



SANYO Semiconductors

**DATA SHEET**

# LA6564H

Monolithic Linear IC  
For CD-R  
**Four-Channel Bridge (BTL) Driver**

**Overview**

The LA6564H is a 4-channel bridge (BTL) driver for CD-R.

**Functions**

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

**Specifications**

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

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 designated substrate*	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	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

\* Specified board size : 114.3×76.1×1.6mm<sup>3</sup>, glass epoxy.

\*1 Note :  $V_{CC} \geq V_S$ \*

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

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

\*1 Note :  $V_{CC} \geq V_S$ \*

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**Electrical Characteristics** at Ta = 25°C, VCC = 12V, VS1 = VS2 = 5V, VS3 = 12V, VREF = 1.65V, unless especially specified.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
<b>Overall</b>						
VCC No-load current drain	ICC-ON	VCC current, all outputs ON (all MUTE H)		20	30	mA
No-load current drain OFF	ICC-OFF	Total current of VCC and VS1 through 3 (All MUTE : L)			0.5	mA
<b>Output AMP Block</b>						
Output offset voltage	VOFF	Between + and - outputs of each CH	-50		50	mV
Output voltage 1	VO1	RL=8Ω. Voltage between outputs of CH1 through CH3 *1	4	4.5		V
Output voltage 2	VO2	RL=16Ω. Voltage between outputs of CH4 *1	10.5	11		V
Closed-circuit voltage gain 1	VG1	Input and output gain	10	12	14	dB
Closed-circuit voltage gain 2	VG2	Input and output gain	16	18	20	dB
Input voltage range	VIN	Each input pin	0		VS*	V
Slew rate	SR	AMP Independent Multiply 2 between outputs.		0.5		V/μs
<b>MUTE block</b>						
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
<b>VREF AMP block</b>						
VREF-IN input voltage range			1		VCC-1.5	V
<b>Voltage limiter block</b> (Setting the limit value of CH4 output voltage)						
VO-SET input and output gain	G-VOSET	*1	11	12	13	dB
VO-SET input current	I-VOSET	VO-SET : Current at 3.3 V			1	μA

Note \*1 : Output saturated.

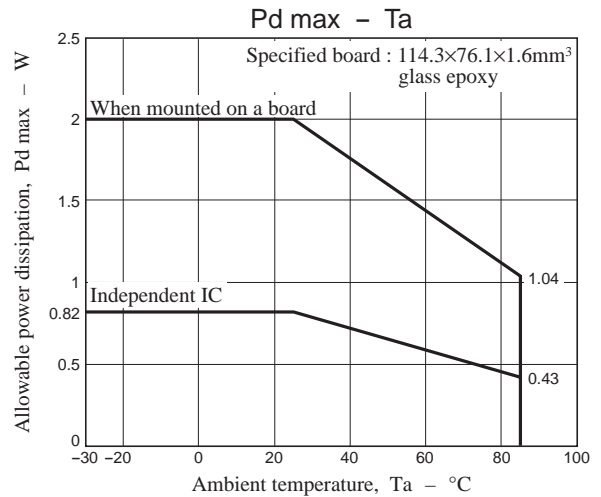
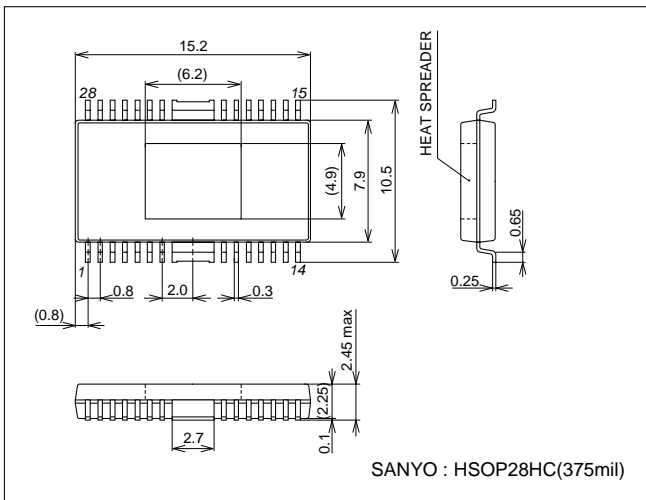
\*2 : MUTE output ON with HI and OFF with LOW (High impedance with AMP output OFF)

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

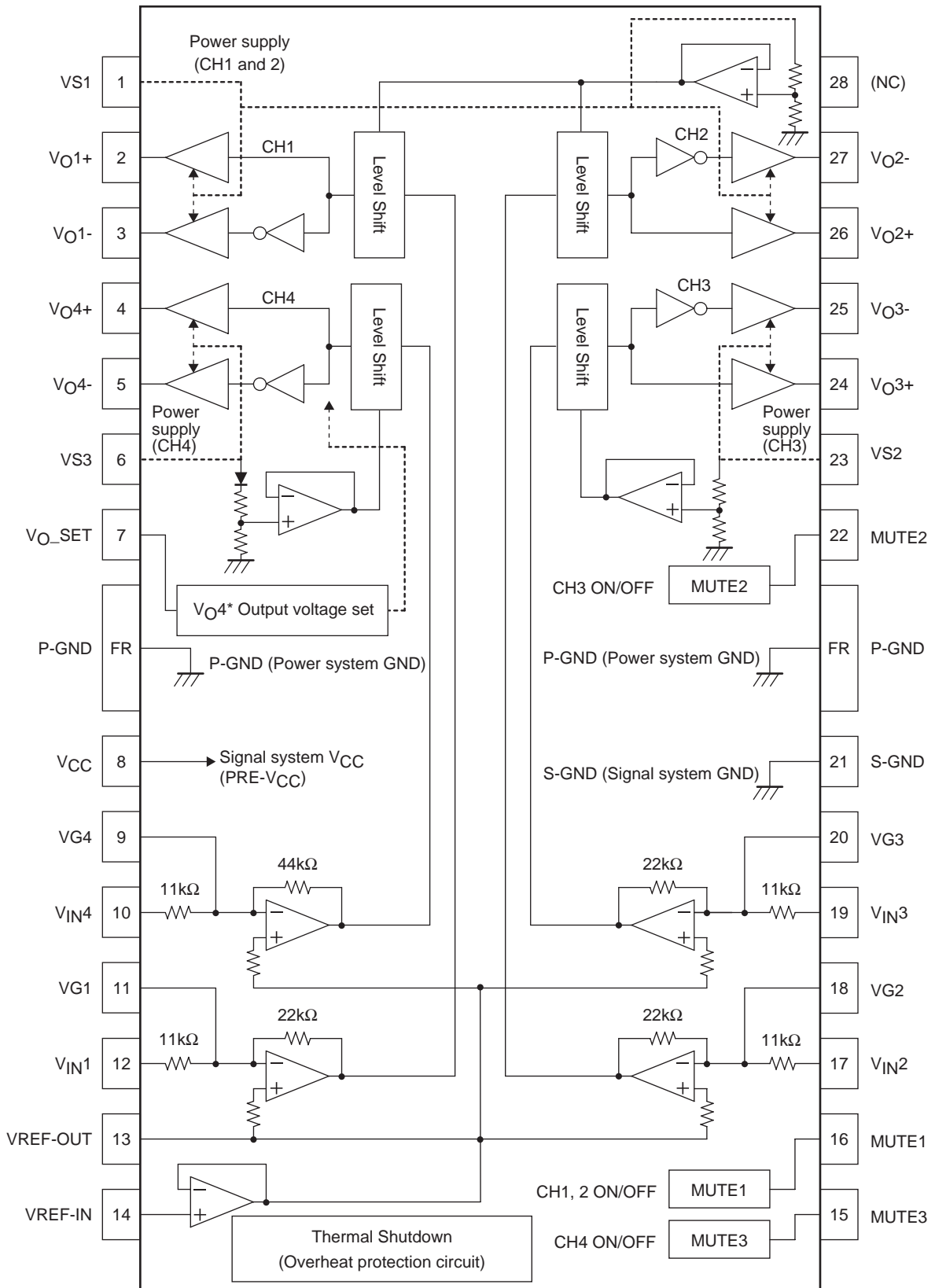
**Package Dimensions**

unit : mm (typ)

3234B



Block Diagram



## Pin Functions

Pin No.	Symbol	Pin descriptions
1	VS1	Output stage power supplies 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	V <sub>CC</sub>	Power supply for preamplifier stage signal system
9	VG4	Input pin for channel 4 (for gain adjustment)
10	V <sub>IN</sub> 4	Input pin for channel 4
11	VG1	Input pin for channel 1 (for gain adjustment)
12	V <sub>IN</sub> 1	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	V <sub>IN</sub> 2	Input pin for channel 2
18	VG2	Input pin for channel 2 (for gain adjustment)
19	V <sub>IN</sub> 3	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	VG2	Output pin (-) for channel 2, inverted output for channel 2 input
28	(NC)	Do not use

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

**Pin Description**

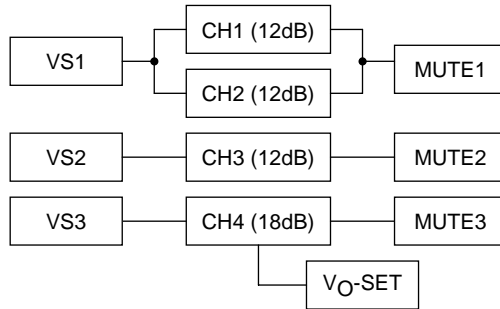
Pin No.	Symbol	Pin function	Description	Equivalent circuit
12 17 19 10 11 18 20 9	$V_{IN1}$ $V_{IN2}$ $V_{IN3}$ $V_{IN4}$ $VG1$ $VG2$ $VG3$ $VG4$	Input	Each input pin	
2 3 26 27 24 25 4 5	$V_{O1+}$ $V_{O1-}$ $V_{O2+}$ $V_{O2-}$ $V_{O3+}$ $V_{O3-}$ $V_{O4+}$ $V_{O4-}$	Output	Each output pin	
16 22 15	MUTE1 MUTE2 MUTE3	MUTE	ON/OFF for each channel output MUTE : H output ON MUTE : L output OFF	

## Relation 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 of circuits including the output AMP.

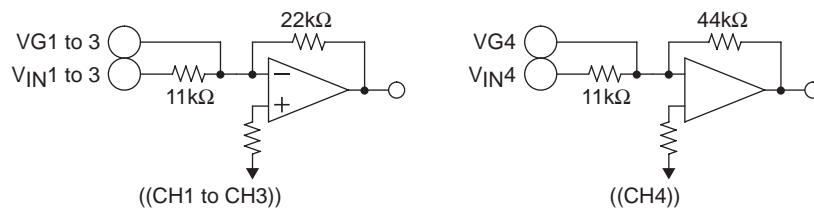
Relationship between each CH and  $V^*$ , MUTE $V_{O-SET}$ 

$V_{O-SET}$  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.

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.



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