

Ordering number : ENN7336

Monolithic Linear IC



LA6564H

4CH Bridge (BTL) Driver for CD-R

Overview

The LA6564H is a 4-channel BTL driver developed for CD-ROM/R/RW and DVD-ROM actuator.

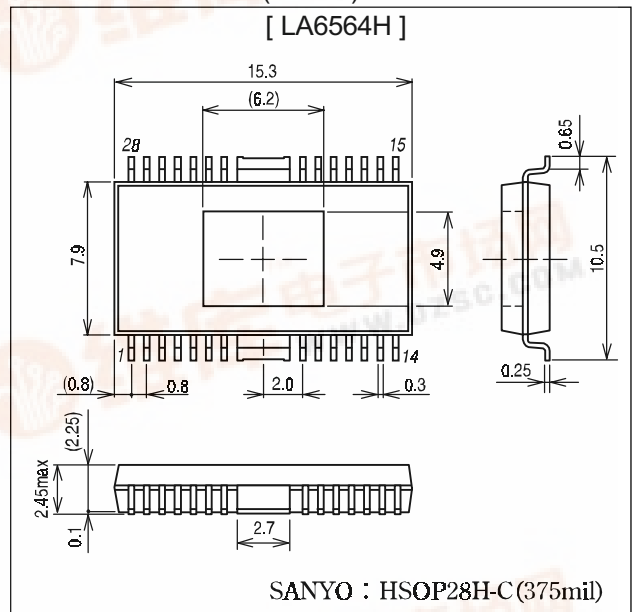
Functions

- Three power supply systems (with a separate preamplifier stage).
- Four bridge-connection (BTL) power amps built-in.
- I_O max : 1A.
- Mute circuit (output ON/OFF) built-in. With three systems (2-1-1).
- Provides output voltage setting pin (for 4CH only).

Package Dimensions

unit : mm

3234A-HSOP28H-C (375mil)



Specifications

Maximum Ratings at T_a = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage 1	V _{CC} max	*1	14	V
Supply voltage 2	V _S max	*1	14	V
Allowable power dissipation	P _d max	Independent IC	0.82	W
		A specified substrate (114.3mm×76.1mm×1.6mm/glass epoxy)	2	W
Maximum input voltage	V _{INB}		13	V
Mute pin voltage	V _{MUTE}		13	V
Maximum output current	I _O max	Each output	1	A
Operating temperature	T _{opr}		-30 to +85	°C
Storage temperature	T _{stg}		-55 to +150	°C

1 Note : V_{CC} ≥ V_S

■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.



LA6564H

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage 1	V_{CC}	$V_{CC} \text{ *1}$	4 to 13.5	V
Supply voltage 2	VS	VS 1,2,3 *1	4 to 13.5	V

1 Note : $V_{CC} \geq VS^$

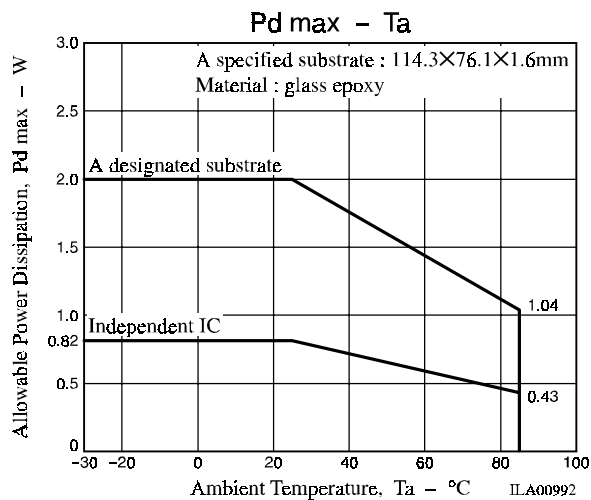
Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$, $VS1 = VS2 = 5\text{V}$, $VS3 = 12\text{V}$, $V_{REF} = 1.65\text{V}$, unless otherwise specified

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[All Blocks]						
V_{CC} no-load current drain	I_{CC-ON}	V_{CC} current, all outputs ON (all MUTE : H)		20	30	mA
No-load current drain OFF	I_{CC-OFF}	Total current of V_{CC} and VS1 through 3 (All MUTE : L)			0.5	mA
[Output AMP Block]						
Output offset voltage	VOFF	Between + and - outputs of each CH	-50		50	mV
Output voltage 1	V_{O1}	$R_L = 8\Omega$, voltage between outputs of CH1 through CH3 *1	4	4.5		V
Output voltage 2	V_{O2}	$R_L = 16\Omega$, voltage between outputs of CH4 *1	10.5	11		V
Closed-circuit voltage gain 1	VG1	CH1,2,3, input and output gain	10	12	14	dB
Closed-circuit voltage gain 2	VG2	CH4, input and output gain	16	18	20	B
Input voltage range	V_{IN}	Each input pin	0		VS^*	V
Slew rate	SR	Independent AMP. Doubled when between outputs.		0.5		V/ μs
[MUTE Block]						
MUTE ON voltage	VMUTE-ON	MUTE *2	2			V
MUTE OFF voltage	VMUTE-OFF	MUTE *2			0.5	V
MUTE pin inrush current	I-MUTE	Inrush current of each MUTE pin		25	50	μA
[AREF AMP Block]						
V_{REF-IN} input voltage range			1		$V_{CC}-1.5$	V
[Voltage limiter block] [Setting the limit value of CH4 output voltage]						
V_{O-SET} input and output gain	G- V_{OSET}	*1	11	12	13	dB
V_{O-SET} input current	I- V_{OSET}	V_{O-SET} : current at 3.3 V			1	μA

*1. Output saturated.

*2. MUTE output ON with HI and OFF with LOW (High impedance with AMP output OFF).

MUTE operates independently for each CH (Refer to "Relationship of MUTE and output" described later).



LA6564H

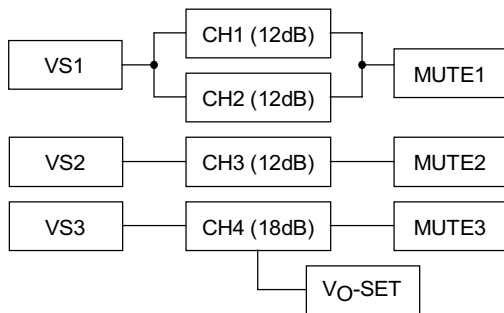
1) Relation ship of MUTE and output

	Output			
	CH1	CH2	CH3	CH4
Each MUTE	MUTE1		MUTE2	MUTE3
H	ON			
L	OFF			

*1 The output becomes HI impedance when it is OFF.

*2 MUTE operates independently for each CH (Refer to the following description). All MUTES enter the STBY mode when they are L (output OFF), turning OFF all the circuits including the output AMP.

2) Relationship between each CH and V*, MUTE



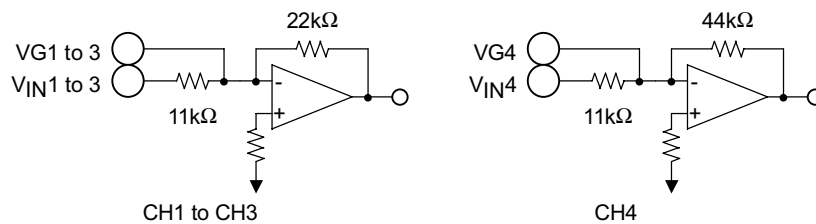
3) V_O-SET

V_O-SET operates for CH4. V_O-SET is correlated to CH4 output by 12dB. For example, the output is 4V when V_O-SET is 1V.

4) Gain set (V_{IN}* and V_G*)

Gain of each CH can be equivalently represented as follows :

- CH1 to CH3 : 12dB, CH4 : 18dB when only V_{IN} pin is used. The similar gain is obtained also when a 11k resistor is used for the V_G* pin and the input is provided from its resistor end.
- The input/output gain is determined from the resistance ratio as shown in the figure below. To set the gain with the V_G pin, the input-output gain has a slight temperature characteristic depending on the difference in temperature characteristic between internal and external resistances.



LA6564H

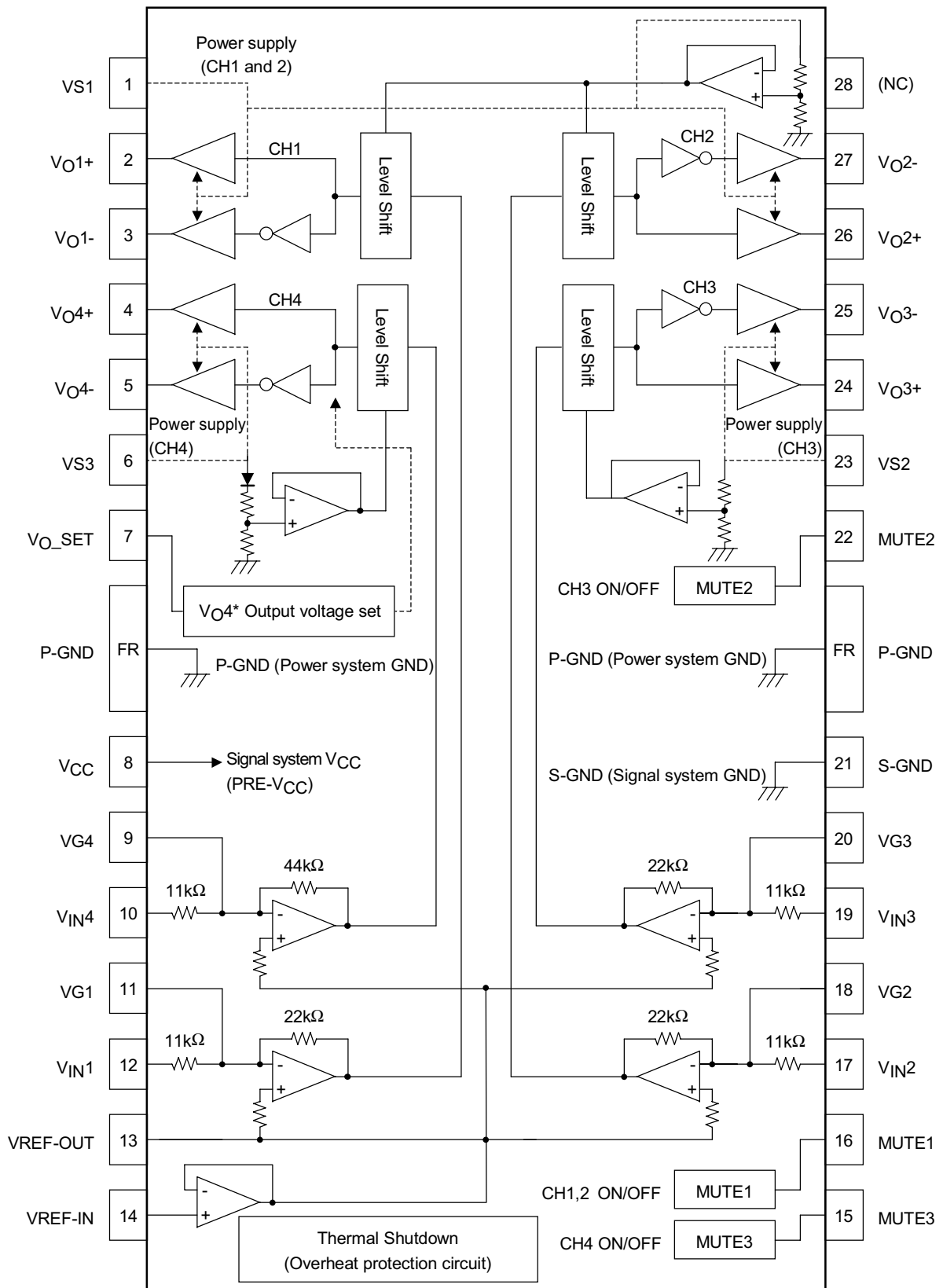
Pin Functions

Pin No.	Pin Name	Description (Functions)
1	VS1	Output stage power supply for channel 1 and 2
2	VO1+	Output pin (+) for channel 1, non-inverted output for channel 1 input
3	VO1-	Output pin (-) for channel 1, inverted output for channel 1 input
4	VO4+	Output pin (+) for channel 4, non-inverted output for channel 4 input
5	VO4-	Output pin (-) for channel 4, inverted output for channel 4 input
6	VS3	Output stage power supply for channel 4
7	VO_SET	Pin to adjust channel 4 output voltage
8	VCC	Power supply for preamplifier stage signal system
9	VG4	Input pin for channel 4 (for gain adjustment)
10	VIN4	Input pin for channel 4
11	VG1	Input pin for channel 1 (for gain adjustment)
12	VIN1	Input pin for channel 1
13	VREF-OUT	VREF-AMP output
14	VREF-IN	Reference voltage input pin
15	MUTE3	ON/OFF for channel 4 output
16	MUTE1	ON/OFF for channel 1 and 2 outputs
17	VIN2	Input pin for channel 2
18	VG2	Input pin for channel 2 (for gain adjustment)
19	VIN3	Input pin for channel 3
20	VG3	Input pin for channel 3 (for gain adjustment)
21	S-GND	Signal system GND
22	MUTE2	ON/OFF for channel 3 output
23	VS2	Output stage power supply for channel 3
24	VO3+	Output pin (+) for channel 3, non-inverted output for channel 3 input
25	VO3-	Output pin (-) for channel 3, inverted output for channel 3 input
26	VO2+	Output pin (+) for channel 2, non-inverted output for channel 2 input
27	VO2-	Output pin (-) for channel 2, inverted output for channel 2 input
28	(NC)	Do not use

* Center frame (FR) becomes GND for the power system (P-GND). Set this to the minimum potential together with S-GND.

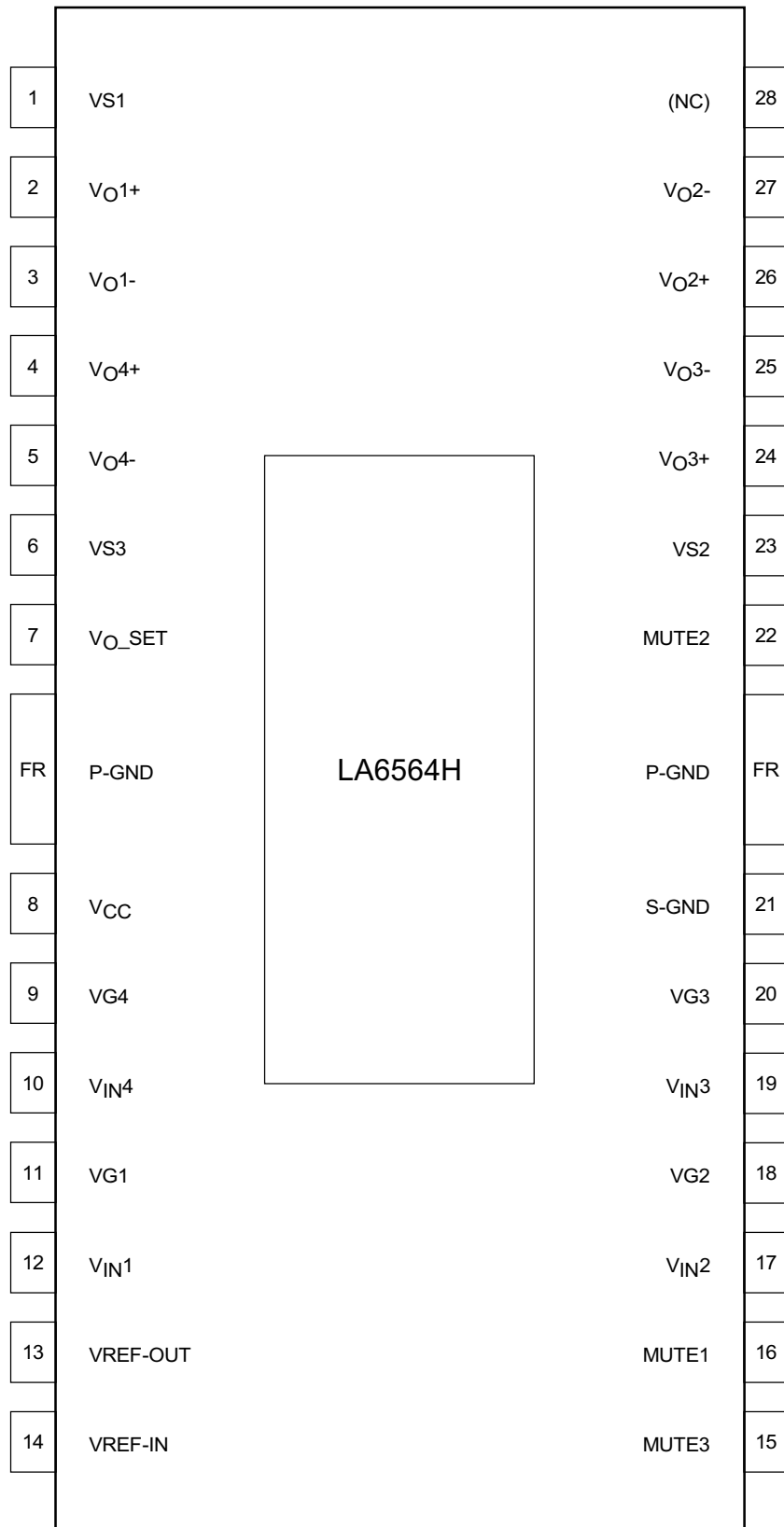
LA6564H

Block Diagram



LA6564H

Pin Assignment



Top view

LA6564H

Pin Description

Name	Pin Name	Pin No.	Equivalent Circuit Diagram	Description
Input	VIN1 VIN2 VIN3 VIN4 VG1 VG2 VG3 VG4	12 17 19 10 11 18 20 9		Input pins
Output	VO1+ VO1- VO2+ VO2- VO3+ VO3- VO4+ VO4-	2 3 26 27 24 25 4 5		Output pins
MUTE	MUTE1 MUTE2 MUTE3	16 22 15		Switch for each channel output MUTE : H output ON MUTE : L output OFF

LA6564H

- Specifications of any and all SANYO products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- SANYO Electric Co., Ltd. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO products (including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of SANYO Electric Co., Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO product that you intend to use.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of September, 2002. Specifications and information herein are subject to change without notice.