TDA8947J

4-channel audio amplifier

Rev. 02 — 16 June 2005 Product data sheet

1. General description

The TDA8947J contains four identical audio power amplifiers. The TDA8947J can be used as: four Single-Ended (SE) channels with a fixed gain of 26 dB, two times Bridge-Tied Load (BTL) channels with a fixed gain of 32 dB or two times SE channels (26 dB gain) plus one BTL channel (32 dB gain) operating as a 2.1 system

The TDA8947J comes in a 17-pin Dil-Bent-Sil (DBS) power package. The TDA8947J is pin compatible with the TDA8944AJ and TDA8946AJ.

The TDA8947J contains a unique protection circuit that is solely based on multiple temperature measurements inside the chip. This gives maximum output power for all supply voltages and load conditions with no unnecessary audio holes. Almost any supply voltage and load impedance combination can be made as long as thermal boundary conditions (number of channels used, external heatsink and ambient temperature) allow it.

2. Features

- SE: 1 W to 25 W, BTL: 4 W to 50 W operation possibility (2.1 system)
- Soft clipping
- Standby and Mute mode
- No on/off switching plops
- Low standby current
- High supply voltage ripple rejection
- Outputs short-circuit protected to ground, supply and across the load
- Thermally protected
- Pin compatible with TDA8944AJ and TDA8946AJ

3. Applications

- Television
- PC speakers
- Boom box
- Mini and micro audio receivers

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4. Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{CC}	supply voltage	operating		9	18	26	V
		no (clipping) signal	[1]	-	-	28	V
I_q	quiescent supply current	V_{CC} = 18 V; R_L = ∞		-	100	145	mA
I_{stb}	standby supply current			-	-	10	μA
$P_{o(SE)}$	SE output power	THD = 10 %; R_L = 4 Ω					
		V_{CC} = 18 V		7	8.5	-	W
		V_{CC} = 22 V		-	14	-	W
$P_{o(BTL)}$	BTL output power	THD = 10 %; R_L = 8 Ω					
		V_{CC} = 18 V		16	18	-	W
		V_{CC} = 22 V		-	29	-	W
THD	total harmonic distortion	SE; P_o = 1 W		-	0.1	0.5	%
		BTL; P_o = 1 W		-	0.05	0.5	%
$G_{v(max)}$	maximum voltage gain	SE		25	26	27	dB
		BTL		31	32	33	dB
SVRR	supply voltage ripple rejection	SE; f = 1 kHz		-	60	-	dB
		BTL; f = 1 kHz		-	65	-	dB

[1] The amplifier can deliver output power with non clipping output signals into nominal loads as long as the ratings of the IC are not exceeded.

5. Ordering information

Table 2: Ordering information

Type number	Package		
	Name	Description	Version
TDA8947J	DBS17P	plastic DIL-bent-SIL power package; 17 leads (lead length 12 mm)	SOT243-1

6. Block diagram

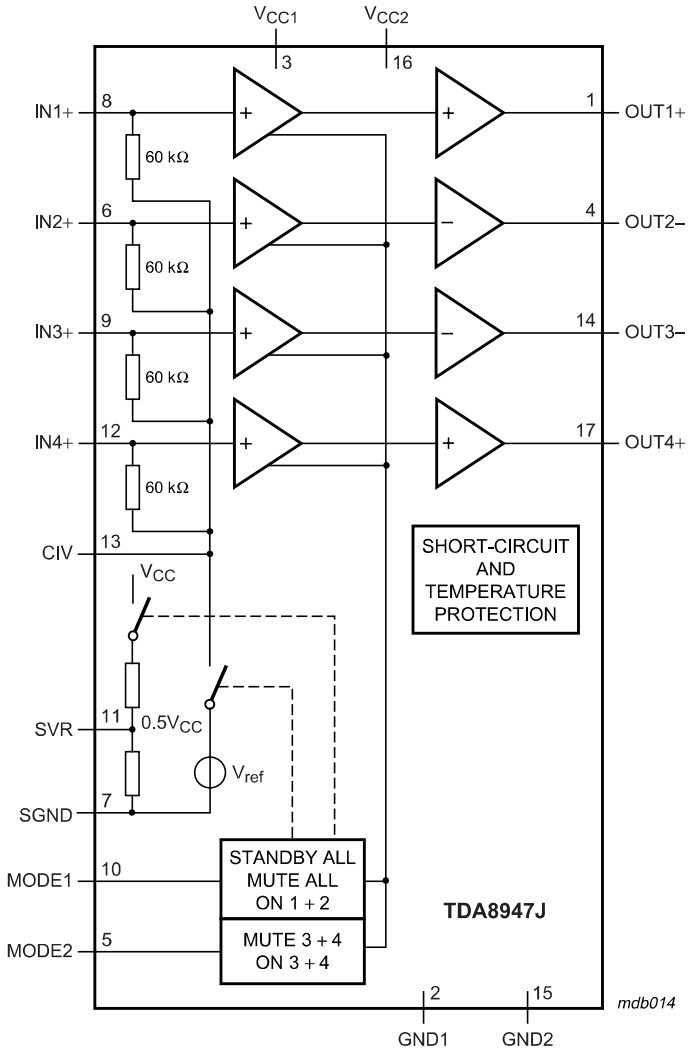

Fig 1. Block diagram

7. Pinning information

7.1 Pinning

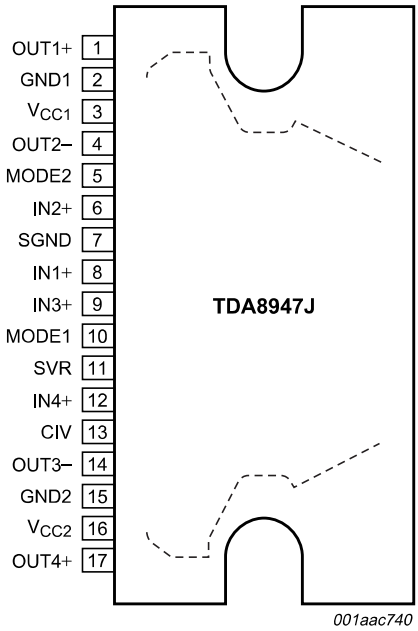

Fig 2. Pin configuration

7.2 Pin description

Table 3: Pin description

Symbol	Pin	Description
OUT1+	1	non inverted loudspeaker output of channel 1
GND1	2	ground of channels 1 and 2
V_{CC1}	3	supply voltage channels 1 and 2
OUT2–	4	inverted loudspeaker output of channel 2
MODE2	5	mode selection 2 input: Mute and On mode for channels 3 and 4
IN2+	6	input channel 2
SGND	7	signal ground
IN1+	8	input channel 1
IN3+	9	input channel 3
MODE1	10	mode selection 1 input: Standby, Mute and On mode for all channels
SVR	11	half supply voltage decoupling (ripple rejection)
IN4+	12	input channel 4
CIV	13	common input voltage decoupling
OUT3–	14	inverted loudspeaker output of channel 3
GND2	15	ground of channels 3 and 4