



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 Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>CC</sub> max		18	V
Input voltage	V <sub>IN</sub>		-0.3 to V <sub>CC</sub>	V
Output circuit	I <sub>OUT</sub>		±1.6	A
Allowable power dissipation	P <sub>d</sub> max		1.2	W
Operating temperature	T <sub>opr</sub>		-25 to +75	°C
Storage temperature	T <sub>stg</sub>		-55 to +125	°C

Recommended Operating Ranges at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V <sub>CC1</sub>		7 to 18	V
	V <sub>CC2</sub>		5 to 18	V

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# LB1641

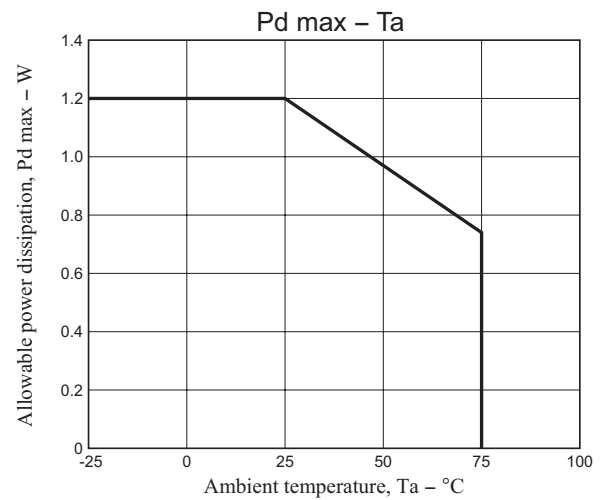
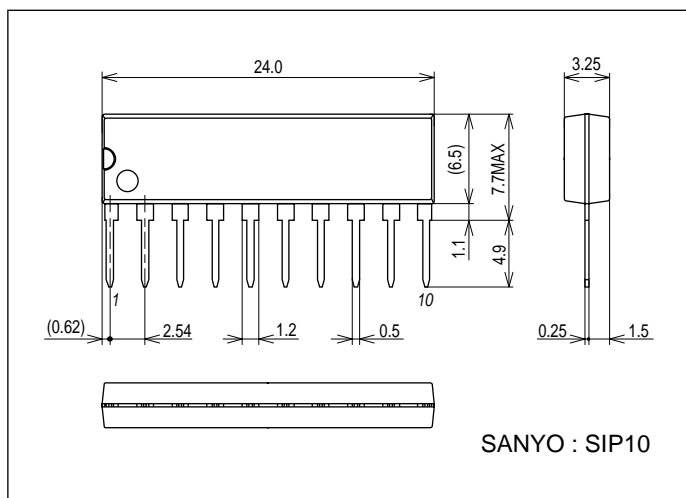
## Electrical Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC} = 12\text{V}$

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	$\mu\text{A}$
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

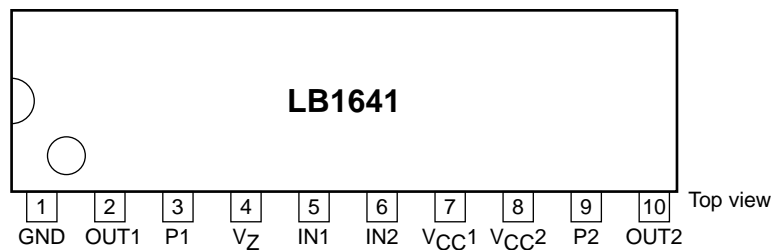
## Package Dimensions

unit : mm (typ)

3043C



## Pin Assignment



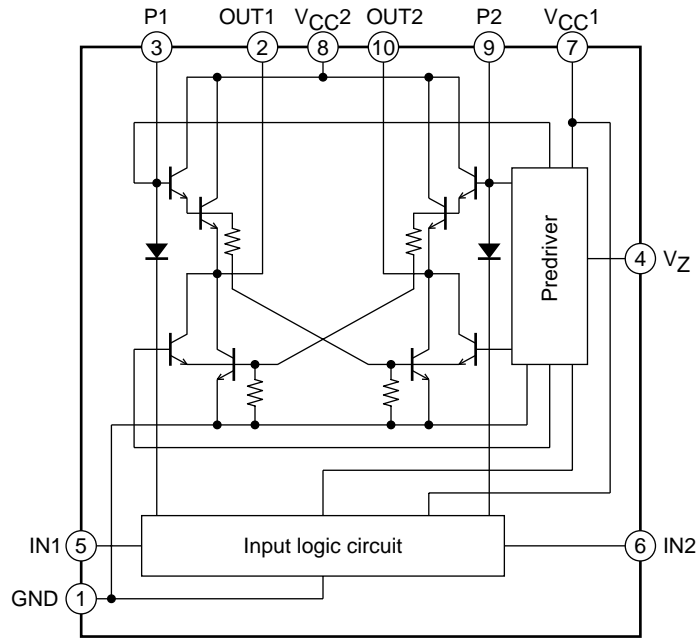
## Truth Table

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

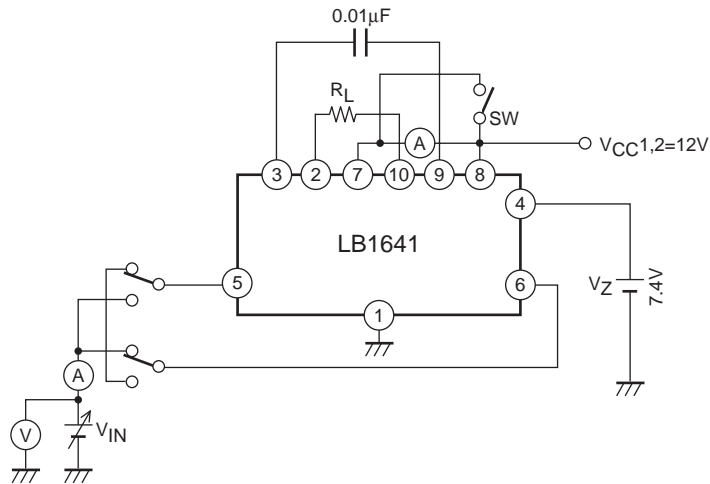
Input level 1 : 2.0V or greater  
0 : 0.7V or less

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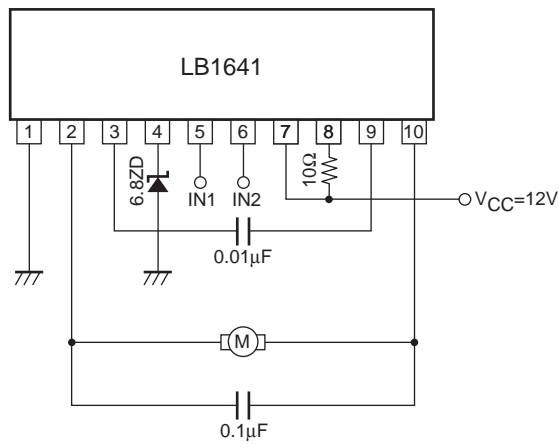
## Block Diagram

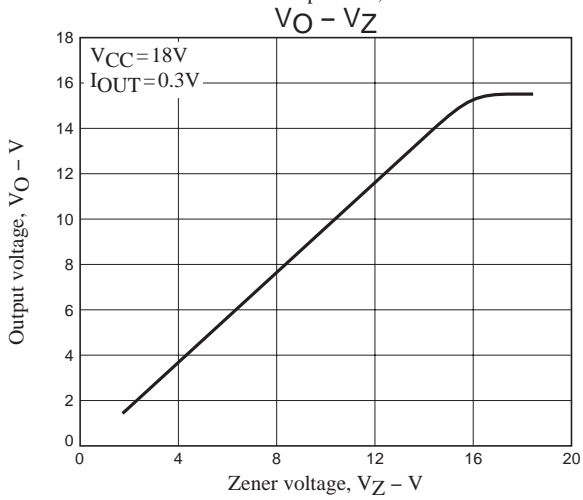
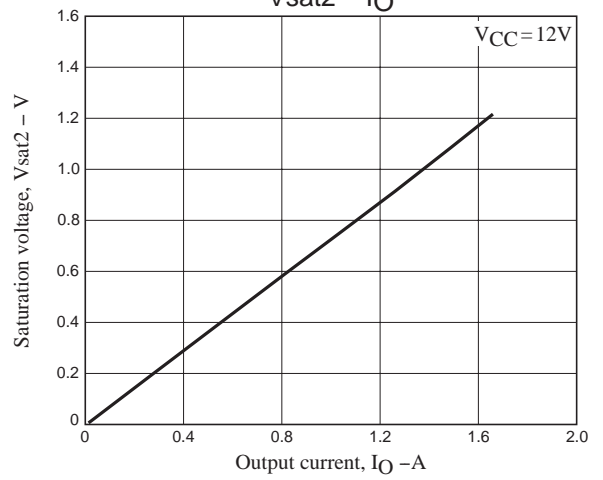
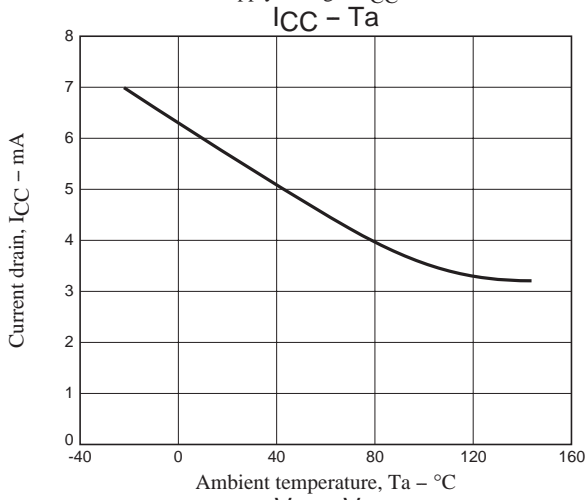
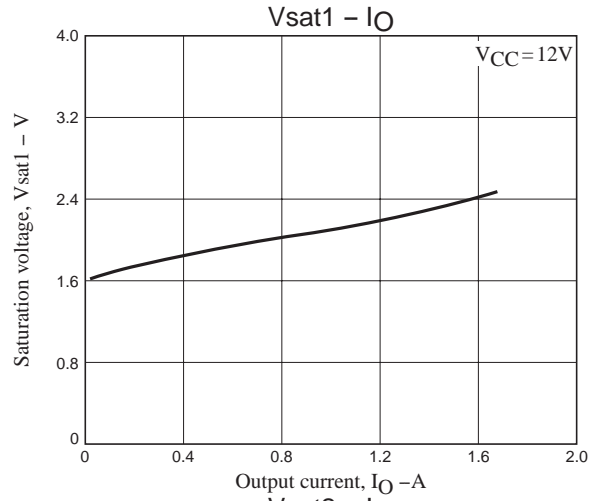
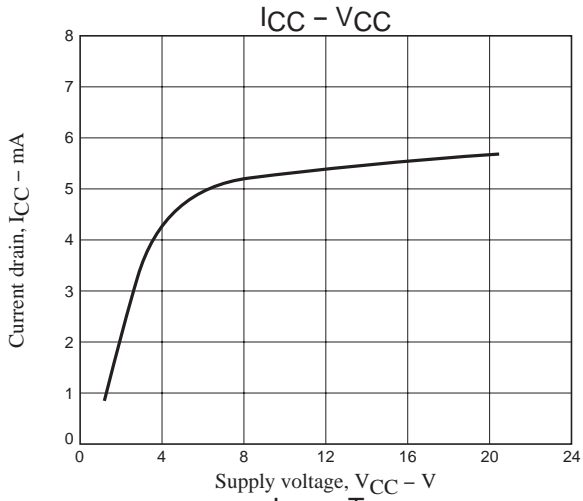


## Test Circuit



## Sample Application Circuit : 6V motor circuit





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