



SANYO Semiconductors

DATA SHEET

Bi-CMOS LSI

LV4910T — Class-D Audio Power Amplifier

BTL 2W × 2ch

Overview

LV4910T is a stereo digital amplifier for portable equipment, for example notebook-PC, portable DVD and portable mini-speakers. It is characterized by the use of an original feedback technology to improve sound quality though it is Class-D amplifier, and does not need the LC filter in the output stage.

Features

- D-class high-efficiency amplifier
- Low pop sound at SW changeover
- Differential input type

Functions

- 2W stereo digital power amplifier
- Standby switch
- Mute switch
- Various protective circuits (over-current protective, thermal protective, and under-voltage circuits) incorporated

Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\text{ max}}$		6	V
Allowable power dissipation	$P_d\text{ max}$	as mounted on the substrate	1.05	W
Operating temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +150	$^\circ\text{C}$

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SANYO Semiconductor Co., Ltd.

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LV4910T

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V _{CC}		5	V
Operation supply voltage range	V _{CC} opg		2.5 to 5.5	V
Recommended load resistance	R _L	Speaker	4	Ω

Electrical Characteristics Ta = 25°C, V_{CC} = 5V, f = 1kHz, R_L = 4Ω

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Standby current	I _{st}	Current at ST ON			1	μA
Current at no signal	I _{CCO1}	At LC filter-less		12	20	mA
Current at Mute	I _{CCO} mute	At Mute of speaker		10	16	mA
Voltage gain	V _G	V _O = 0dBm	21	23	25	dB
Channel balance	ΔV _G	V _O = 0dBm	-1	0	1	dB
Output power	P _O	THD = 10%		2		W
Total harmonic distortion	THD	P _O = 0.5W, DIN AUDIO		0.4	0.7	%
Output noise voltage	V _{NO}	R _g = 0, DIN AUDIO		100	200	μV
Crosstalk	CT	V _O = 0dBm, TUN 1kHz		-60	-40	dB
Ripple rejection ratio	RR	f _r = 100Hz, V _r = -10dBm, TUN 100Hz		-40	-30	dB
Common mode rejection ratio	CMRR	V _O = 0dBm, DIN AUDIO		-60	-40	dB
Mute attenuation value	V _{OFF}	V _O = 0dBm, DIN AUDIO		-80	-70	dB
Oscillation frequency	F _{PWM}			300		kHz
Standby ON voltage sensitivity	V _{PWROFF}	Standby ON start voltage			1	V
Standby OFF voltage sensitivity	V _{PWRON}	Standby OFF start voltage	3			V
Mute ON voltage sensitivity	V _{MUTEON}	Mute ON start voltage			0.5	V
Mute OFF voltage sensitivity	V _{MUTEOFF}	Mute OFF start voltage	2			V

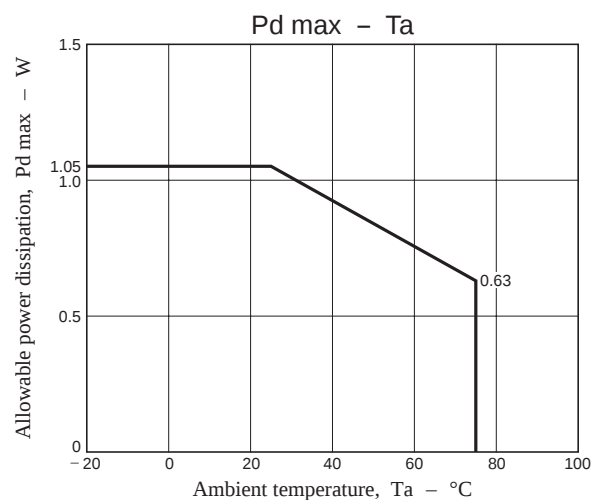
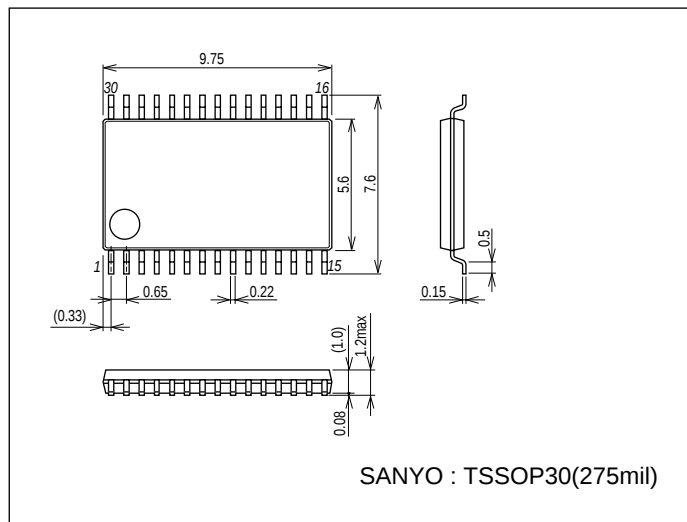
* Electrical characteristics vary depending on the substrate layout and selection of external parts.

For measurement of the above characteristics, the coil : 22μH (Toko Kabushiki Kaisha made D63CB) is used.

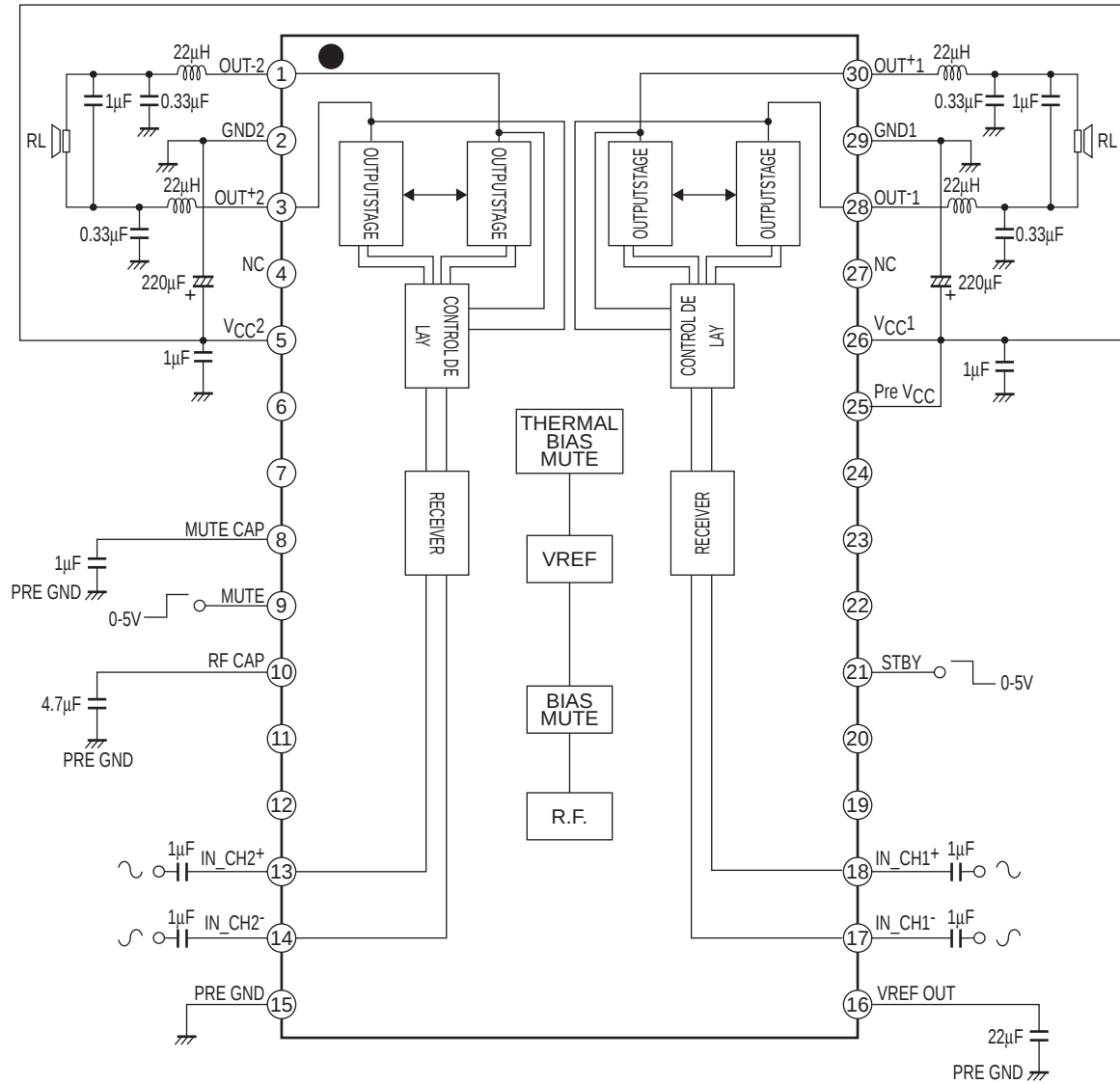
Package Dimensions

unit : mm (typ)

3259



Block Diagram



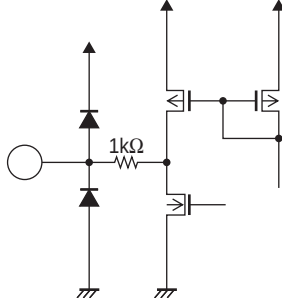
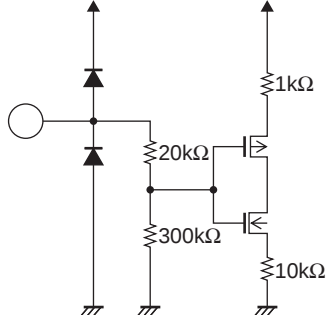
Pin Descriptions

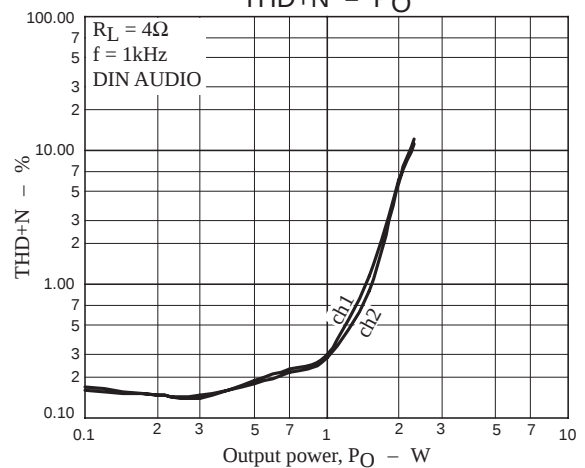
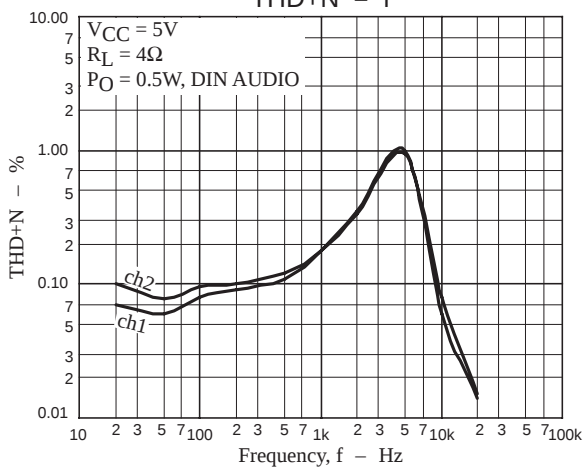
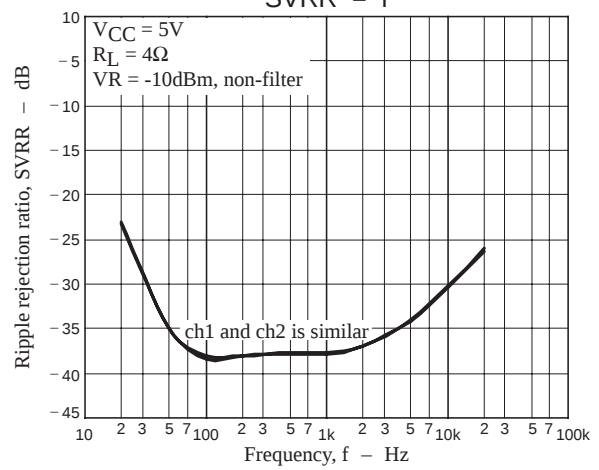
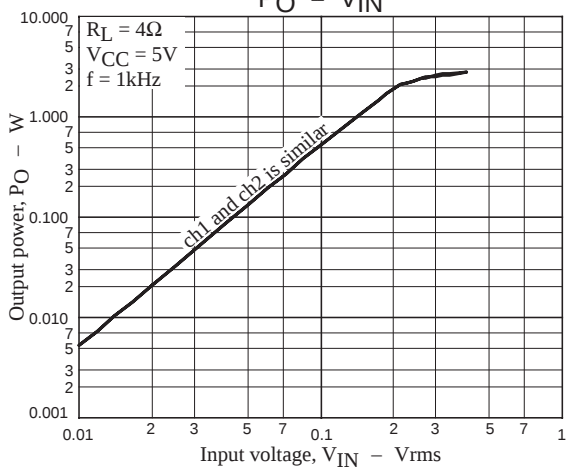
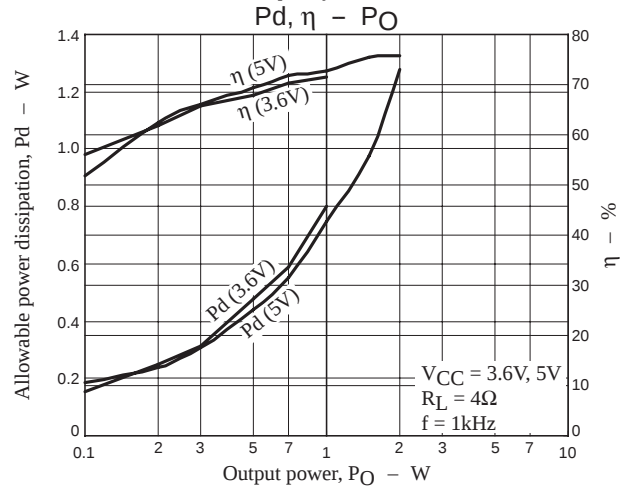
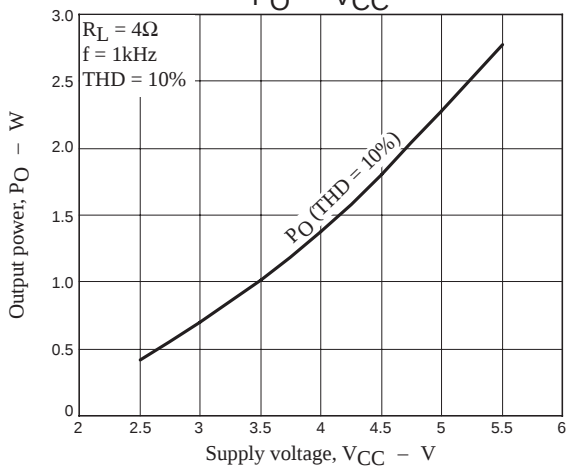
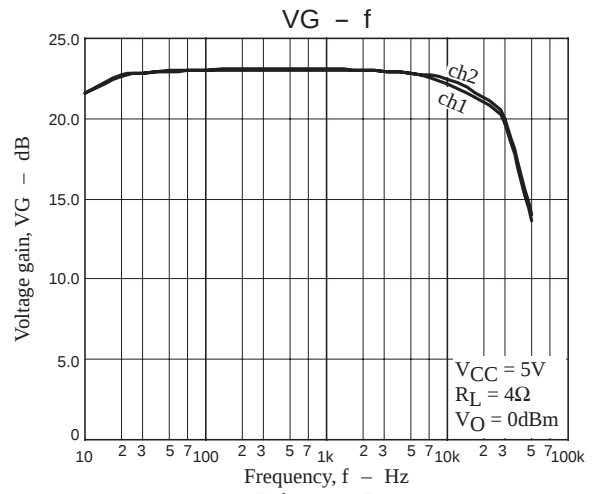
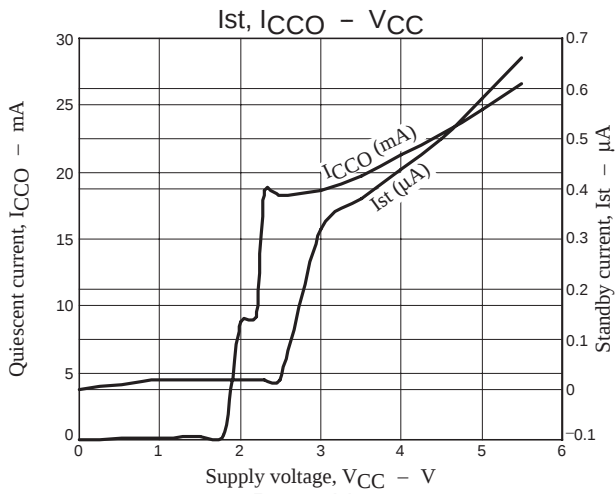
Pin No.	Pin name	Pin voltage (V)	Pin description	Equivalent circuit
1 3 28 30	OUT ⁻ 2 OUT ⁺ 2 OUT ⁻ 1 OUT ⁺ 1	2.58	Power outputs	
2	GND2	0		
4	NC		Non-connection	
5	V _{CC} 2	5		
6	NC		Non-connection	
7	NC		Non-connection	
8	MUTE CAP	4.9	Connection for the mute switch On/Off impulse noise reduction capacitor	
9	MUTE		- Mute On/Off switch 2 to 5.5V : Mute Off 0 to 0.7V : Mute On	
10	RF CAP	2.6	Ripple filter reference	
11	NC		Non-connection	
12	NC		Non-connection	
13 14 17 18	IN _{ch2} ⁺ IN _{ch2} ⁻ IN _{ch1} ⁻ IN _{ch1} ⁺	2.4	Signal input	

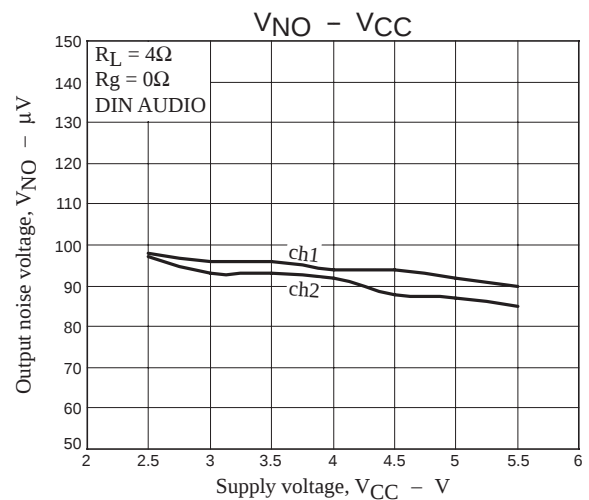
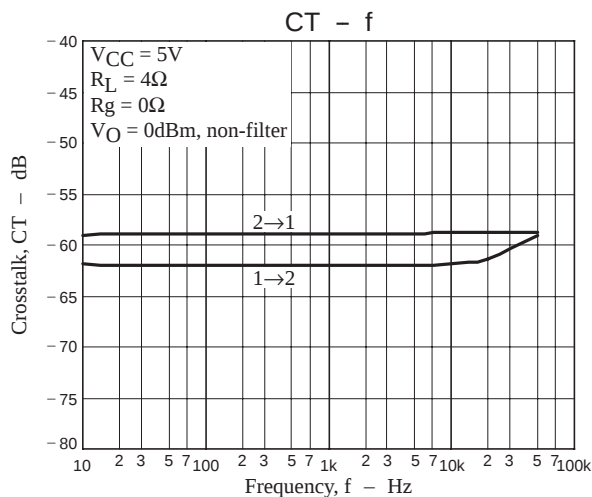
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Pin No.	Pin name	Pin voltage (V)	Pin description	Equivalent circuit
15	PRE GND	0		
16	VREF OUT	2.55	VREF amplifier reference	
19	NC		Non-connection	
20	NC		Non-connection	
21	STBY		- STBY On/Off switch 0 to 1V : Power Off 3 to 5.5V : Power On	
22	NC		Non-connection	
23	NC		Non-connection	
24	NC		Non-connection	
25	PRE V _{CC}	5		
26	V _{CC} 1	5		
27	NC		Non-connection	
29	GND1	0		





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