Ordering number:EN2575B

Monolithic Digital IC

# LB1641

## Bidirectional Motor Driver

## Overview

The LB1641 is a bidirectional motor driver IC. Since it has a 2-input logic circuit and performs the functions of bidirectional driving and braking, it is capable of direct driving 6V, 9V, 12V motors. The output voltage can be varied by using an external zener diode.

## Features

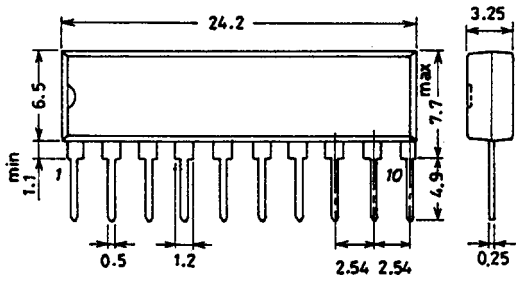
- 2-input logic can be used to exercise control of bidirectional driving and braking.
- On-chip elements to absorb dash current of motor.
- Input interfaceable to MOS LSI.
- Output voltage variable by use of external zener diode.

## Package Dimensions

unit:mm

**3043A-SIP10**

[LA1641]




SANYO : SIP10

## Specifications

### Absolute Maximum Ratings at Ta = 25˚C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Maximum supply voltage | $V_{CC}$ max | | 18 | V |
| Input voltage | $V_{IN}$ | | –0.3 to $V_{CC}$ | V |
| Output current | $I_{OUT}$ | | ±1.6 | A |
| Allowable power dissipation | Pd max | | 1.2 | W |
| Operating temperature | Topr | | –25 to +75 | ˚C |
| Storage temperature | Tstg | | –55 to +125 | ˚C |

### Operating Conditions at Ta = 25˚C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Supply voltage | $V_{CC}1$ | | 7 to 18 | V |
| | $V_{CC}2$ | | 5 to 18 | V |

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## Operating Characteristics at Ta = 25˚C

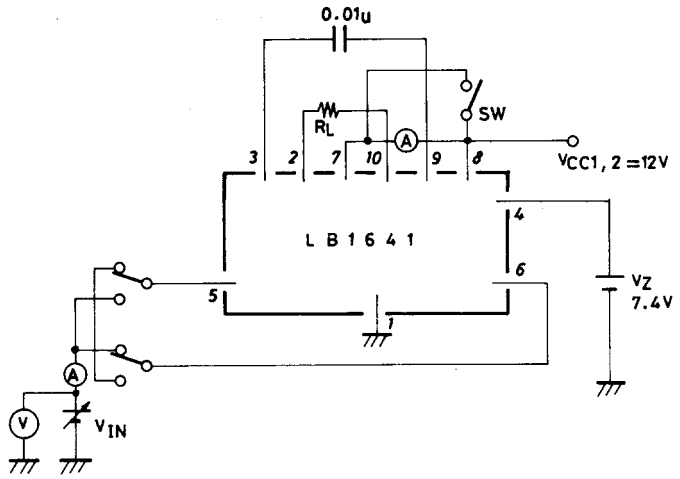
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Input threshold voltage | Vth | $R_L$=∞ | 1.1 | 1.3 | 1.5 | V |
| Minimum input on-state current | $I_{IN}$ | $R_L$=∞ | | 10 | 15 | µA |
| Output voltage | $V_O$ | $R_L$=60Ω, $V_Z$=7.4V | 6.6 | 7.2 | 7.4 | V |
| Output leakage current | $I_{OL}$ | Pins5, 6 GND, $R_L$=∞ | | 0.01 | 1.0 | mA |
| Current drain | $I_{CC}$ | Pins5, 6 GND, $R_L$=∞ | 3 | 6 | 10 | mA |
| Saturation voltage (upper) | Vsat1 | $V_{CC}$=12V, $I_{OUT}$=300mA | | 1.9 | 2.2 | V |
| | Vsat1 | $V_{CC}$=12V, $I_{OUT}$=500mA | | 1.9 | 2.3 | V |
| Saturation voltage (lower) | Vsat2 | $V_{CC}$=12V, $I_{OUT}$=300mA | | 0.25 | 0.5 | V |
| | Vsat2 | $V_{CC}$=12V, $I_{OUT}$=500mA | | 0.4 | 0.65 | V |

## Truth Table

| Input | | Output | | Operation |
|---|---|---|---|---|
| IN1 | IN2 | OUT1 | OUT2 | |
| 0 | 0 | 0 | 0 | Braking |
| 1 | 0 | 1 | 0 | Forward (reverse) drive |
| 0 | 1 | 0 | 1 | Reverse (forward) drive |
| 1 | 1 | 0 | 0 | Braking |

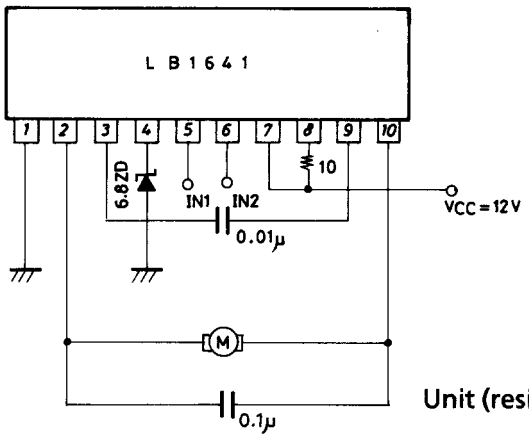
Input level 1 : 2.0V or greater
0 : 0.7V or less

## Test Circuit




Unit ( capacitance: F )

## Sample Application Circuit : 6V motor circuit




Unit (resistance: Ω, capacitance: F)

## Equivalent Circuit Block Diagram