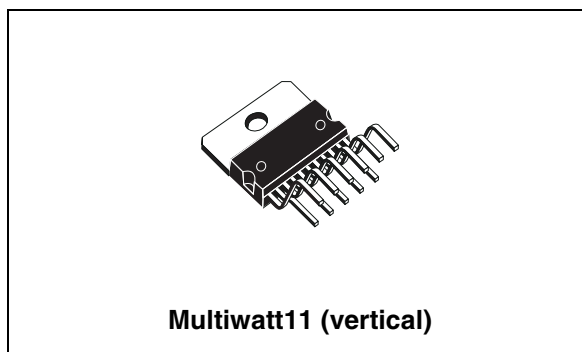


## 30 W + 30 W stereo amplifier with mute and standby

### Features

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



**Multiwatt11 (vertical)**

applications such as home entertainment systems and stereo TV sets.

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

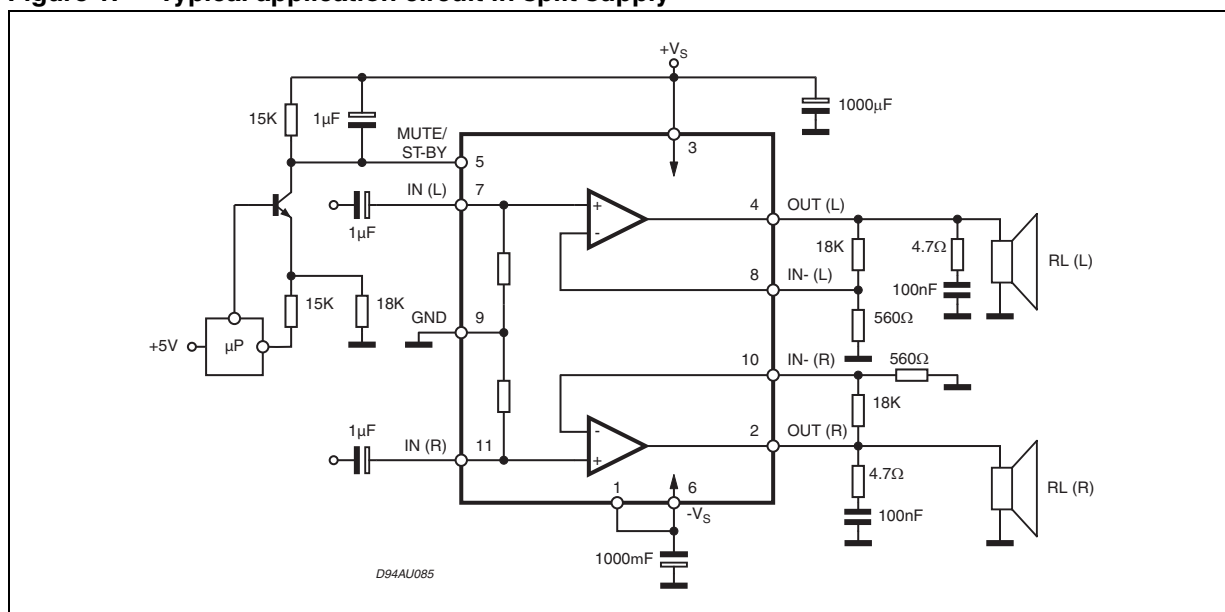
### Description

The TDA7265B is class-AB dual audio power amplifier assembled in the Multiwatt package, especially designed for high-quality sound

**Table 1. Device summary**

Order code	Package	Packing
TDA7265B	Multiwatt11 (vertical)	Tube

**Figure 1. Typical application circuit in split supply**



# Contents

<b>1</b>	<b>Pin connections</b> .....	<b>5</b>
<b>2</b>	<b>Electrical specifications</b> .....	<b>6</b>
2.1	Absolute maximum ratings .....	6
2.2	Thermal data .....	6
2.3	Electrical characteristics .....	6
<b>3</b>	<b>Typical operating characteristics</b> .....	<b>8</b>
<b>4</b>	<b>Mute standby function</b> .....	<b>10</b>
<b>5</b>	<b>Applications</b> .....	<b>11</b>
5.1	Stereo configuration circuit and PCB layout .....	11
5.2	Application suggestions for stereo configuration .....	13
5.3	Single supply circuit configuration and PCB layout .....	14
<b>6</b>	<b>Package mechanical data</b> .....	<b>16</b>
<b>7</b>	<b>Revision history</b> .....	<b>17</b>

## List of tables

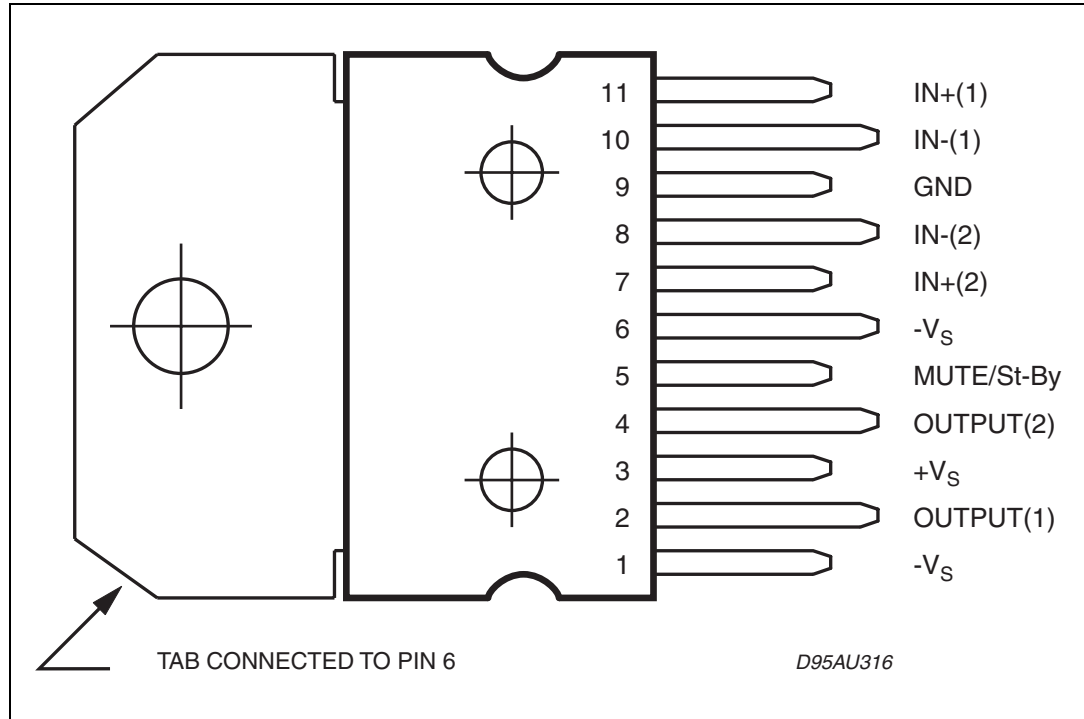
Table 1.	Device summary . . . . .	1
Table 2.	Absolute maximum ratings . . . . .	6
Table 3.	Thermal data . . . . .	6
Table 4.	Electrical characteristics . . . . .	6
Table 5.	Recommended values of the external components in the TDA7265B demonstration board schematic . . . . .	13
Table 6.	Mute, standby truth table . . . . .	13
Table 7.	Document revision history . . . . .	17

## List of figures

Figure 1.	Typical application circuit in split supply . . . . .	1
Figure 2.	Pin connections (top view) . . . . .	5
Figure 3.	Quiescent current vs. supply voltage . . . . .	8
Figure 4.	Frequency response . . . . .	8
Figure 5.	THD vs. output power . . . . .	8
Figure 6.	Output power vs. supply voltage . . . . .	8
Figure 7.	Quiescent current vs. pin 5 voltage . . . . .	9
Figure 8.	Attenuation vs. pin 5 voltage . . . . .	9
Figure 9.	Crosstalk vs. frequency . . . . .	9
Figure 10.	Power dissipation vs. output power . . . . .	9
Figure 11.	Mute/standby thresholds on pin 5 . . . . .	10
Figure 12.	Test and application circuit (stereo configuration) . . . . .	11
Figure 13.	Soldering side (bottom) . . . . .	11
Figure 14.	Component side (top) . . . . .	12
Figure 15.	Components . . . . .	12
Figure 16.	Typical application circuit in single supply . . . . .	14
Figure 17.	Soldering side (bottom) . . . . .	14
Figure 18.	Component side (top) . . . . .	15
Figure 19.	Components . . . . .	15
Figure 20.	Multiwatt 11 (vertical) mechanical data & package dimensions . . . . .	16

# 1 Pin connections

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	$\pm 35$	V
$I_O$	Output peak current (internally limited)	5	A
$P_{tot}$	Power dissipation $T_{case} = 70\text{ }^\circ\text{C}$	40	W
$T_{op}$	Operating temperature	-20 to 85	$^\circ\text{C}$
$T_{stg}, T_j$	Storage and junction temperature	-40 to +150	$^\circ\text{C}$

### 2.2 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
$R_{th\ j\ case}$	Thermal resistance junction-case typ.	1.5	$^\circ\text{C/W}$

### 2.3 Electrical characteristics

Refer to the test circuit,  $V_S = \pm 23\text{ V}$ ;  $R_L = 8\ \Omega$ ;  $R_S = 50\ \Omega$ ;  $G_V = 30\text{ dB}$ ;  $f = 1\text{ kHz}$ ;  $T_{amb} = 25\text{ }^\circ\text{C}$ , unless otherwise specified.

Table 4. Electrical characteristics

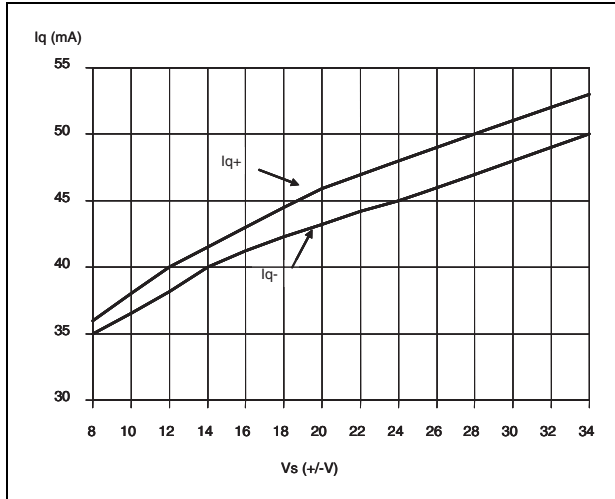
Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
$V_S$	Supply range		$\pm 8$		$\pm 33$	V
$I_q$	Total quiescent current			50	130	mA
$V_{OS}$	Input offset voltage		-20		+20	mV
$I_b$	Non-inverting input bias current			500		nA
$P_O$	Output power	THD = 10%; $R_L = 8\ \Omega$		30		W
		THD = 1%; $R_L = 8\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

Table 4. Electrical characteristics (continued)

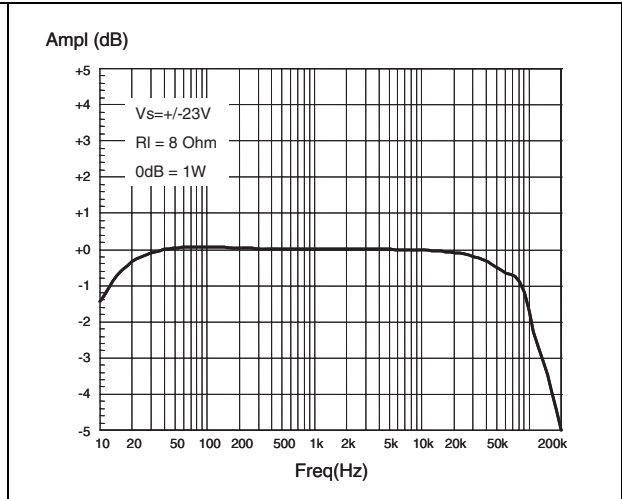
Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
SVR	Supply voltage rejection			75		dB
Tj	Thermal shutdown			145		°C
<b>Mute function { ref.: +Vs }</b>						
VTmute	Mute / play threshold		-7	-6	-5	V
Am	Mute attenuation			75		dB
<b>Standby function { ref.: +Vs }</b>						
VTst-by	Standby / mute threshold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

### 3 Typical operating characteristics

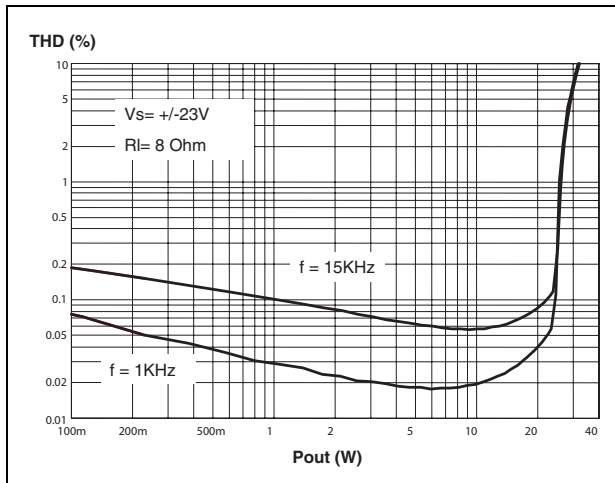
**Figure 3. Quiescent current vs. supply voltage**



**Figure 4. Frequency response**



**Figure 5. THD vs. output power**



**Figure 6. Output power vs. supply voltage**

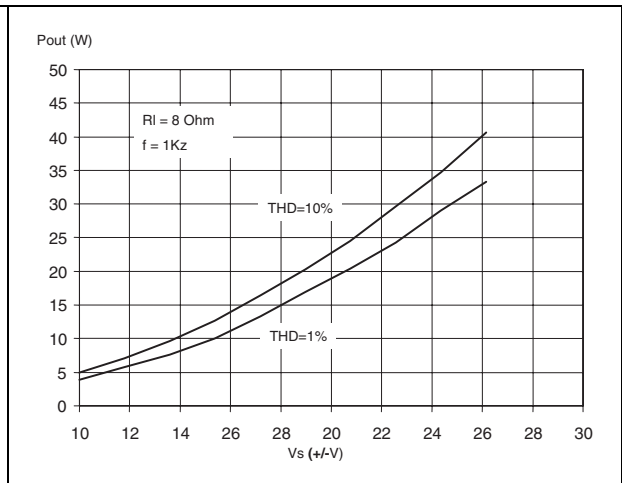




Figure 7. Quiescent current vs. pin 5 voltage      Figure 8. Attenuation vs. pin 5 voltage

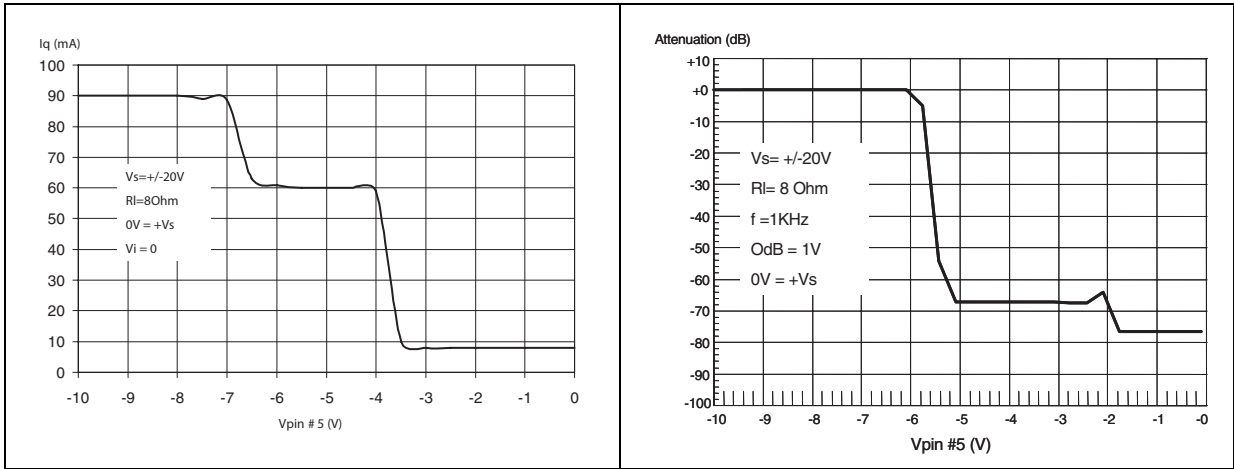


Figure 9. Crosstalk vs. frequency

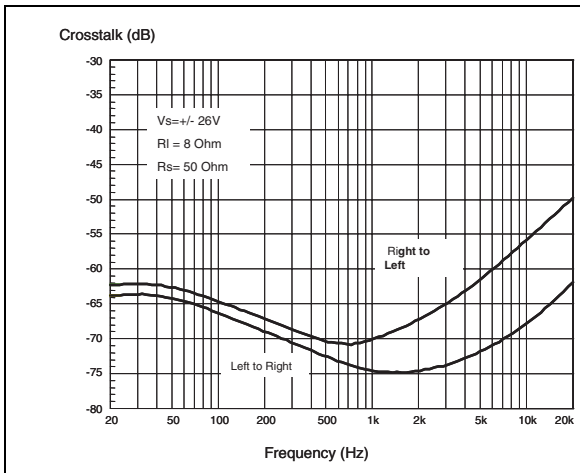
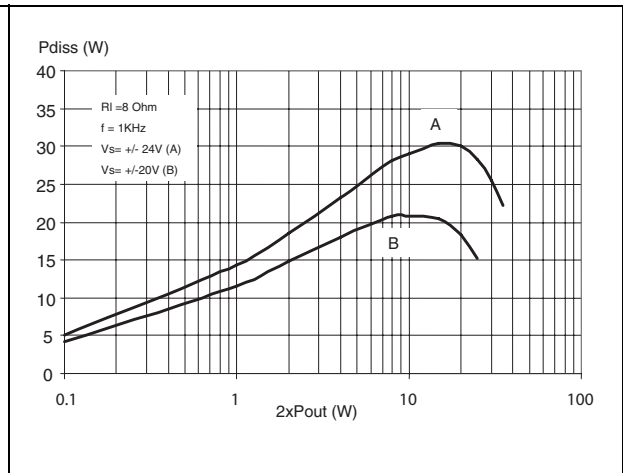


Figure 10. Power dissipation vs. output power

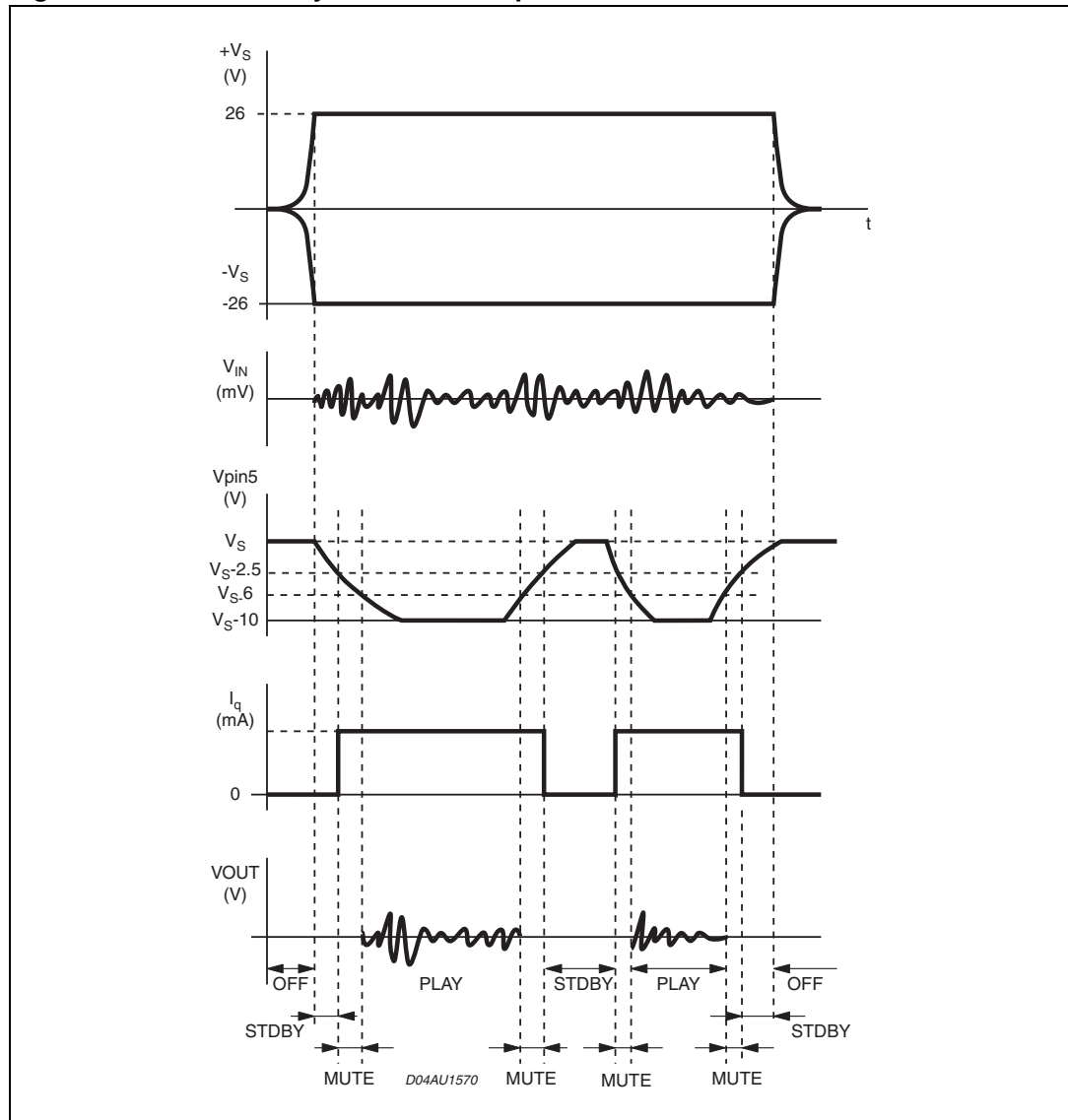


## 4 Mute standby function

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  $+V_S - 2.5\text{ V}$ , the amplifier is in standby mode and the final stage generators are off
- when  $V_{pin5}$  is between  $+V_S - 2.5\text{ V}$  and  $+V_S - 6\text{ V}$ , the final stage current generators are switched on and the amplifier is in mute mode
- when  $V_{pin5}$  is less than  $+V_S - 6\text{ V}$ , 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)

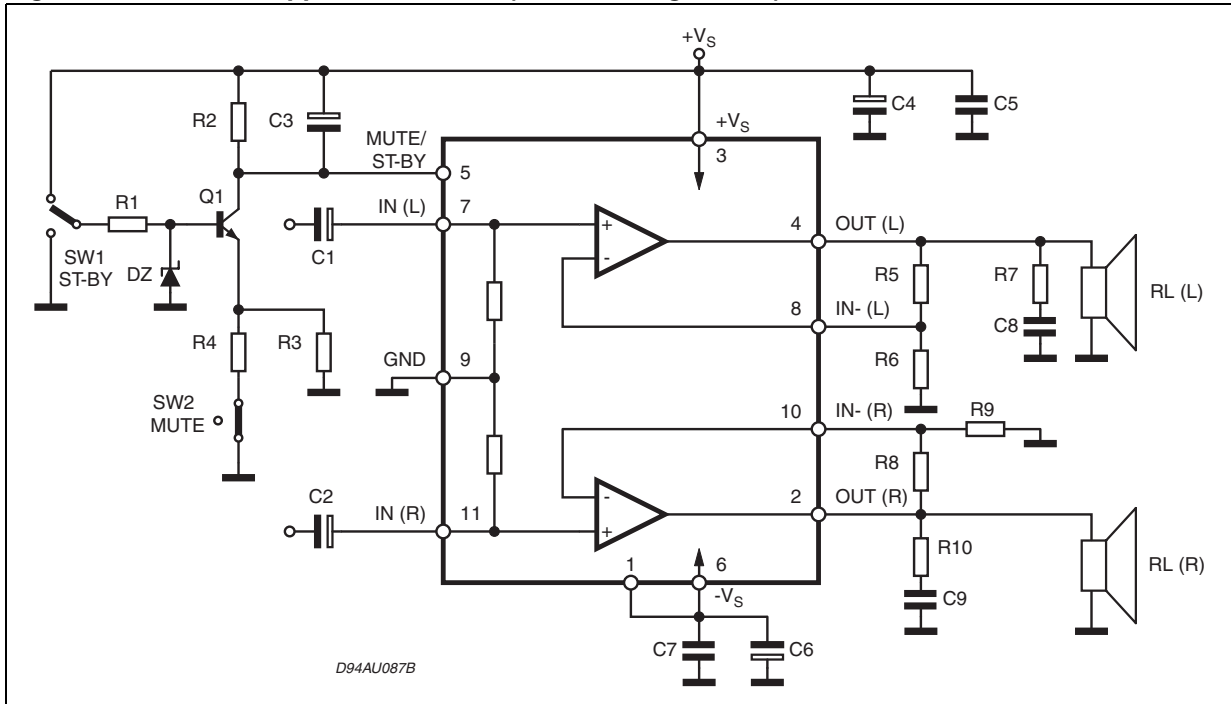


Figure 13. Soldering side (bottom)

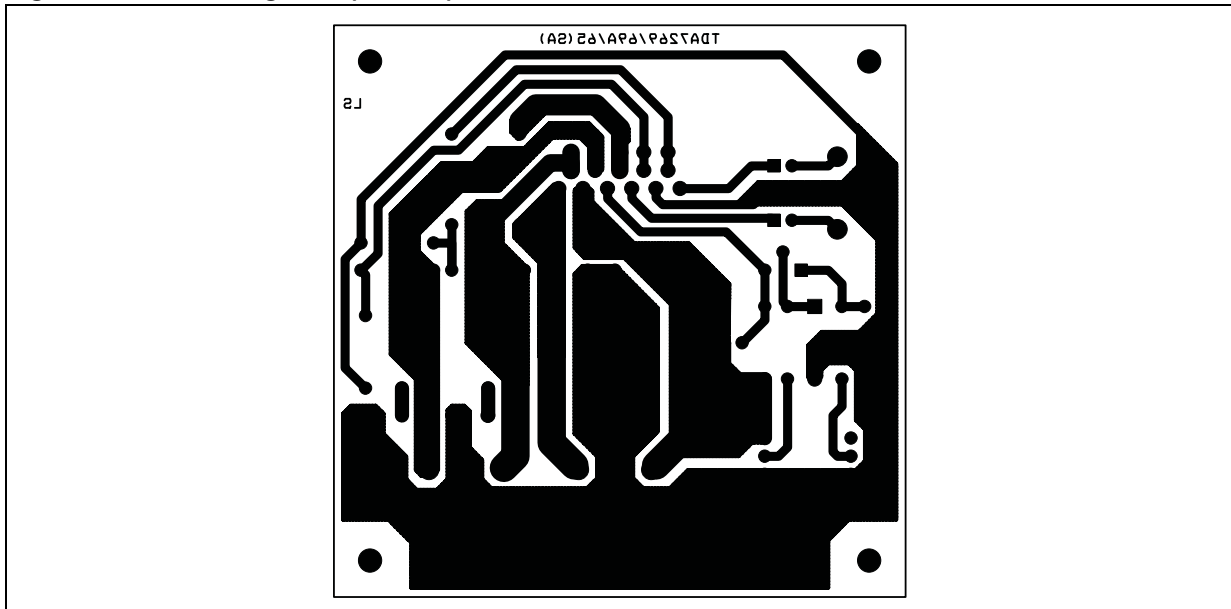


Figure 14. Component side (top)

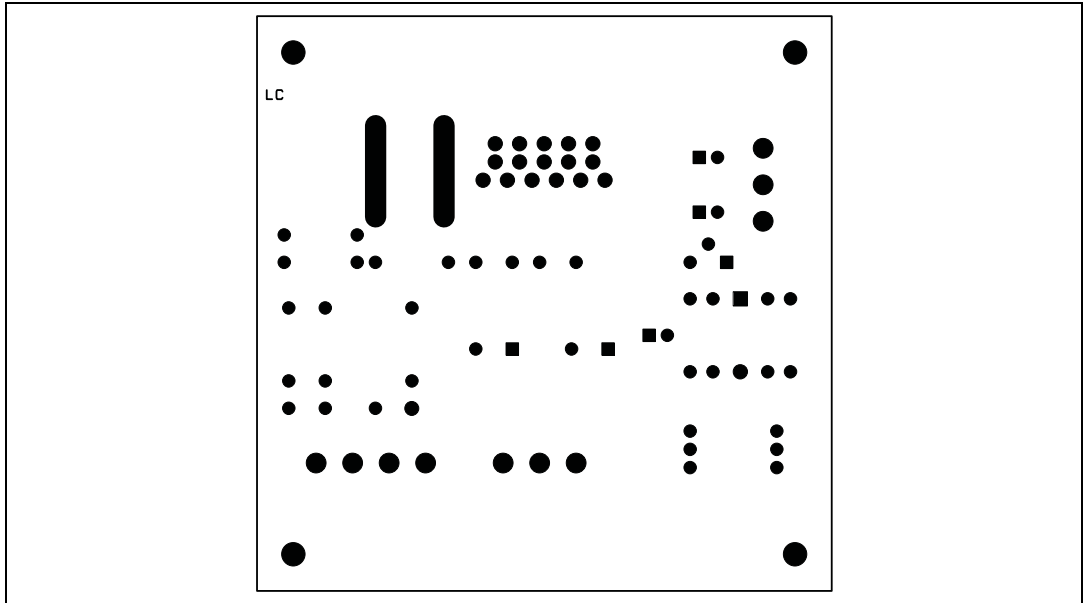
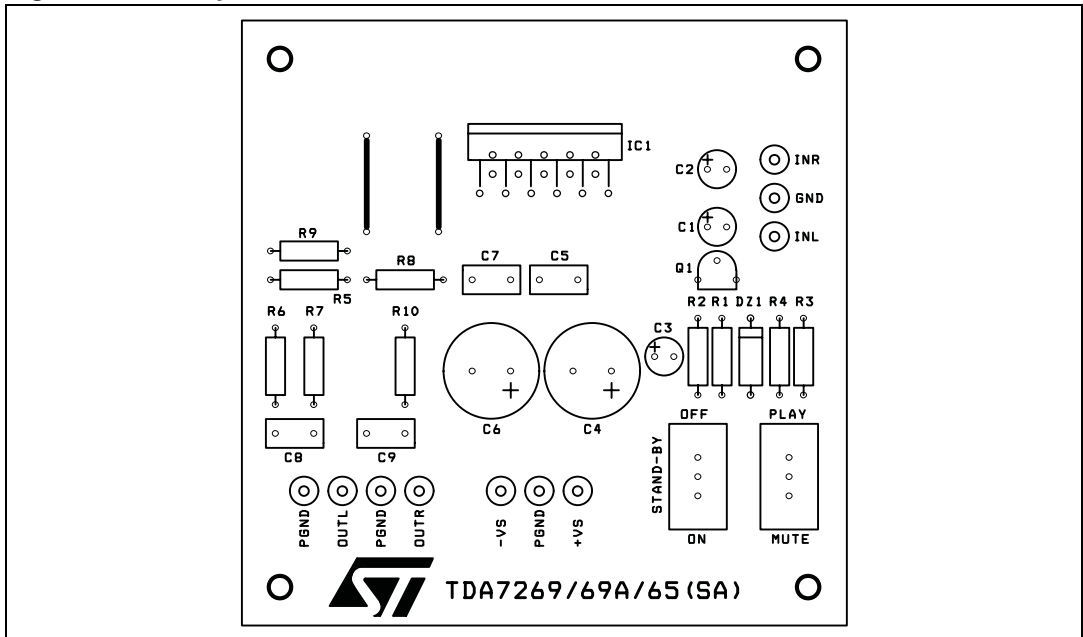


Figure 15. Components



## 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 k $\Omega$	Mute circuit	Increase of Dz biasing current	
R2	15 k $\Omega$	Mute circuit	V <sub>pin # 5</sub> shifted downward	V <sub>pin # 5</sub> shifted upward
R3	18 k $\Omega$	Mute circuit	V <sub>pin # 5</sub> shifted upward	V <sub>pin # 5</sub> shifted downward
R4	15 k $\Omega$	Mute circuit	V <sub>pin # 5</sub> shifted upward	V <sub>pin # 5</sub> shifted downward
R5, R8	18 k $\Omega$	Closed-loop gain setting <sup>(1)</sup>	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	5.1 V	Mute circuit		
Q1	BC107	Mute circuit		

1. Closed-loop gain has to be  $\geq 29$  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

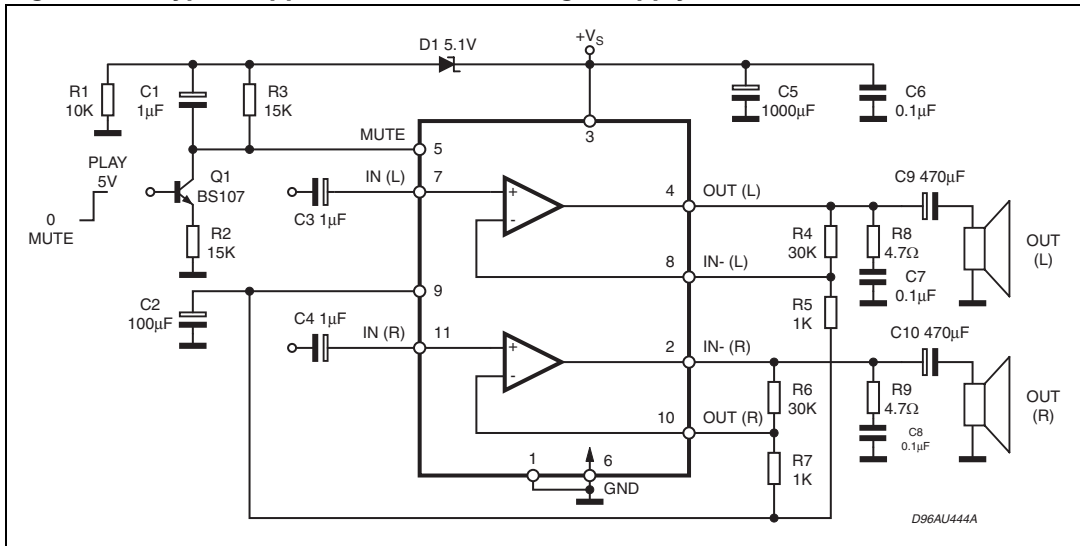


Figure 17. Soldering side (bottom)

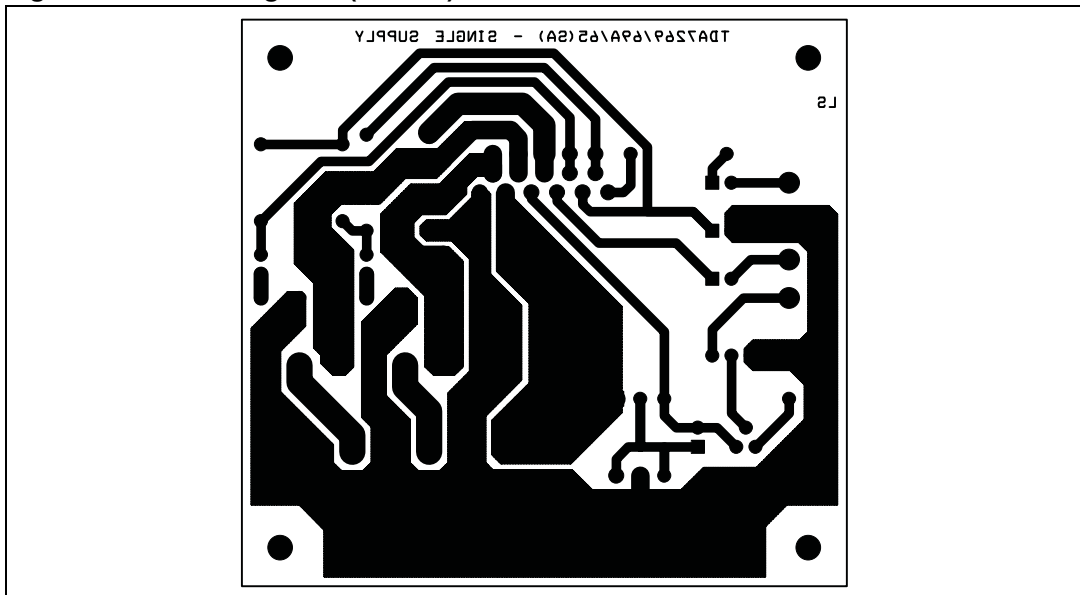


Figure 18. Component side (top)

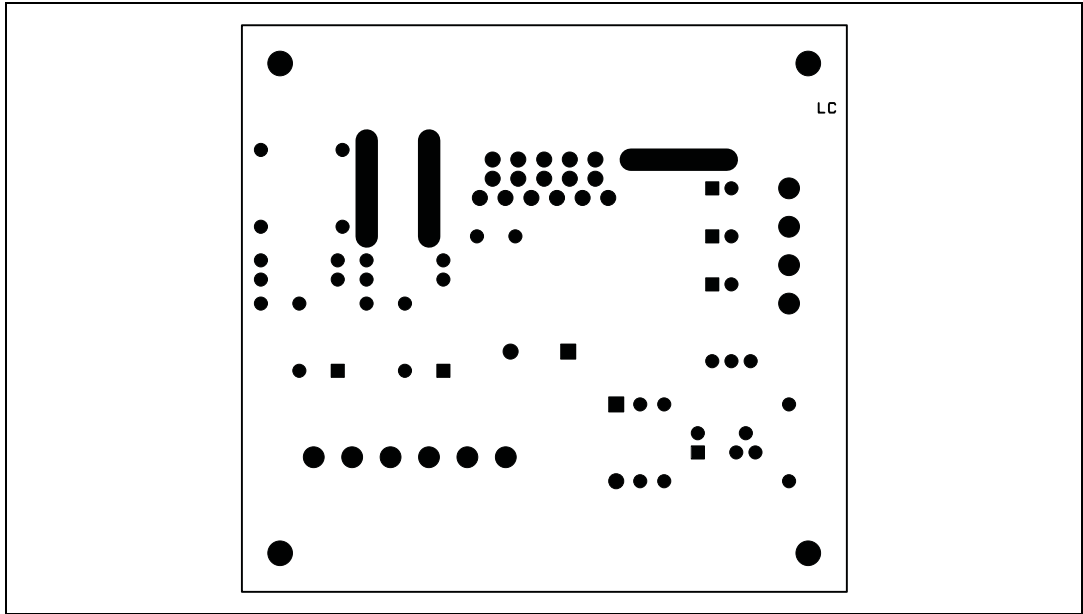
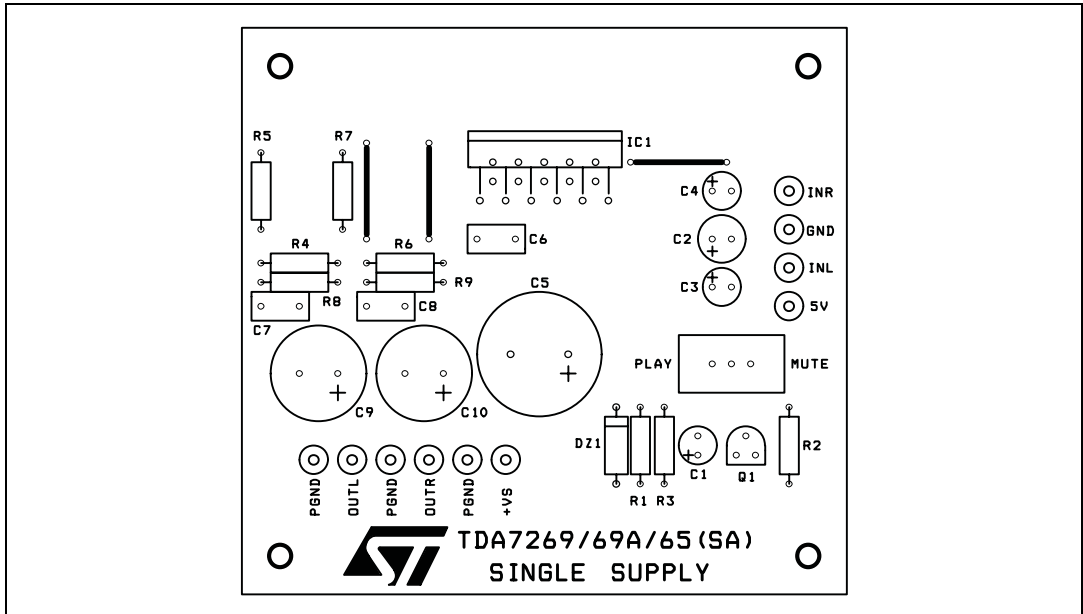


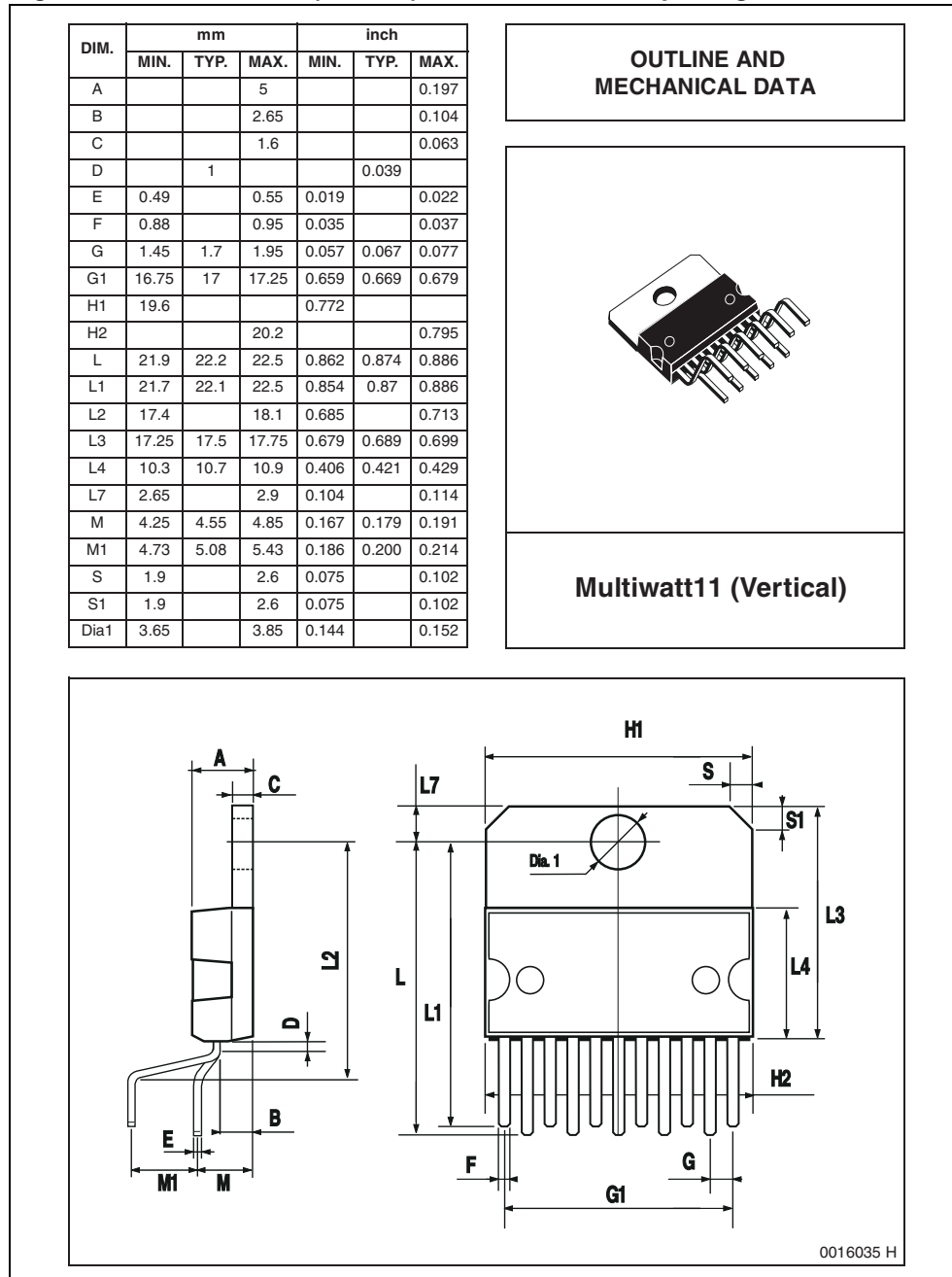
Figure 19. Components



## 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](http://www.st.com). ECOPACK® is an ST trademark.

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





## 7 Revision history

**Table 7. Document revision history**

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

**Please Read Carefully:**

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

**UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.**

**UNLESS EXPRESSLY APPROVED IN WRITING BY TWO AUTHORIZED ST REPRESENTATIVES, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.**

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2011 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)