



No.2059C

LB1646

VTR Reel Motor Controller

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

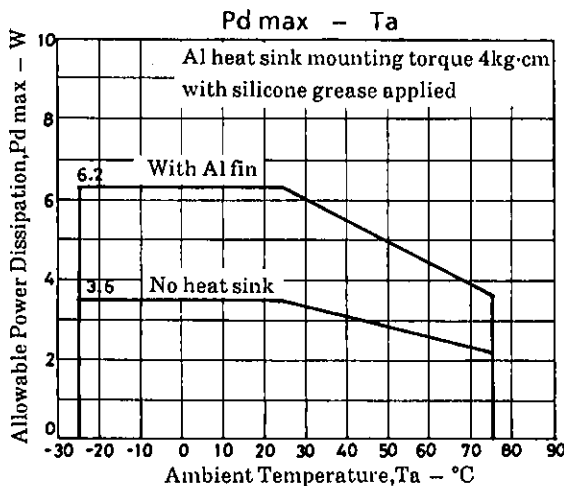
- 2-input logic can be used to exercise control of bidirectional driving and braking.
- Input connectable direct to MOS LSI.
- Output voltage variable by use of external Zener diode.
- On-chip output current limiter.
- On-chip minimum output voltage control circuit.
- Variable output current limit slope.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

Absolute Maximum Ratings at Ta = 25°C

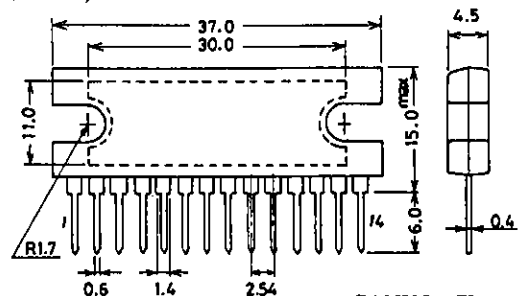
Parameter	Symbol	Value	unit
Maximum Supply Voltage	V _{CC} max	25	V
Input Voltage	V _{IN1}	V _{IN1} , V _{IN2} , INH pin	-0.3 to V _{CC}
	V _{IN2}	V _L , R _R pin	-0.3 to V _{ref}
Output Current	I _{OUT}	±1.6	A
Allowable Power Dissipation	P _d max	No heat sink	3.6
Operating Temperature	T _{opr}	-25 to +75	°C
Storage Temperature	T _{stg}	-55 to +125	°C

Allowable Operating Conditions at Ta = 25°C

Parameter	Symbol	Value	unit
Supply Voltage	V _{CC}	7 to 25	V



Package Dimensions 3023A
(unit: mm)

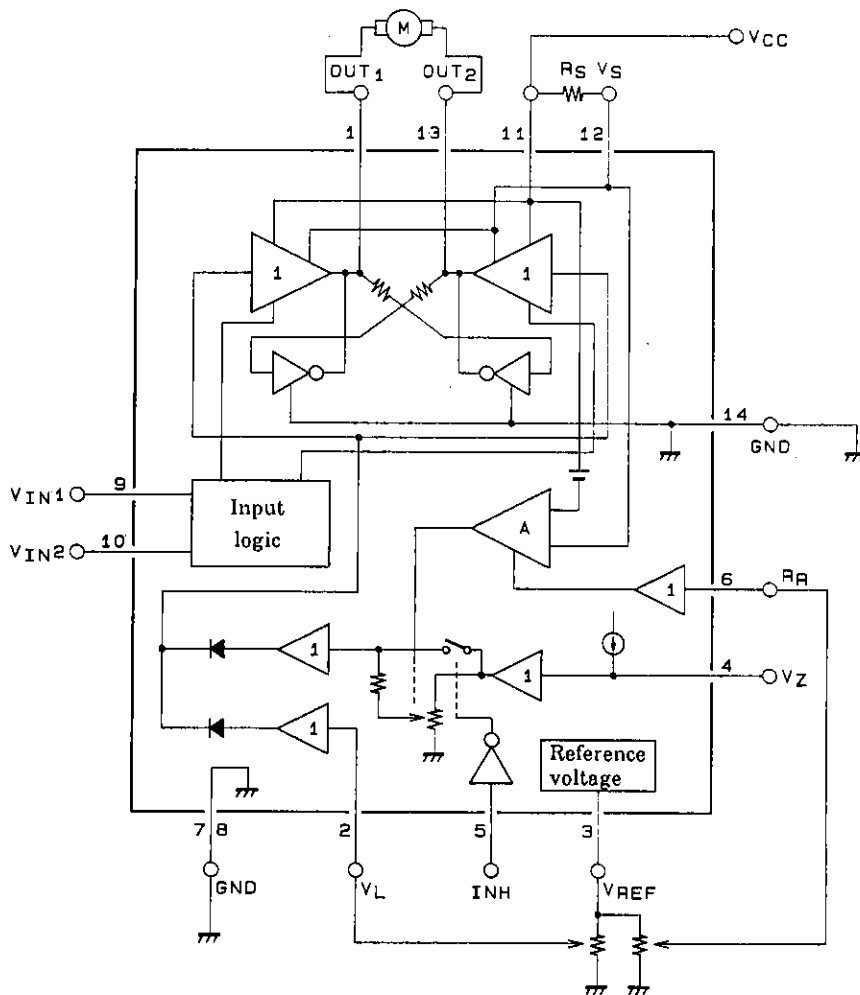


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Electrical Characteristics at $T_a = 25^\circ\text{C}, V_{CC} = 12\text{V}$

			min	typ	max	unit
Input Threshold Voltage	V_{th}	V_{IN1}, V_{IN2}, INH	1.0	1.4	2.0	V
Input Current	I_{IN}	$V_{IN1}, V_{IN2}, INH = 10\text{V}$	0.10	0.17	0.25	mA
Output Voltage	V_O	$I_{OUT} = 100\text{mA}, V_Z = 7.0\text{V}$	6.0	6.8	7.5	V
Output Leakage Current	I_{OL}	$V_{IN1}, V_{IN2} = 0\text{V}$			1.0	mA
Current Dissipation	I_{CC}	$V_{IN1}, V_{IN2} = 0\text{V}$	9.5	14.5	19	mA
Saturation Voltage (Upper)	V_{sat1}	$I_{OUT} = 300\text{mA}$			2.2	V
		$I_{OUT} = 500\text{mA}$			2.3	V
Saturation Voltage (Lower)	V_{sat2}	$I_{OUT} = 300\text{mA}$			0.5	V
		$I_{OUT} = 500\text{mA}$			0.65	V
Limit Voltage	V_L	$V_L = 3.0\text{V}$	2.8	3.2	3.6	V
V_Z Flow-out Current	I_{VZ}	$V_Z = 7\text{V}$	1.1	1.6	2.1	mA
Current Limit Start Voltage	V_{RCD}	$V_O = 9\text{V}, R_s = 2.0\Omega, R_R = 1\text{V}, V_{CC} = 15\text{V}$	425	460	493	mV
Current Limit Start Voltage	ΔV_{RCD}	$V_O = 9\text{V to } 4\text{V}, R_{CD} = 2.0\Omega, R_R = 1\text{V}, V_{CC} = 15\text{V}$	32	42	52	mA
Reference Voltage	V_{rdf}	$I_{ref} = 500\mu\text{A}$	5.8	6.2	6.6	V

Equivalent Circuit Block Diagram



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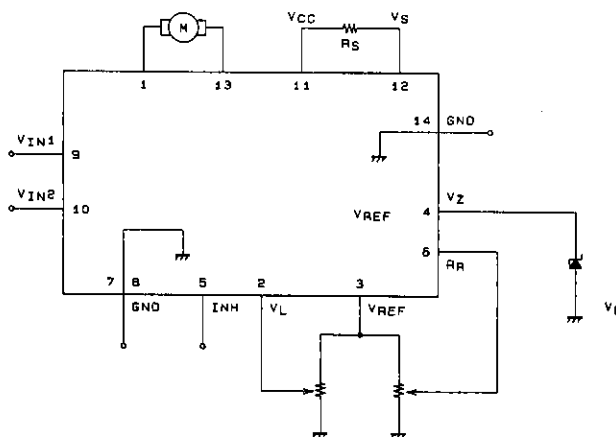
Pin Functions

Pin No.	Pin Name	Function
1	OUT1	Output pin1. When V_{IN1} is brought to H 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 voltage.
5	INH	Current free inhibit pin. When this pin is brought to H level, the output current is limited by a preset 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_{IN1}	Input pin1. When brought to H level, output pin OUT1 is at a high voltage level relative to OUT2 (Refer to Logic Diagram).
10	V_{IN2}	Input pin2. When brought to H 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_{IN2} is brought to H level, OUT2 is at a high voltage level relative to OUT1.
14	GND	GND. Power section GND. Connected to pins 8, 9 internally.

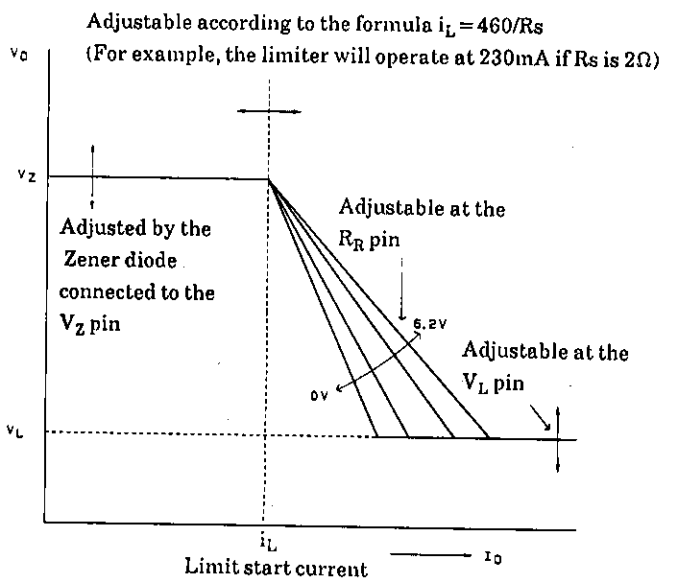
Logic Section Truth Table

V_{IN1}	V_{IN2}	OUT1	OUT2
0	0	L	L
1	0	H	L
0	1	L	H
1	1	L	L

Sample Application Circuit



Sample Application Characteristics Circuit



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