Ordering number: EN 2576B

Monolithic Digital IC

SANYO No. 2576B

LB1644

Dual Bidirectional Motor Driver

The LB1644 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 interfaceable to MOS LSI.
- Minimum number of external parts required.
- Wide operating voltage range.
- Contains thermal shutdown protector.

Absolute Maximum Ratings at Ta=25°C

			unit
Maximum Supply Voltage	V_{CC}max	25	V
Input Voltage	V_{IN}	25	V
Output Current	I_{OUT}	±1	A
Allowable Power Dissipation	Pdmax	1.44	W
Operating Temperature	Topr	-25 to +65	°C
Storage Temperature	Tstg	-55 to +125	°C

Allowable Operating Condition at Ta=25°C

			unit
Supply Voltage	V_{CC}	7 to 25	V

Electrical Characteristics at Ta=25°C, V_{CC}=12V, per channel

			min	typ	max	unit
Current Dissipation	I_{CC1} Pin 1	Braking mode, R_L=∞		8.0	11.5	mA
	I_{CC2} Pin 9	Braking mode, R_L=∞		7.0	10.0	mA
Output Leakage Current	I_{OL}	Braking mode, R_L=∞ per output pin		40	120	μA
Input Threshold Voltage	V_{th}	R_L=∞	0.9	1.05	1.20	V
Output Voltage	V_o	R_L=60ohms, V_Z=7.4V	6.5	7.2	7.5	V

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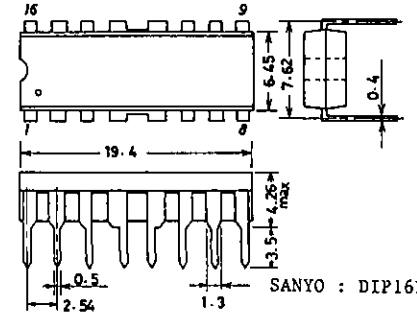
Package Dimensions 3054A
(unit: mm)



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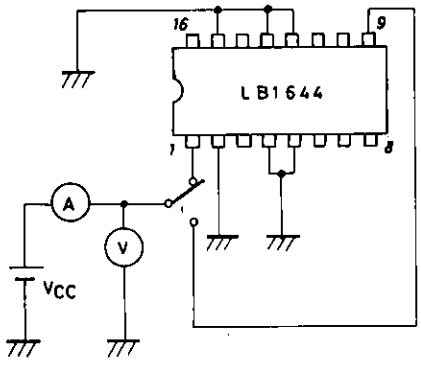
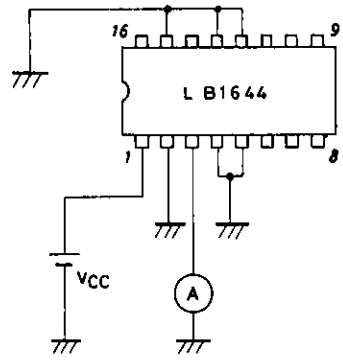
			min	typ	max	unit
Output Tr Saturation Voltage (Upper)	V_{sat1}	I_{OUT}=300mA		1.9	2.3	V
		I_{OUT}=500mA		2.0	2.4	V
Output Tr Saturation Voltage (Lower)	V_{sat2}	I_{OUT}=300mA		0.3	0.55	V
		I_{OUT}=500mA		0.5	0.7	V

Test Circuits (per channel)

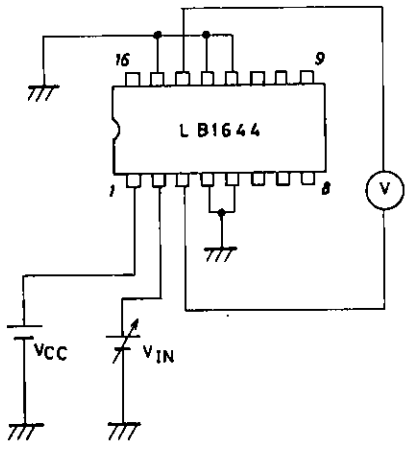
(1) ICC1 (1pin)
ICC2 (9pin)



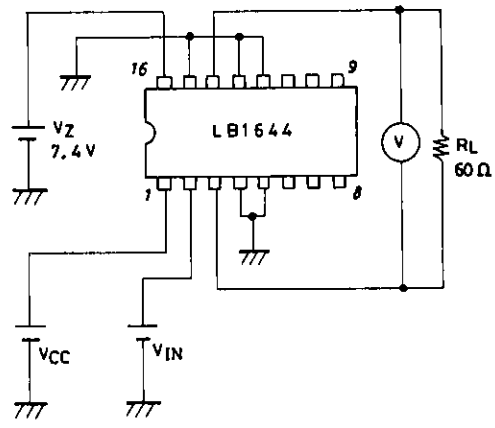
(2) IOL



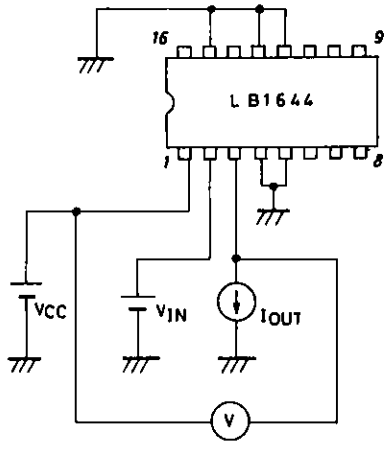
(3) Vth



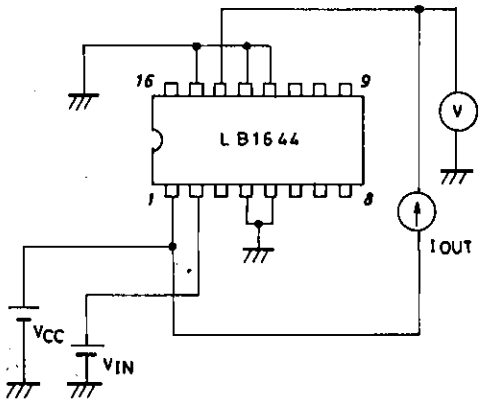
(4) Vo



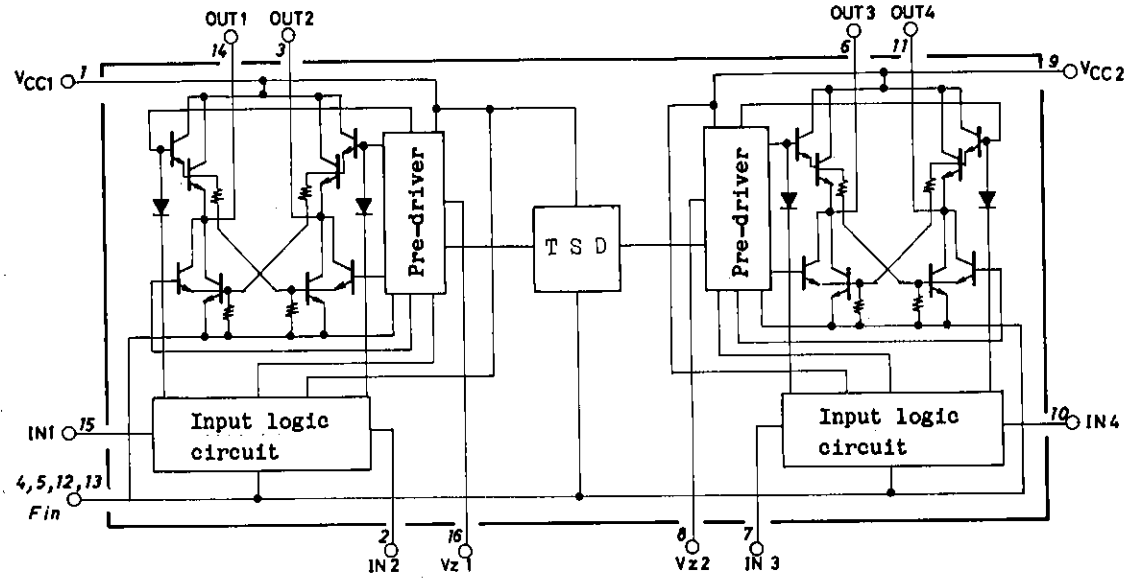
(5) Vsat1



(6) Vsat2



Equivalent Circuit Block Diagram



Truth Table of Logic Circuit

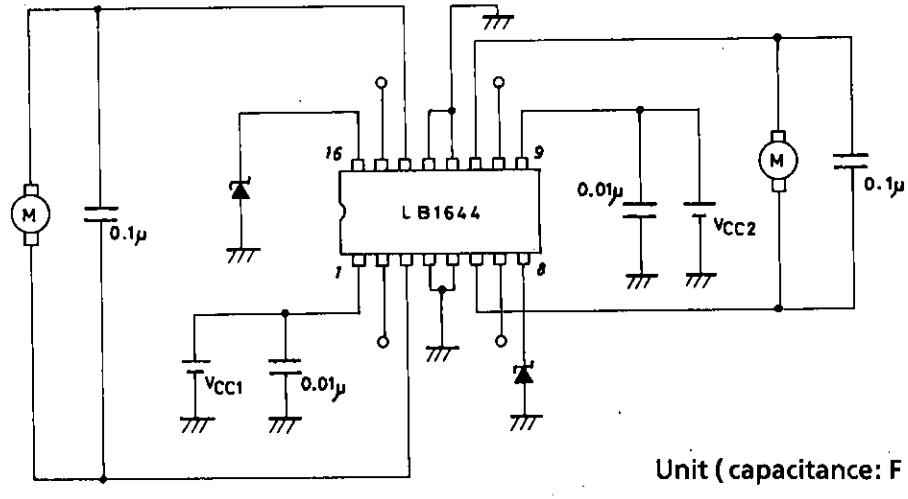
IN1	IN2	OUT1	OUT2	IN3	IN4	OUT3	OUT4
0	0	L	L	0	0	L	L
1	0	H	L	1	0	H	L
0	1	L	H	0	1	L	H
1	1	L	L	1	1	L	L

(Note) A capacitor of 0.01uF or greater must be connected across $V_{CC}1,2$ and GND.

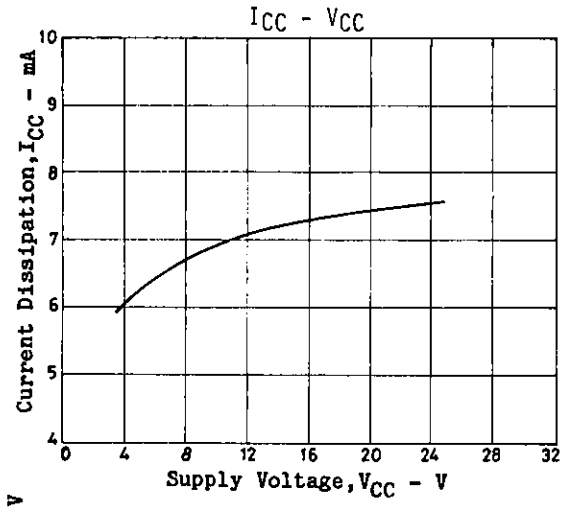
INPUT			OUTPUT				MODE	
IN1	IN2,3	IN4	OUT1	OUT2	OUT3	OUT4	M1	M2
0	0	0	L	L	L	L	Braking	Braking
1	0	0	H	L	L	L	Forward/reverse	Braking
0	1	1	L	H	L	L	Reverse/forward	Braking
1	1	0	L	L	H	L	Braking	Forward/reverse
0	0	1	L	L	L	H	Braking	Reverse/forward
1	1	1	L	L	L	L	Braking	Braking

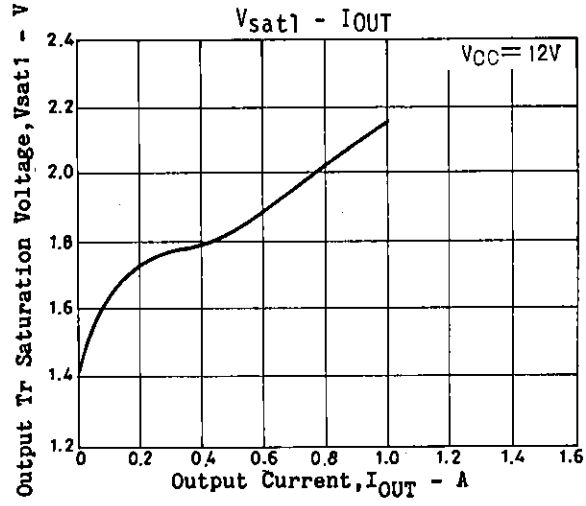
The remaining input states 1,0,1 and 0,1,0 are not inhibited.

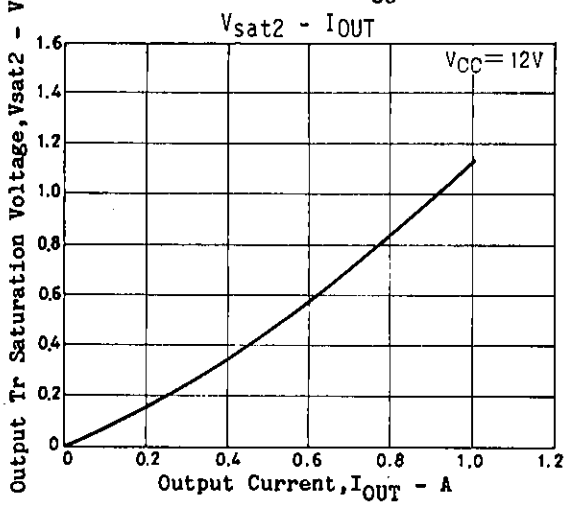
Sample Application Circuit

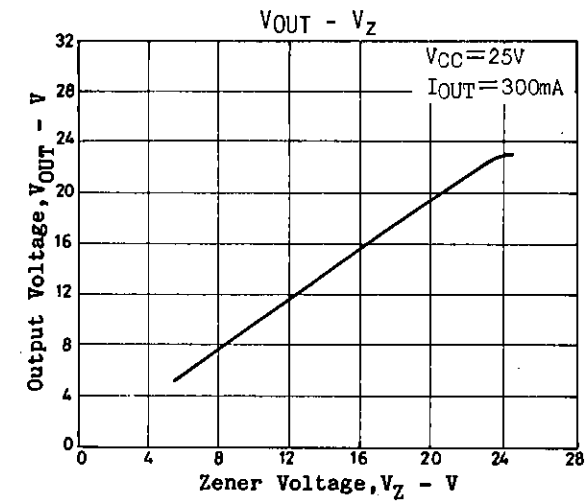


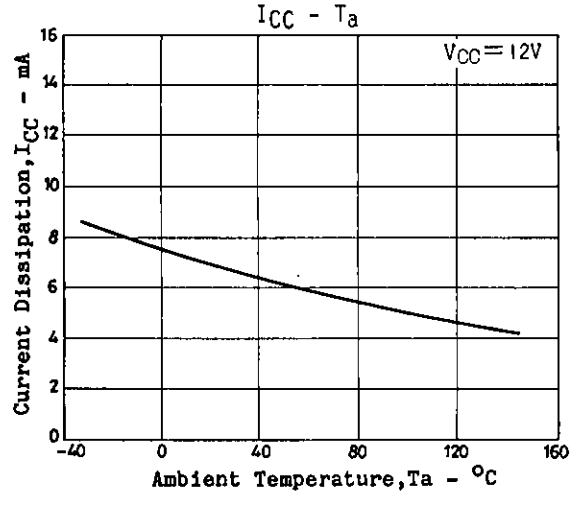
Unit (capacitance: F)

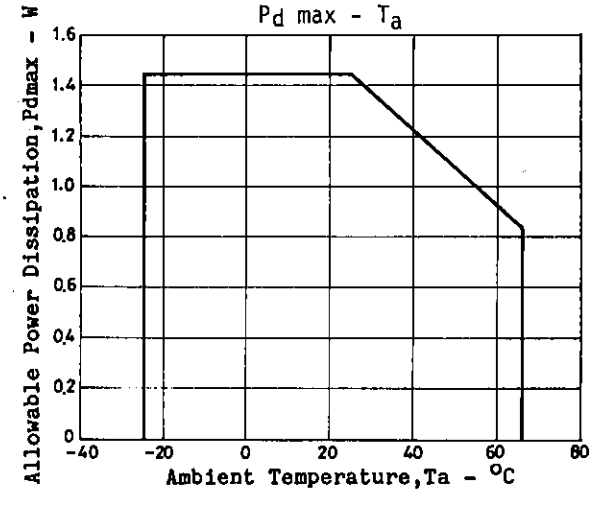

I_{CC} - V_{CC}
Current Dissipation, I_{CC} - mA
Supply Voltage, V_{CC} - V


V_{sat1} - I_{OUT}
V_{CC}= 12V
Output Tr Saturation Voltage, Vsat1 - V
Output Current, I_{OUT} - A


V_{sat2} - I_{OUT}
V_{CC}= 12V
Output Tr Saturation Voltage, Vsat2 - V
Output Current, I_{OUT} - A


V_{OUT} - V_Z
V_{CC}=25V
I_{OUT}=300mA
Output Voltage, V_{OUT} - V
Zener Voltage, V_Z - V


I_{CC} - T_a
V_{CC}= 12V
Current Dissipation, I_{CC} - mA
Ambient Temperature, Ta - °C


P_d max - T_a
Allowable Power Dissipation, Pdmax - W
Ambient Temperature, Ta - °C