Ordering number: EN 1261E

Mnolithic Digital IC

No.1261E

# LB1630

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

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 dissipation at the standby mode ($I_{CC} \leqq 30uA$)
- Low-saturation voltage (upper transistor + lower transistor residual voltage 1.2V max at 400mA)
- On-chip spark killer diodes

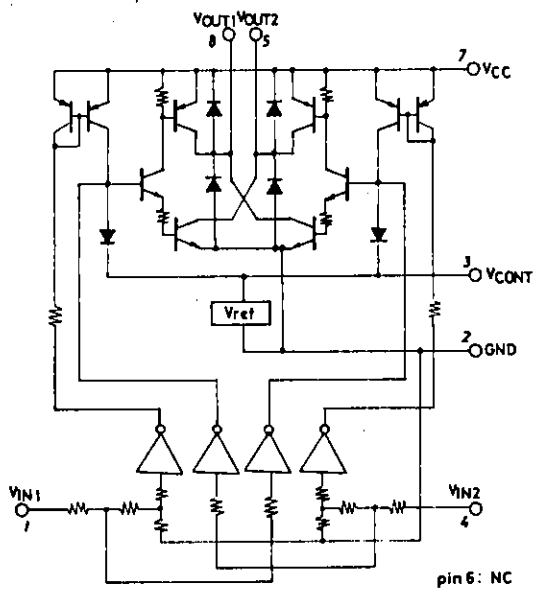
**Absolute Maximum Ratings** at Ta=25°C

| | | | | unit |
|---|---|---|---|---|
| Maximum Supply Voltage | $V_{CC}$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 | $R_M$min | Pulse width<50ms Duty 10% | 3 | ohm |
| GND Pin Flow-out Current | $I_{GND}$ | Pulse width<50ms Duty 10% | 2 | A |
| Allowable Power Dissipation | Pdmax | | 785 | mW |
| Operating Temperature | Topr | | -20 to +75 | °C |
| Storage Temperature | Tstg | | -40 to +125 | °C |

**Allowble Operating Conditions** at Ta=25°C

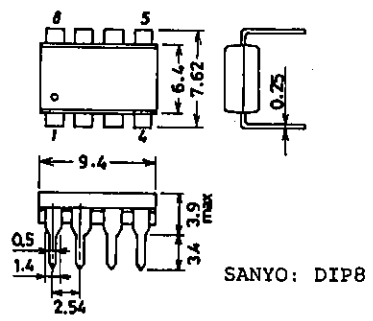
| | | | unit |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | 2.5 to 6.0 | V |
| Input "H"-Level Voltage | $V_{IH}$ | 2.0 to 6.0 | V |
| Input "L"-Level Voltage | $V_{IL}$ | -0.3 to +0.7 | V |

**Equivalent Circuit**




**Package Dimensions** 3001B

unit: mm



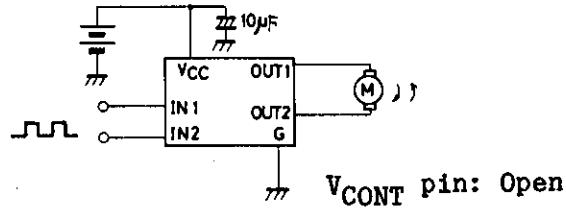
**Electrical Characteristics** at Ta=25°C

| | | | min | typ | max | unit |
|---|---|---|---|---|---|---|
| Output Saturation Voltage | $V_{OUT(1)}$ | $V_{CC}$=3V,$V_{IN}$=3V,$I_{OUT}$=200mA | | | 0.6 | V |
| (upper side + lower side) | $V_{OUT(2)}$ | $V_{CC}$=3.5V,$V_{IN}$=3V,$I_{OUT}$=400mA | | | 1.2 | V |
| Output Sustain Voltage | $V_{O(sus)}$ | $I_{OUT}$=400mA | 9 | | | V |
| Output Leakage Current | $I_{O(leak)}$ | $V_{CC}$=6V | | | 30 | μA |
| Input Current | $I_{IN}$ | $V_{IN}$=6V | | | 1.0 | mA |
| Spark Killer Diode | | | | | | |
| Reverse Current | $I_S$(leak) | $V_{CC}$=6V,$V_{IN}$=0V | | | 30 | μA |
| Forward Voltage | $V_{SF}$ | $I_{OUT}$=500mA | | | 1.7 | V |
| Current Dissipation | $I_{CC}$ | $I_{CC}$=3.5V,$V_{IN}$=3V,$I_{OUT}$=400mA | | | 430 | mA |

**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**




$V_{CONT}$ pin: Open