Ordering number : ENN7819

SANYO Semiconductors
DATA SHEET

LA6575H — Monolithic Linear IC Five-Channel Driver (four BTL channels plus one H bridge channel) for MD and CD Player

Overview

The LA6575H is a five-channel motor driver IC for MD and CD players with four BTL channels and one H bridge channel for the loading motor. It features a built-in 5 V regulator circuit.

Functions and Features

- Four power amplifier channels plus one H bridge channel
- I_O max: 700 mA (each channel)
- Built-in level shifting circuits for the BLT amplifiers
- One muting circuit system (output on/off control): applies to the BTL amplifiers
- Thermal protection circuit (Thermal shutdown circuit)
- Separate loading block power supply
- Built-in 5 V regulator

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC} max		14	V
Allowable power dissipation	Pdmax	Independent IC	0.82	W
		∗ Mounted on a board.	2.0	
Maximum output current	I_O max	Each channel for CH1 to CH5	0.7	A
Maximum input voltage	VINB		13	V
MUTE pin voltage	VMUTE		13	V
Operating temperature	Topr		–30 to +85	°C
Storage temperature	Tstg		–55 to +150	°C

Note ∗: Mounted on a board (76.1 × 114.3 × 1.6 mm) Material: glass epoxy

Recommended Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC}		5.6 to 13	V

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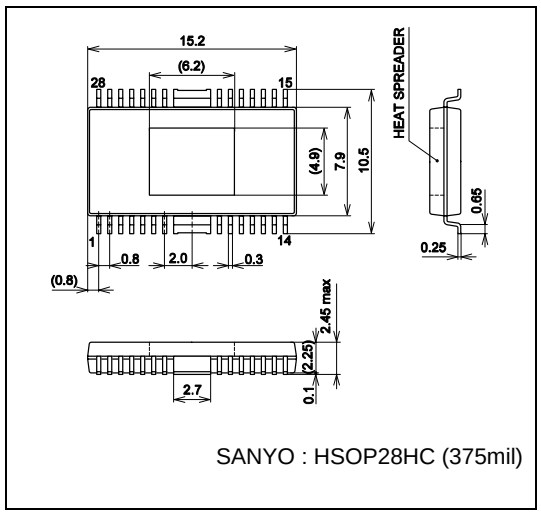
Electrical Characteristics (Unless specified otherwise, the conditions are Ta = 25°C, $V_{CC}1 = V_{CC}2 = 8$ V, VREF = 1.65 V)

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[Overall Characteristics]						
No load current drain - ICC on	I_{CC}-ON	All outputs on, FWD = REV = 0 V ∗1		30	50	mA
No load current drain - ICC off	I_{CC}-OFF	All outputs off, FWD = REV = 0 V ∗1		10	20	mA
VREF input voltage range	VREF-IN		1		V_{CC}–1.5	V
[BTL Amplifier Block]						
Output offset voltage	VOFF	BTL amplifiers, the voltage difference across each channel's output	–50		+50	mV
Input voltage range	V_{IN}	Input voltage range	0		V_{CC}	V
Output voltage	V_O	The voltage between each of the V_O+/V_O– pairs when R_L is 8 Ω. ∗2	4	5		V
Closed loop voltage gain	VG	Gain from input to output	3.5	4	4.5	Multi-plier
Slew rate	SR	With the amplifier operating independently, twice the value measured between outputs ∗4		0.5		V/µs
Mute on voltage	VMUTE-ON	Each Mute ∗3			0.5	V
Mute off voltage	VMUTE-OFF	Each Mute ∗3	2			V
[H Bridge Block]						
Output voltage	V_O-LOAD	The voltage between each of the V_O+/V_O– pairs when R_L is 8 Ω. ∗2	5.6	6		V
Low-level input voltage	V_{IN}-L				1	V
High-level input voltage	V_{IN}-H		2			V
[Regulator Block]						
Output voltage	Vreg	I_L = 100 mA	4.75	5	5.25	V
Load regulation	ΔVRL	I_L = 0 to 200 mA	–50	0	+10	mV
Line regulation	ΔVVCC	V_{CC} = 6 to 12 V, I_L = 100 mA	–15	+21	+60	mV

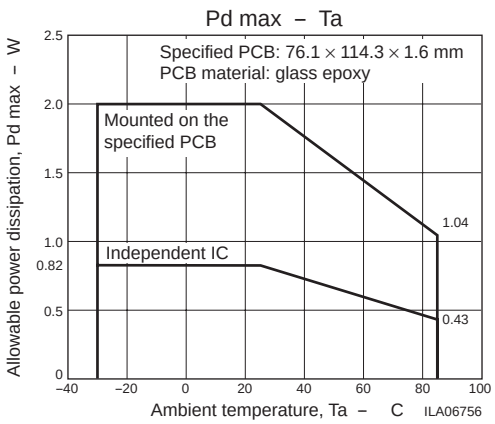
Note ∗1: The total current drain for $V_{CC}1$ and $V_{CC}2$ with no load.
∗2: Voltage difference across the load (8 Ω). With the outputs in the saturated state.
∗3: When the MUTE pin is high, the outputs will be on, and when low, the outputs will be off (high-impedance state).
∗4: Design guarantee value

Package Dimensions

unit: mm
3234B



SANYO : HSOP28HC (375mil)

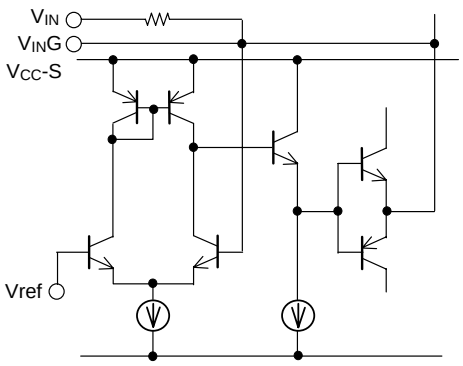
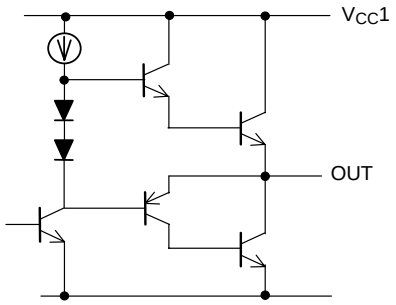
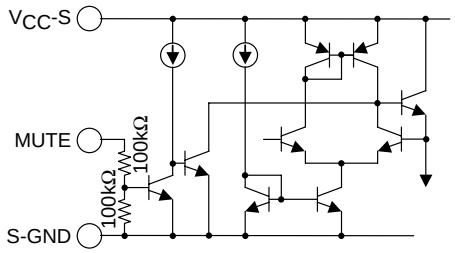
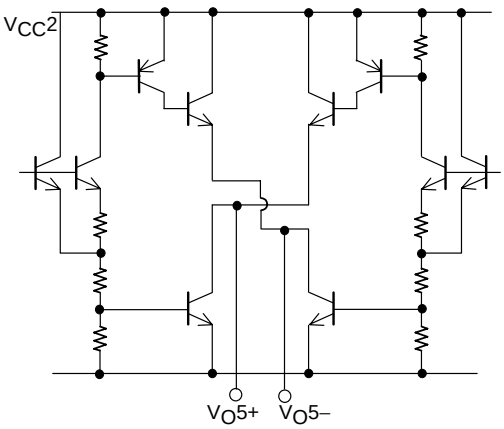


Pin Functions

Pin No.	Symbol	Pin descriptions
1	$V_{CC}2$	Channel 5 power supply
2	V_O5-	Loading output (–)
3	V_O5+	Loading output (+)
4	V_O4+	Channel 4 output (+)
5	V_O4-	Channel 4 output (–)
6	V_O3+	Channel 3 output (+)
7	V_O3-	Channel 3 output (–)
8	V_O2+	Channel 2 output (+)
9	V_O2-	Channel 2 output (–)
10	V_O1+	Channel 1 output (+)
11	V_O1-	Channel 1 output (–)
12	$V_{CC}1$	Channels 1 to 0 4 (BTL) power supply (This pin must be shorted to V_{CC}-S)
13	$V_{IN}1$	Channel 1 input
14	$V_{IN}1G$	Channel 1 input (gain adjustment input)
15	$V_{IN}2$	Channel 2 input
16	$V_{IN}2G$	Channel 2 input (gain adjustment input)
17	$V_{IN}3$	Channel 3 input
18	$V_{IN}3G$	Channel 3 input (gain adjustment input)
19	REG-IN	Regulator input (external pnp transistor base)
20	REG-OUT	Regulator output (external pnp transistor collector)
21	VREF-IN	Reference voltage input
22	V_{CC}-S	Signal system power supply (This pin must be shorted to $V_{CC}1$.)
23	$V_{IN}4G$	Channel 4 input (gain adjustment input)
24	$V_{IN}4$	Channel 4 input
25	MUTE	Channels 1 to 4 (BTL amplifiers) output on/off control
26	S-GND	Signal system ground
27	FWD	Channel 5 (VLO) output switching (FWD); loading block logic input
28	REV	Channel 5 (VLO) output switching (REV); loading block logic input

Note: • The center frame (FR) is used as the power system ground. Along with the signal system ground (S-GND), this level must be the lowest potential in the system.
• The three power supply pins V_{CC}–S, $V_{CC}1$, and $V_{CC}2$ must be shorted together externally.

Pin Functions

Pin No.	Symbol	Pin name	Pin description	Equivalent circuit
13 14 15 16 17 18 23 24	V_{IN}	Inputs	Inputs	
4 5 6 7 8 9 10 11	V_O	Outputs	Outputs	
25	MUTE	Mute	ON/OFF each output MUTE: H output ON MUTE: L output OFF	
2 3	V_O5+ V_O5-	V_O5	H bridge outputs	

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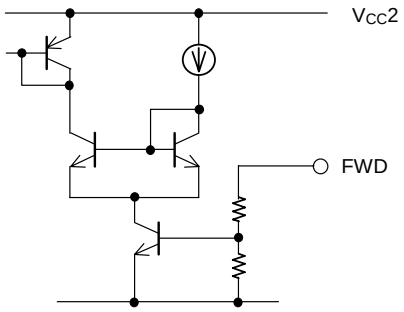
27 28	FWD REV	FWD REV	H bridge inputs	

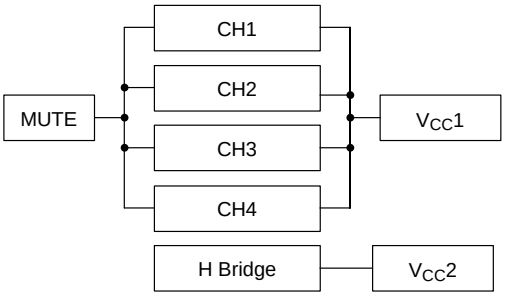
H Bridge Block

FWD	REV	V_O5+	V_O5-	Mode
L	L	OFF	OFF	Open ∗1
L	H	H	L	Forward
H	L	L	H	Reverse
H	H	L	L	Brake ∗2

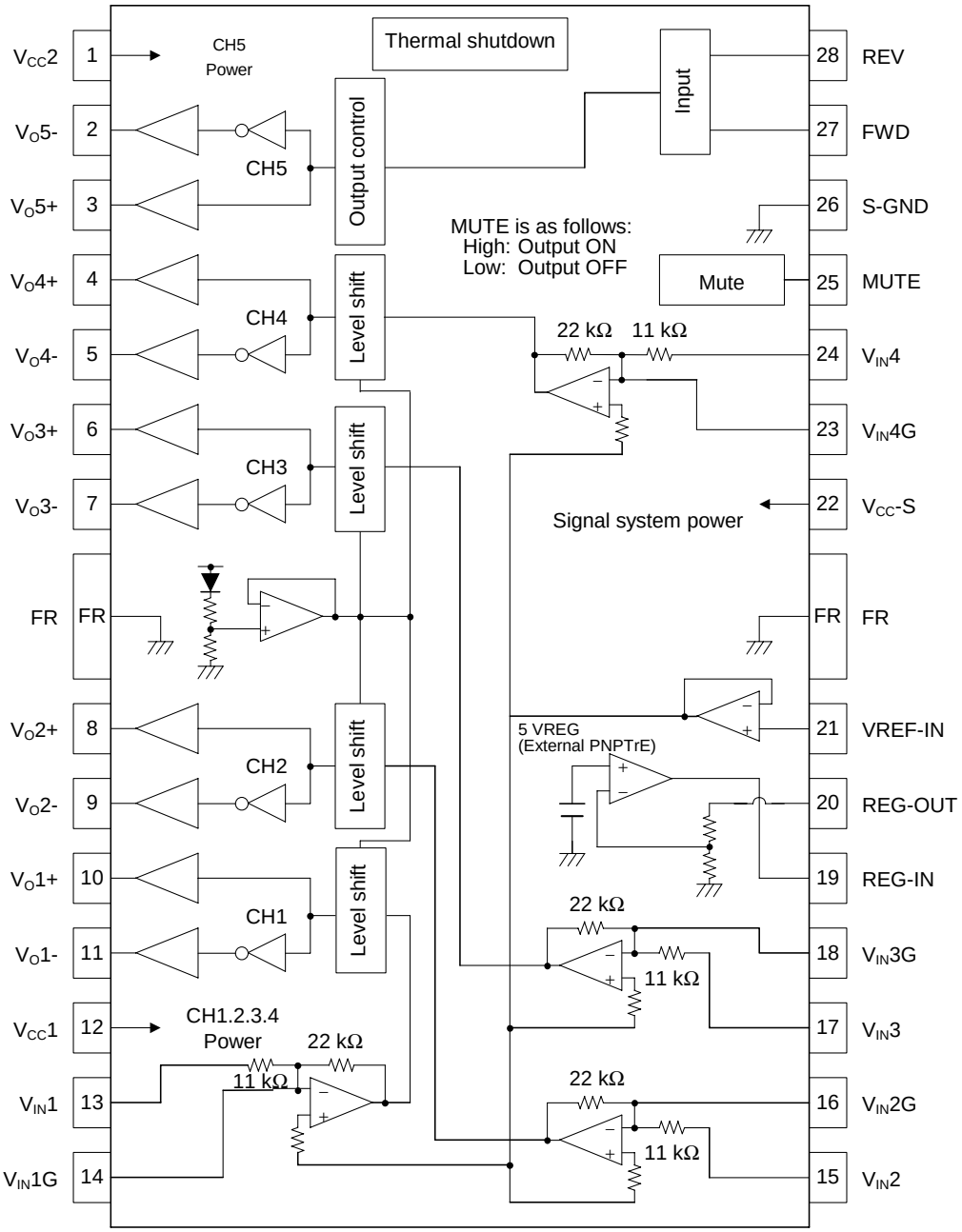
Note ∗1: The output are in the high-impedance state in this mode

∗2: In brake mode, the sink side transistors are on (short-circuit braking). The VLO+ and VLO– levels go to a level essentially the same as the ground level.

Relationship between the MUTE pin and the power supplies (V_{CC}*)



Block Diagram



Sample Application Circuit