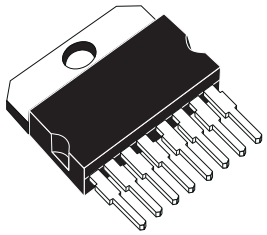
TDA7264

25 W + 25 W stereo amplifier with mute and standby

Features

- Wide supply voltage range (up to ±22.5 V)
- Split supply
- High output power
  - 25 W + 25 W into 8 Ω
    with V_S = ±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



Multiwatt8

Description

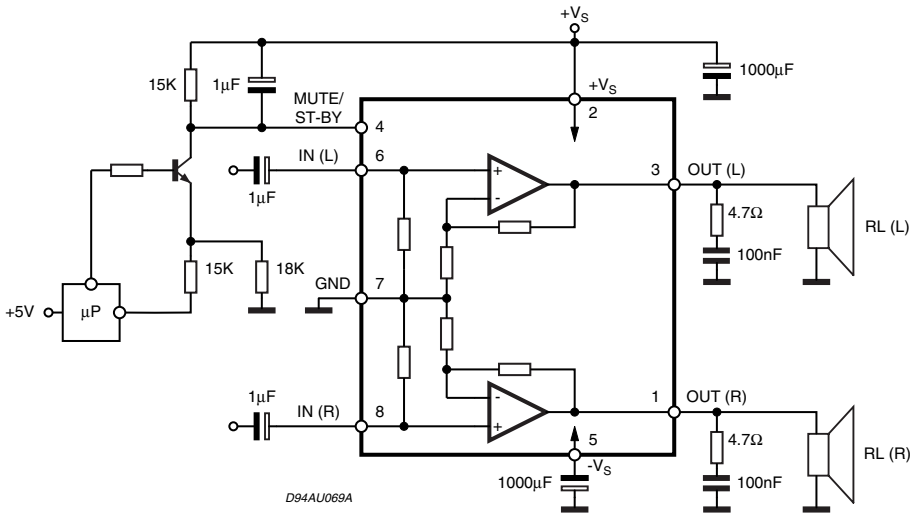
The TDA7264 is class-AB dual audio power amplifier assembled in a Multiwatt package.

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

Table 1. Device summary

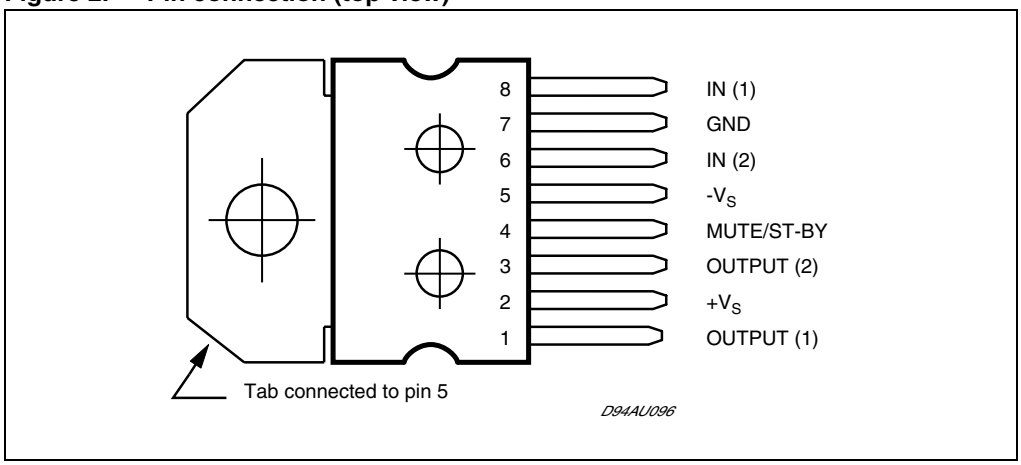
Order code	Operating temperature	Package	Packaging
TDA7264	0 to 70 °C	Multiwatt8	Tube

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	±25	V
I_O	Output Peak Current (internally limited)	4.5	A
P_{tot}	power Dissipation T_{case} = 70°C	30	W
T_{op}	Operating temperature	-20 to 85	°C
T_j	Junction temperature	-40 to 150	°C
T_{stg}	Storage temperature	-40 to 150	°C

2.2 Thermal data

Table 3. Thermal data

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

2.3 Electrical specifications

Unless otherwise stated, the results in *Table 4* below are given for the conditions: V_S = ±20 V, R_L (load) = 8 Ω, R_S (source) = 50 Ω, f = 1 kHz, and T_{amb} = 25° 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	-	±5	-	±22.5	V
I_q	Total quiescent current	-	-	80	130	mA
P_{OM}	Music output power (1)	THD = 10%, R_L = 8 Ω, V_S = ±22.5 V	-	32	-	W
P_O	Output power	THD = 10%: R_L = 8 Ω, V_S = ±20 V R_L = 4 Ω, V_S = ±16 V	20	 25 25	-	W
		THD = 1%: R_L = 8 Ω, V_S = ±20 V R_L = 4 Ω, V_S = ±16 V	-	 20 20	-	

Table 4. Electrical specifications (continued)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
THD	Total harmonic distortion	P_O = 1 W, f = 1 kHz, R_L = 8 Ω, V_S = ±20 V,	-	0.02	-	%
		P_O = 0.1 to 15 W, f = 100 Hz to 15 kHz, R_L = 8 Ω, V_S = ±20 V	-	-	0.5	
		P_O = 1 W, f = 1 kHz, R_L = 4 Ω, V_S = ±16 V,	-	0.03	-	
		P_O = 0.1 to 12 W, f = 100 Hz to 15 kHz, R_L = 4 Ω, V_S = ±16 V	-	-	1.0	
C_T	Crosstalk	f = 1 kHz f = 10 kHz	-	70 60	-	dB
SR	Slew rate	-	-	10	-	V/µs
G_V	Closed-loop voltage gain	-	29	30	31	dB
ΔG_V	Voltage gain matching	-	-	0.2	-	dB
eN	Total input noise	A curve f = 20 Hz to 22 kHz	- -	2.5 3.5	8 -	µV
R_i	Input resistance	-	15	20	-	kΩ
SVRR	Supply voltage rejection ratio	f_r = 100 Hz, V_r = 0.5 V	-	60	-	dB
T_j	Junction temperature at thermal shut-down	-	-	145	-	°C
Mute mode (see also *Table 5 on page 8*)						
VT_{MUTE}	Mute/play threshold	-	-7	-6	-5	V
A_{MUTE}	Mute attenuation	-	60	90	-	dB
Standby mode (see also *Table 5 on page 8*)						
VT_{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 = ±22.5 V with R_L = 8 Ω and V_S = ±16 V with R_L = 4 Ω.
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

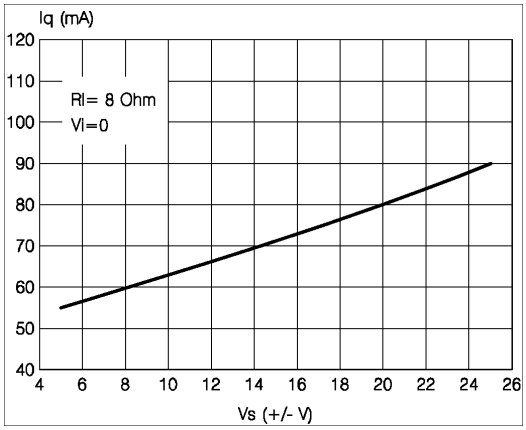


Figure 4. Frequency response

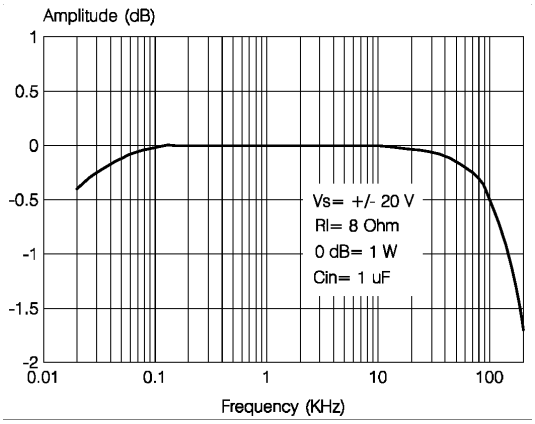


Figure 5. Output power vs supply voltage

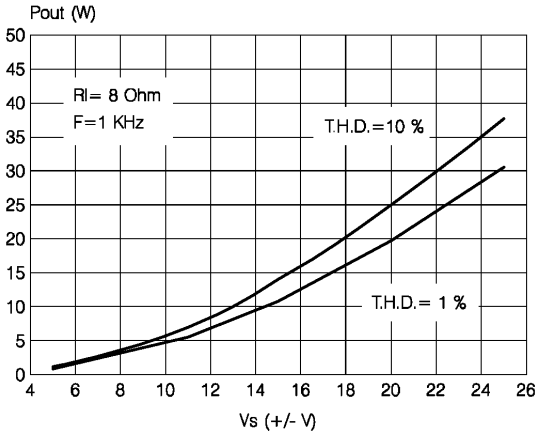


Figure 6. Distortion vs output power

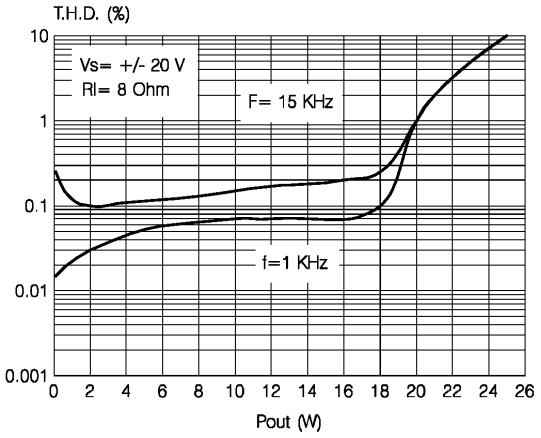


Figure 7. Crosstalk vs frequency

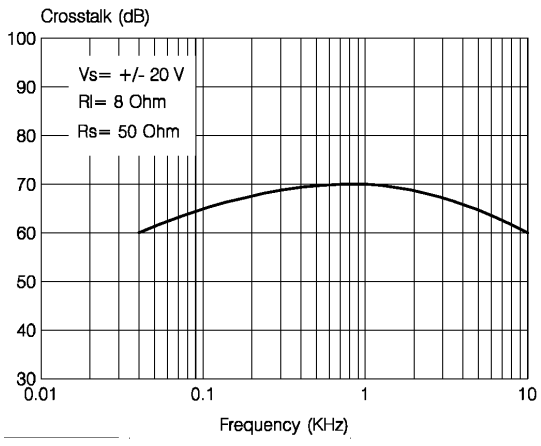


Figure 8. SVRR vs frequency

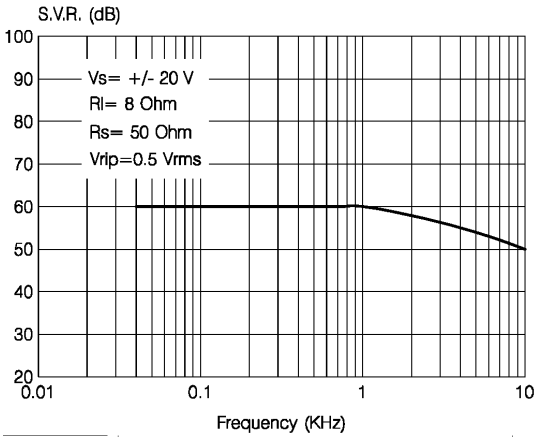


Figure 9. Attenuation and quiescent current vs voltage on pin 4

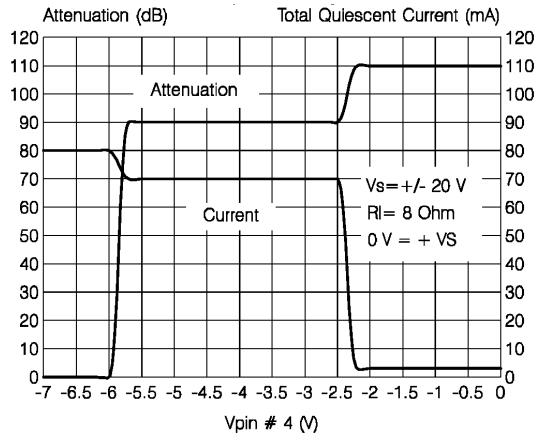
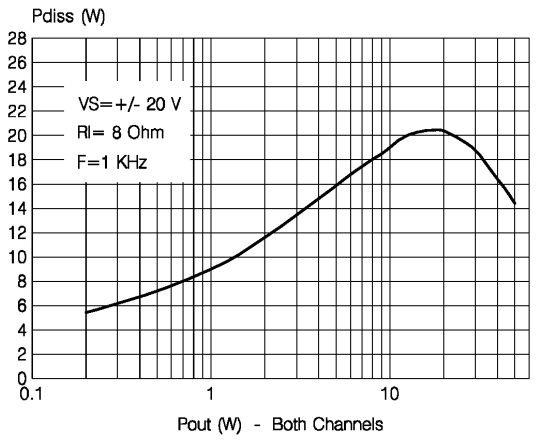


Figure 10. Power dissipation vs output power



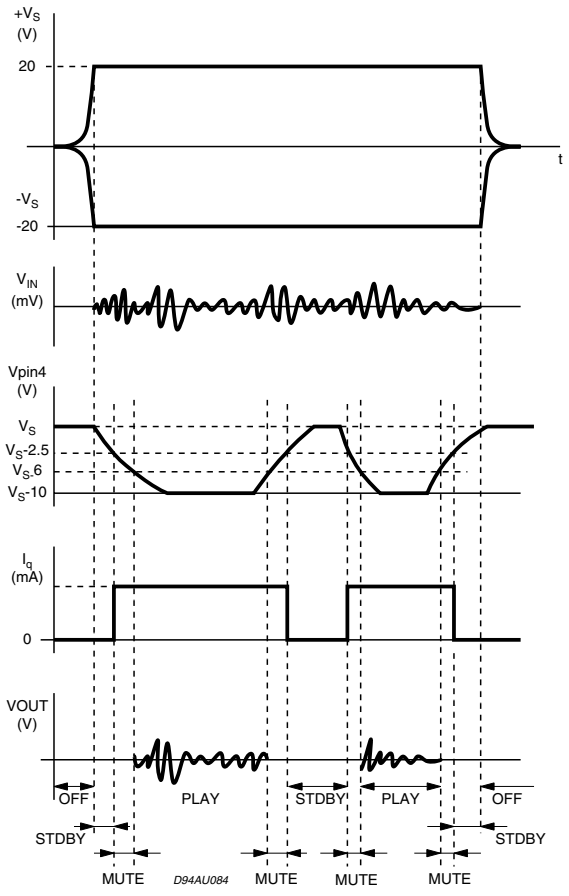
4 Mute and standby modes

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 V	Standby	Output stages turned off
> $+V_S$ - 6.0 V, < $+V_S$ - 2.5 V	Mute	Output stages turned on, amplifiers muted
< $+V_S$ - 6.0 V	Play	Amplifiers active

Figure 11. Mute and standby thresholds on pin 4



5 Applications information

Figure 12. Schematic of demo board

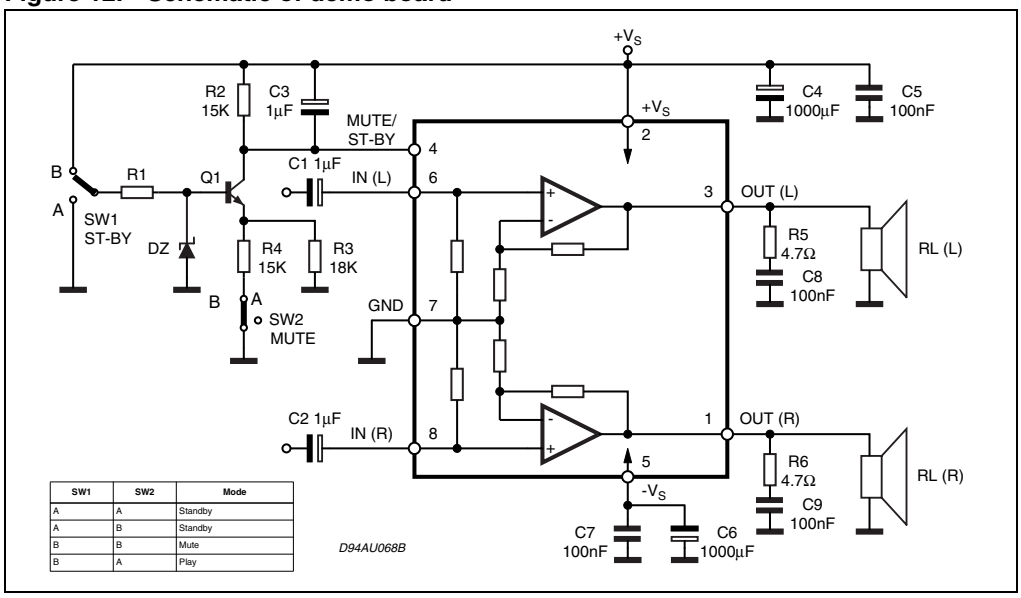


Figure 13. Component layout of demo-board

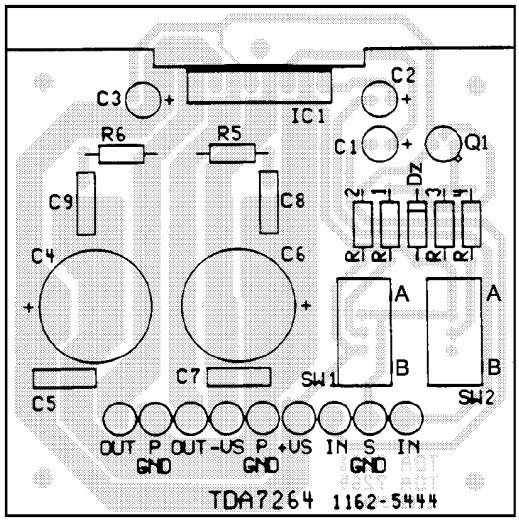


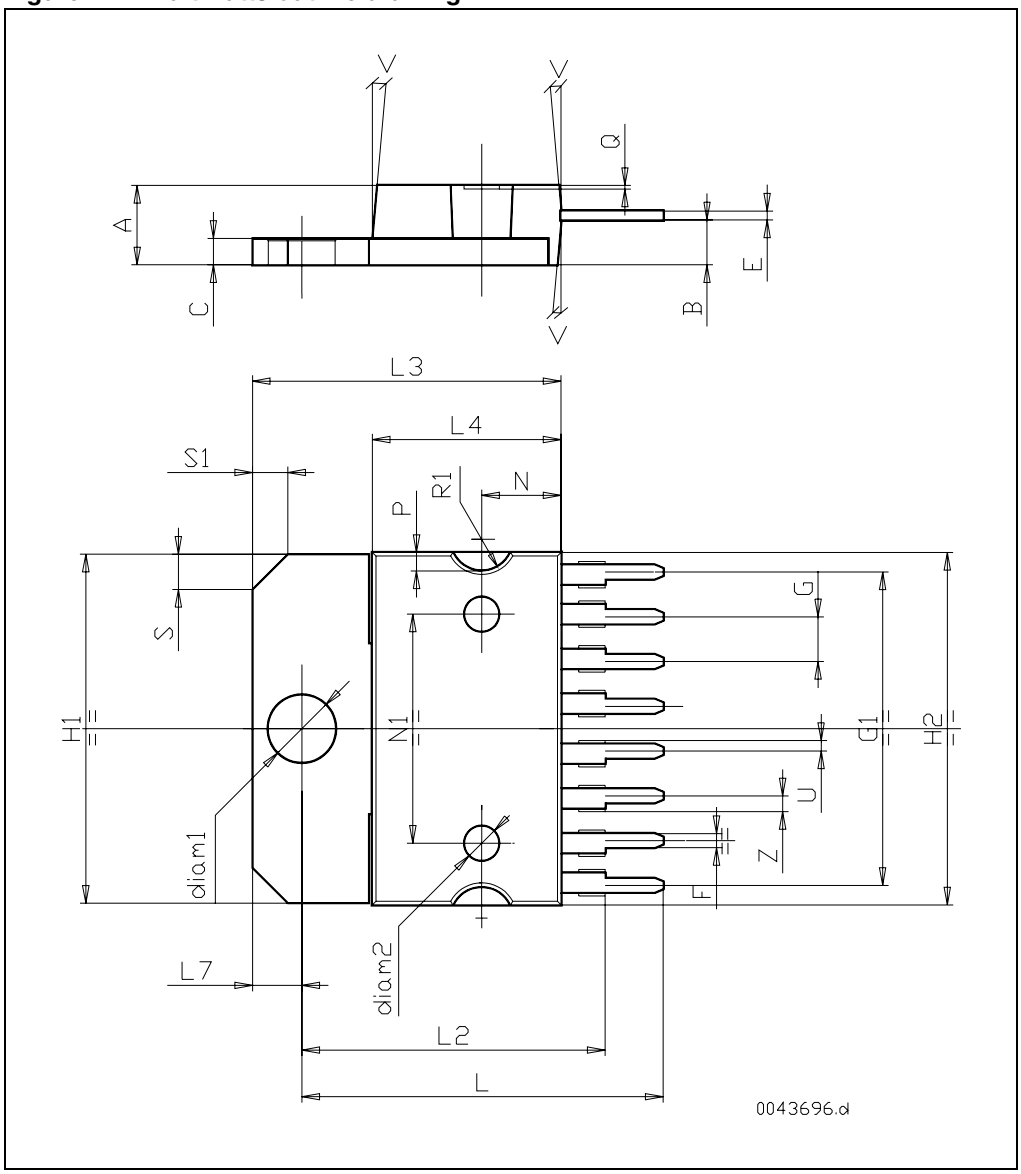
Table 6. Recommended component values for demo board

Component	Recommended value	Purpose	Larger than recommended value	Smaller than recommended value
R1	10 kΩ	Mute circuit	Decrease in DZ biasing current	-
R2	15 kΩ	Mute circuit	V_{PIN4} shifted downwards	V_{PIN4} shifted upwards
R3	18 kΩ	Mute circuit	V_{PIN4} shifted upwards	V_{PIN4} shifted downwards
R4	15 kΩ	Mute circuit	V_{PIN4} shifted upwards	V_{PIN4} shifted downwards
R5, R6	4.7 Ω	Frequency stability	Danger of oscillation	Danger of oscillation
C1, C2	1 µF	Input AC coupling	-	Higher low-frequency cutoff
C3	1 µF	Standby/mute time constant	Longer on/off time	Shorter on/off time
C4, C6	1000 µF	Supply voltage decoupling	-	Danger of oscillation
C5, C7	0.1 µF	Supply voltage decoupling	-	Danger of oscillation
C8, C9	0.1 µF	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® 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.

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