



SANYO Semiconductors

# DATA SHEET

## Bi-CMOS LSI

# LV8085CL — Two-channel H-Bridge Driver

### Overview

The LV8085CL is a two-channel H-bridge driver that supports low-voltage operation. It is optimal for H-bridge drive of stepping motors (AF and zoom) in portable equipment such as camera cell phones.

### Features

- Two-channel H-bridge driver
- Supports both 2-phase drive and 1-2 phase drive.
- Implemented in a low-power MOS IC process.
- Ultraminiature easy to solder ESCP2823-10 package
- Built-in thermal protection and low-voltage sensing circuits

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC}$ max		6.5	V
Output voltage	$V_{OUT}$ max	OUT1, OUT2, OUT3, OUT4	6.5	V
Input voltage	$V_{IN}$ max	CONT, IN	-0.3 to +6.5	V
Ground pin source current	IGND	Per channel	400	mA
Allowable power dissipation	$P_d$ max	Mounted on a circuit board.*	400	mW
Operating temperature	$T_{opr}$		-30 to +85	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-40 to +150	$^\circ\text{C}$

\* Specified circuit board : 20.0mm×10.0mm×0.8mm<sup>3</sup>, paper-phenol circuit board.

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# LV8085CL

## Allowable Operating Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V <sub>CC</sub>		2.5 to 6.0	V
High-level input voltage	V <sub>IH</sub>	IN	0.6V <sub>CC</sub>	V
Low-level input voltage	V <sub>IL</sub>		-0.3 to 0.2V <sub>CC</sub>	V

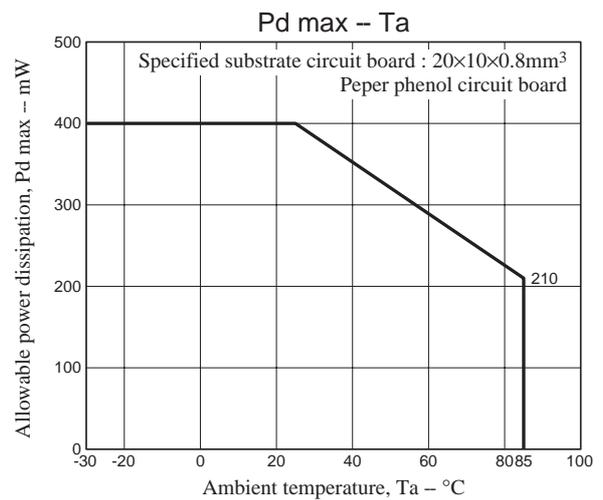
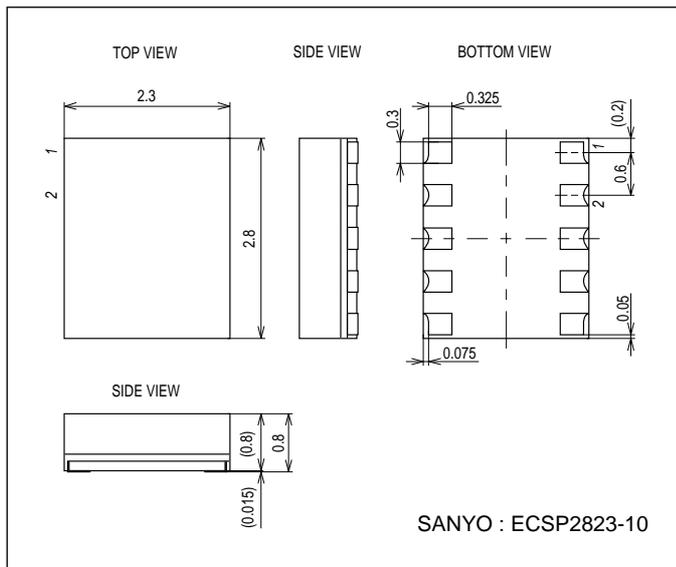
## Electrical Characteristics at Ta = 25°C, V<sub>CC</sub> = 3.0V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	I <sub>CCO</sub>	IN = 0V		0.1	1	μA
	I <sub>CCO1</sub>	IN = 3V		0.45	0.7	mA
Output on resistance	R <sub>on1</sub>	V <sub>CC</sub> = 3.0V (High and low side total) IN1 to 4 = 3.0V, I <sub>OUT</sub> = 100mA		2.1	3.0	Ω
	R <sub>on2</sub>	V <sub>CC</sub> = 5.0V (High and low side total) IN1 to 4 = 5.0V, I <sub>OUT</sub> = 100mA		1.75	2.2	Ω
Output turn-on time	Trise			1.5	3.0	μs
Output turn-off time	Tfall			0.2	1.0	μs
Input current	I <sub>IN</sub>	V <sub>IN</sub> = 3V		30	70	μA

## Package Dimensions

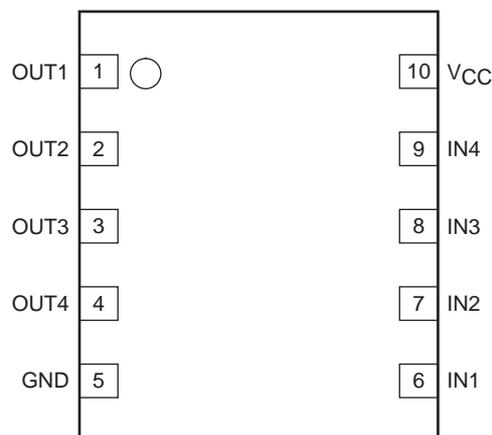
unit : mm (typ)

3334



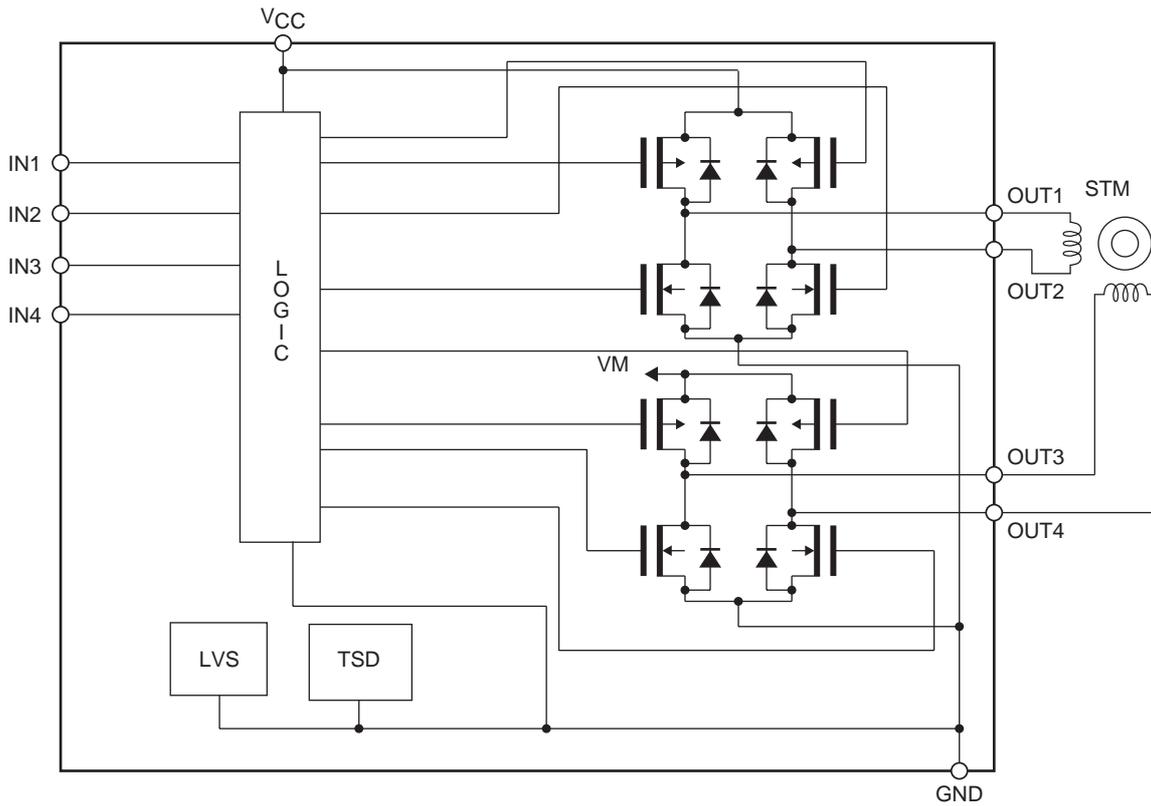
## Pin Assignment

(ECSP2823-10)



(Top View)

Block Diagram



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Usage Notes

Capacitor for the power supply stability must be connected between VCC and ground.

Truth Table

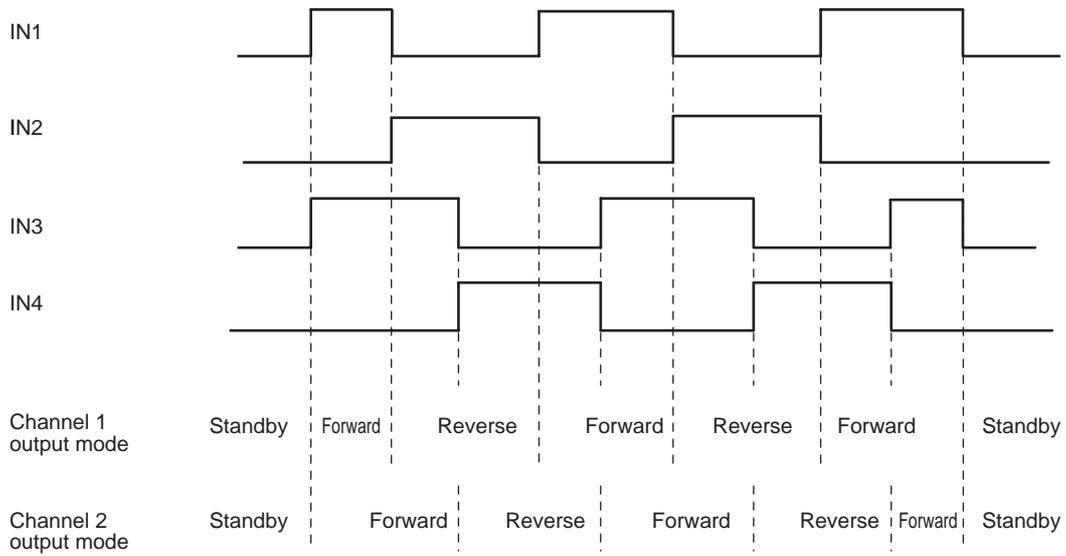
Input				Output				Mode
IN1	IN2	IN3	IN4	OUT1	OUT2	OUT3	OUT4	
Low	Low	Low	Low	Off	Off	Off	Off	Standby mode
Low	High	-	-	Low	High	Off	Off	Channel 1, reverse
High	Low			High	Low			Channel 1, forward
High	High			Low	Low			Channel 1, brake mode
-	-	Low	High	Off	Off	Low	High	Channel 2, reverse
		High	Low			High	Low	Channel 2, forward
		High	High			Low	Low	Channel 2, brake mode

Note : The "-" input unstable state. When off, a high-impedance state.

- The IC goes to the standby state with a low-level input, and to the operating state with a high-level input.

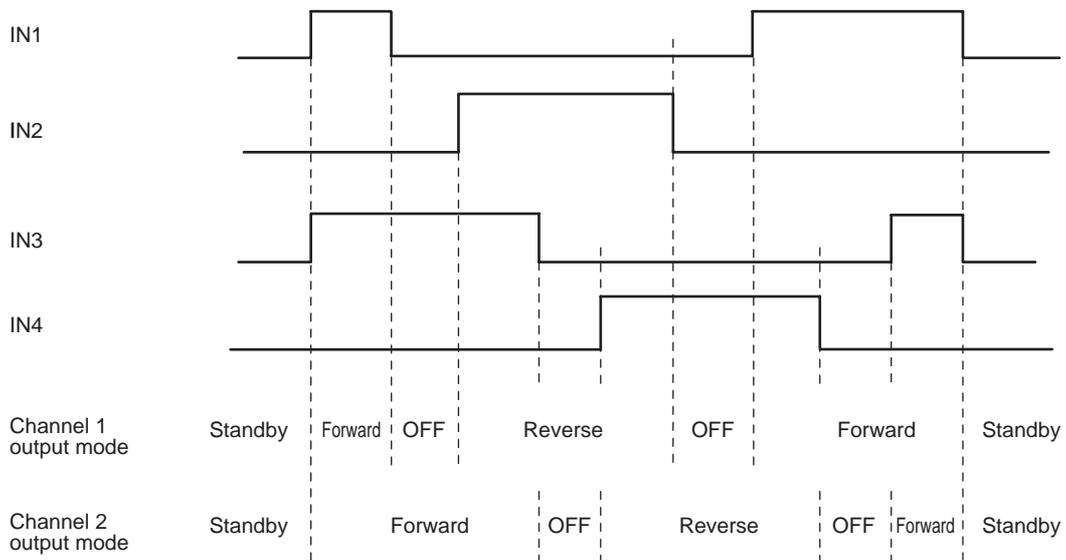
**Timing Chart**

(1) Stepper motor timing chart  
Timing chart for 2-phase drive



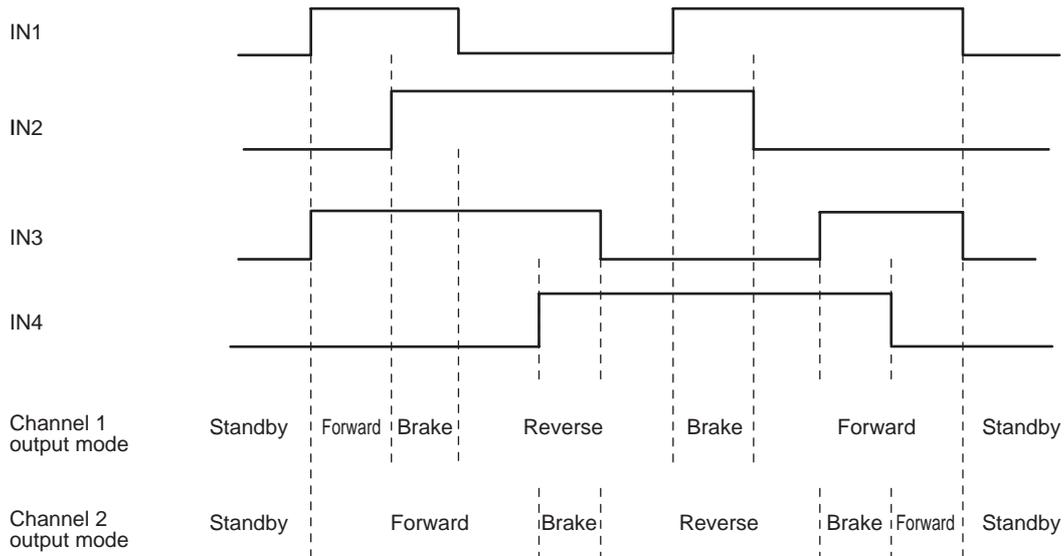
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(2) Timing chart for 1-2 phase drive (Fastdecay mode)



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## (3) Timing chart for 1-2 phase drive (Slow decay mode)



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