



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.

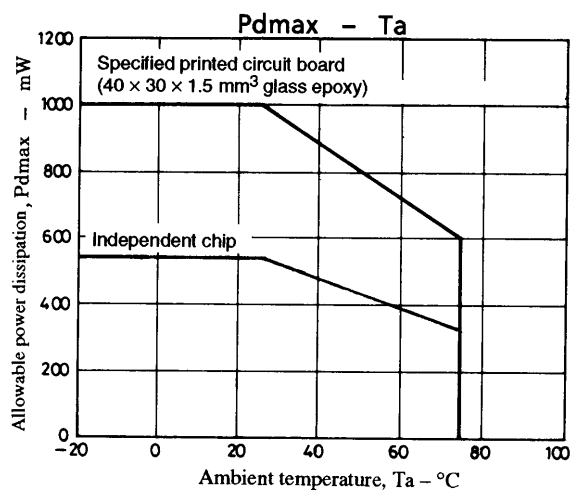
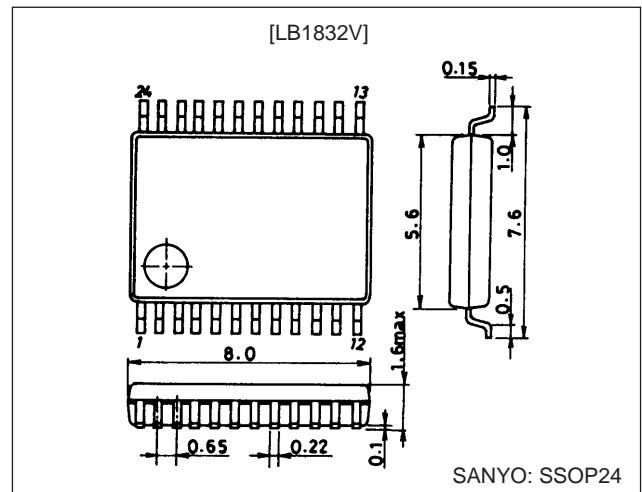
Features

- 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



Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		-0.3 to +8.0	V
	V_S 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	Pd max1	Independent IC	550	mW
	Pd 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 $T_a = 25^\circ\text{C}$

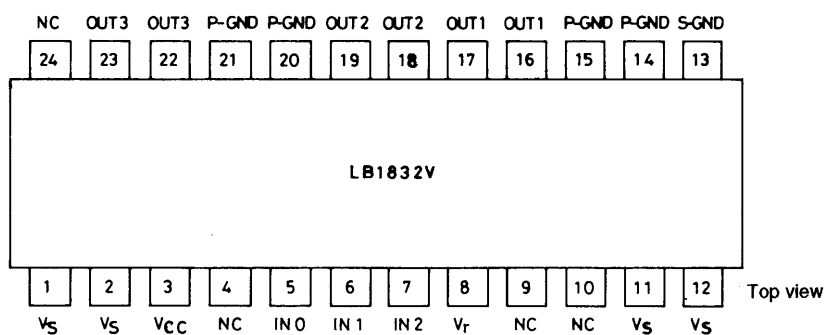
Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_E	$V_{CC} = V_S$; Using the same power supply	1.6 to 7.0	V
	V_{CC}	Using separate power supplies for V_{CC} and V_S	2.5 to 7.0	V
	V_S		1.0 to 7.0	V
Input high-level voltage	V_{IH}		1.6 to 7.0	V
Input low-level voltage	V_{IL}		-0.3 to +0.4	V

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 (sat)1	$I_{OUT} = 500 \text{ mA}$ ($V_{CC} = V_S = 2 \text{ V}$)		0.3	0.4	V
	V_O (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 (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 (leak)	V_{CC} , $V_S = 7 \text{ V}$			10	μA
Forward voltage	V_{SF}	$I_{OUT} = 1 \text{ A}$			1.7	V

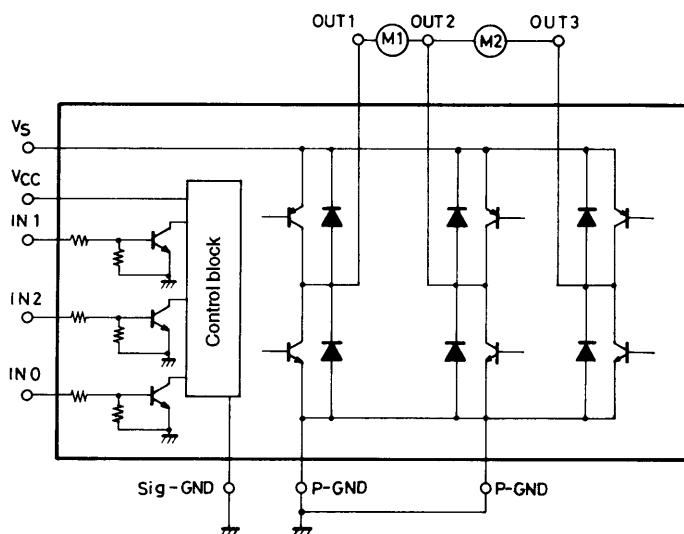
LB1832V

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

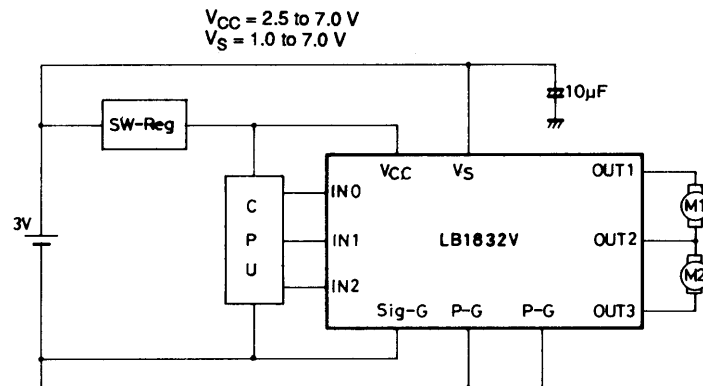
Input			Output			Mode
IN0	IN1	IN2	OUT1	OUT2	OUT3	
L	L	L				Standby
H	L	L				
L	H	L	H	L		ch1
L	L	H	L	H		
L	H	H	L	L		
H	H	L		L	H	ch2
H	L	H		H	L	
H	H	H		L	L	

Note: Blanks are off.

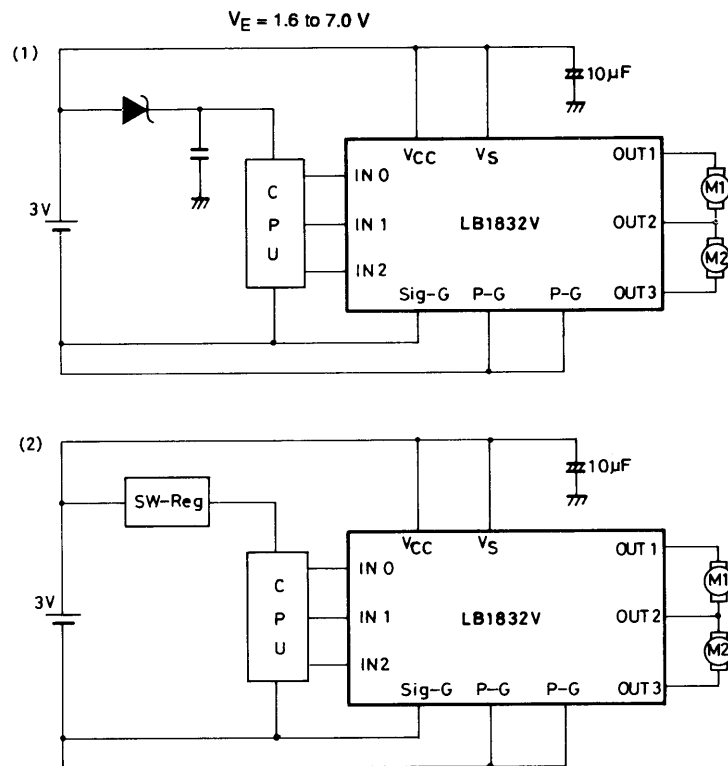
LB1832V

Application Circuit Examples

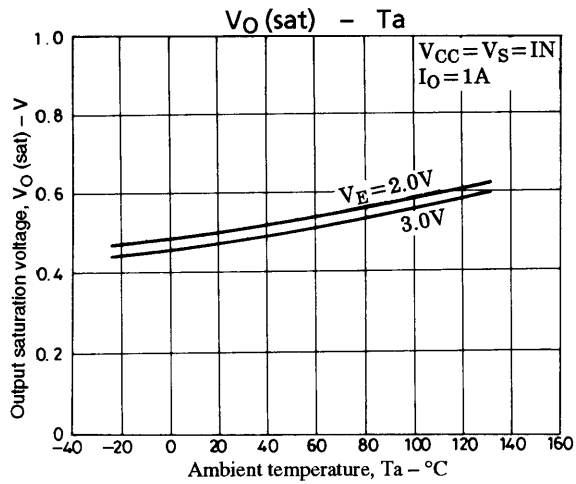
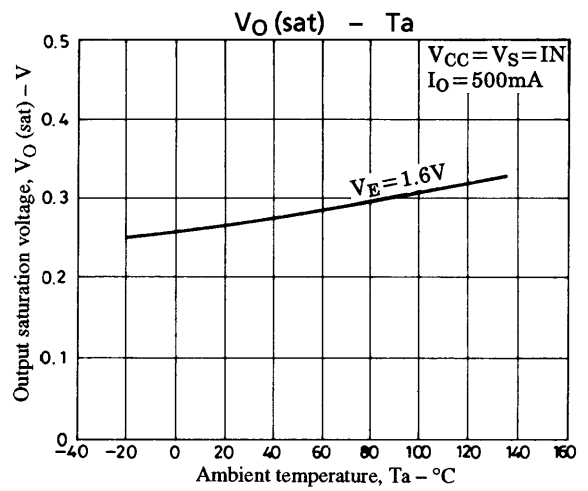
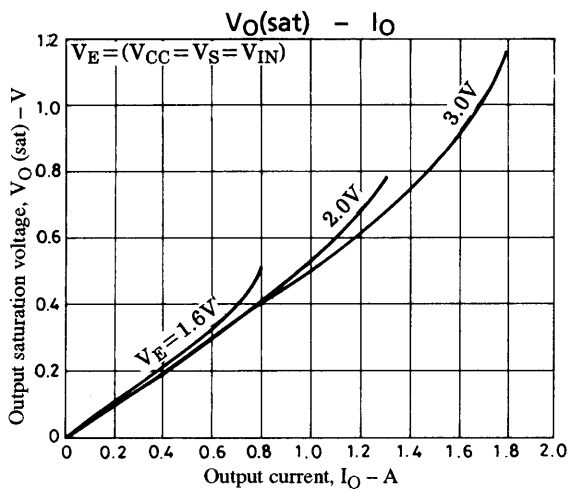
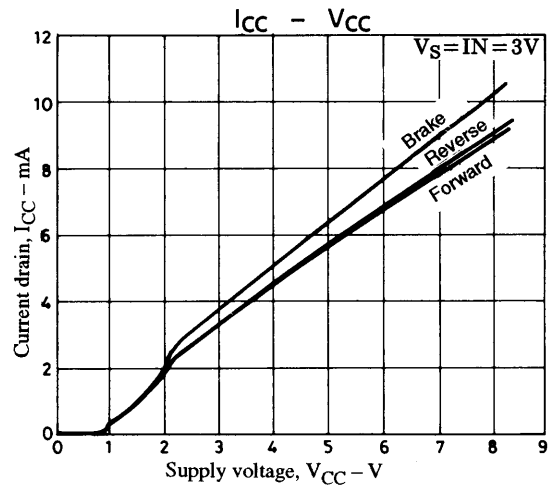
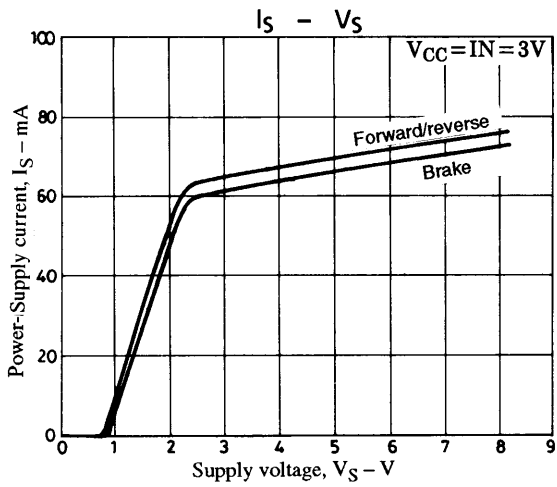
When separate power supplies are used for V_{CC} and V_S



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

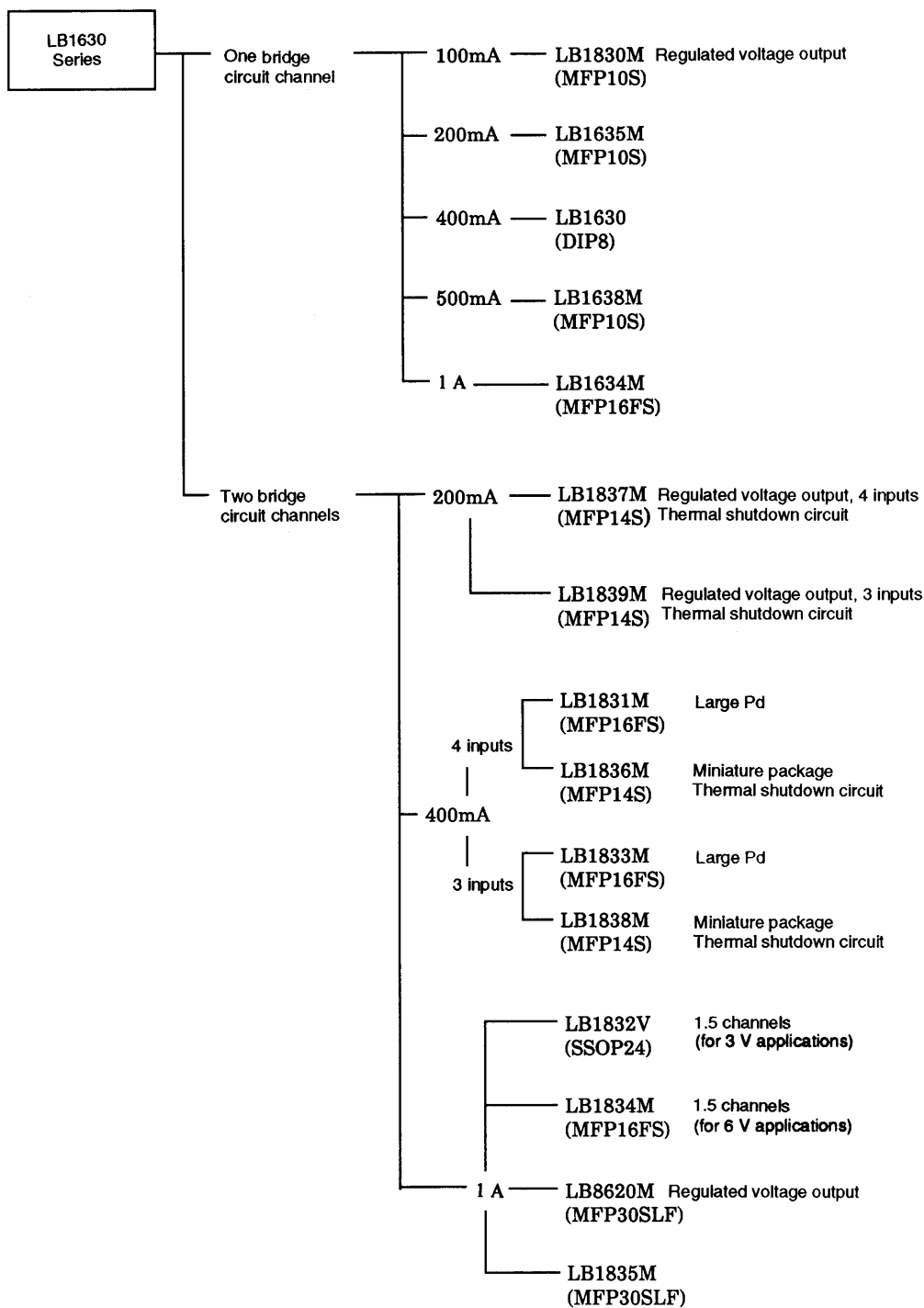


Note: There are no limitations on the magnitude relationships between V_{CC} , V_S , and V_{IN} .



LB1832V

Low-Voltage Low-Saturation Bidirectional Motor Driver Product Line



- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
 - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
 - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of April, 1996. Specifications and information herein are subject to change without notice.