

<b>SANYO</b>	No. 1571B	<b>LB1649</b>
<b>Dual Bidirectional Motor Driver</b>		

The LB1649 is a dual bidirectional motor driver. Since each channel has a 2-input logic circuit and performs bidirectional driving and braking functions, it is capable of direct driving 2pcs. of motor of various types rated at 6 to 24V. The output voltage can be varied by using external zener diodes. It is especially suited for dual motor drive (reel motor, loading motor, cassette motor in VTR) and for stepping motor drive.

**Features**

- . With power transistors for motor drive contained, capable of withstanding dash current of 1A max.
- . Performs braking function at the motor stop mode.
- . Contains elements to absorb motor dash current.
- . Input connectable direct to MOS LSI.
- . Minimum number of external parts required.
- . Wide operating voltage range.

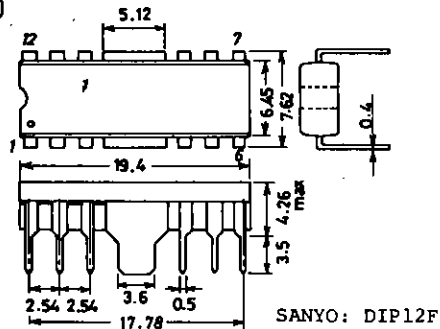
Absolute Maximum Ratings at Ta=25°C		unit
Maximum Supply Voltage	V <sub>CCmax</sub>	25 V
Input Voltage	V <sub>IN</sub>	25 V
Output Current	I <sub>O</sub>	±1 A
Allowable Power Dissipation	P <sub>dmax</sub>	1.9 W
Operating Temperature	T <sub>opr</sub>	-25 to +75 °C
Storage Temperature	T <sub>stg</sub>	-55 to +125 °C

Allowable Operating Conditions at Ta=25°C		unit
Supply Voltage	V <sub>CC</sub>	7 to 25 V

Electrical Characteristics at Ta=25°C, V <sub>CC</sub> =12V, per channel			min	typ	max	unit
Current Dissipation	I <sub>CC</sub>	Braking mode, R <sub>L</sub> =∞ per channel		7.0	10.0	mA
Output Leakage Current	I <sub>OL</sub>	Braking mode, R <sub>L</sub> =∞ per channel		40	120	µA
Input Threshold Voltage	V <sub>th</sub>	R <sub>L</sub> =∞	0.9	1.05	1.20	V
Output Voltage	V <sub>O</sub>	R <sub>L</sub> =60ohms, V <sub>Z</sub> =7.4V	6.5	7.2	7.5	V

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**Package Dimensions 3022A**  
(unit: mm)



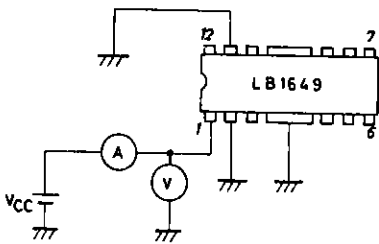
LB1649

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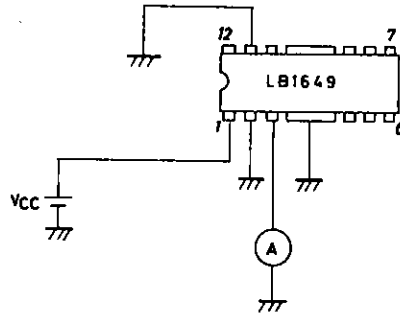
			min	typ	max	unit
Output Tr Saturation Voltage (Upper)	$V_{sat1}$	$I_{OUT}=300mA$		1.9	2.3	V
		$I_{OUT}=500mA$		2.0	2.4	V
Output Tr Saturation Voltage (Lower)	$V_{sat2}$	$I_{OUT}=300mA$	0.3	0.55		V
		$I_{OUT}=500mA$	0.5	0.7		V

Test Circuits (per channel)

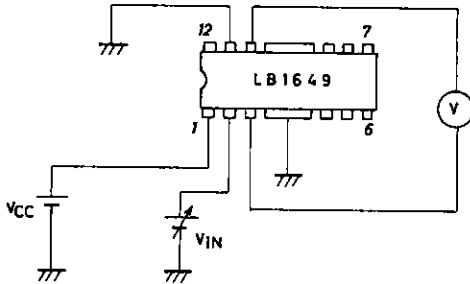
(1)  $I_{CC}$



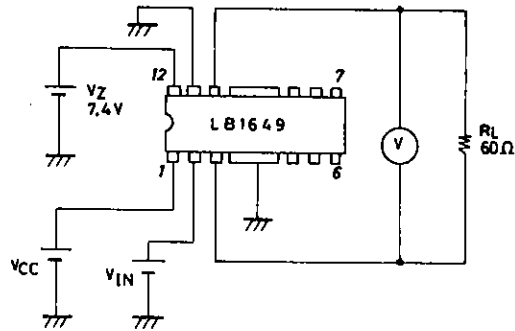
(2)  $I_{OL}$



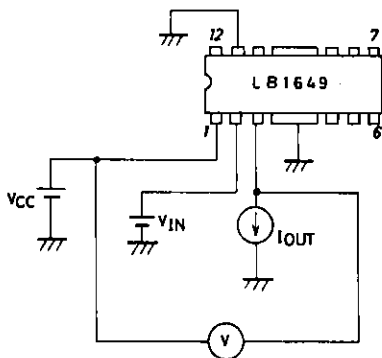
(3)  $V_{th}$



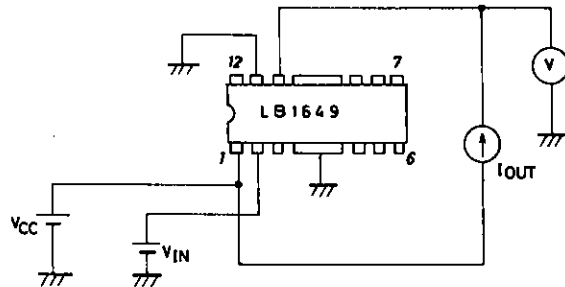
(4)  $V_O$



(5)  $V_{sat1}$

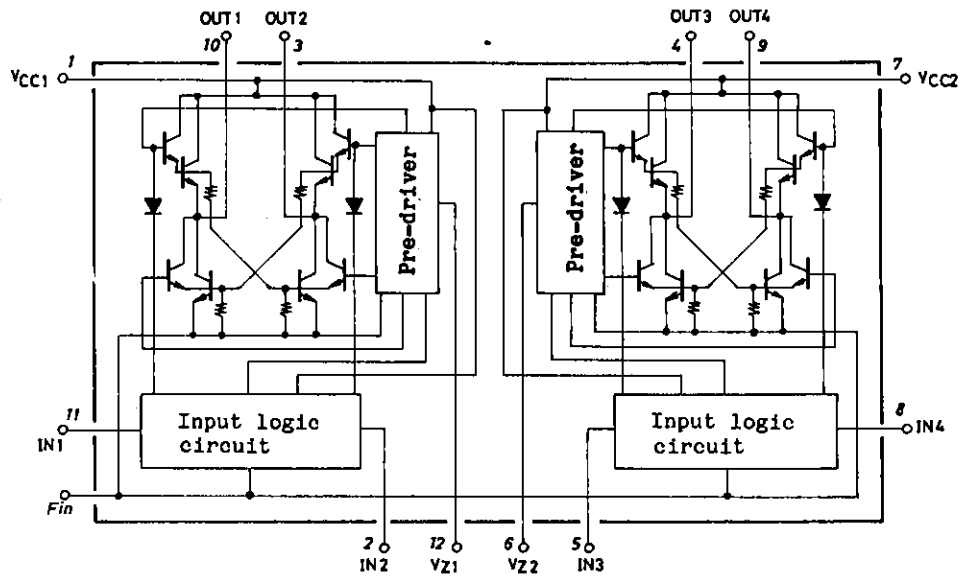


(6)  $V_{sat2}$



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## Equivalent Circuit Block Diagram



## Truth Table of Logic Circuit

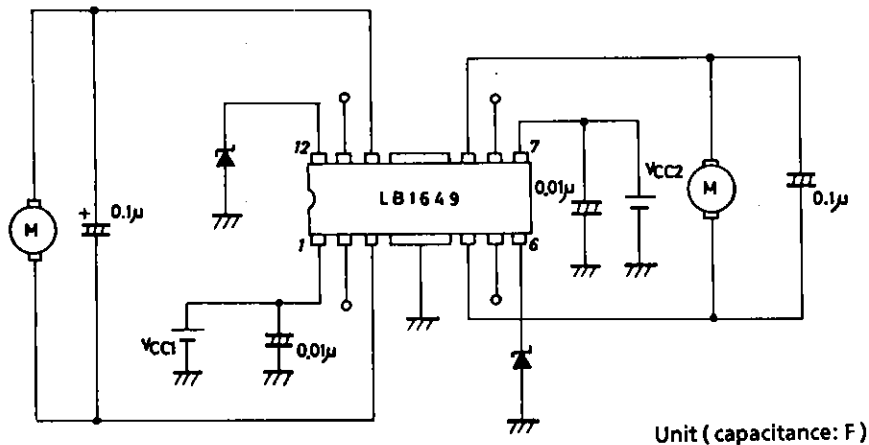
IN1	IN2	OUT1	OUT2	IN3	IN4	OUT3	OUT4
0	0	L	L	0	0	L	L
1	0	H	L	1	0	H	L
0	1	L	H	0	1	L	H
1	1	L	L	1	1	L	L

Note) A capacitor of 0.01 $\mu$ F or greater must be connected across V<sub>CC</sub>1,2 and GND.

INPUT			OUT PUT				MODE	
IN1	IN2,3	IN4	OUT1	OUT2	OUT3	OUT4	M1	M2
0	0	0	L	L	L	L	Brake	Brake
1	0	0	H	L	L	L	Forward/Reverse	Brake
0	1	1	L	H	L	L	Reverse/Forward	Brake
1	1	0	L	L	H	L	Brake	Forward/Reverse
0	0	1	L	L	L	H	Brake	Reverse/Forward
1	1	1	L	L	L	L	Brake	Brake

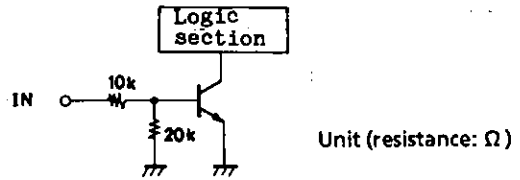
The remaining input states 1,0,1 and 0,1,0 are not inhibited.

## Sample Application Circuit



Input Circuit

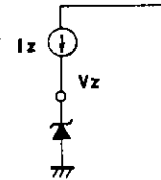
The input circuit is shown right.



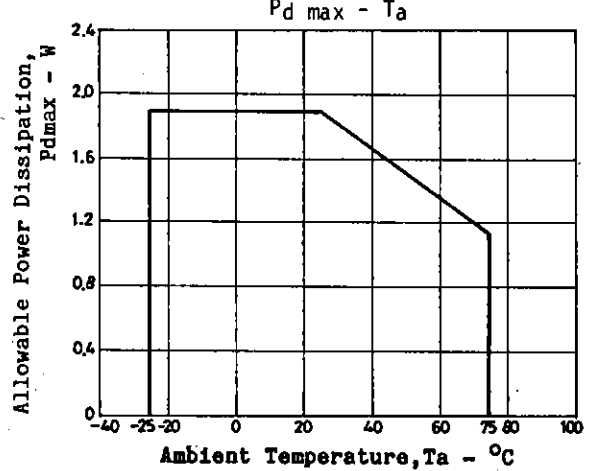
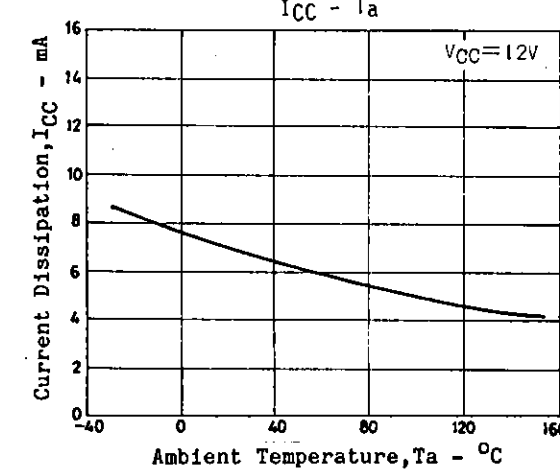
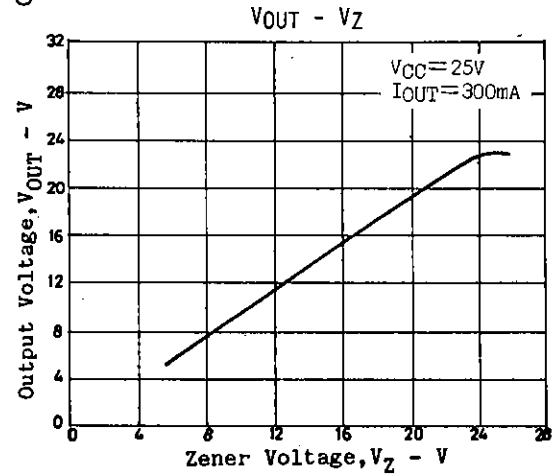
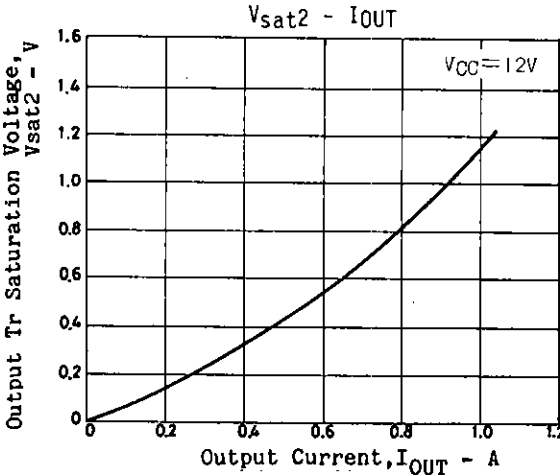
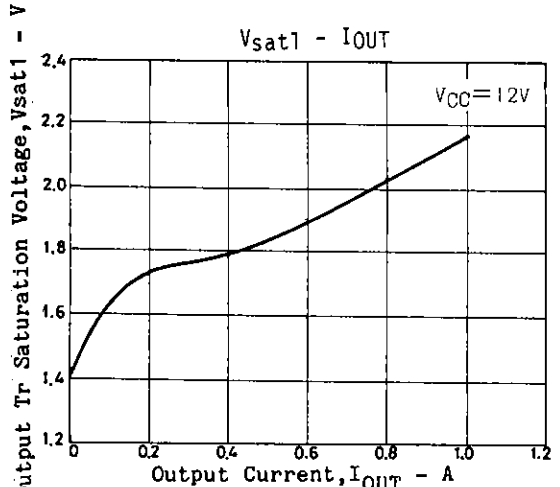
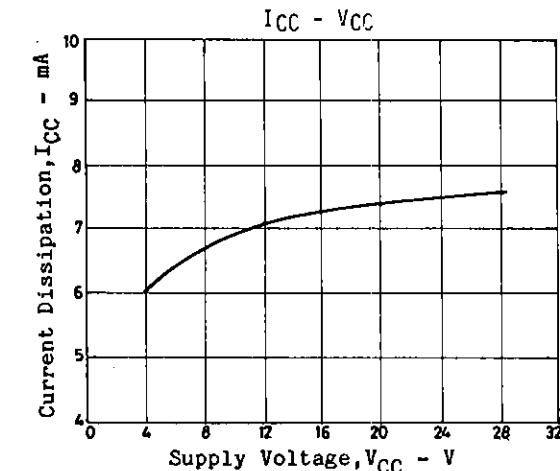
$V_Z$  pin

Zener voltage	$V_Z$ pin Voltage value
$\geq 5.6V$	small
$< 5.6V$	large*

\*Susceptible to  $V_Z$  pin flow-out current change.



$I_Z$ ----- $V_Z$  flow-out current



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