



SANYO Semiconductors

DATA SHEET

LB8682PL

Monolithic Digital IC For Camera Cell Phone Motor Driver Two Saturated Drive Channels and One Constant-Current Drive Channel

Overview

The LB8682PL is a motor driver IC that has a two saturated drive channels and one constant-current drive channel. Its compact, low-profile package makes it ideal for use in cell phone cameras. Using direct microcontroller drive, and the control of the shutter and the motor for the AF(Auto-Focus) drive, etc..

Functions

- Constant voltage control for AF (H-Bridge × 2ch)
- Constant current control for shutter. (H-Bridge × 1ch)
- Built-in thermal protection circuit
- Built-in reference voltage circuit (0.2V typical)
- Built-in spark killer diodes

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V _{CC} max		-0.3 to +8.0	V
Output voltage	V _{OUT} max	OUT1 to OUT6	V _{CC} +V _{SF}	V
Input voltage	V _{IN} max	ENA1 to ENA2, IN1 to IN4	-0.3 to +8.0	V
GND pin source current	I _{GND}	Per channel	300	mA
Allowable power dissipation	P _d max	When mounted on a circuit board*	830	mW
Operating temperature	T _{opr}		-20 to +75	°C
Storage temperature	T _{stg}		-40 to +125	°C

* On the specified circuit board: 40.0mm×50.0mm×0.8mm, four-layer glass-epoxy board.

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LB8682PL

Allowable Operating Ranges at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC}		2.2 to 7.5	V
Constant-current setting range	I_{OUT}		50 to 200	mA
High-level input voltage	V_{IH}	ENA1 to ENA2, IN1 to IN4	1.5 to 7.5	V
Low-level input voltage	V_{IL}		-0.3 to +0.5	V

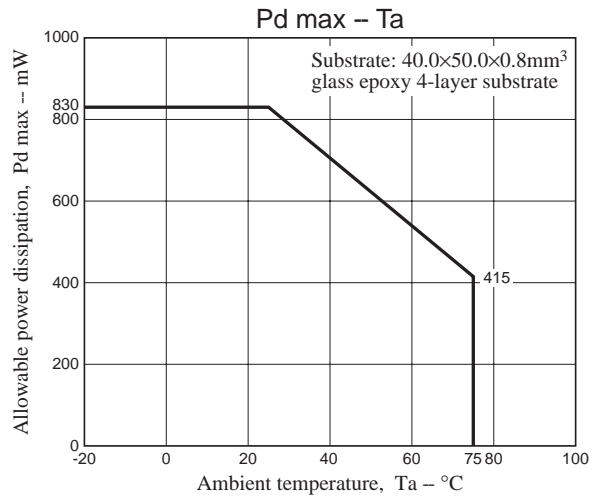
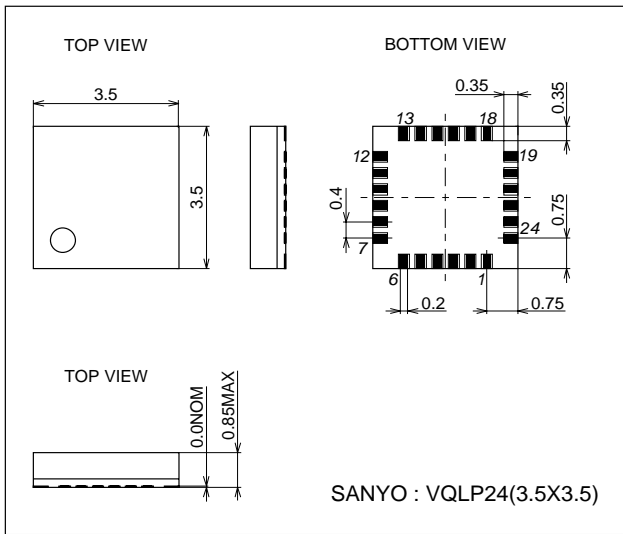
Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 3.3\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current drain	I_{CC0}	ENA1 = ENA2 = IN3 = IN4 = 0V		0.1	1	μA
	I_{CC1}	ENA1 = ENA2 = 3V		13.5	20.0	mA
	I_{CC2}	IN3orIN4 = 3V IO = 200mA $R_F = 1\Omega$		5.0	8.5	mA
Input current	I_{IN}	$V_{IN} = 3\text{V}$		60	90	μA
Saturated drive driver (OUT1, OUT2, OUT3, and OUT4)						
Output saturation voltage1	V_{SAT11}	$I_{OUT} = 100\text{mA}$		0.22	0.32	V
	V_{SAT12}	$I_{OUT} = 200\text{mA}$		0.42	0.62	V
Constant-Current drive driver (OUT5 and OUT6)						
Constant-current output1	I_{OUT1}	Between RFG and ground: 2Ω	95	100	105	mA
Constant-current output2	I_{OUT2}	Between RFG and ground: 0.8Ω , $V_{CC} = 5\text{V}$	238	250	262	mA
Output saturation voltage	V_{SAT21}	$I_{OUT} = 100\text{mA}$		0.18	0.27	V
	V_{SAT22}	$I_{OUT} = 200\text{mA}$		0.35	0.53	V
Spark killer diode						
Reverse current	I_S (leak)				1	μA
Forward voltage	V_{SF}	$I_{OUT} = 200\text{mA}$			1.7	V
Other circuits						
Thermal protection detection temperature	T_{TSD}	(Design specification)	160	180	200	$^\circ\text{C}$

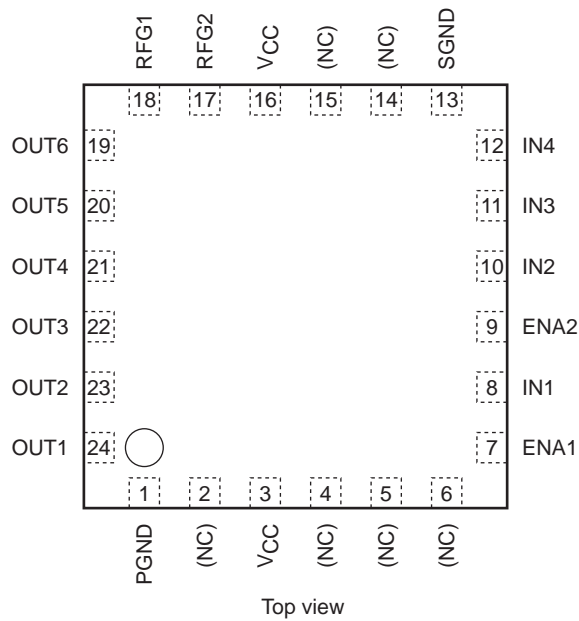
LB8682PL

Package Dimensions

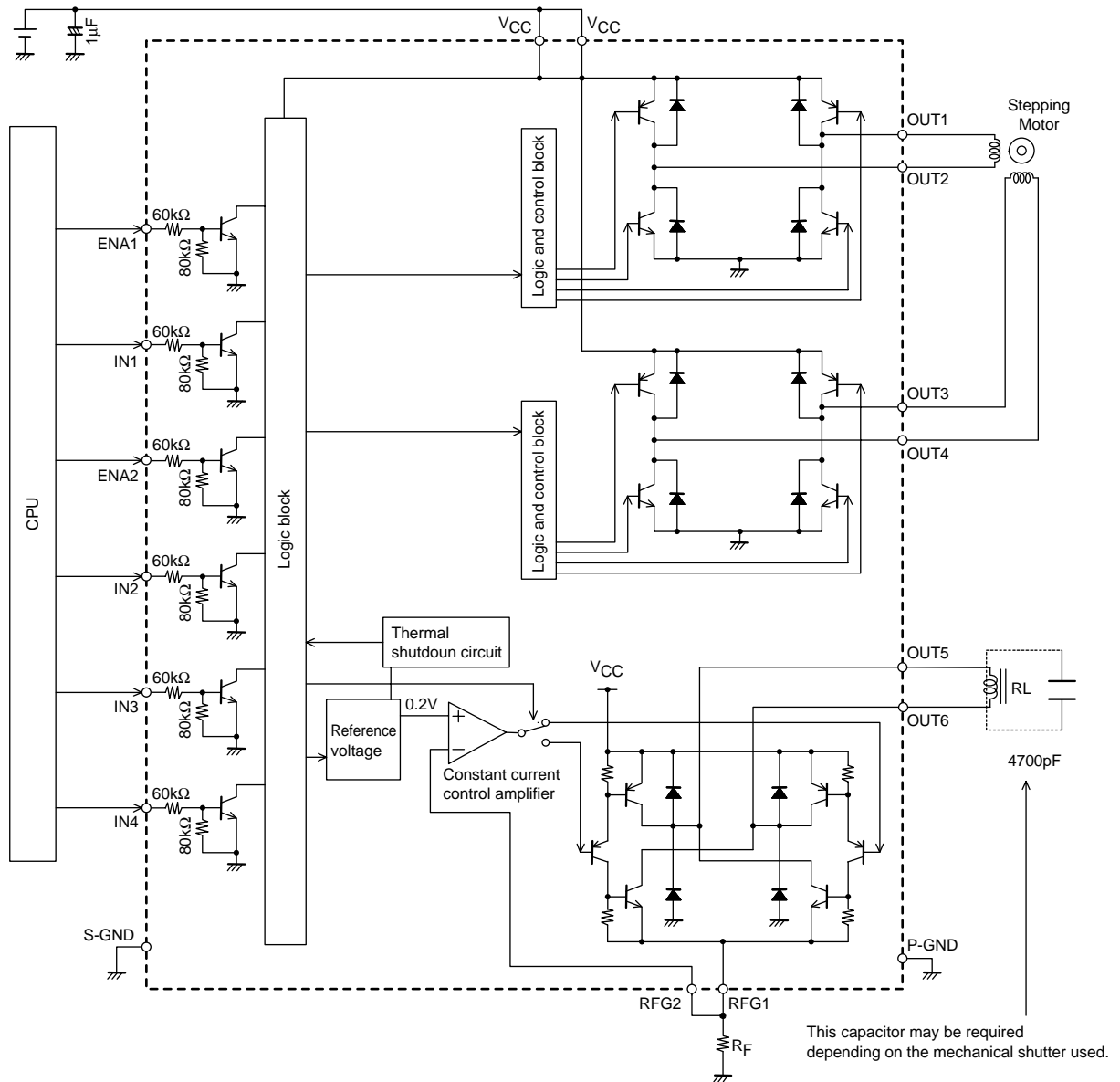
unit : mm (typ)
3321



Pin Assignment



Block Diagram



Usage Notes

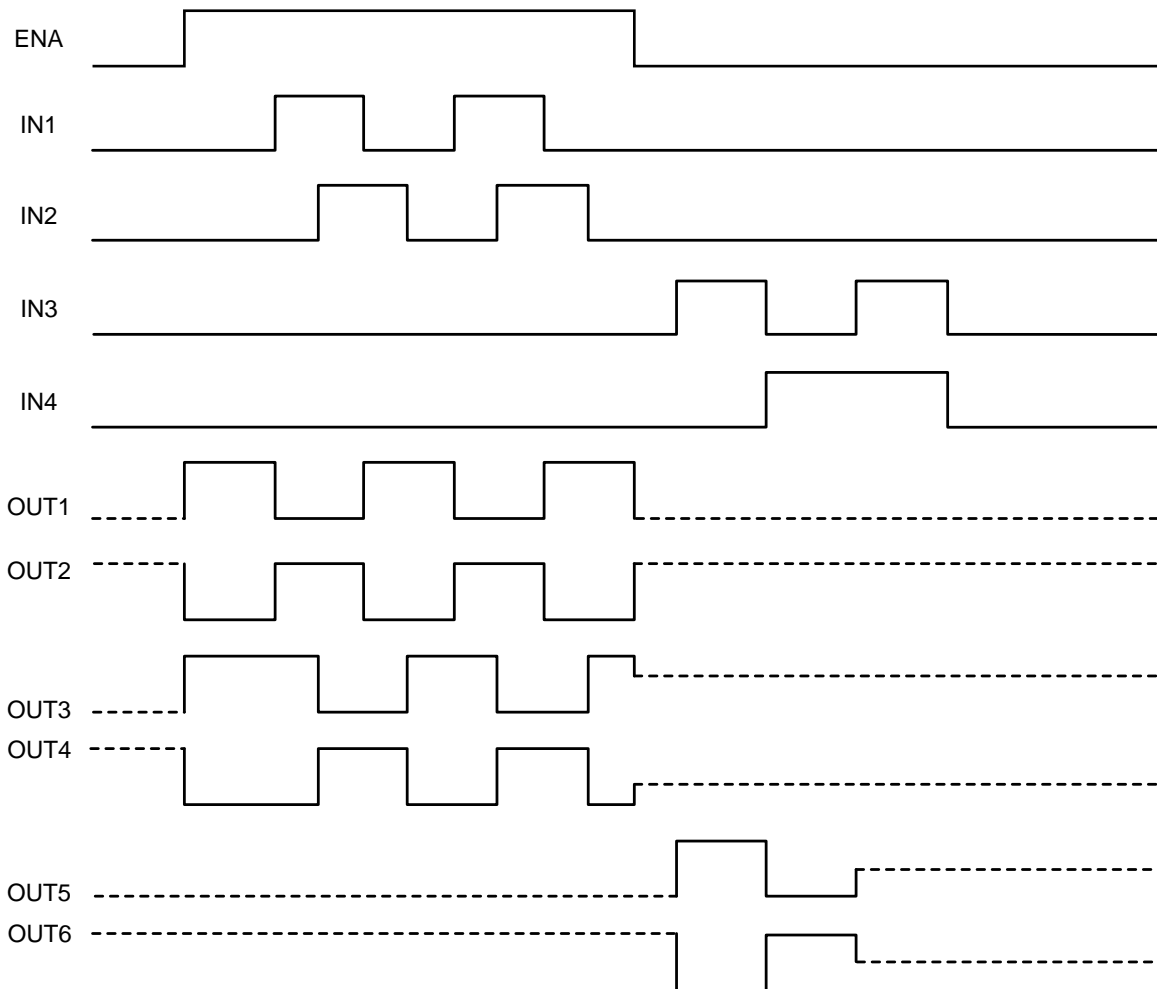
- The constant-current level is set with the resistor R_F . The formula for calculating the current is shown below.
Constant-current level = $0.2 \div R_F$
- Connect capacitors between VCC and ground to reduce the amount of motor noise that enters the power supply.

Truth Table

Input						Output						Mode	
ENA1	IN1	ENA2	IN2	IN3	IN4	OUT1	OUT2	OUT3	OUT4	OUT5	OUT6	Saturated	Standby
Low	*	Low	*			OFF	OFF	OFF	OFF				
High	Low					High	Low						
	High					Low	High						
		High	Low					High	Low				
			High	Low	High								
				Low	Low					OFF	OFF	Constant current	Standby
				Low	High					Low	High		Forward
				High	Low					High	Low		Reverse
				High	High					OFF	OFF		OFF

*: don't care, OFF: hi-impedance.

Timing Chart



- The waveforms shown for OUT1 to OUT4 are for a 2-phase excitation stepping motor driver.
- In the constant-current driver waveforms for OUT5 and OUT6, the high-side transistor is saturated and the low-side transistor is not saturated.
- The broken lines in the figure represent the off state.

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