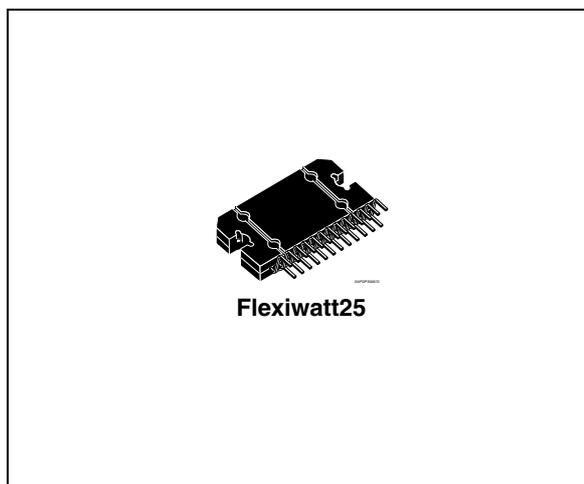


## 4 x 42 W quad bridge car radio amplifier

Datasheet – production data

### Features

- High output power capability:
  - 4 x 42 W / 4 Ω max.
  - 4 x 23 W / 4 Ω @ 14.4 V, 1 kHz, 10 %
- Clipping detector
- Low distortion
- Low output noise
- Standby function
- Mute function
- Automute at min. supply voltage detection
- Diagnostics facility for:
  - Clipping
  - Out to GND short
  - Out to  $V_S$  short
  - Thermal shutdown
- Low external component count:
  - Internally fixed gain (26 dB)
  - No external compensation
  - No bootstrap capacitors
- Protections:
  - Output short circuit to GND, to  $V_S$ , across the load
  - Very inductive loads
  - Overrating chip temperature with soft thermal limiter
  - Load dump voltage
  - Fortuitous open GND



- Reversed battery
- ESD

### Description

The TDA7385 is an AB class audio power amplifier, packaged in Flexiwatt 25 and designed for high end car radio applications.

Based on a fully complementary PNP/NPN configuration, the TDA7385 allows a rail to rail output voltage swing with no need of bootstrap capacitors. The extremely reduced boundary components count allows very compact sets.

The on-board clipping detector simplifies gain compression operations. The fault diagnostics makes it possible to detect mistakes during car-radio assembly and wiring in the car.

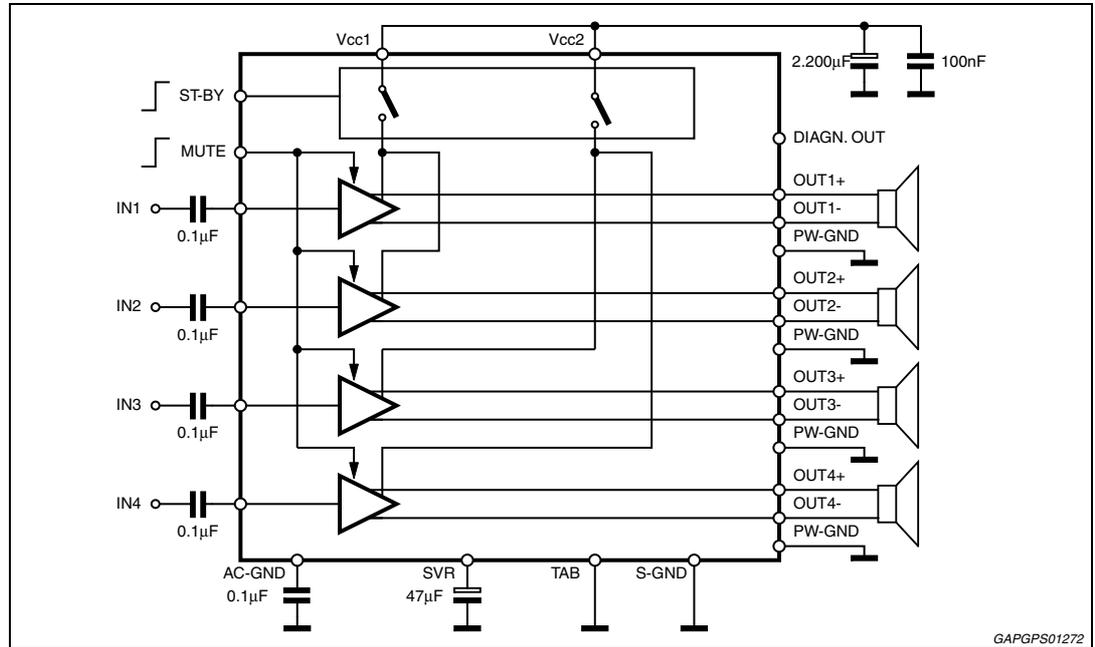
**Table 1. Device summary**

Order code	Package	Packing
TDA7385	Flexiwatt25	Tube
E-TDA7385 <sup>(1)</sup>	Flexiwatt25	Tube

1. Device in ECOPACK® package (see [Section 4: Package information on page 15](#)).

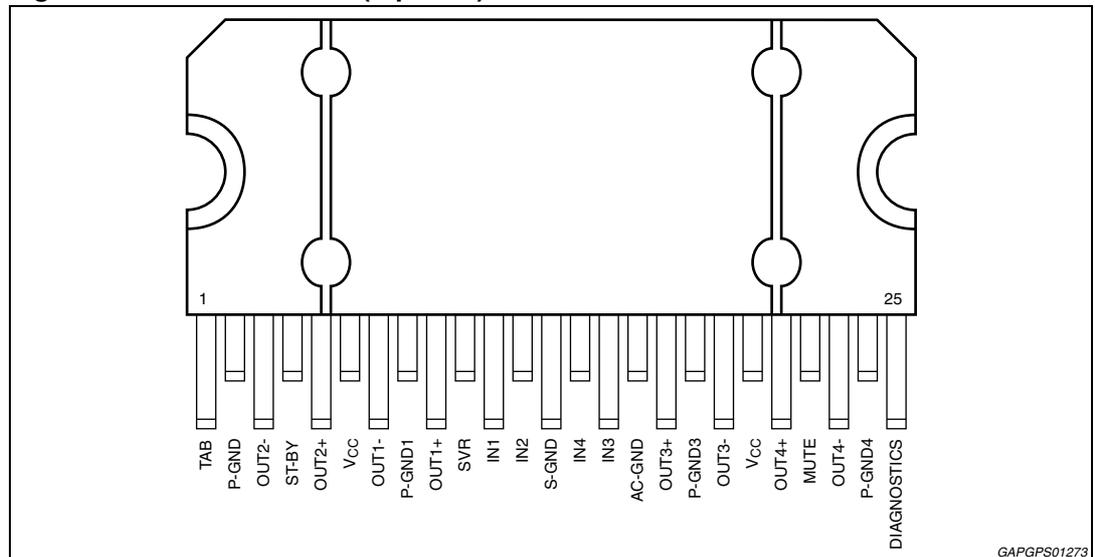
# 1 Block and pin connection diagrams

Figure 1. Block diagram



GAPGPS01272

Figure 2. Pin connection (top view)



GAPGPS01273

## 2 Electrical specifications

### 2.1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
$V_S$	Operating supply voltage	18	V
$V_{S(DC)}$	DC supply voltage	28	V
$V_{S(pk)}$	Peak supply voltage (t = 50 ms)	50	V
$I_O$	Output peak current: Repetitive (duty cycle 10 % at f = 10 Hz)	4.5	A
	Non repetitive (t = 100 $\mu$ s)	5.5	A
$P_{tot}$	Power dissipation, ( $T_{case} = 70\text{ }^\circ\text{C}$ )	80	W
$T_j$	Junction temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage temperature	- 55 to 150	$^\circ\text{C}$

### 2.2 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
$R_{th\ j-case}$	Thermal resistance junction-to-case max.	1	$^\circ\text{C}/\text{W}$

### 2.3 Electrical characteristics

$V_S = 14.4\text{ V}$ ; f = 1 kHz;  $R_g = 600\ \Omega$ ;  $R_L = 4\ \Omega$ ;  $T_{amb} = 25\text{ }^\circ\text{C}$ ; Refer to the test and application diagram ([Figure 3](#)), unless otherwise specified.

Table 4. Electrical characteristics

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
$I_{q1}$	Quiescent current	-	-	180	300	mA
$V_{OS}$	Output offset voltage	-	-	-	100	mV
$G_v$	Voltage gain	-	25	26	27	dB
$P_o$	Output power	THD = 10%	21	23	-	W
		THD = 1%	16.5	19	-	
		THD = 10%; $V_S = 13.2\text{ V}$	17	20	-	
		THD = 1%; $V_S = 13.2\text{ V}$	14	16	-	
$P_{o\ max.}$	Max. output power <sup>(1)</sup>	$V_S = 14.4\text{ V}$	33	35	-	W
		$V_S = 15.2\text{ V}$	-	42	-	W
THD	Distortion	$P_o = 4\text{ W}$	-	0.04	0.3	%

Table 4. Electrical characteristics (continued)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
$e_{No}$	Output noise	"A" Weighted Bw = 20 Hz to 20 kHz	-	50 65	- 150	$\mu$ V $\mu$ V
SVR	Supply voltage rejection	f = 100 Hz	50	65	-	dB
$f_{cl}$	Low cut-off frequency	-	-	20	-	Hz
$f_{ch}$	High cut-off frequency	-	75	-	-	kHz
$R_i$	Input impedance	-	70	100	-	k $\Omega$
$C_T$	Cross talk	f = 1 kHz	50	70	-	dB
$I_{SB}$	Standby current consumption	$V_{standby} = 0$ V	-	-	15	$\mu$ A
$V_{SB\ out}$	Standby out threshold voltage	(Amp: on)	3.5	-	-	V
$V_{SB\ in}$	Standby in threshold voltage	(Amp: off)	-	-	1.5	V
$A_M$	Mute attenuation	$V_O = 1V_{rms}$	80	90	-	dB
$V_{M\ out}$	Mute out threshold voltage	(Amp: play)	3.5	-	-	V
$V_{M\ in}$	Mute in threshold voltage	(Amp: mute)	-	-	1.5	V
$I_m(L)$	Muting pin current	$V_{MUTE} = 1.5V$ (source current)	5	10	16	$\mu$ A
$I_{CDOFF}$	Clipping detector "off" output average current	THD = 1% (1)	-	100	-	$\mu$ A
$I_{CDON}$	Clipping detector "on" output average current	THD = 10% (1)	100	240	350	$\mu$ A

1. Diagnostics output pulled-up to 5 V with 10 k $\Omega$  series resistor.

Figure 3. Standard test and application circuit

