Ordering number : ENA1133A

SANYO Semiconductors
DATA SHEET

An ON Semiconductor Company

Bi-CMOS LSI

LV8075LP — Constant-voltage Control 1-channel Forward/Reverse Motor Driver

Overview

LV8075LP is a constant voltage control 1-channel forward/reverse motor driver IC.

Features

- Constant voltage control forward/reverse H-bridge
  Parallel input-Analog value must be entered for constant voltage reference input
  V (OUT) = V (VC) × 2.0
- Built-in thermal protection circuit and under-voltage detection protection circuit

Specifications

Absolute Maximum Ratings at Ta = 25°C, SGND = PGND = 0V

Parameter	Symbol	Conditions	Ratings	Unit
Maximum control power supply voltage	V_{CC} max		6	V
Maximum load power supply voltage	VM max		6	V
Maximum control pin voltage	V_C max		6	V
Maximum output current	I_O max	OUT1, 2	0.5	A
VREF maximum current	IREF max	VREF	1	mA
Allowable power dissipation	Pd max	Mounted on a circuit board*	700	mW
Operating temperature	Topr		-30 to +85	°C
Storage temperature	Tstg		-40 to +150	°C

* Specified circuit board : 40.0×50.0×0.8mm^3 : glass epoxy four-layer board

Allowable Operating Range at Ta = 25°C, SGND = PGND = 0V

Parameter	Symbol	Conditions	Ratings	Unit
Control power-supply voltage	V_{CC}		2.5 to 5.5	V
Load power-supply voltage	VM		2.5 to 5.5	V
Output control input voltage	Vcont	VC pin	0 to V_{CC}-1	V
Input pin “H” voltage	$V_{IN}H$	IN1, 2,EN pin	V_{CC} × 0.6 to V_{CC}+0.3	V
Input pin “L” voltage	$V_{IN}L$	IN1, 2,EN pin	-0.1 to V_{CC} × 0.2	V

Electrical Characteristics at Ta = 25°C, V_{CC} = VM = 3.0V, PGND = SGND = 0V, unless otherwise specified.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Standby currfent consumption 1	I_{CCO}	EN, IN1, 2 = H/L/L or EN = L			1	μA
Standby current consumption 1	I_{MO}	EN, IN1, 2 = H/L/L or EN = L			1	μA
Operating current consumption	$V_{CC}1$	EN = H, IN1 or IN2 = H		0.5	1.0	mA
H-level input current	$I_{IN}H$	200kΩ pull-down, V_{IN} = 3V	10	15	20	μA
L-level input current	$I_{IN}L$	V_{IN} = 0V		0	1	μA
Reference voltage output	VREF	IREF = 500μF	1.4	1.5	1.6	V
Output on-resistance	Ron1	Total of top and bottom		1.75	2.5	Ω
Constant-voltage control output voltage	V_{OUT}	VC = 1.0V	1.94	2.0	2.06	V
Under-voltage detection operating voltage	V_{CS}	V_{CC} Voltage	2.1	2.2	2.35	V
Thermal protection temperature	TSD	Design guarantee value*	150	180	210	°C
Output rise time	Tr	(Note)		1.6	3.0	μs
Output fall time	Tf	(Note)		0.2	1.0	μs

* Design guarantee value and no measurement is made.

Note : Specify rising control start time → 90% of OUT output voltage, and falling control start time → 10% of OUT output voltage.

Package Dimensions

unit : mm (typ)

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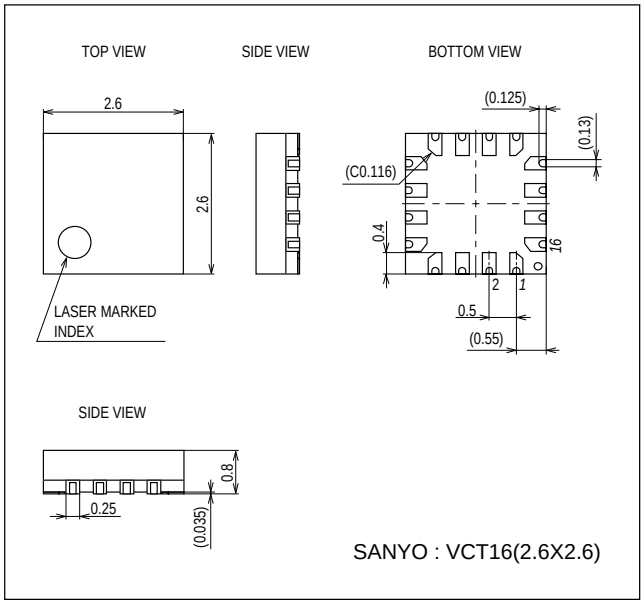
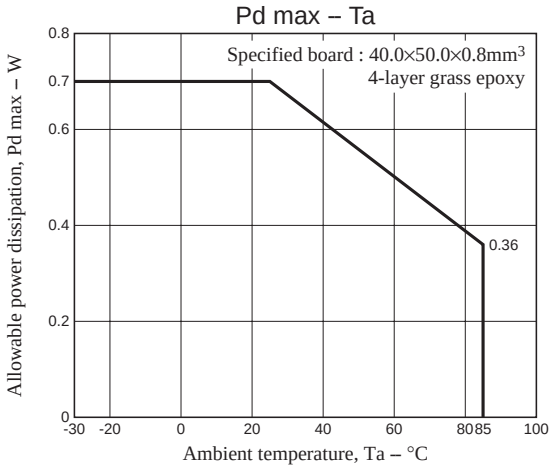
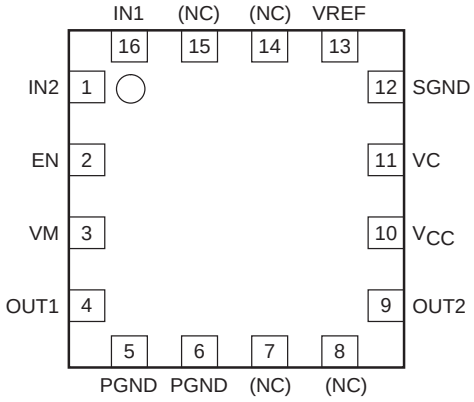


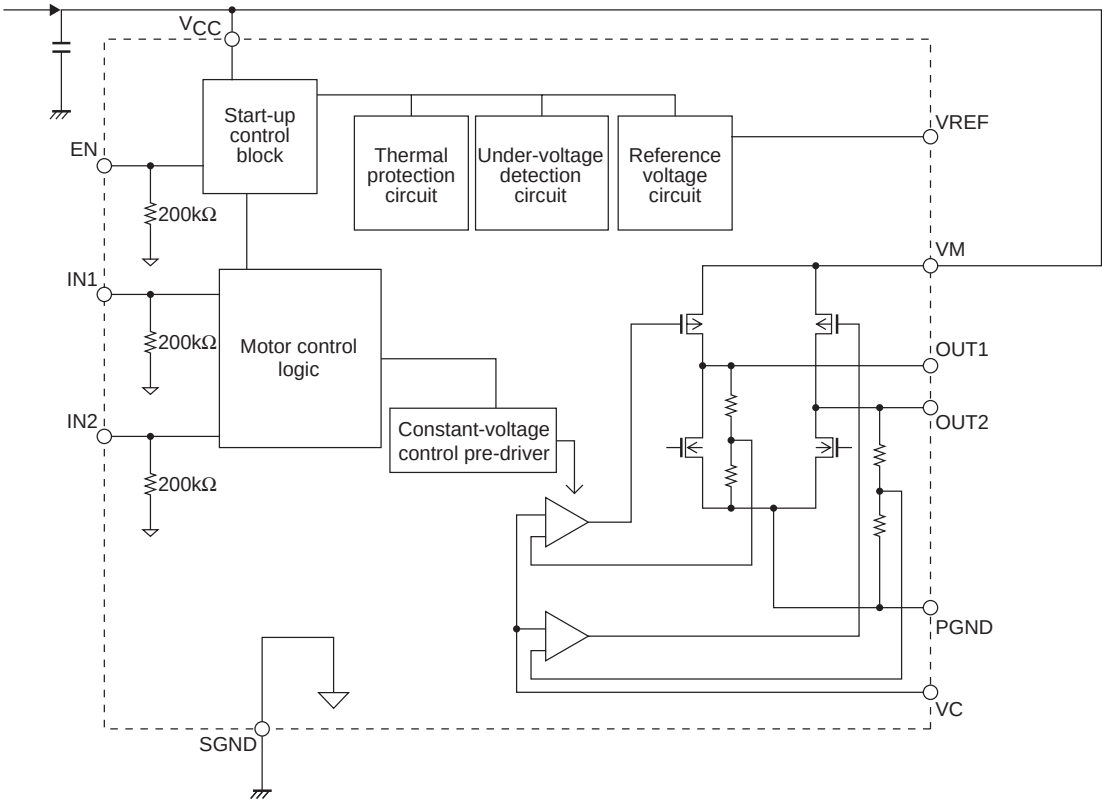


Pin Assignment



Top view

Block Diagram



Truth Table

Constant voltage output H-bridge

EN	IN1	IN2	OUT1	OUT2	Mode
H	H	H	L	L	Brake
	H	L	H	L	Forward evolution
	L	H	L	H	Reverse rotation
	L	L	off	off	Stand by
L	-	-	off	off	Stand by

"-" entries indicate don't care state, "off" indicates output off state, insert 20kΩ impedance across PGND.

Constant voltage output value : V (OUT) = V (VC)×2.0

Pin Functions

Pin No.	Pin name	Description
10	V_{CC}	Power supply pin for control
5, 6	PGND	Power ground pins for IC
12	SGND	IC system ground
3	VM	Power supply pin for constant voltage output H-bridge
2	EN	IC enable pin. Power-saving mode is established when L-level is applied. Pulled-down with 200kΩ
16, 1	IN1, 2	Input pins for manipulating constant-current output H-bridge (OUT1, 2). Pulled-down with 200kΩ
4, 9	OUT1, 2	Constant voltage H-bridge output pins
13	VREF	Reference voltage output, outputs 1.5V
11	VC	Analog voltage input pin for constant voltage setting. Must be short-circuited to V_{CC} pin when using saturation control.