Ordering number : ENA0209B

Discontinued

SANYO Semiconductors

DATA SHEET

LB8683CL

Monolithic Digital IC

For Cell Phone Cameras
1.5-channel Bidirectional Motor Driver IC

Overview

The LB8683CL is a low-voltage, low-saturation forward/reverse motor driver IC with built-in 1.5-channel bridge. 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 voice coil motor for the iris drive, etc..

Features

- Low voltage operation(2.2V min)
- Ultraminiature ECSP2828-10 package (2.8mm×2.8mm×0.8mm)

Functions

- Constant current control (I_{OUT} = 100mA when R_F = 2Ω)
- 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 +0.8	V
Output voltage	V_{OUT} max	OUT1, OUT2, OUT3	V_{CC}+VSF	V
Input voltage	V_{IN} max	IN1, IN2, IN3	-0.3 to +0.8	V
GND pin source current	I_{GND}	Per channel	400	mA
Allowable power dissipation	Pd max	When mounted on a circuit board*	450	mW
Operating temperature	Topr		-30 to +85	°C
Storage temperature	Tstg		-40 to +150	°C

* Specified circuit board: 20.0mm×10.0mm×0.8mm, paper phenol board.

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Allowable Operating Ranges at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC}		2.2 to 7.5	V
High-level input voltage	V_{IH}	IN1, IN2, IN3	1.5 to 7.5	V
Low-level input voltage	V_{IL}		-0.3 to +0.5	V

Electrical Characteristics at Ta = 25°C, V_{CC} = 3.3V

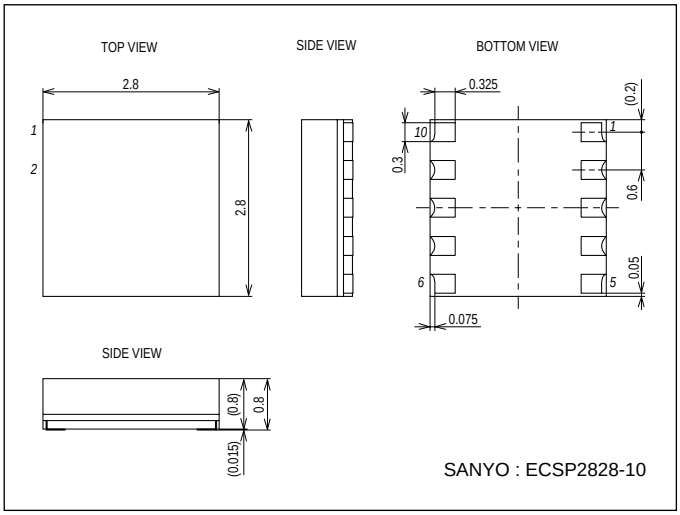
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current drain	$I_{CC}0$	IN1 = IN2 = IN3 = 0V		0.1	1	μA
	$I_{CC}1$	IN1 or IN2 or IN3 = 3V I_O = 100mA RF = 2Ω		5.8	8.0	mA
Output saturation voltage	$V_{OUT}1$	IN1 or IN2 or IN3 = 3V I_O = 100mA		0.2	0.32	V
	$V_{OUT}2$	IN1 or IN2 or IN3 = 3V I_{OUT} = 200mA (Design specification)		0.41	0.62	V
Constant-current output	$I_{OUT}1$	Between RFG and ground: 2Ω	95	100	105	mA
	$I_{OUT}2$	Between RFG and ground: 1Ω (Design specification)	190	200	210	mA
Input current	I_{IN}	V_{IN} = 3V		50	70	μA
Spark killer diode						
Reverse current	I_S(leak)				1	μA
Forward voltage	V_{SF}	I_{OUT} = 100mA			1.7	V
		I_{OUT} = 200mA (Design specification)			1.7	V

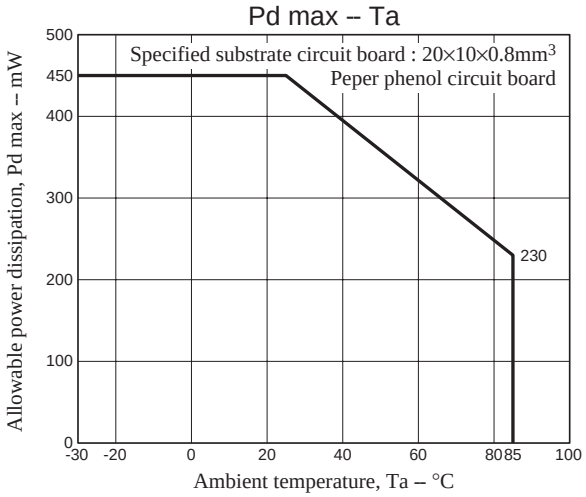
Note: The design specifications are design guarantee values and are not tested.

Package Dimensions

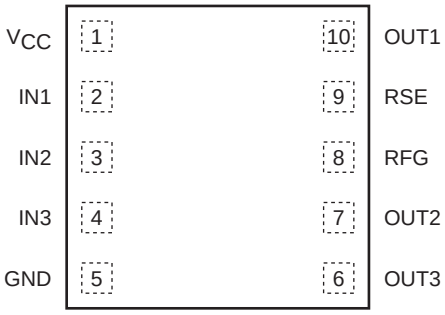
unit : mm

3301A



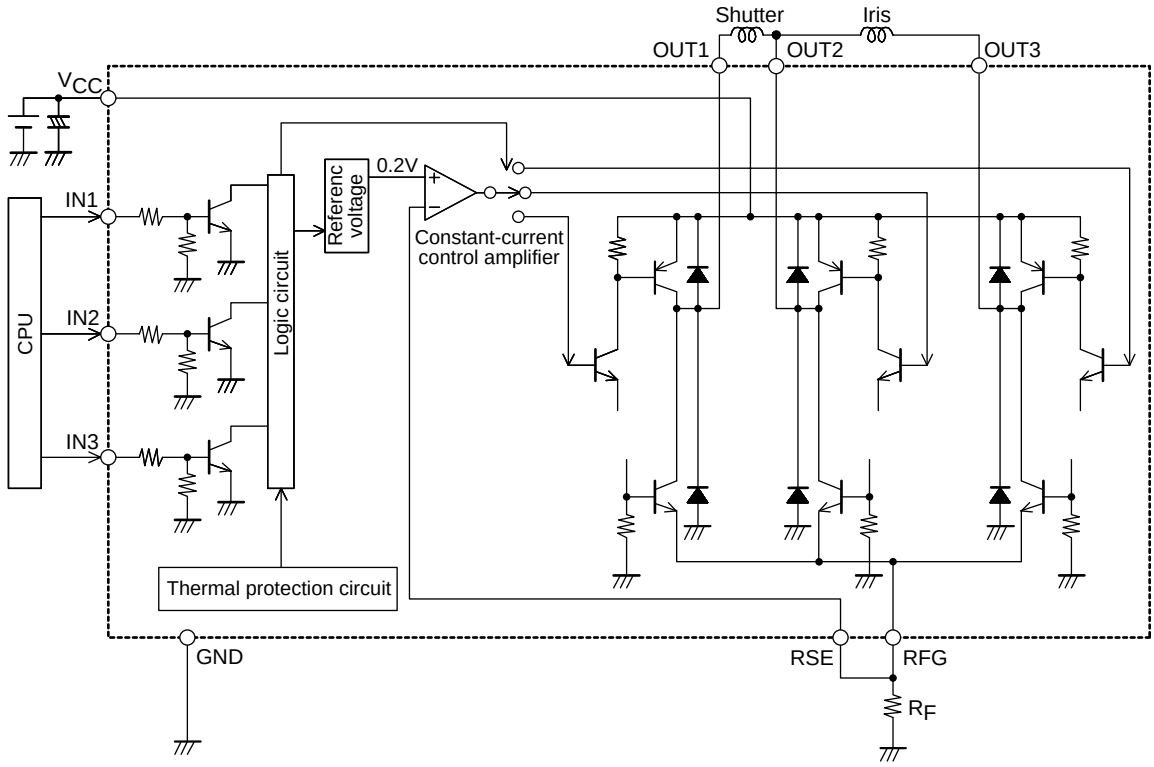


Pin Assignment



Top view

Block Diagram



Constant-current formula: $I_{OUT} = 0.2/R_F$

Usage Notes

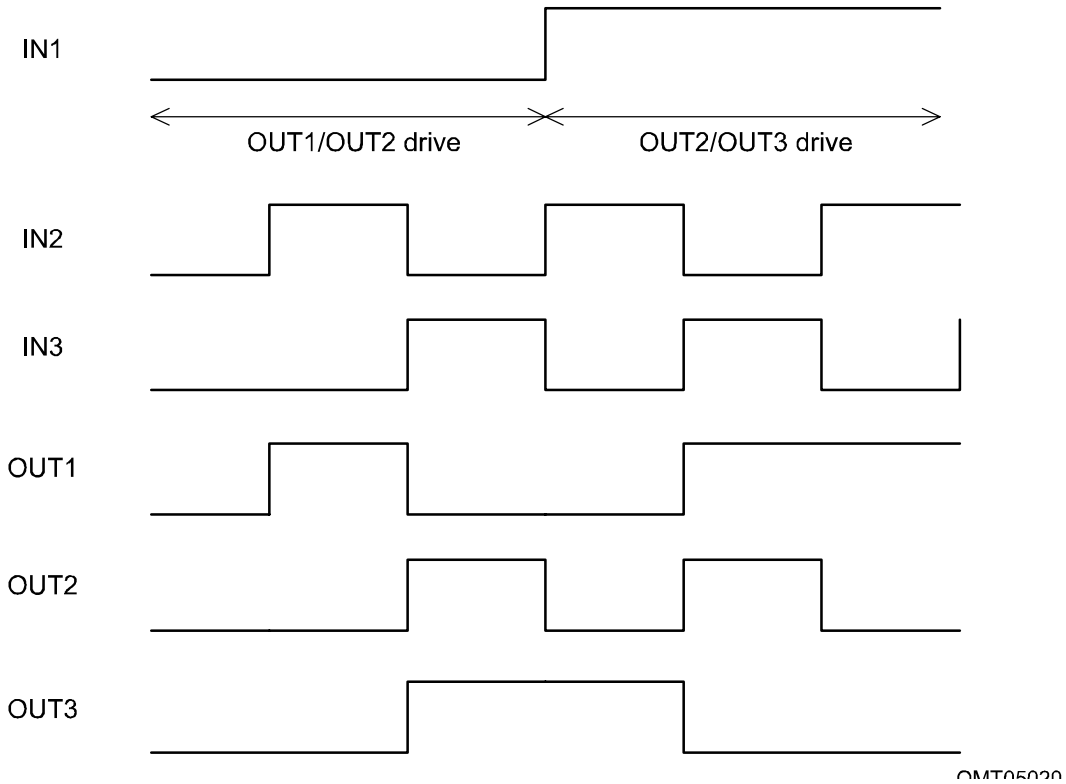
- If V_{CC} is comparatively high, there are case where the use of a mechanical shutter will require 0.01µF capacitors to be inserted between the outputs (OUT pins).
- If only one channel is used and the supply voltage is comparatively high, there are case where the use of a mechanical shutter will require 0.01µF capacitors to be inserted between the outputs (OUT pins).
- The current is set by the value of the resistor RF inserted between RFG and ground according to the constant-current formula.

Truth Table

Input			Output			Notes	
IN1	IN2	IN3	OUT1	OUT2	OUT3		
L	Low	Low	-	-	-	Standby	
	High	Low	High	Low	-	Shutter	Forward
	Low	High	Low	High	-		Reverse
	High	High	Low	High	-		
H	Low	Low	-	-	-	Iris	OFF
	High	Low	-	Low	High		Forward
	Low	High	-	High	Low		Reverse
	High	High	-	High	Low		

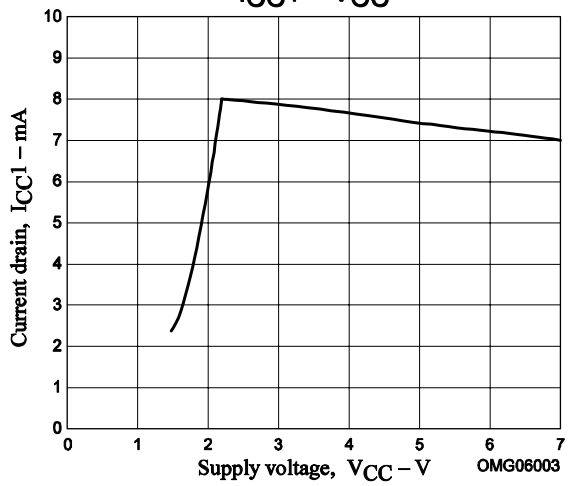
Note 1. The [-] entry for the outputs indicates the off (high-impedance) state.

Timing Chart

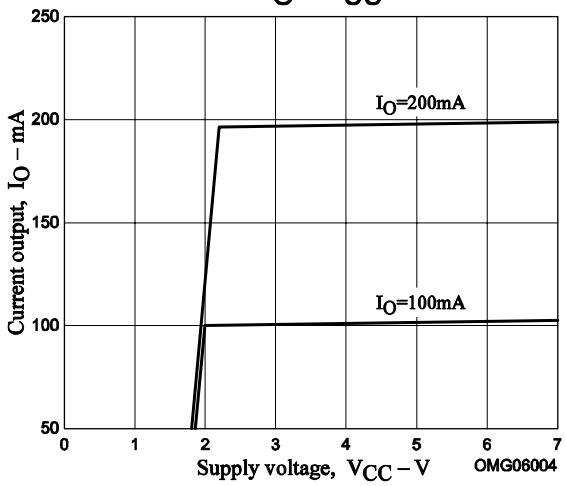


- The IN1 input selects OUT1/OUT2 or OUT2/OUT3 drive.
- The IN2 and IN3 inputs control forward/reverse switching.
- Broken lines (----) indicate the off state.
- During OUT1/OUT2 or OUT2/OUT3 drive, the output high side will be saturated and the low side not saturated. Also note that the output is a constant-current output.

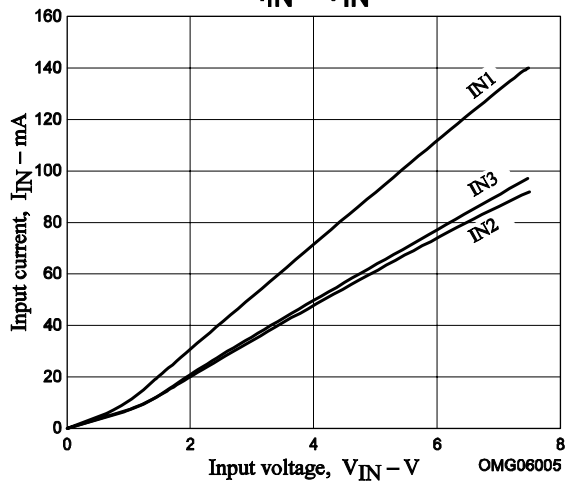
$I_{CC}1 - V_{CC}$



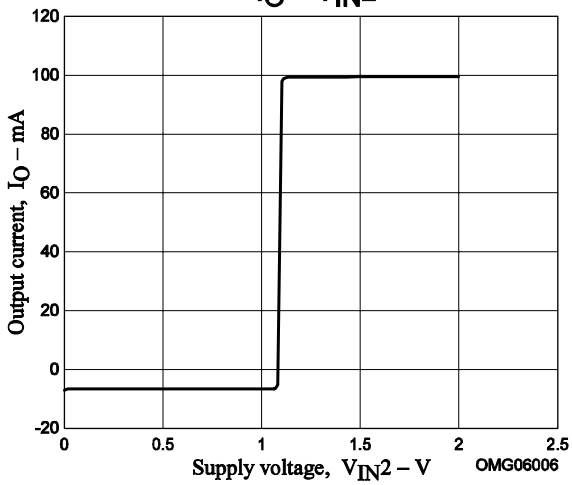
$I_O - V_{CC}$



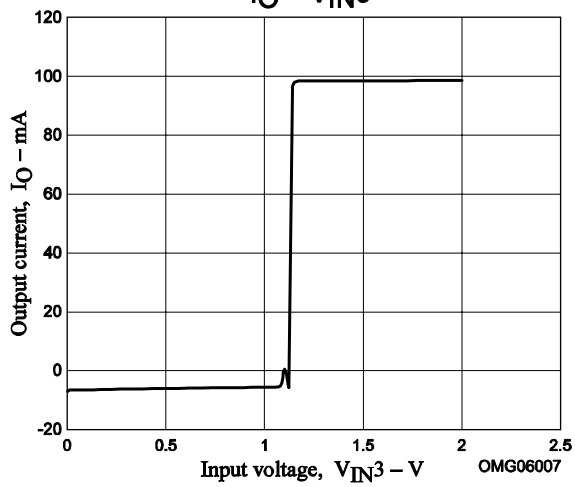
$I_{IN} - V_{IN}$



$I_O - V_{IN}2$



$I_O - V_{IN}3$



$I_O - V_{IN}1$