Ordering number:EN2059C

Monolithic Digital IC

LB1646

VCR Reel Motor Controller

Overview

The LB1646 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 and the output current can be limited at the time of overload.

Features

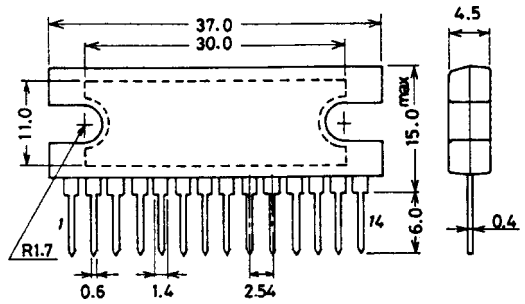
- 2-input logic can be used to exercise control of bidirectional driving and braking.
- Input connectable direct to MOS LSI.
- Output voltage variable by use of external Zener diode.
- On-chip output current limiter.
- On-chip minimum output voltage control circuit.
- Variable output current limit slope.
- On-chip circuit to turn ON/OFF the output current limit function.

Package Dimensions

unit:mm

3023A-SIP14H

[LB1646]



SANYO : SIP14H

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		25	V
Input voltage	$V_{IN}1$	$V_{IN}1$, $V_{IN}2$ INH pin	–0.3 to V_{CC}	V
	$V_{IN}2$	V_L, R_R pin	–0.3 to Vref	V
Output current	I_{OUT}		±1.6	A
Allowable power dissipation	Pd max	No heat sink	3.6	W
Operating temperature	Topr		–25 to +75	˚C
Storage temperature	Tstg		–55 to +125	˚C

Allowable Operating Conditions at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC}		7 to 25	V

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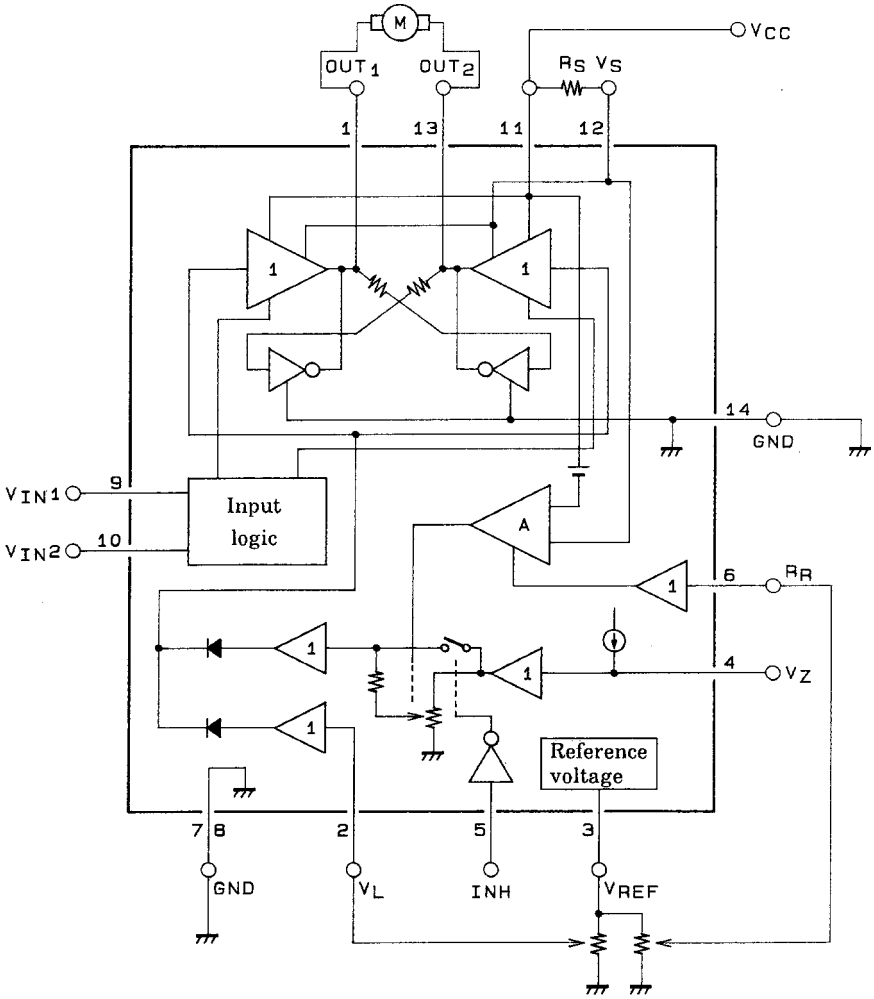
Electrical Characteristics at Ta = 25˚C, V_{CC}=12V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input threshold voltage	V_{th}	$V_{IN}1$, $V_{IN}2$, INH	1.0	1.4	2.0	V
Input current	I_{IN}	$V_{IN}1$, $V_{IN}2$, INH=10V	0.10	0.17	0.25	mA
Output voltage	V_O	I_{OUT}=100mA, V_Z=7.0V	6.0	6.8	7.5	V
Output leakage current	I_{OL}	$V_{IN}1$, $V_{IN}2$=0V			10	mA
Current dissipation	I_{CC}	$V_{IN}1$, $V_{IN}2$=0V	9.5	14.5	19	mA
Saturation voltage (upper)	Vsat1	I_{OUT}=300mA			2.2	V
		I_{OUT}=500mA			2.3	V
Saturation voltage (lower)	Vsat2	I_{OUT}=300mA			0.5	V
		I_{OUT}=500mA			0.65	V
Limit voltage	V_L	V_L=3.0V	2.8	3.2	3.6	V
V_Z flow-out current	I_{VZ}	V_Z=7V	1.1	1.6	2.1	mA
Current limit srart voltage	V_{RCD}	V_O=9V, R_S=2.0Ω, R_R=1V, V_{CC}=15V	425	460	493	mV
Current limit start voltage	ΔV_{RCD}	V_O=9V to 4V, R_{CD}=2.0Ω, R_R=1V, V_{CC}=15V	32	42	52	mA
Reference voltage	Vrdf	Iref=500µA	5.8	6.2	6.6	V

Equivalent Circuit Block Diagram

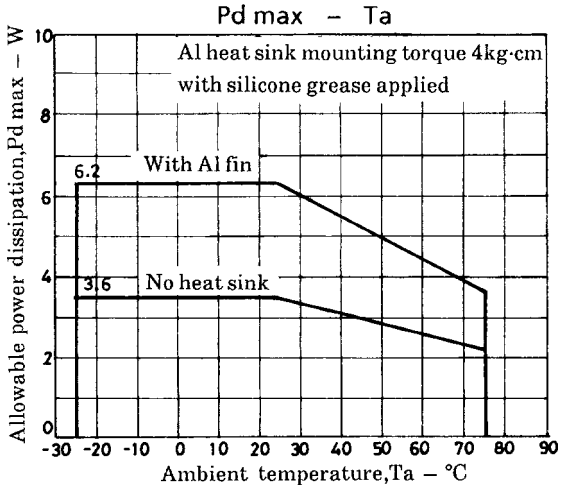


Pin Functions

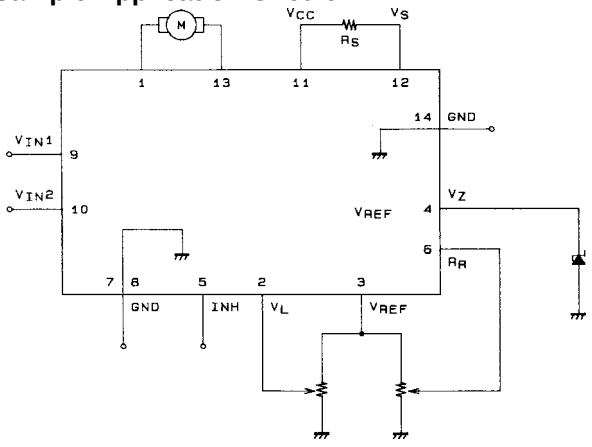
Pin No.	Pin Name	Function
1	OUT1	Output pin1. When $V_{IN}1$ is brougnt to high level, Out1 is at a high voltage level relative to OUT2.
2	V_L	Minimum voltage control pin. Controls a minimum value of output voltage at the current control mode.
3	V_{REF}	Reference voltage output pin. Regulated power source for supplying voltage for V_L, R_R.
4	V_Z	Zener pin. Controls the output voltage. The voltage on pin is almost equal to the output votlage.
5	INH	Current free inhibit pin. When this pin is brought to high level, the output current is limited by a present value.
6	R_R	Slope control pin. Controls the output current Vs. Output voltage slope at the current control mode.
7, 8	GND	GND. Control section GND.
9	$V_{IN}1$	Input pin1. When brought to high level, output pin OUT1 is at a high voltage level relative to OUT2 (Refer to Logic Diagram).
10	$V_{IN}2$	Input pin2. When brought to high level output pin OUT2 is at a high voltage level relative to OUT1 (Refer to Logic Diagram).
11	V_{CC}	Power source voltage supply pin.
12	V_S	Current detect pin. By connecting a resistor across V_S and V_{CC} and setting its value, a limit start current can be obtained. Limit start current=V_{OL}/R_S.
13	OUT2	Output pin2. When $V_{IN}2$ is brought to high level, OUT2 is at a high voltage level relative to OUT1.
14	GND	GND. Power section GND. Connected to pins 8, 9 internally.

Logic Section Truth Table

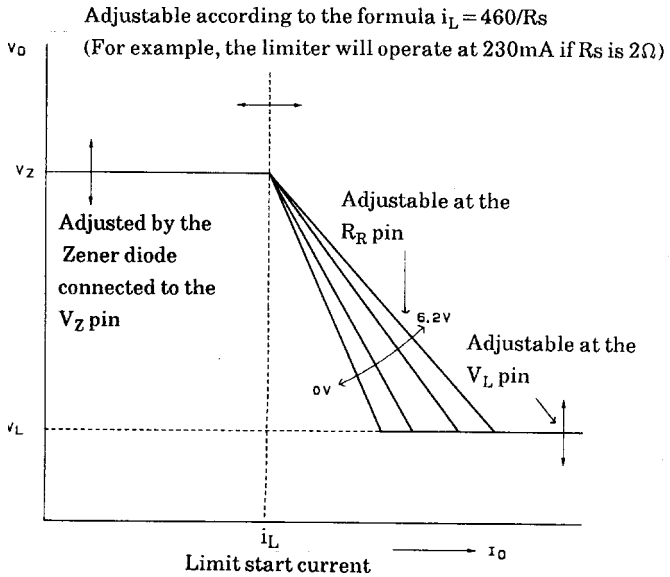
$V_{IN}1$	$V_{IN}2$	OUT1	OUT2
0	0	L	L
1	0	H	L
0	1	L	H
1	1	L	L



Sample Application Circuit



Sample Application Characteristics



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