



SANYO Semiconductors

DATA SHEET

LA6570 — Monolithic Linear IC 5CH Driver (BTL : 4CH, H-Bridge : 1CH) for CD

Overview

The LA6570 is a 5CH driver (BTL : 4CH, H-bridge : 1CH) for CD players.

Features

- Built-in POWER AMP 5CH (bridge connection (BTL) : 4CH, H-bridge : 1CH)
- I_O max 1A
- Built-in level shift circuit (Except H-bridge.)
- Built-in MUTE circuit (output ON/OFF).
(Operates only for CH1 to CH4 BTL AMP. No operation for H-bridge and 5VREG.)
- Built-in 5V regulator (with external PNP transistor)
- Implements VREF switching function (Select H for external, or L for internal (2.5 V))
- Built-in overheat protection circuit (Thermal shutdown)

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Power supply voltage	V _{CC} max		14	V
Allowable operation	Pd max	Independent IC	0.8	W
		Specific board *	2.0	
Maximum output current	I _O max	Each output of CH1 to CH4 and H-bridge	1	A
Maximum input voltage	V _{INB}		13	V
MUTE pin voltage	V _{MUTE}		13	V
Operating temperature	T _{opr}		-30 to +85	°C
Storage temperature	T _{stg}		-55 to +150	°C

* Specific board size: 76.1 mm × 114.3 mm × 1.6 mm, board material: glass epoxy resin.

Recommended Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Power supply voltage	V _{CC}		5.6 to 13	V

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Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC1} = V_{CC2} = 8\text{V}$, $V_{REF} = 2.5\text{V}$ unless otherwise specified

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[Whole]						
No-load current consumption ON	I_{CC-ON}	BLT AMP output ON, LODING block OFF *1		30	50	mA
No-load current consumption OFF	I_{CC-OFF}	All output OFF *1		10	15	mA
Thermal shutdown operating temperature	TSD	Design guaranteed performance	150	175	200	$^\circ\text{C}$
[VREF-AMP]						
VREF-AMP offset voltage	VREF-OFFSET		-10		10	mV
VREF input voltage range	VREF-IN		1		$V_{CC-1.5}$	V
VREF-OUT output current	I-VREF-OUT	CH1 input reference voltage	2	5		mA
[BTL AMP block] (CH1 to CH4)						
Output offset voltage	VOFF	Voltage differences between BTL AMP and each channel output. *2	-50		50	mV
Input voltage range	V_{IN}	Input voltage range of input OP-AMP	0		$V_{CC-1.5}$	V
Output voltage	V_O	For $R_L = 8\Omega$, between each V_{O+} and V_{O-} *3	5.7	6.2		V
Closed circuit voltage gain	VG	Gain between input and output, input OP-AMP:BUFFER	3.6	4	4.4	times
Slew rate	SR	For output by AMP alone, it must be doubled		0.5		V/ μs
MUTE ON voltage	VMUTE-ON	Output ON voltage, each MUTE *4	2			V
MUTE OFF voltage	VMUTE-OFF	Output OFF voltage, each MUTE *4			0.5	V
[Input AMP block] (CH1 to CH4)						
Input voltage range	V_{IN-OP}		0		$V_{CC-1.5}$	V
Output current (SINK)	SINK-OP		2			mA
Output current (SOURCE)	SOURCE-OP	*5	300	500		μA
Output offset voltage	VOFF-OP		-10		10	mV
CH1 input switching voltage 1	VSW-OP1	CH1 input AMP (B), external VREF selected *6	2			V
CH1 input switching voltage 2	VSW-OP2	CH1 input AMP (A), Internal VREF selected *6			0.5	V
[Loading block] (CH5, H-bridge)						
Output voltage	V_{O-LOAD}	Between outputs for Normal/Reverse rotation, $R_L = 8\Omega$	5.7	6.5		V
Brake output saturation voltage	VCE-BREAK	For brake, output voltage *8			0.3	V
Input "L" level	V_{IN-L}				1	V
Input "H" level	V_{IN-H}		2			V
[Power supply block] (with external PNP transistor : 2SB632K is used)						
5V power supply output	V_{OUT}	$I_O=200\text{mA}$	4.8	5.0	5.2	V
REG-IN SINK current	REG-IN-SINK	Base current of external PNP transistor *9	5	10		mA
Line regulation	ΔV_{OLN}	$6\text{V} \leq V_{CC} \leq 12\text{V}$, $I_O=200\text{mA}$		10	100	mV
Load regulation	ΔV_{OLD}	$5\text{mA} \leq I_O \leq 200\text{mA}$		10	100	mV

*1. Total current consumption of V_{CC1} and V_{CC2} when non-load.

*2. Input AMP is BUFFER AMP.

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

*4. When MUTE is "H", output is ON. When MUTE is "L", output is OFF (HI impedance).

*5. Input OP-AMP SOURCE is constant current. Since $11\text{k}\Omega$ resistance to the next level is loaded, special care should be taken for the gain setting of input OP-AMP.

*6. When V_{IN1-SW} is "L", select AMP-A for input AMP and internal VREF (nearly equal to 2.5V) for VREF.

When V_{IN-SW} is "H", select AMP-B for input AMP and external VREF (nearly equal to VREF-IN) for VREF.

*7. Voltage of upper side (SOURCE) and lower side (SINK). For Normal/Reverse rotation. Output voltage is obtained by subtracting this value from V_{CC} .

*8. Brake is short (GND) brake. Output of SINK side is ON.

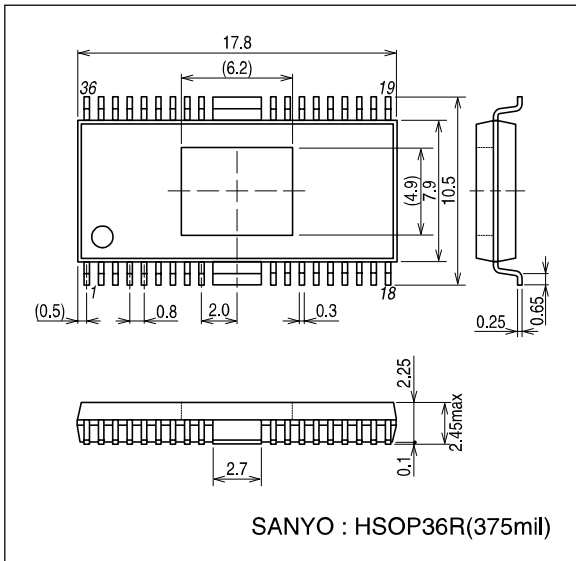
*9. 5VREG has built-in drooping protection circuit. Operates when base current is 10mA (TYP).

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Package Dimensions

unit : mm

3251



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