7 Ω	Frequency stability	Danger of oscillations	Danger of oscillations
C1, C2	1 µF	Input DC decoupling		Higher low-frequency cutoff
C3	1 µF	St-By/Mute time constant	Larger on/off time	Smaller on/off time
C4, C6	1000 µF	Supply voltage bypass		Danger of oscillations
C5, C7	0.1 µF	Supply voltage bypass		Danger of oscillations
C8, C9	0.1 µF	Frequency stability		
Dz	5.1 V	Mute circuit		
Q1	BC107	Mute circuit		

1. Closed-loop gain has to be ≥ 29 dB

Table 6. Mute, standby truth table

SW1	SW2	
B	A	Standby
B	B	Standby
A	A	Mute
A	B	Play

5.3 Single supply circuit configuration and PCB layout

Figure 16. Typical application circuit in single supply

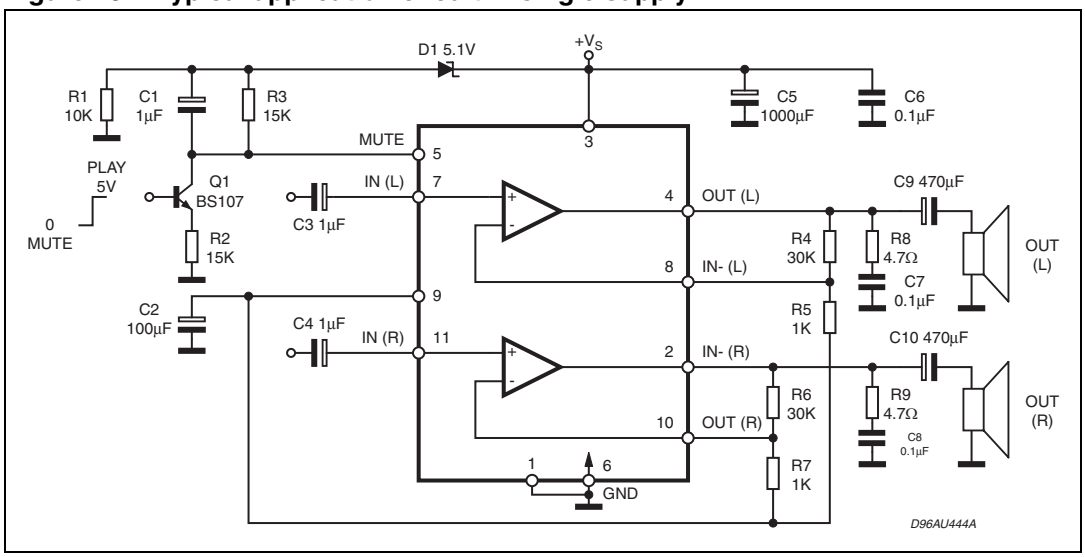


Figure 17. Soldering side (bottom)

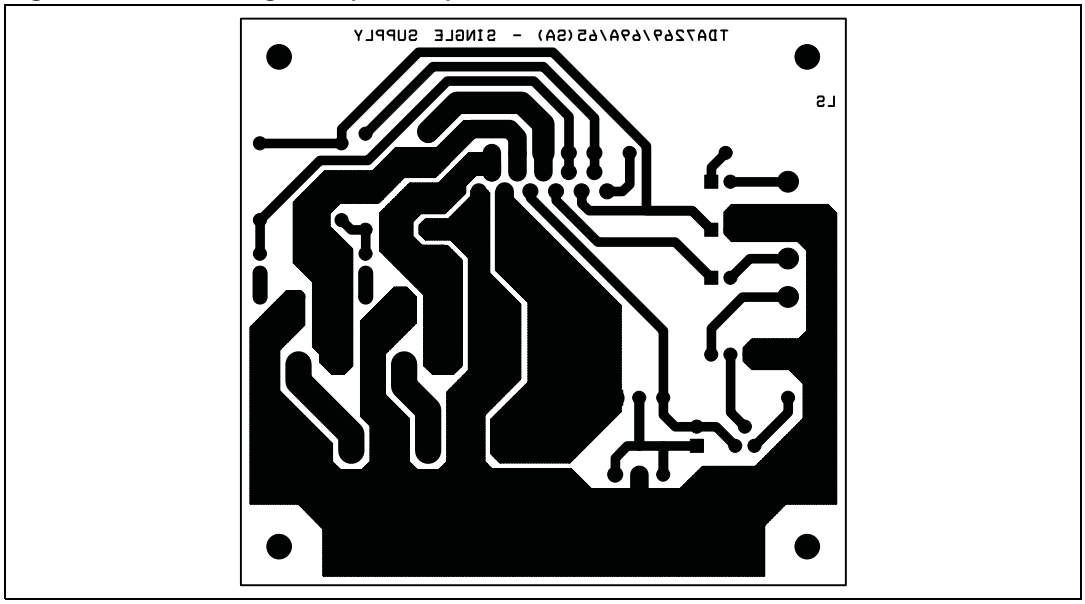


Figure 18. Component side (top)

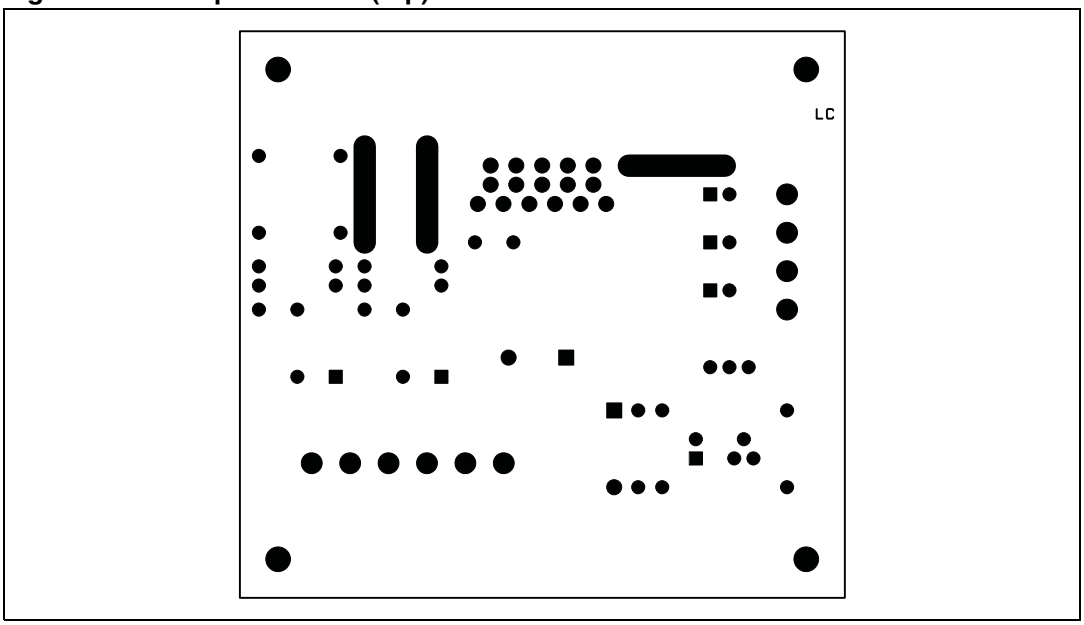
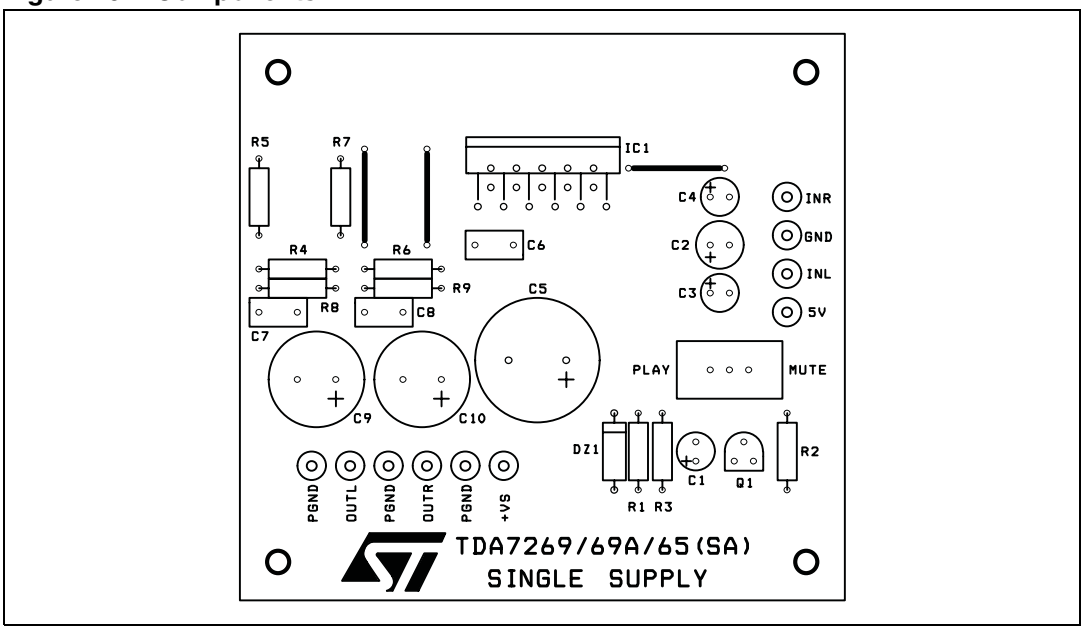


Figure 19. Components



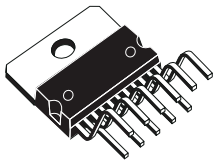
6 Package mechanical data

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.

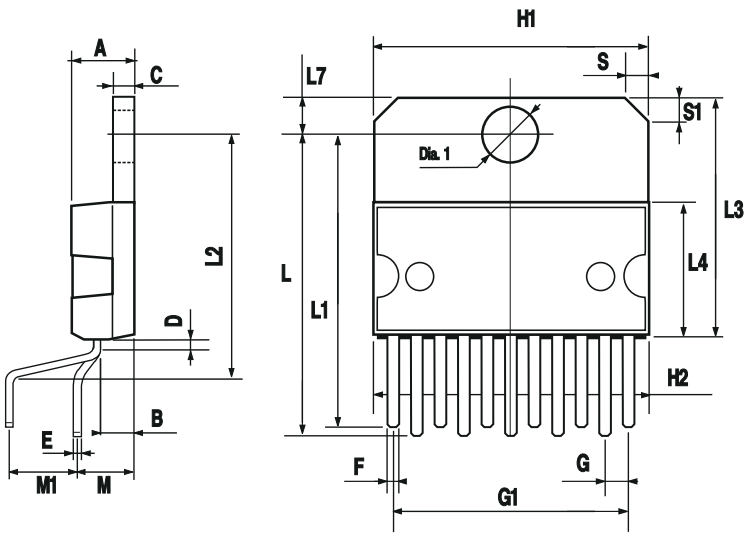
Figure 20. Multiwatt 11 (vertical) mechanical data & package dimensions

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 (Vertical)



7 Revision history

Table 7. Document revision history

Date	Revision	Changes
19-Dec-2011	1	Initial release.

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