DATA SHEET

TDA8511J
4 × 13 W single-ended power amplifiers

Preliminary specification
Supersedes data of 1999 Jun 14
File under Integrated Circuits, IC01

2000 Mar 10

Philips
Semiconductors

PHILIPS

4 × 13 W single-ended power amplifiers TDA8511J

FEATURES

- Requires very few external components
- High output power
- Fixed gain
- Diagnostic facility (distortion, short-circuit and temperature detection)
- Good ripple rejection
- Mode select switch (operating, mute and standby)
- AC and DC short-circuit safe to ground and to V_P
- Low power dissipation in any short-circuit condition
- Thermally protected
- Reverse polarity safe
- Electrostatic discharge protection
- No switch-on/switch-off plop
- Flexible leads
- Low thermal resistance
- Identical inputs.

APPLICATIONS

The device is primarily developed for multi-media applications and active speaker systems.

GENERAL DESCRIPTION

The TDA8511J is an integrated class-B output amplifier in a 17-lead DIL-bent-SIL power package. It contains 4 × 13 W single-ended amplifiers.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_P	supply voltage		6	15	18	V
I_{ORM}	repetitive peak output current		–	–	4	A
$I_{q(tot)}$	total quiescent current		–	80	–	mA
I_{stb}	standby current		–	0.1	100	μA
P_o	output power	THD = 10%				
		R_L = 4 Ω	–	7	–	W
		R_L = 2 Ω	–	13	–	W
SVRR	supply voltage ripple rejection		46	–	–	dB
$V_{n(o)}$	noise output voltage	R_s = 0 Ω	–	50	–	μV
$\|Z_i\|$	input impedance		50	–	–	kΩ

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
TDA8511J	DBS17P	plastic DIL-bent-SIL power package; 17 leads (lead length 12 mm)	SOT243-1

BLOCK DIAGRAM

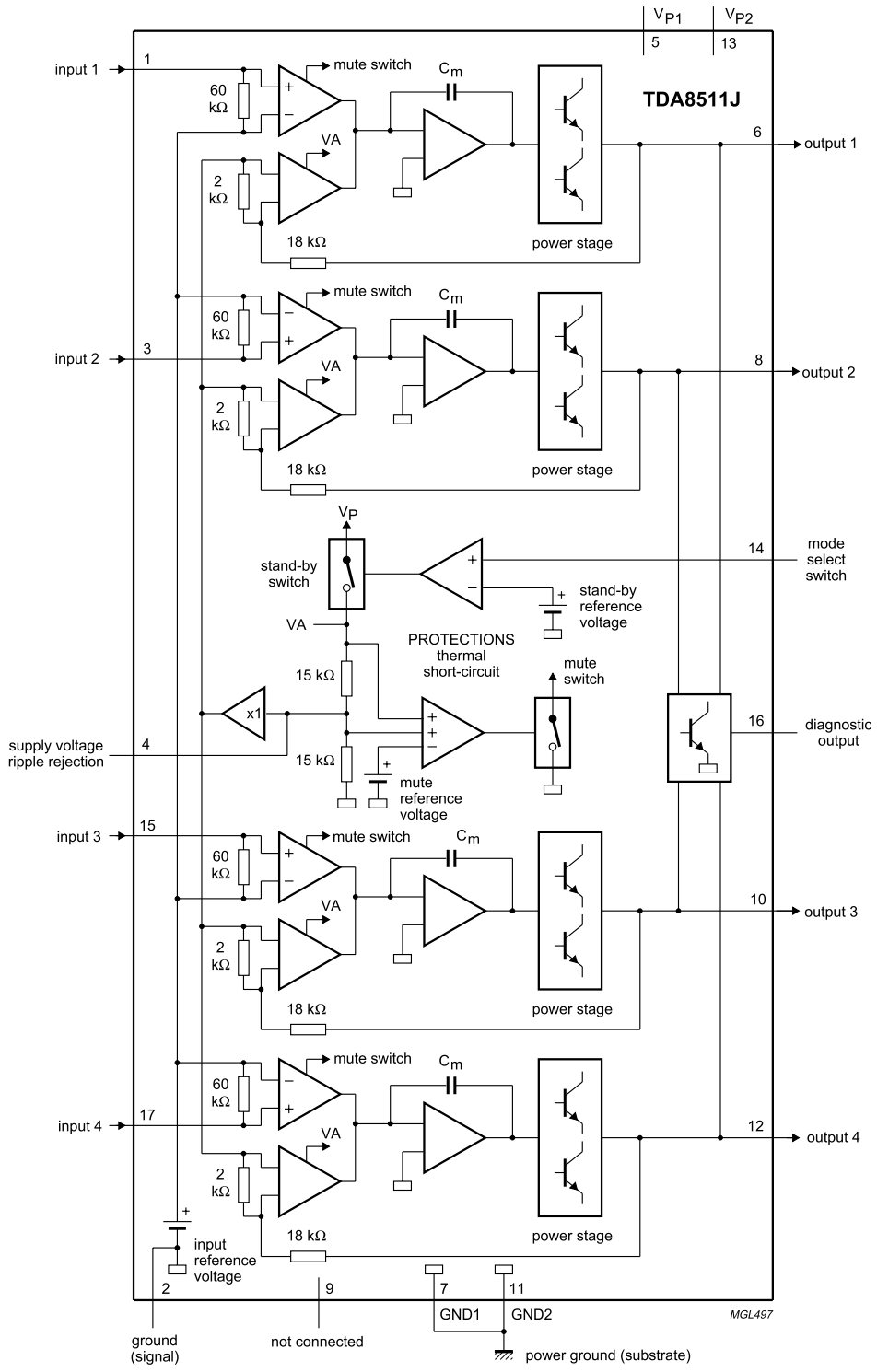

Fig.1 Block diagram.

PINNING

SYMBOL	PIN	DESCRIPTION
IN1	1	input 1
SGND	2	signal ground
IN2	3	input 2
RR	4	supply voltage ripple rejection
V_{P1}	5	supply voltage
OUT1	6	output 1
GND1	7	power ground 1
OUT2	8	output 2
n.c.	9	not connected
OUT3	10	output 3
GND2	11	power ground 2
OUT4	12	output 4
V_{P2}	13	supply voltage
MODE	14	mode select switch input
IN3	15	input 3
V_{DIAG}	16	diagnostic output
IN4	17	input 4

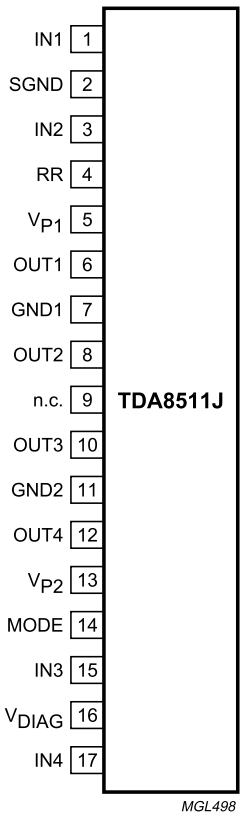

Fig.2 Pin configuration.

FUNCTIONAL DESCRIPTION

The TDA8511J contains four identical amplifiers and can be used for single-ended applications. The gain of each amplifier is fixed at 20 dB. Special features of the device are:

- Mode select switch (pin 14)
- Diagnostic output (pin 16).

Mode select switch (pin 14)

- Low standby current (<100 μA)
- Low switching current (low cost supply switch)
- Mute facility.

To avoid switch-on plops, it is advised to keep the amplifier in the mute mode during ≥100 ms (charging of the input capacitors at pin 1, 3, 15 and pin 17).

This can be achieved by:

- Microprocessor control
- External timing circuit (see Fig.7).

Diagnostic output (pin 16)

DYNAMIC DISTORTION DETECTOR (DDD)

At the onset of clipping of one or more output stages, the dynamic distortion detector becomes active and pin 16 goes LOW. This information can be used to drive a sound processor or DC volume control to attenuate the input signal and thus limit the distortion. The output level of pin 16 is independent of the number of channels that are clipping (see Fig.3).