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NTE1834
Integrated Circuit
Dual Reversible Motor Driver

Description:

The NTE1834 is a monolithic IC in a 10–Lead SIP type package designed for use as a dual reversible motor driver. This device contains two independent circuits designed for driving brush–type DC motors. The control logic inputs are compatible with CMOS devices. The motor torque can be controlled by varying the motor voltage with the control input (Pin8). With few external components required and dual circuit configuration, the NTE1834 offers great benefits in terms of reduced components and reduced circuit board space.

Features:

- Dual Reversible Motor Drivers Implemented on a Single Chip (Simultaneous Dual Circuit Operation is Not Possible)
- Minimum External Components Required
- Control Inputs Directly Compatible with CMOS Logic (Protection Resistors are Required if CMOS Output Voltage Exceeds 5V)
- Internal Motor Driving Power Transistors
- Internal Surge Suppressors
- Internal Thermal Shut–Down Circuit

Applications:

- VCRs
- Tape Decks

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Supply Voltage, V_{CC} 20V
Input Voltage Range, V_i . . . . . –0.3V to +5V
Output Current (Note 1), I_{OUT} 1.6A
Power Dissipation, P_D 2200mW
Operating Temperature Range, T_{opr} . . . . . –25° to +75°C
Storage Temperature Range, T_{stg} . . . . . –55° to +125°C

Note 1. Pulse Width = 200μs, Duty Cycle = 1%

Recommended Operating Conditions: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	$V_{CC}1$		8	–	18	V
	$V_{CC}2$		8	–	18	V
	V_R		0	–	18	V

Electrical Characteristics: (T_A = +25°C, V_{CC} = 12V unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Supply Current	I_{CC}	R_L = ∞, Pin4, Pin5, and Pin6 = "L" Level		–	12	24	mA
Input Low Level Voltage (Pin4, Pin5, and Pin6)	V_{IL}			–	–	1.0	V
Input High Level Voltage (Pin4, Pin5, and Pin6)	V_{IH}			4.0	–	–	V
Output Low Level Voltage (Pin4, Pin5, and Pin10)	V_{OL}	Pin8 = Open, I_O = 500mA		–	0.8	1.5	V
Output High Level Voltage (Pin4, Pin5, and Pin10)	V_{OH}	Pin8 = Open, I_O = 500mA		10	10.5	–	V
Output Leakage Current	I_{OL}	R_L = ∞, Pin4, Pin5, and Pin6 = "L" Level, Current flowing to Pin9		–	–	1	mA
Voltage Stability (Pin2)	ΔV_2	V_R = 6V with respect to Pin8	$I_{O(2)}$ = 500mA	–0.5	–	0.5	V
(Pin3)	ΔV_3		$I_{O(3)}$ = 500mA	–0.5	–	0.5	V
(Pin10)	ΔV_{10}		$I_{O(10)}$ = 500mA	–0.5	–	0.5	V
Drain Current (Pin2)	$I_{8\,(2)}$	V_R = 6V, $I_{O(2)}$ = 500mA, Pin2 = "H" Level		–0.5	–	0.5	V
(Pin3)	$I_{8\,(3)}$	V_R = 6V, $I_{O(3)}$ = 500mA, Pin3 = "H" Level		–0.5	–	0.5	V
(Pin10)	$I_{8\,(10)}$	V_R = 6V, $I_{O(10)}$ = 500mA, Pin10 = "H" Level		–0.5	–	0.5	V
Backlash Current	I_B	Sink current at Pin9 when Pin4, Pin5, and Pin6 are low and one output pin is at –1V		–	–	0.3	A
Thermal Shut–Down Operate Temperature	T_{ON}			–	150	–	°C
Thermal Shut–Down Release Temperature	T_{OFF}			–	100	–	°C

Input/Output Truth Table:

Input			Output			Function
Pin4	Pin5	Pin6	Pin10	Pin2	Pin3	
L	L	X	L	L	L	Brake
H	L	L	H	L	OPEN	Current flows from Pin10 to Pin2
H	L	H	L	H	OPEN	Current flows from Pin2 to Pin10
L	H	L	H	OPEN	L	Current flows from Pin10 to Pin3
L	H	H	L	OPEN	H	Current flows from Pin3 to Pin10
H	H	X	L	L	L	Brake

X = Don't Care

Precautions:

1. While the control input pins of the NTE1834 can be directly connected to MOS logic outputs, it is recommended that you insert a series protection resistor in the range 1kΩ to 10kΩ between the devices.
2. To improve reliability, be sure to temporarily put the device in brake mode before reversing the direction of rotation of the motor. A brake mode duration of more than 10μs is recommended.
3. The recommended power on sequence is one in which V_{CC}1 (Pin7) is the first turned on and the last turned off.

Pin Connection Diagram
(Front View)