



LB1832V

Low-Saturation 1.5-Channel 3 V Drive Bidirectional Driver

Overview

The LB1832V is a bidirectional driver IC that includes an on-chip low-voltage low-saturation 1.5-channel bridge and is provided in a miniature package. It is therefore optimal for cameras that use 3 V lithium batteries. This IC allows direct drive from the control microprocessor and supports control of standby, forward, reverse, and braking operations for two motors, i.e. the film take-up and lens drive motors, from three inputs.

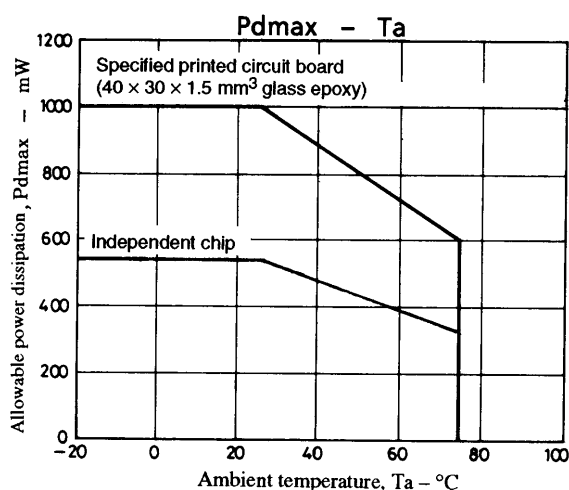
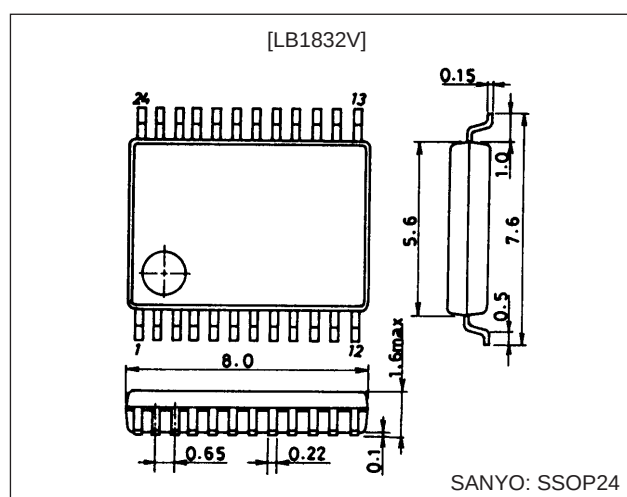
Features

- Supports low-voltage drive.
 - When the same power supply is used for V_{CC} and V_S : $V_{CC} = V_S = 1.6$ V min.
 - When different power supplies are used for V_{CC} and V_S : $V_S = 1.0$ V min, $V_{CC} = 2.5$ V min.
- Low saturation voltage (Upper side transistor plus lower side transistor remaining voltage: 0.6 V (typ) at 1 A)
- Zero current drain in standby mode
- 1.5-channel bidirectional driver that can be directly driven from the control microprocessor
- Separate logic and motor power supply connections
- Brake function
- Built-in spark killer diode
- Miniature package (SSOP-24)

Package Dimensions

unit: mm

3175A-SSOP24



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Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\text{ max}}$		-0.3 to +8.0	V
	$V_S\text{ max}$		-0.3 to +8.0	V
Output applied voltage	V_{OUT}		-0.3 to $V_S + V_{SF}$	V
Input applied voltage	V_{IN}		-0.3 to +0.8	V
GND pin current	I_{GND}		2.0	A
Allowable power dissipation	$P_d\text{ max1}$	Independent IC	550	mW
	$P_d\text{ max2}$	Mounted on the specified printed circuit board ($40 \times 30 \times 1.5\text{ mm}^3$ glass epoxy)	1000	mW
Operating temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +150	$^\circ\text{C}$

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

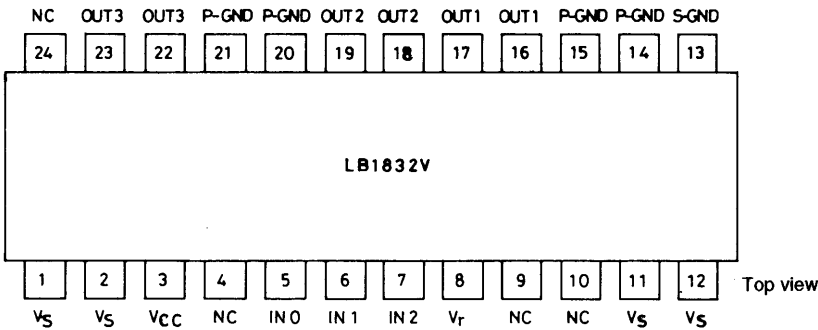
Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_E	$V_{CC} = V_S$; Using the same power supply	1.6 to 7.0	V
	V_{CC}	Using separate power supplies for V_{CC} and V_S	2.5 to 7.0	V
	V_S		1.0 to 7.0	V
Input high-level voltage	V_{IH}		1.6 to 7.0	V
Input low-level voltage	V_{IL}		-0.3 to +0.4	V

Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = V_S = 3\text{ V}$

Parameter	Symbol	Conditions	min	typ	max	Unit
Current drain	I_{CC0}	Standby: $I_{CC} + I_S$		0.1	3	μA
	I_{CC1}	I_{CC}		3.5	5	mA
	I_{S1}	Forward/reverse: I_S		65	85	mA
	I_{S2}	Brake: I_S		60	80	mA
Output saturation voltage (upper + lower)	$V_O\text{ (sat)1}$	$I_{OUT} = 500\text{ mA}$ ($V_{CC} = V_S = 2\text{ V}$)		0.3	0.4	V
	$V_O\text{ (sat)2}$	$I_{OUT} = 1\text{ A}$ ($V_{CC} = V_S = 2.2\text{ V}$)		0.6	0.8	V
Variation in output applied voltage		$I_{OUT} = 500\text{ mA}$	-20	0	+20	%
Sustainable output voltage	$V_O\text{ (SUS)}$	$I_{OUT} = 1\text{ A}$	9			V
Input current	I_{IN}	$V_{IN} = 5\text{ V}$, $V_{CC} = 7\text{ V}$			100	μA
[Spark killer diode]						
Reverse current	$I_S\text{ (leak)}$	V_{CC} , $V_S = 7\text{ V}$			10	μA
Forward voltage	V_{SF}	$I_{OUT} = 1\text{ A}$			1.7	V

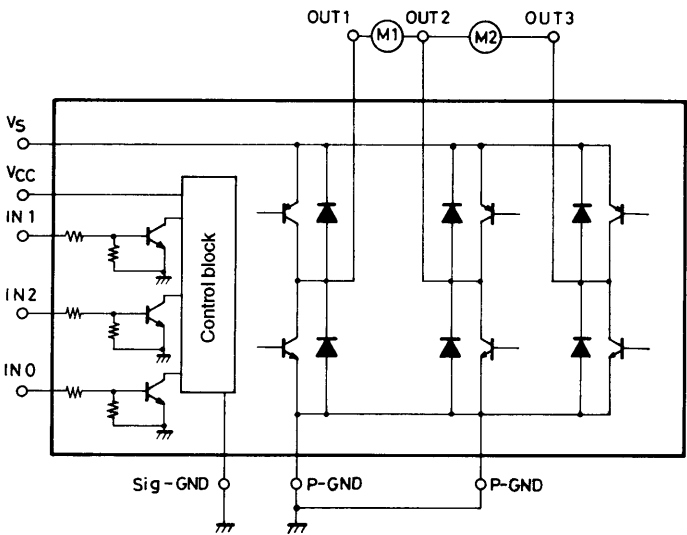
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Pin Assignment



- Note: 1. V_S (motor power supply pins)
 Connect either pins 1 and 2 or pins 11 and 12. The wiring resistance falls if all four are connected.
2. P-GND (motor power supply ground pins)
 Connect all four of these pins
3. S-GND (Control power supply ground pin)
 Connect to the microprocessor ground.

Block Diagram



Note: The two P-GND pins must be connected to a ground as close as possible to the IC.

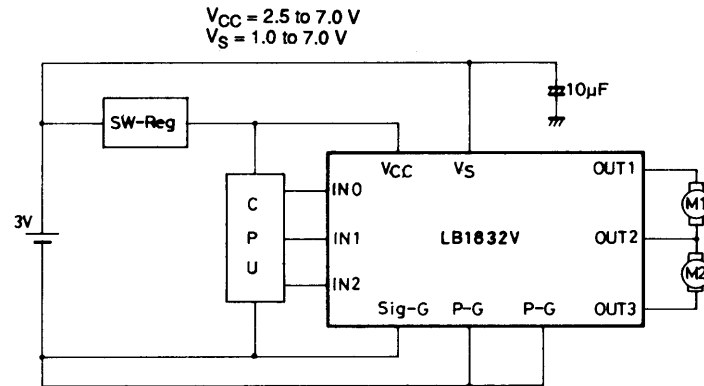
Truth Table

Input			Output			Mode
IN0	IN1	IN2	OUT1	OUT2	OUT3	
L	L	L				Standby
H	L	L				
L	H	L	H	L		
L	L	H	L	H		ch1
L	H	H	L	L		
H	H	L		L	H	
H	L	H		H	L	ch2
H	H	H		L	L	

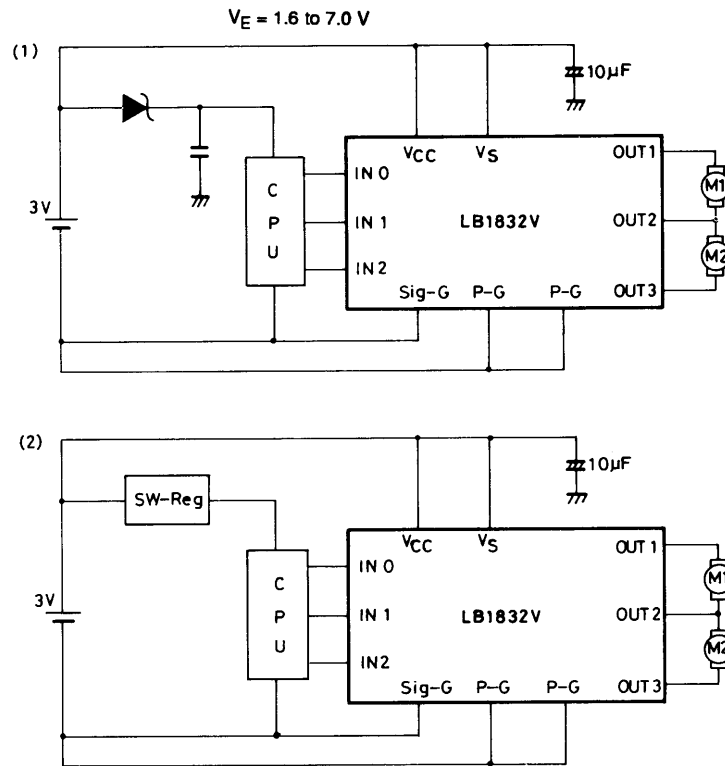
Note: Blanks are off.

Application Circuit Examples

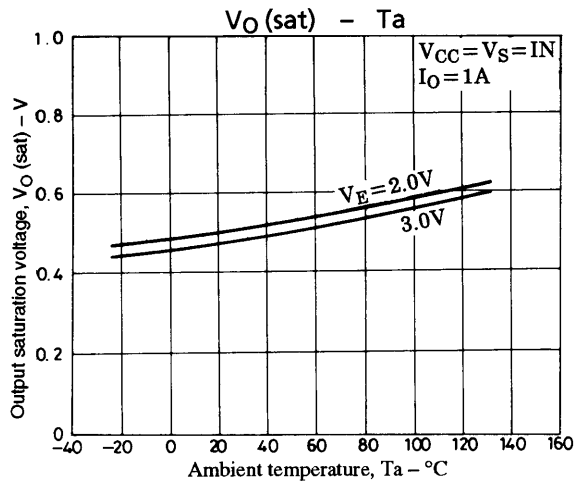
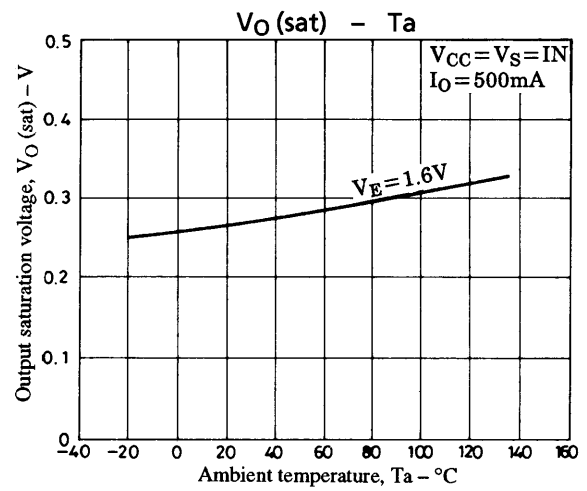
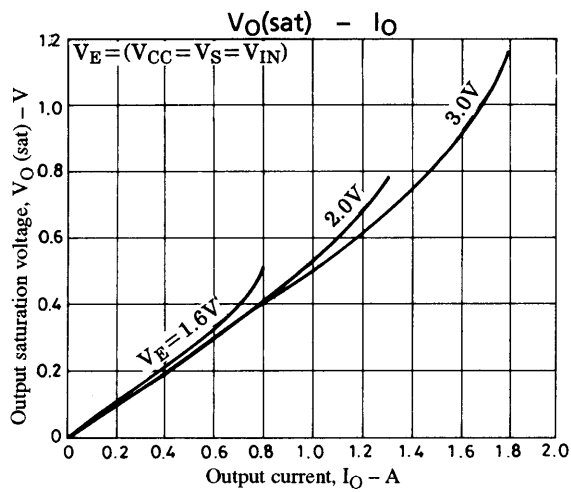
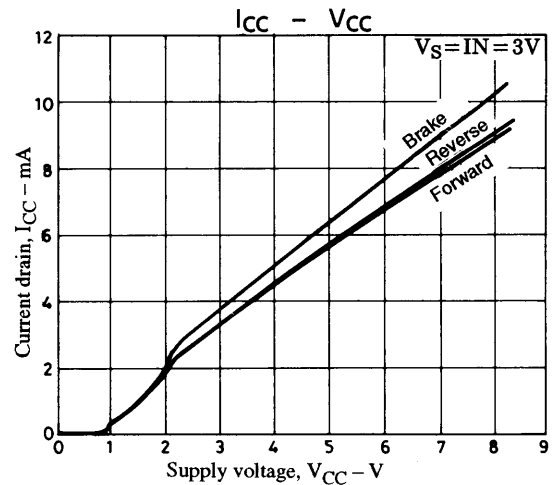
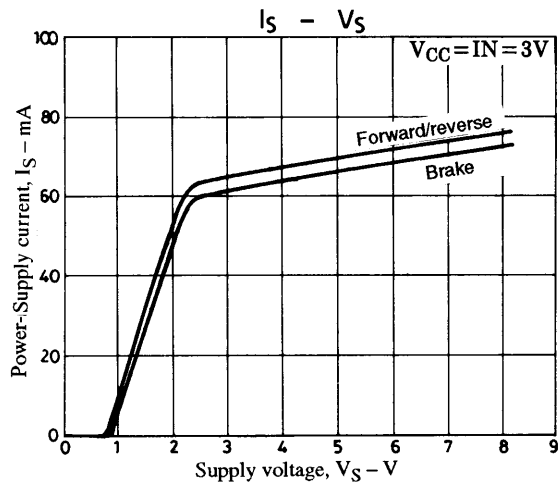
When separate power supplies are used for V_{CC} and V_S



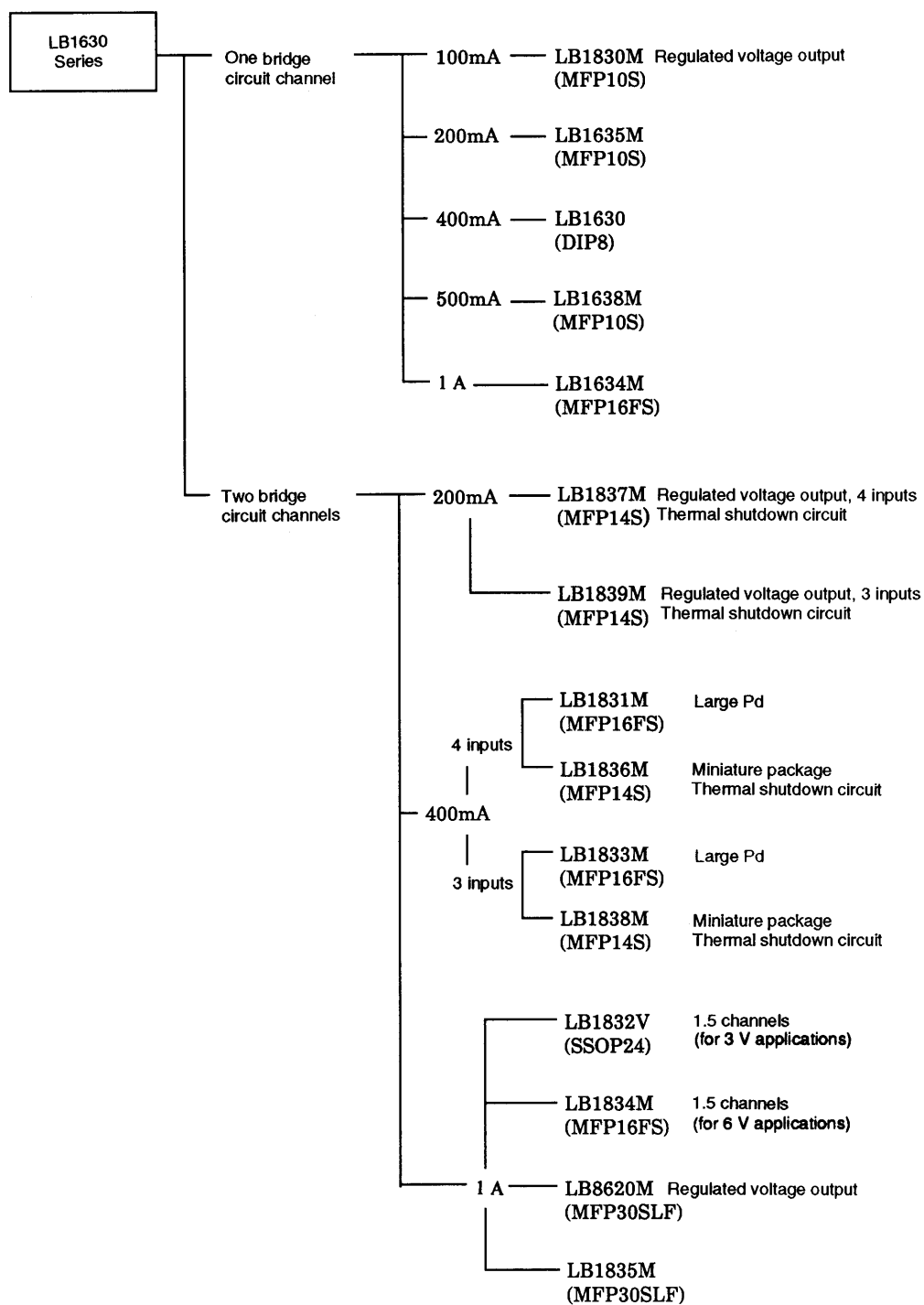
When the same power supply is used for V_{CC} and V_S



Note: There are no limitations on the magnitude relationships between V_{CC} , V_S , and V_{IN} .



Low-Voltage Low-Saturation Bidirectional Motor Driver Product Line



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