



# LB1630

## Low-Saturation Bidirectional Motor Driver for Low-Voltage Applications

### Overview

The LB1630 is a low-saturation bidirectional motor driver IC for use in low-voltage applications. It is especially suited for use in small-sized low-voltage motors for printers, cassette tape recorders, and consumer equipment.

### Features

- Capable of operating from a low voltage (2.5V min).  
Low current drain at the standby mode ( $I_{CC} \leq 30\mu\text{A}$ ).
- Low-saturation voltage (upper transistor + lower transistor residual voltage 1.2V max at 400mA).
- On-chip spark killer diodes.

### 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 +7.0	V
Output supply voltage	$V_{OUT}$		-0.3 to $V_{CC} + V_F$	V
Input supply voltage	$V_{IN}$		-0.3 to +7.0	V
Allowable load resistance	$R_M \text{ min}$	Pulse width < 50ms, duty 10%	3	$\Omega$
GND pin flow-out current	$I_{GND}$	Pulse width < 50ms, duty 10%	2	A
Allowable power dissipation	$P_d \text{ max}$		785	mW
Operating temperature	$T_{opr}$		-20 to +75	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-40 to +125	$^\circ\text{C}$

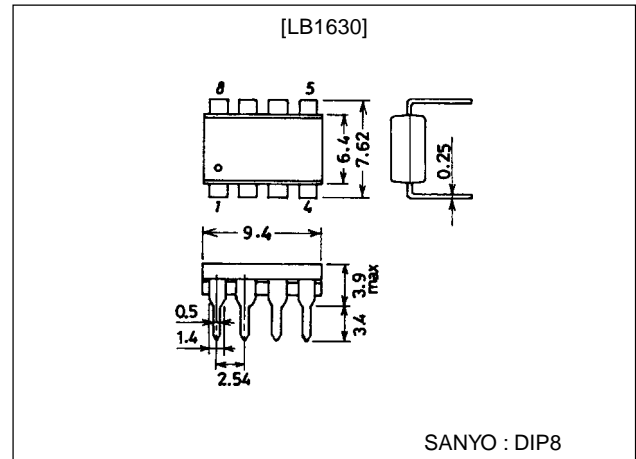
#### Allowable Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	$V_{CC}$		2.5 to 6.0	V
Input high-level voltage	$V_{IH}$		2.0 to 6.0	V
Input low-level voltage	$V_{IL}$		-0.3 to +0.7	V

### Package Dimensions

unit:mm

3001B-DIP8



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**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

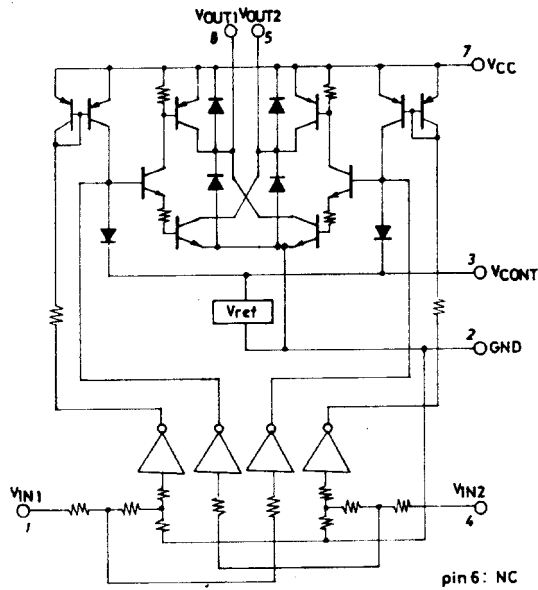
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# LB1630

## Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output saturation voltage (upper side+lower side)	V <sub>OUT(1)</sub>	V <sub>CC</sub> =3V, V <sub>IN</sub> =3V, I <sub>O</sub> UT=200mA			0.6	V
	V <sub>OUT(2)</sub>	V <sub>CC</sub> =3.5V, V <sub>IN</sub> =3V, I <sub>O</sub> UT=400mA			1.2	V
Output sustain voltage	V <sub>O(sus)</sub>	I <sub>O</sub> UT=400mA	9			V
Output leakage current	I <sub>O(leak)</sub>	V <sub>CC</sub> =6V			30	μA
Input current	I <sub>IN</sub>	V <sub>IN</sub> =6V			1.0	mA
[Spark killer diode]						
Reverse current	I <sub>S(leak)</sub>	V <sub>CC</sub> =6V, V <sub>IN</sub> =0V			30	μA
Forward voltage	V <sub>SF</sub>	I <sub>O</sub> UT=500mA			1.7	V
Current drain	I <sub>CC</sub>	I <sub>CC</sub> =3.5V, V <sub>IN</sub> =3V, I <sub>O</sub> UT=400mA			430	mA

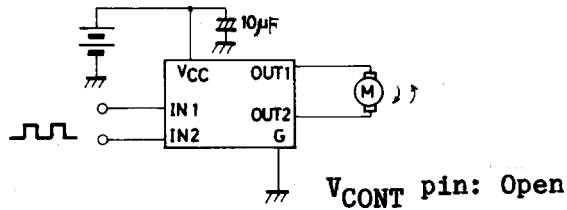
## Equivalent Circuit



## Truth Table

IN1	IN2	OUT1	OUT2	MOTOR
H	L	H	L	Forward
L	H	L	H	Reverse
H	H	off	off	Standby
L	L	off	off	Standby

## Sample Application Circuit



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