

Monolithic Digital IC

SANYO

No. 1530C

LB1650**Dual Bidirectional Motor Driver**

The LB1650 is a dual bidirectional motor driver that is designed to accept standard TTL input logic levels and drive motors. It provides the functions of bidirectional motor drive, brake that are determined by two inputs and the inhibit function that brings the output to a high impedance state.

Applications

- . Multi DC motor driver
- . Bidirectional motor driver
- . Bipolar stepping motor driver

Features

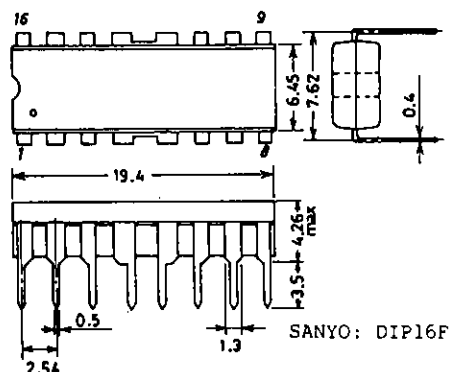
- . High output current (1A/ch)
- . Wide operating voltage range (4.5 to 36V)
- . Inhibit facility
- . Input connectable to TTL, CMOS IC
- . High noise margin

Absolute Maximum Ratings at $T_a=25^{\circ}\text{C}$

			unit
Maximum Supply Voltage	V_{CC1}	36	V
Logic Supply Voltage	V_{CC2}	36	V
Input Voltage	V_i	7	V
Inhibit Voltage	V_{inh}	7	V
Peak Output Current	I_{OUT}	1ms non-repetitive	2 A
Allowable Power Dissipation	$P_{d\max}$	IC only	1.9 W
Operating Temperature	T_{opr}	-20 to +80	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-40 to +150	$^{\circ}\text{C}$

Allowable Operating Conditions at $T_a=25^{\circ}\text{C}$

			unit
Supply Voltage	V_{CC1}	4.5 to 36	V
Logic Supply Voltage	V_{CC2}	4.5 to 36	V

Package Dimensions 3054A
(unit: mm)**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

N3093TS/7067TA/D065MW/9074KI, TS No.1530-1/5

LB1650

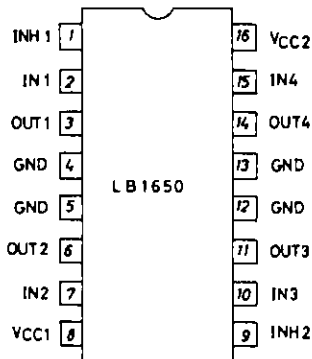
Electrical Characteristics at $T_a=25^{\circ}\text{C}$, $V_{CC1}=24\text{V}$, $V_{CC2}=5\text{V}$				min	typ	max	unit
Supply Current (Per CH)	I_{CC1}	$V_1=L, I_0=0, V_{inh}=H$				1.5	mA
		$V_1=H, I_0=0, V_{inh}=H$				6	mA
		$V_{inh}=L$				1	mA
Logic Supply Current	I_{CC2}	$V_1=L, I_0=0, V_{inh}=H$			44	60	mA
		$V_1=H, I_0=0, V_{inh}=H$				22	mA
		$V_{inh}=L$				24	mA
"L"-Level Input Voltage	V_{IL}			-0.3		1.5	V
"H"-Level Input Voltage	V_{IH}	$V_{CC2} \leq 7\text{V}$		2.3		V_{CC2}	V
		$V_{CC2} > 7\text{V}$		2.3		7	V
"L"-Level Input Current	I_{IL}	$V_1=L$				± 10	μA
"H"-Level Input Current	I_{IH}	$V_1=H-0.3\text{V}$			30	100	μA
"L"-Level Inhibit Voltage	V_{inhL}			-0.3		1.5	V
"H"-Level Inhibit Voltage	V_{inhH}	$V_{CC2} \leq 7\text{V}$		2.3		V_{CC2}	V
		$V_{CC2} > 7\text{V}$		2.3		7	V
"L"-Level Inhibit Current	I_{inhL}			-100	-30		μA
"H"-Level Inhibit Current	I_{inhH}					± 10	μA
Saturation Voltage	$V_{CE(sat)}$	$I_0=-1\text{A}$			1.4	1.8	V
		$I_0=1\text{A}$			1.2	1.8	V

Truth Table

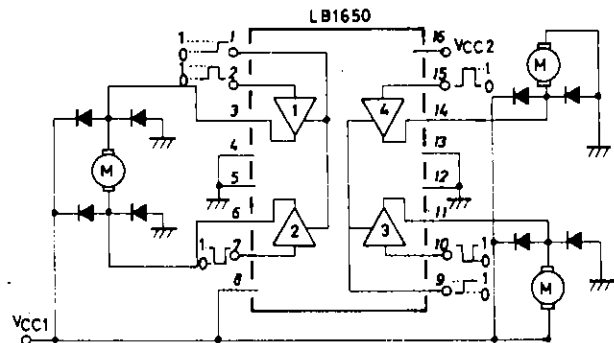
V_1 (per CH)	V_{inh}	V_O
H	H	H
L	H	L
H	L	Open*
L	L	Open*

*: High impedance

Pin Assignment

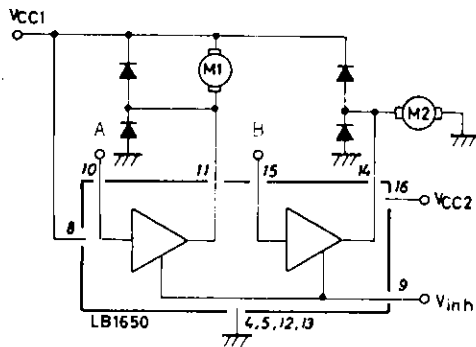


Equivalent Circuit Block Diagram and Peripheral Circuit



Sample Application Circuits

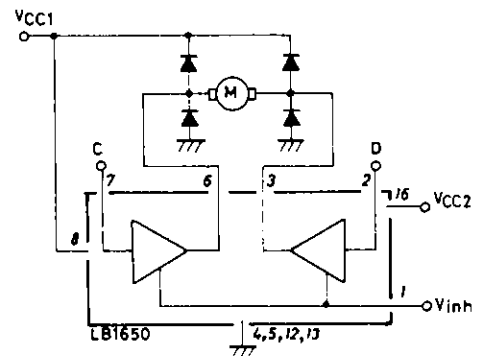
(1) DC motor control



V_{inh}	A	M1	B	M2
H	H	Brake	H	Forward
H	L	Forward	L	Brake
L	X	Open*	X	Open*

X: don't care

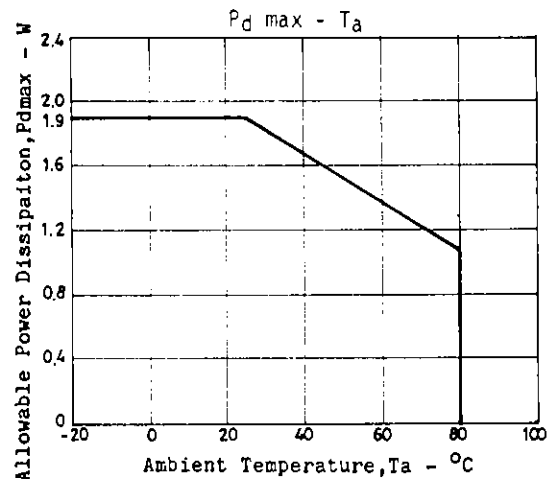
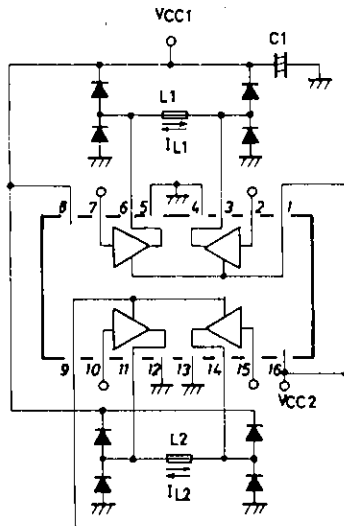
(2) DC motor control (Forward, reverse)

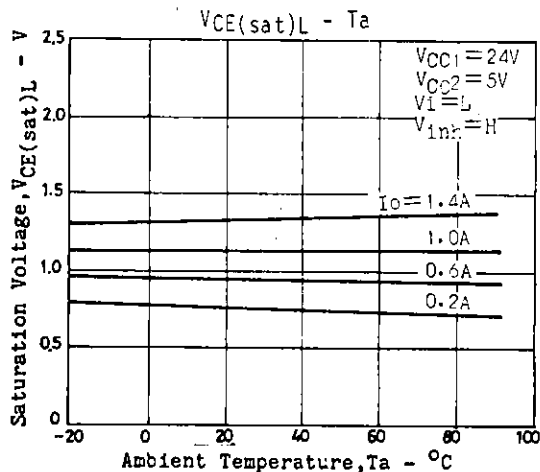
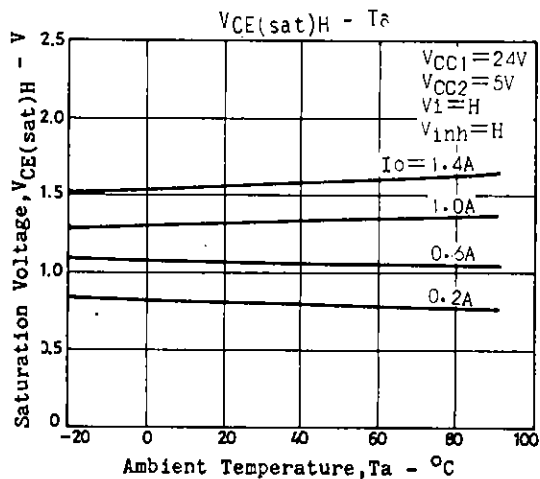
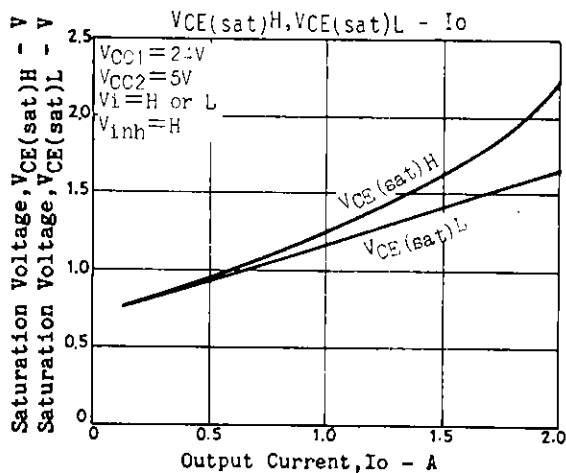
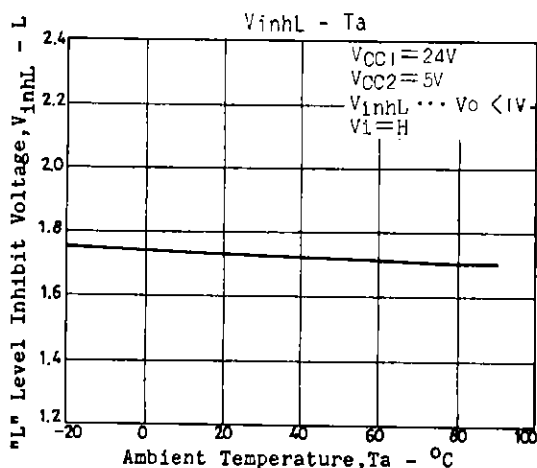
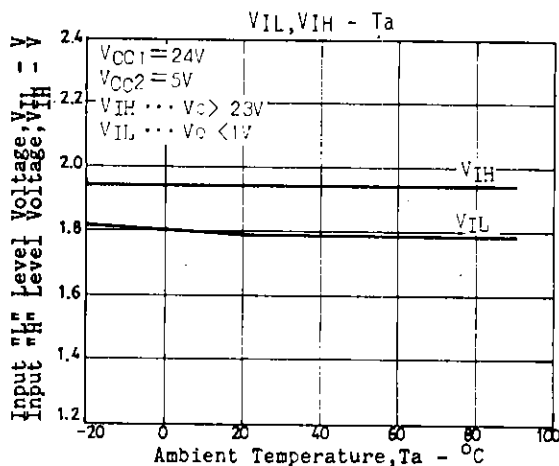
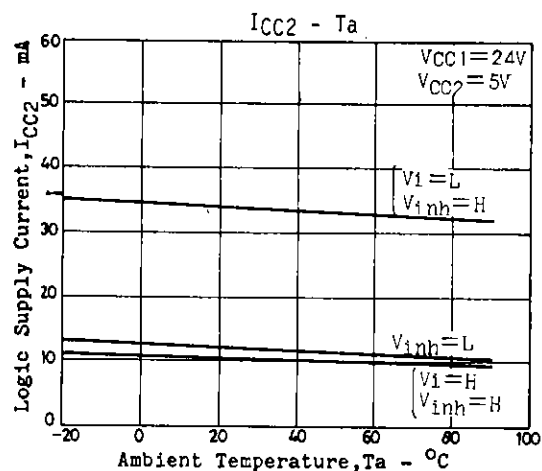
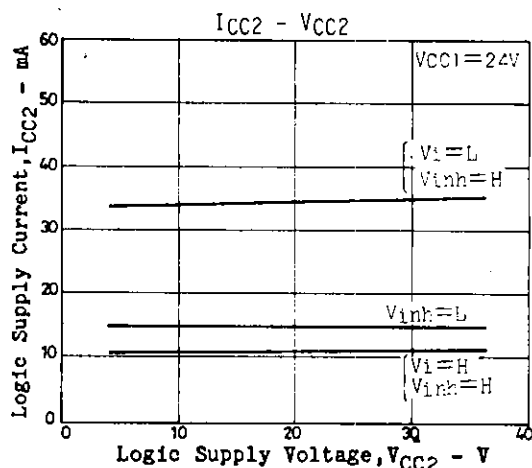


Input		Function
$V_{inh}=H$	C=H D=L	Forward(right)
	C=L D=H	Reverse(left)
	C=D	Brake
$V_{inh}=L$	C=X D=X	Open*

*: High impedance

(3) Stepping motor control (Bipolar drive)





- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
 - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
 - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.