



# TDA7850LV

## 4 x 50 W quad bridge amplifier suitable for low voltage car radio systems

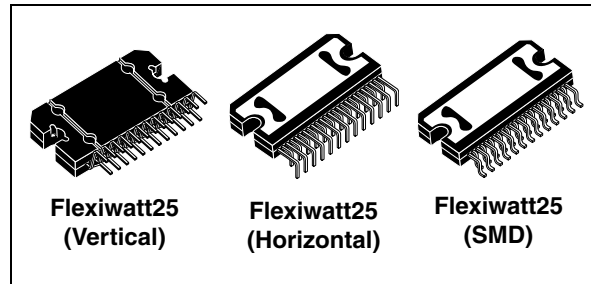
Data brief

### Features

- High output power capability:
  - 4 x 50 W/4  $\Omega$  max.
  - 4 x 30 W/4  $\Omega$  @ 14.4 V, 1 kHz, 10 %
  - 4 x 80 W/2  $\Omega$  max.
  - 4 x 53 W/2  $\Omega$  @ 14.4V, 1 kHz, 10 %
- MOSFET output power stage
- Capable to operate in low voltage conditions (e.g.: “Start - Stop”)
- Excellent 2  $\Omega$  driving capability
- Hi-Fi class distortion
- Low output noise
- Standby function and mute function
- Automute at min. supply voltage detection
- Low external component count:
  - Internally fixed gain (26 dB)
  - No external compensation
  - No bootstrap capacitors
- On board 0.35 A high side driver

### Protections:

- Extreme robustness against any kind of short to GND
- Output short circuit to GND, to  $V_S$ , across the load
- Very inductive loads
- Overrating chip temperature with soft thermal limiter



- Output DC offset detection
- Load dump voltage
- Fortuitous open GND
- Reversed battery
- ESD

### Description

The TDA7850LV is a MOSFET class AB audio power amplifier, designed for high-power car radio. In addition to the outstanding output current capability and distortion performance, the TDA7850LV is extremely robust against several kinds of fortuitous misconnections.

It is, moreover, compliant to the most recent OEM specifications for low voltage operation (the so called 'start-stop' battery profile during engine stop) and features a very compact design in BCD technology.

The TDA7850LV includes offset detector capability (or high side driver output) and is available in both SMD and standard Flexiwatt packages.

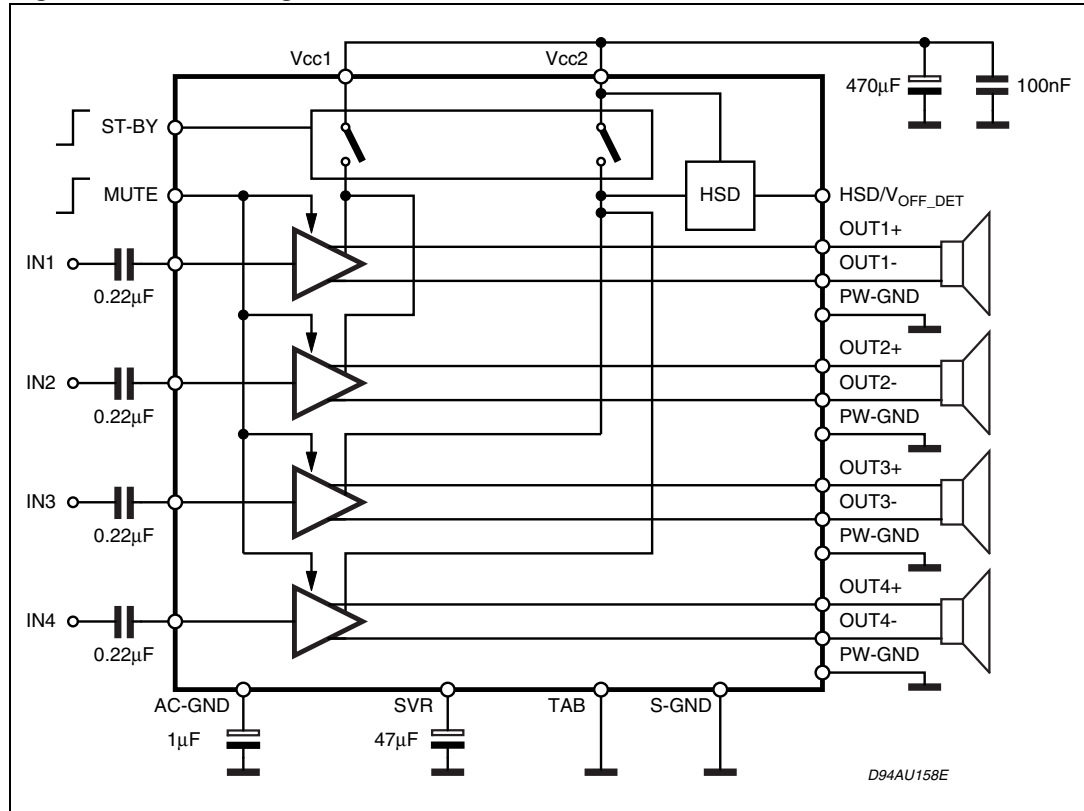
Table 1. Device summary

Order code	Package	Packing
TDA7850LV	Flexiwatt25 (Vertical)	Tube
TDA7850LVH	Flexiwatt25 (Horizontal)	Tube
TDA7850LVSM	Flexiwatt25 (SMD)	Tube
TDA7850LVSMTR	Flexiwatt25 (SMD)	Tape and reel

# 1 Block and pins description diagrams

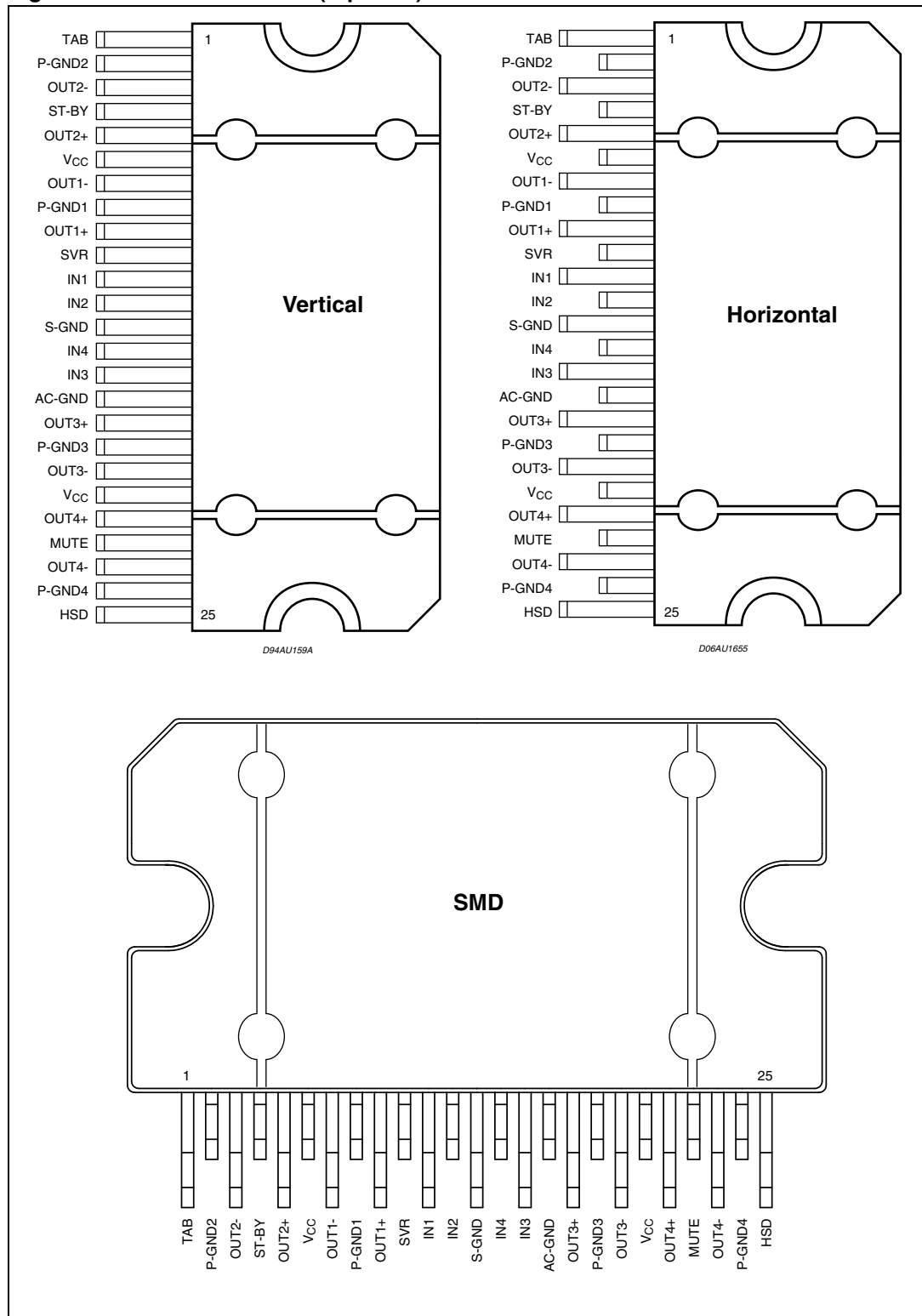
## 1.1 Block diagram

Figure 1. Block diagram



## 1.2 Pins description diagrams

Figure 2. Pins connection (top view)



## 2 Package information

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 3. Flexiwatt25 (vertical) mechanical data and package dimensions**

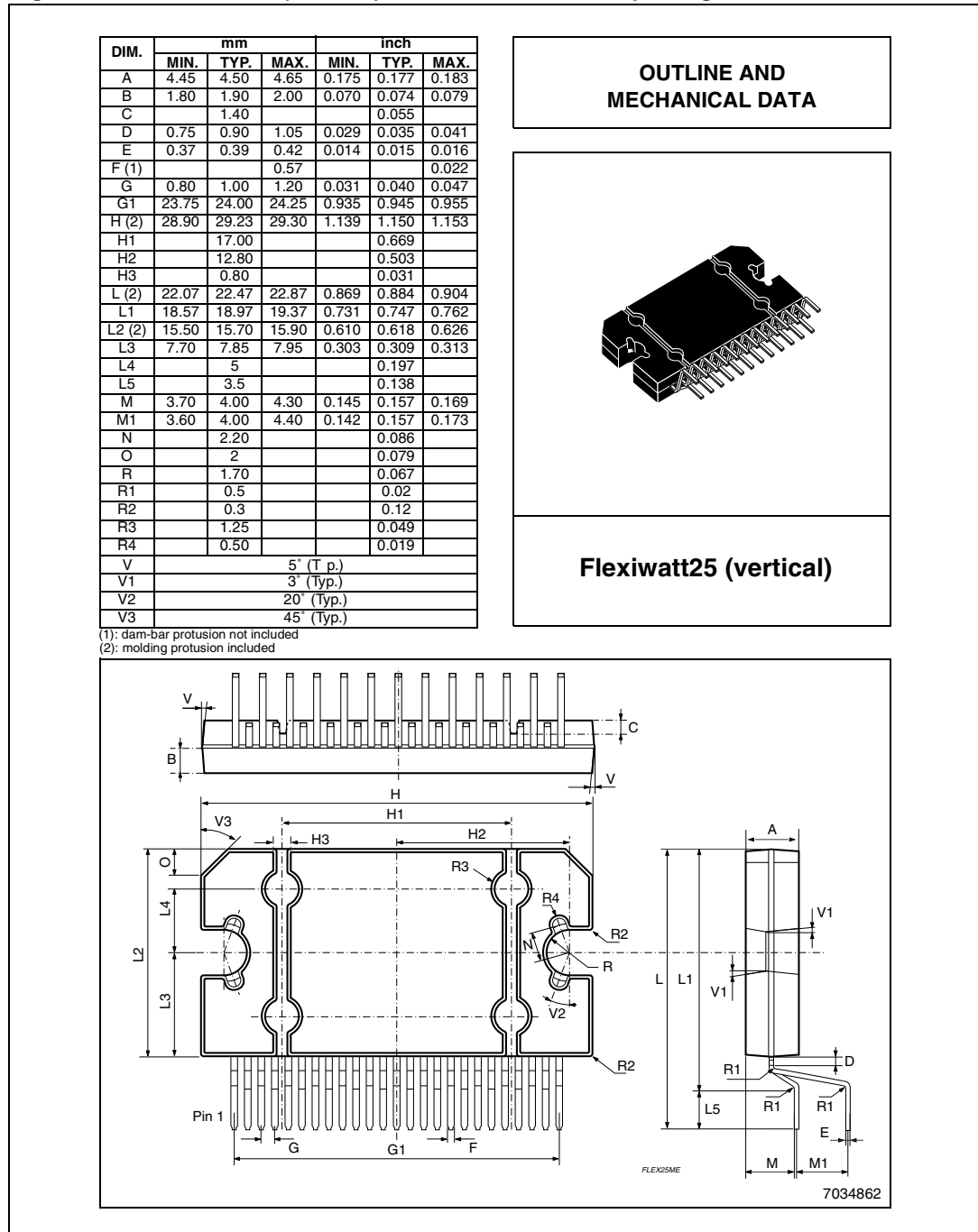
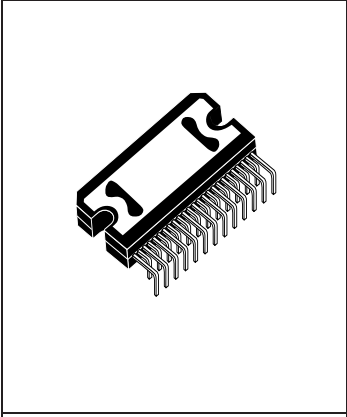


Figure 4. Flexiwatt25 (horizontal) mechanical data and package dimensions

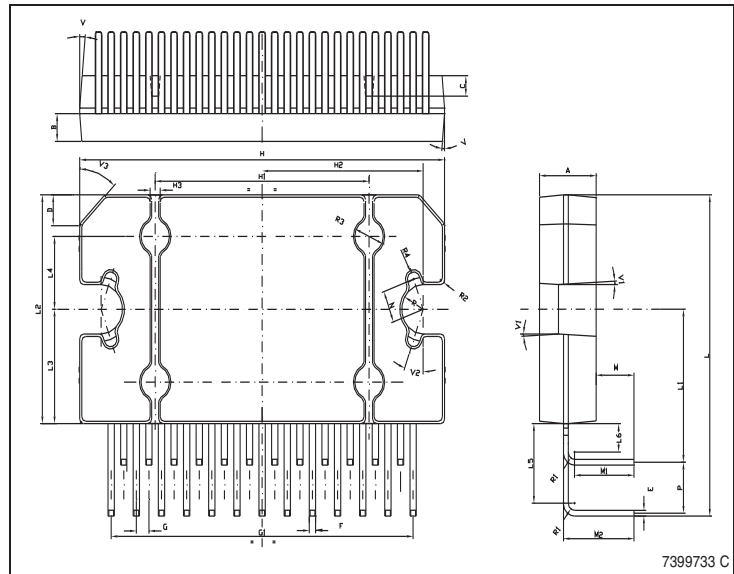
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.45	4.50	4.65	0.175	0.177	0.183
B	1.80	1.90	2.00	0.070	0.074	0.079
C		1.40			0.055	
D		2.00			0.079	
E	0.37	0.39	0.42	0.014	0.015	0.016
F (1)			0.57			0.022
G	0.75	1.00	1.25	0.029	0.040	0.049
G1	23.70	24.00	24.30	0.933	0.945	0.957
H (2)	28.90	29.23	29.30	1.139	1.150	1.153
H1		17.00			0.669	
H2		12.80			0.503	
H3		0.80			0.031	
L (2)	21.64	22.04	22.44	0.852	0.868	0.883
L1	10.15	10.5	10.85	0.40	0.413	0.427
L2 (2)	15.50	15.70	15.90	0.610	0.618	0.626
L3	7.70	7.85	7.95	0.303	0.309	0.313
L4		5			0.197	
L5	5.15	5.45	5.85	0.203	0.214	0.23
L6	1.80	1.95	2.10	0.070	0.077	0.083
M	2.75	3.00	3.50	0.108	0.118	0.138
M1		4.73			0.186	
M2		5.61			0.220	
N		2.20			0.086	
P	3.20	3.50	3.80	0.126	0.138	0.15
R		1.70			0.067	
R1		0.50			0.02	
R2		0.30			0.12	
R3		1.25			0.049	
R4		0.50			0.02	
V	5 (typ.)					
V1	3 (typ.)					
V2	20 (typ.)					
V3	45 (typ.)					

OUTLINE AND MECHANICAL DATA



Flexiwatt25 (Horizontal)

(1): dam-bar protrusion not included; (2): molding protrusion included

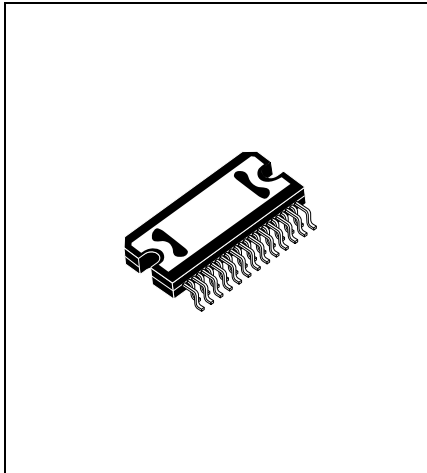


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Figure 5. Flexiwatt25 (SMD) mechanical data and package dimensions

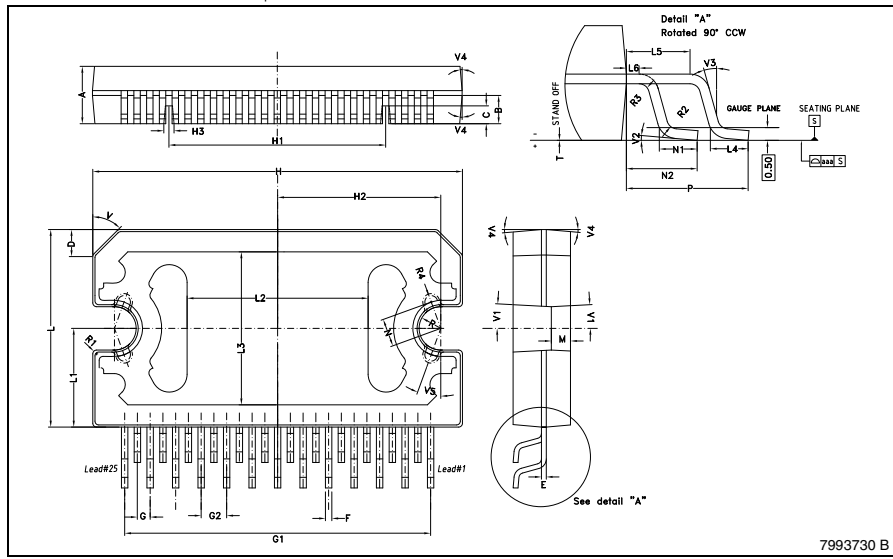
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.45	4.50	4.65	0.1752	0.1772	0.1831
B	2.12	2.22	2.32	0.0835	0.0874	0.0913
C		1.40			0.0551	
D		2.00			0.0787	
E	0.36	0.40	0.44	0.0142	0.0157	0.0173
F**	0.47	0.51	0.57	0.0185	0.0201	0.0224
G(*)	0.75	1.00	1.25	0.0295	0.0394	0.0492
G1	23.70	24.00	24.30	0.9331	0.9449	0.9567
G2(*)	1.75	2.00	2.25	0.0689	0.0787	0.0886
H(**)	28.85	29.23	29.40	1.1358	1.1508	1.1575
H1		17.00			0.6693	
H2		12.80			0.5039	
H3		0.80			0.0315	
L(**)	15.50	15.70	15.90	0.6102	0.6181	0.6260
L1	7.70	7.85	7.95	0.3031	0.3091	0.3130
L2	14.00	14.20	14.40	0.5512	0.5591	0.5669
L3	11.80	12.00	12.20	0.4646	0.4724	0.4803
L4	1.30	1.48	1.66	0.0512	0.0583	0.0654
L5	2.42	2.50	2.58	0.0953	0.0984	0.1016
L6	0.42	0.50	0.58	0.0165	0.0197	0.0228
M		1.50			0.0591	
N		2.20			0.0866	
N1	1.30	1.48	1.66	0.0512	0.0583	0.0654
N2(*)	2.73	2.83	2.93	0.1075	0.1114	0.1154
P(*)	4.73	4.83	4.93	0.1862	0.1902	0.1941
R		1.70			0.0669	
R1		0.30			0.0118	
R2	0.35	0.40	0.45	0.0138	0.0157	0.0177
R3	0.35	0.40	0.45	0.0138	0.0157	0.0177
R4		0.50			0.0197	
T(*)	-0.08		0.10	-0.0031		0.0039
aaa(*)		0.1			0.0039	
V		45°			45°	
V1		3°			3°	
V2	3°	5°	7°	3°	5°	7°
V3	12°	15°	18°	12°	15°	18°
V4		5°			5°	
V5		20°			20°	

OUTLINE AND MECHANICAL DATA



Flexiwatt25 (SMD)

(\*) Golden parameters  
 (\*\*) - Dimension "F" doesn't include dam-bar protrusion.  
 - Dimensions "H" and "L" include mold flash or protrusions.



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### 3 Revision history

**Table 2. Document revision history**

Date	Revision	Changes
09-Jul-2010	1	Initial release.
04-Aug-2010	2	Added <a href="#">Section 1: Block and pins description diagrams</a> .
22-Oct-2010	3	Minor text changes.
18-Sep-2013	4	Updated Disclaimer.

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