



SANYO Semiconductors

DATA SHEET

LA6571 — Monolithic Linear IC 5CH Driver for Mini Disk and Compact Disk

Overview

The LA6571 is 5-channel driver for mini disk and compact disk applications (BTL-AMP: 5CH).

Features

- Power amplifier 5-channel built-in.
- I_O max 1A
- Level shift circuit built-in.
- Mute circuit (output ON/OFF) with three built-in channels (2-2-1).
(Operates independently for each of MUTE1: CH1 and 2, MUTE2: CH3 and 4, and MUTE3: CH5.
Not operating for the regulator (REG))
- Regulator (REG) built-in (external PNP transistor).
Voltage setting (typ: 1.5V or more) with an external resistor
- Overheat protection circuit (thermal shutdown) built-in.

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC} max		14	V
Maximum output current	I_O max	Each output for channel 1 to 5.	1	A
Maximum input voltage	V_{INB}		13	V
MUTE pin voltage	V_{MUTE}		13	V
Allowable loss	P_d max	Independent IC	0.8	W
		Mounted on a specified board*	2	W
Operating temperature	T_{opr}		-30 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

* Mounted on a specified board: 76.1mm×114.3mm×1.6mm glass epoxy

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

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage 1	V_{CC1}		4.5 to V_{CC2}	V
Supply voltage 2	V_{CC2}		6 to 13	V

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LA6571

Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC1} = 5\text{V}$, $V_{CC2} = 12\text{V}$, $V_{REF-IN} = 1.65\text{V}$, unless especially specified

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[ALL Blocks]						
No-load current drain ON	$I_{CC\ ON}$	All outputs ON *1		30	50	mA
No-load current drain OFF	$I_{CC\ OFF}$	All outputs OFF *1		10	20	mA
VREF input voltage range	V_{REF-IN}		1		$V_{CC2}-1$	V
Thermal shutdown temperature	TSD	*7	150	175	200	$^\circ\text{C}$
[BTL AMP Block] (CH1 to CH5)						
Output offset voltage	V_{OFF}	Voltage difference in output between BTL AMP and each channel.	-50		50	mV
Output offset voltage	V_{OFF1}	Voltage difference in output between BTL AMP and each channel.	-80		80	mV
Output voltage	V_O	CH1,CH2 *3	3.2	4.0		V
Output voltage	V_{O1}	CH3,CH4,CH5 *4	9.7	10.5		V
Closed-circuit voltage gain	V_G1	Gain between input and output for CH1, CH2, and CH5 *2	4.2	5.0	6.0	times
Closed-circuit voltage gain	V_G3	Gain between input and output for CH3 and CH4 *2	8.2	9.0	11.0	times
Slew rate	SR	AMP Independent. Multiply 2 between outputs. *7		0.5		$\text{V}/\mu\text{s}$
MUTE ON voltage	$V_{MUTE\ ON}$	Each MUTE *6	2			V
MUTE OFF voltage	$V_{MUTE\ OFF}$	Each MUTE *6			0.5	V
[Input AMP Block]						
Input voltage range	$V_{IN\ op}$		0		$V_{CC2}-1.5$	V
Output offset voltage	$V_{OFF\ op}$		-10		10	mV
Output current (SINK)	SINK op		2			mA
Output current (SOURCE)	SOURCE op	*5	300	500		μA
[Power Supply Block] (PNP transistor: 2SB632K)						
Regulator output	V_{OUT}	For error Amp, $R_L = 10\text{k}\Omega$ at buffer	1.2	1.3	1.4	V
REG-IN SINK current	REG-IN-SINK	Base current to external PNP	5	10		mA
Line regulation	ΔV_{OLN}	$6\text{V} \leq V_{CC} \leq 12\text{V}$, $I_O = 200\text{mA}$		20	150	mV
Load regulation	ΔV_{OLD}	$5\text{mA} \leq I_O \leq 200\text{mA}$		50	200	mV

*1. Current dissipation that is a sum of V_{CC1} and V_{CC2} at no load.

*2. Input AMP is a BUFFER AMP.

*3. Voltage difference between both ends of load (8Ω). Output saturated.

*4. Voltage difference between both ends of load (12Ω). Output saturated.

*5. The source of input OP-AMP is a constant current. (See the specified block diagram.)

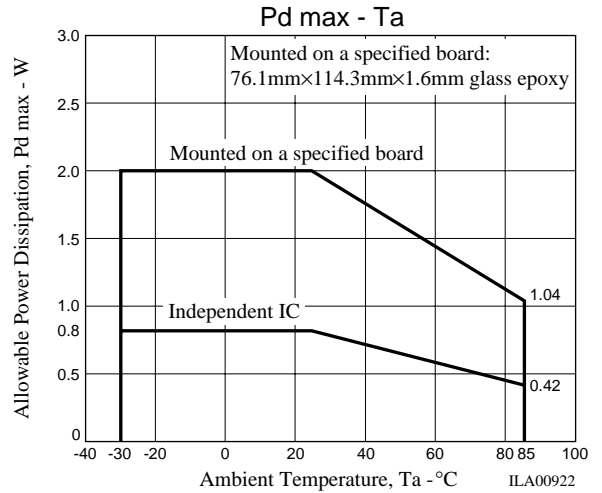
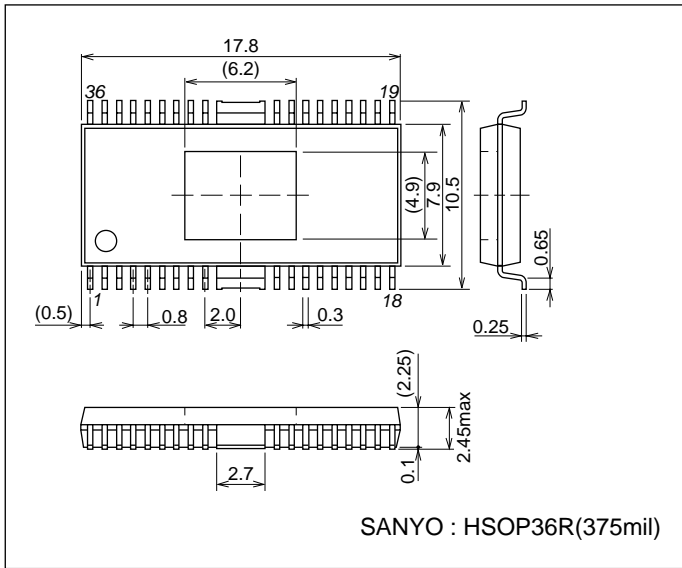
As the $11\text{k}\Omega$ resistance to the next stage is a load, pay due attention when setting the input OP-AMP gain.

*6. Output ON with MUTE: [H] and OFF with MUTE: [L] (HI impedance).

*7. Design guarantee value

Package Dimensions

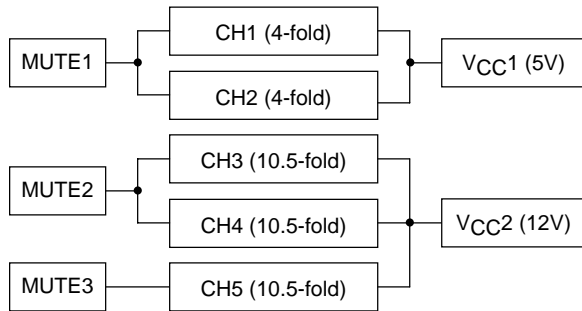
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Pin Description

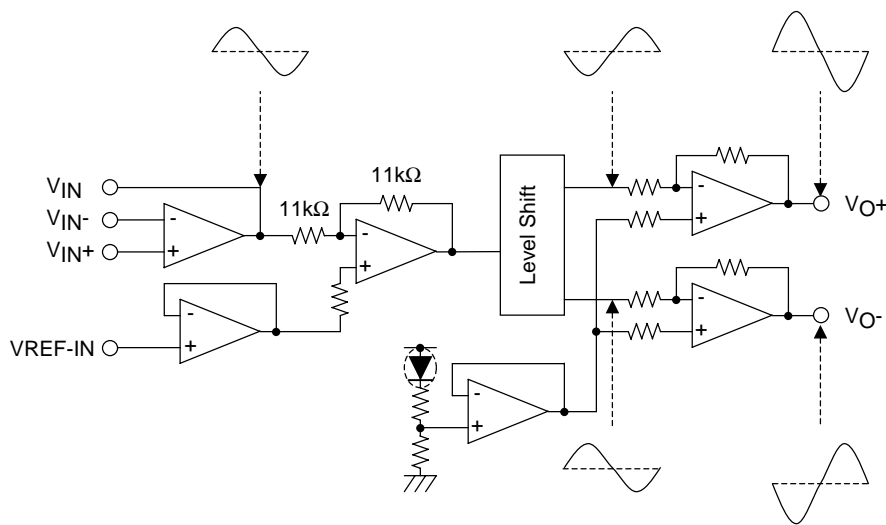
Pin Name	Pin Name	Pin No.	Equivalent Circuit Diagram	Description
Input	VIN1+ VIN1- VIN1 VIN2+ VIN2- VIN2 VIN3+ VIN3- VIN3 VIN4+ VIN4- VIN4 VIN5+ VIN5- VIN5	17 16 15 20 19 18 23 22 21 30 29 31 32 33 34		Each input pin
Output	VO1+ VO1- VO2+ VO2- VO3+ VO3- VO4+ VO4- VO5+ VO5-	12 13 10 11 8 9 6 7 5 4		Each output
MUTE	MUTE1 MUTE2 MUTE3	1 2 36		Turns ON/OFF the output for MUTE1: CH1, 2 MUTE2: CH3, 4, and MUTE3: CH5. Each MUTE operates independently. MUTE: H output ON MUTE: L output OFF With the output OFF, the output has a high impedance.

Relationship between MUTE and Power (VCC)

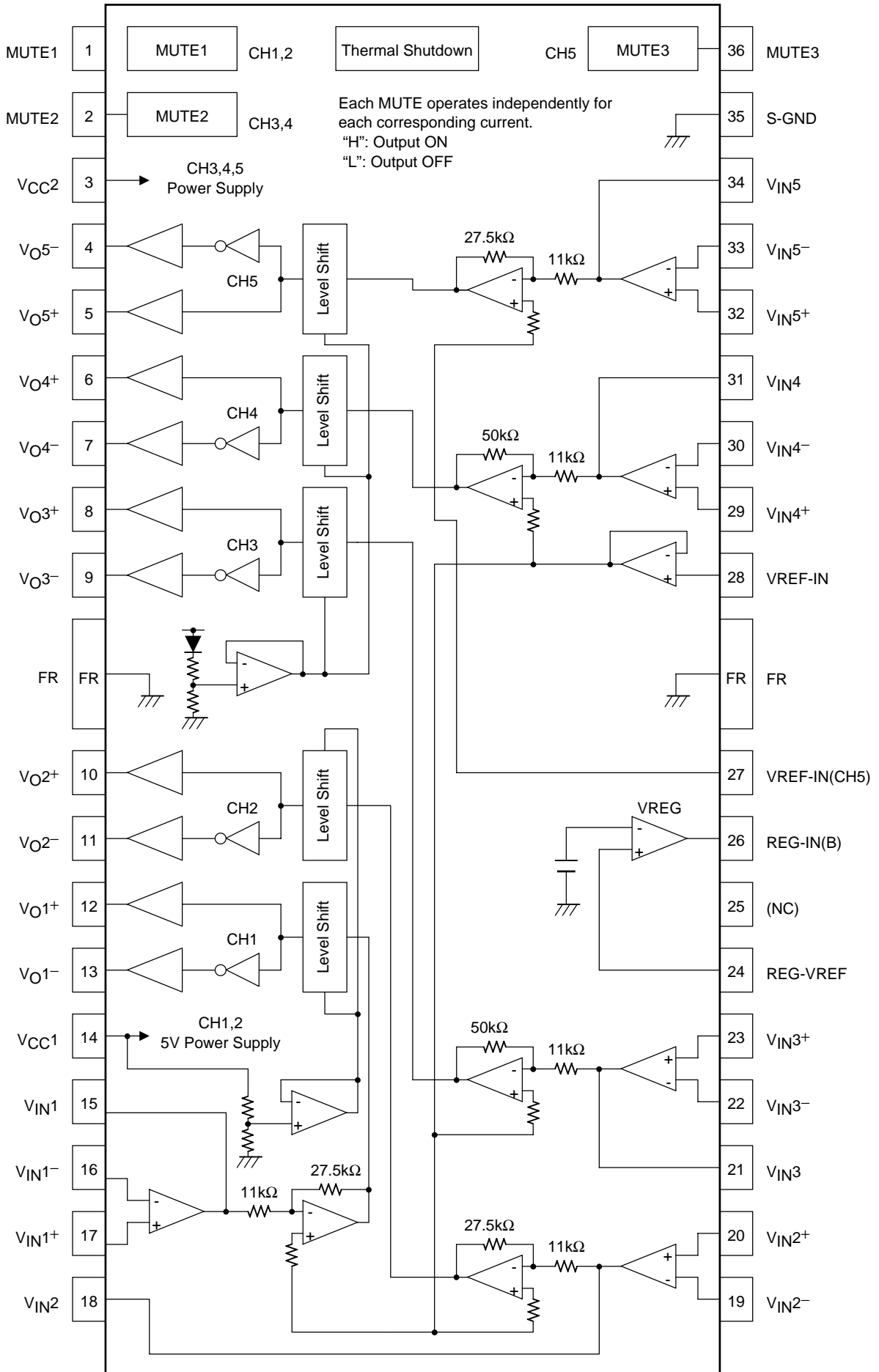


* MUTE operates independently for each corresponding channel.

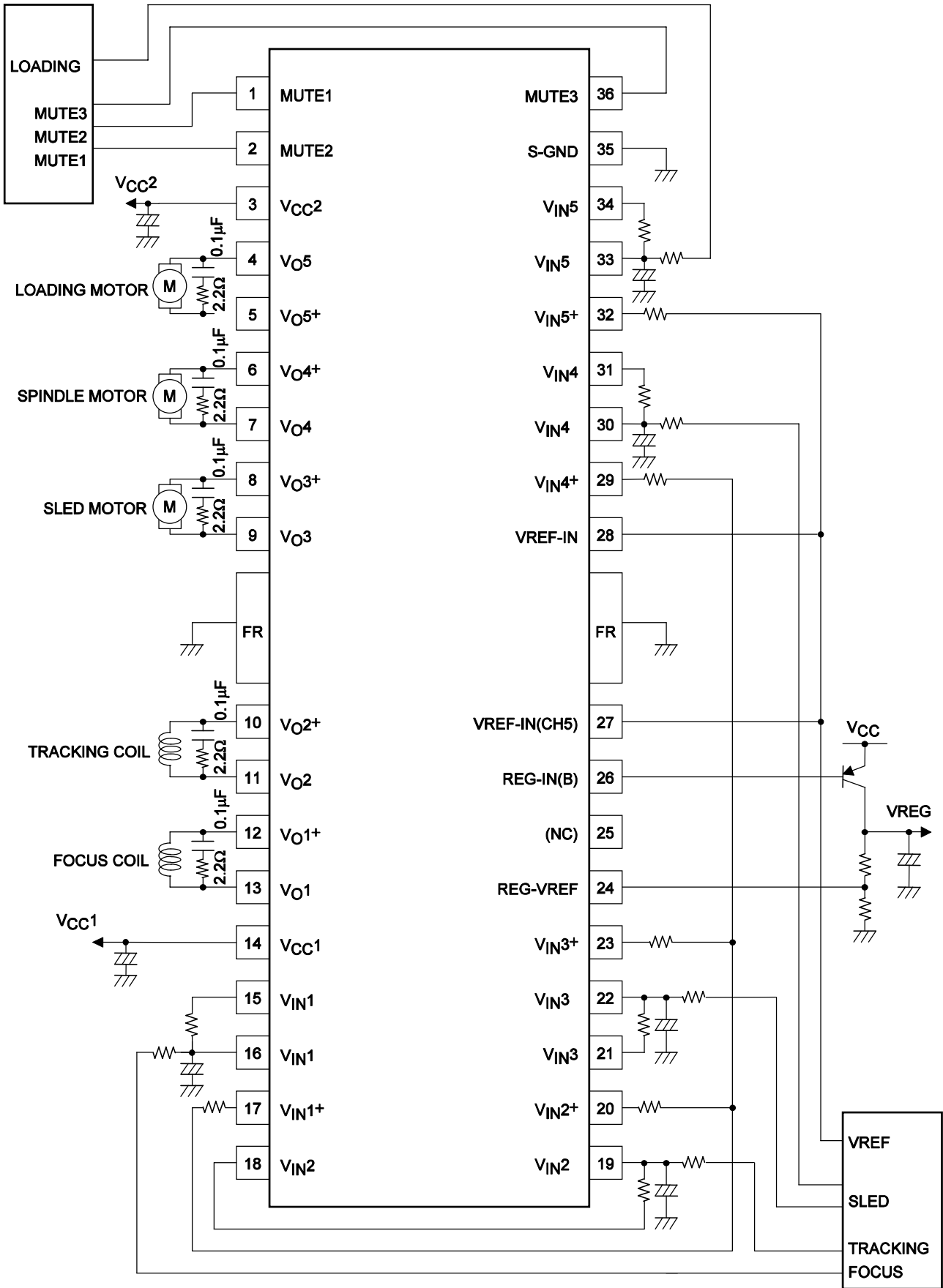
Schematic Diagram of I/O Related Components



Block Diagram



Sample Application Circuit



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