



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

LB1641 — Monolithic Digital IC 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.

Specifications

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|---------------------|------------|------------------|------------------|
| Maximum supply voltage | $V_{CC\text{ max}}$ | | 18 | V |
| Input voltage | V_{IN} | | -0.3 to V_{CC} | V |
| Output circuit | I_{OUT} | | ± 1.6 | A |
| Allowable power dissipation | $P_d\text{ max}$ | | 1.2 | W |
| Operating temperature | T_{opr} | | -25 to +75 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | | -55 to +125 | $^\circ\text{C}$ |

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|----------------|-----------|------------|---------|------|
| Supply voltage | V_{CC1} | | 7 to 18 | V |
| | V_{CC2} | | 5 to 18 | V |

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LB1641

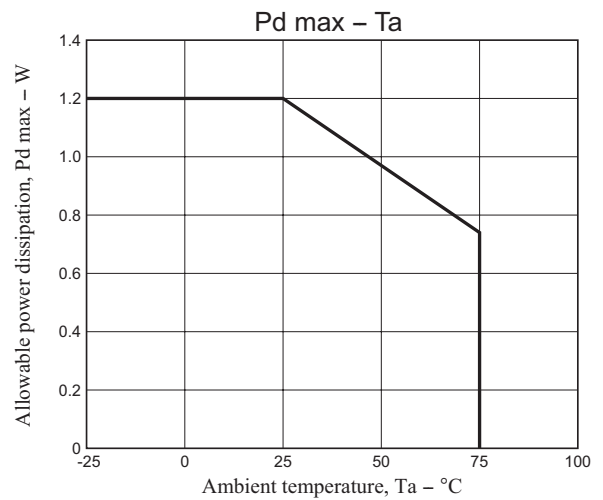
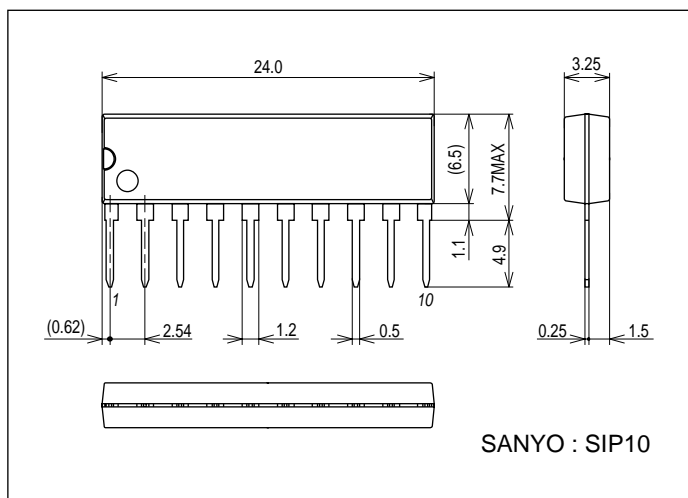
Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--------------------------------|-------------|--|---------|------|------|---------------|
| | | | min | typ | max | |
| Input threshold voltage | V_{th} | $R_L = \infty$ | 1.1 | 1.3 | 1.5 | V |
| Minimum input on-state current | I_{IN} | $R_L = \infty$ | | 10 | 15 | μA |
| Output voltage | V_O | $R_L = 60\Omega$, $V_Z = 7.4\text{V}$ | 6.6 | 7.2 | 7.4 | V |
| Output leakage current | I_{OL} | Pins 5,6 GND, $R_L = \infty$ | | 0.01 | 1.0 | mA |
| Current drain | I_{CC} | Pins 5,6 GND, $R_L = \infty$ | 3 | 6 | 10 | mA |
| Saturation voltage (upper) | V_{sat1} | $I_{OUT} = 300\text{mA}$ | | 1.9 | 2.2 | V |
| | V_{sat1}' | $I_{OUT} = 500\text{mA}$ | | 1.9 | 2.3 | V |
| Saturation voltage (lower) | V_{sat2} | $I_{OUT} = 300\text{mA}$ | | 0.25 | 0.5 | V |
| | V_{sat2}' | $I_{OUT} = 500\text{mA}$ | | 0.4 | 0.65 | V |

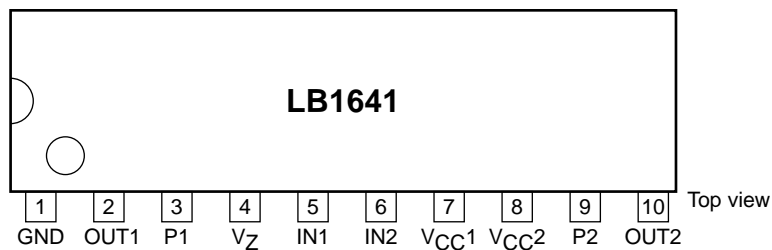
Package Dimensions

unit : mm (typ)

3043C



Pin Assignment



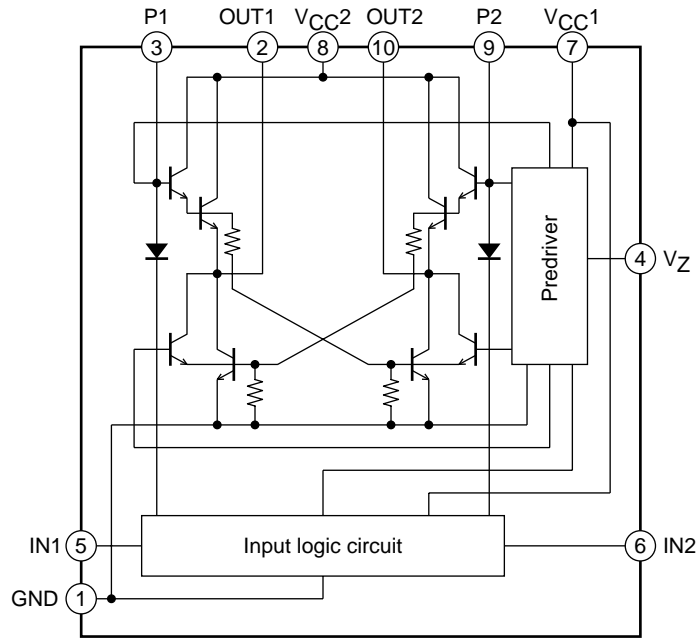
Truth Table

| Input | | Output | | Operation |
|-------|-----|--------|-----|-------------------------|
| IN1 | IN2 | IN3 | IN4 | |
| 0 | 0 | 0 | 0 | Braking |
| 1 | 0 | 1 | 0 | Forward (reverse) drive |
| 0 | 1 | 0 | 1 | Reverse (forward) drive |
| 1 | 1 | 0 | 0 | Braking |

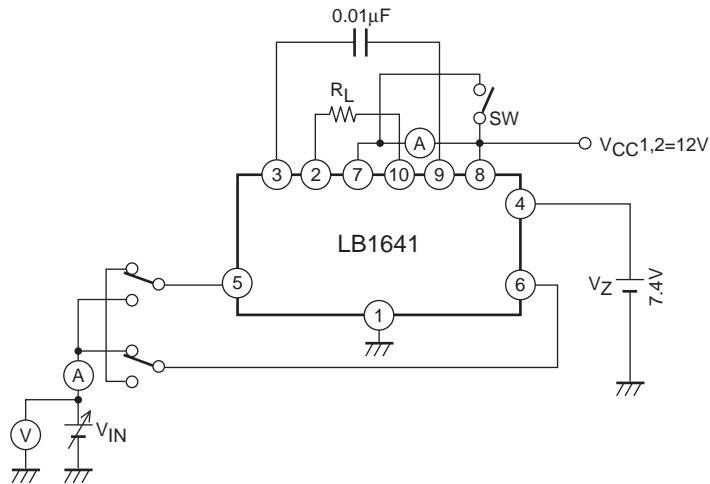
Input level 1 : 2.0V or greater
0 : 0.7V or less

LB1641

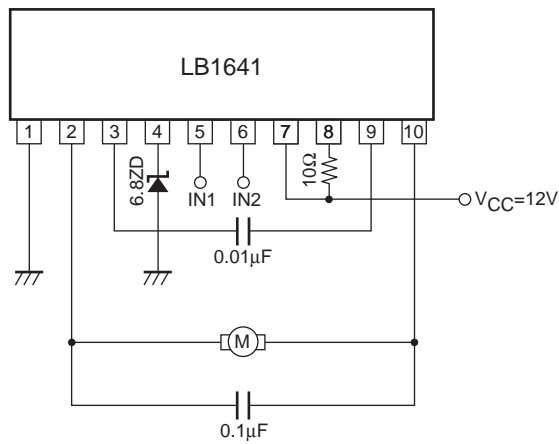
Block Diagram

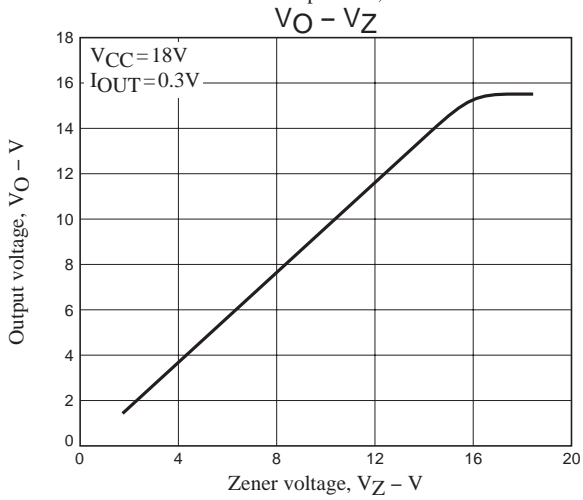
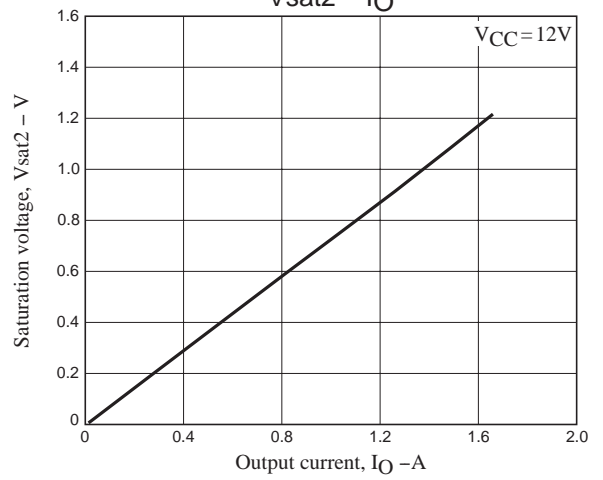
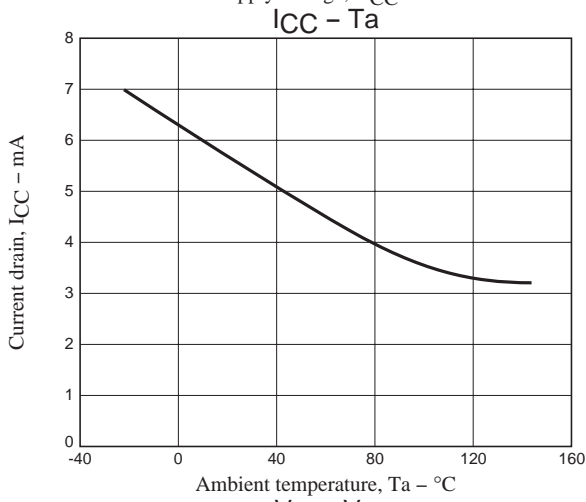
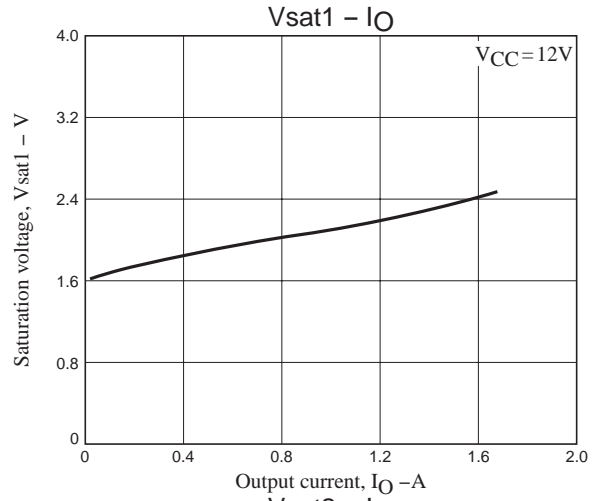
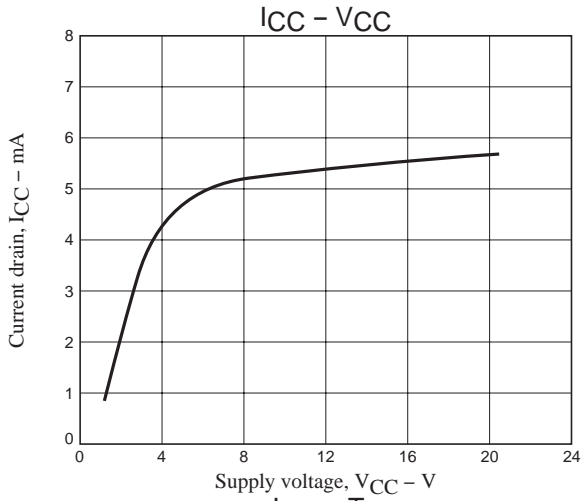


Test Circuit



Sample Application Circuit : 6V motor circuit





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