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NTE1628
Integrated Circuit
Bi–Directional Motor Driver

Description:
The NTE1628 is a Bi–Directional Motor Driver in a 9–lead SIP type package consisting of a full bridge power driver and is designed for DC motor control.

Features:
- Wide Operating Voltage Range (V_{CC} = 4V to 16V)
- Direct Drive Capabilty by TTL, PMOS, and CMOS IC Outputs
- Low Output Saturation Voltage (Large Voltage Across Motor)
- Built–In Clamp Diode
- Large Output Current Drive (I_O(max) = ±1.2A)
- Braking Mode Input

Application:
Commercial Audio Equipment such as Tape Recorder, Radio Cassette Recorder, and VCR

Function:
The NTE1628, full bridge motor driver, has the logic circuitry and non–darlington power drivers for bidirectional control of DC motors operating at currents up to 1.2A. A braking mode is acheived by switching both inputs high for ease of motor control. Both of the separated power supplies for the logic circuitry and the drivers are usuable for motor speed control.

Absolute Maximum Ratings: (T_A = +25°C, Unless otherwise noted)

Supply Voltage,
- $V_{CC\ (1)}$ . . . . . –0.5 to +16V
- $V_{CC\ (2)}$ (With an external heat sink) . . . . . –0.5 to +20V

Driver Supply Voltage, $V_{CC'}$ . . . . . –0.5 to +16V
Input Voltage, V_I . . . . . 0 to V_{CC}
Output Voltage, V_O . . . . . –0.5V to $V_{CC'}$ +2.5V
Peak Output Current (t = 10ms, Repetition Cycle 0.2Hz Max), $I_{O\ MAX}$ . . . . . ±1.2A
Continuous Output Current,
- $I_{O\ (1)}$ . . . . . ±330A
- $I_{O\ (2)}$ (With an external heat sink) . . . . . ±500mA

Power Dissipation (T_A = +75°C), P_d 1.15W
Operating Ambient Temperature Range, T_{opr} . . . . . –10° to +75°C
Storage Temperature Range, T_{stg} . . . . . –55° to +120°C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}		4	12	15	V
Continuous Output Current	I_O		–	–	±300	mA
"H" Input Voltage	V_{IH}		2	–	V_{CC}	V
"L" Input Voltage	V_{IL}		0	–	0.4	V
Motor Braking Interval	t_B		100	–	–	ms

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions			Min	Typ	Max	Unit
Output Leakage Current	$I_{O\ (leak)}$	$V_{CC} = V_{CC}' = 20V$, $V_{11} = V_{12} = 0V$		$V_o = 20V$	–	–	100	μA
				$V_o = 0V$	–	–	–100	μA
Output Saturation Voltage. High	$V_{OH\ (1)}$	$V_{CC} = V_{CC}' = 12V$	$V_{11} = 2V$, $V_{12} = 0V$	$I_{OH\ (1)} = –300mA$	10.8	11.2	–	V
				$I_{OH\ (1)} = –500mA$	10.7	11.1	–	V
	$V_{OH\ (2)}$		$V_{11} = 0V$, $V_{12} = 2V$	$I_{OH\ (1)} = –300mA$	10.8	11.2	–	V
				$I_{OH\ (1)} = –500mA$	10.7	11.1	–	V
Output Saturation Voltage, Low	$V_{OL\ (1)}$	$V_{CC} = V_{CC}' = 12V$	$V_{11} = 0V$ $V_{12} = 2V$	$I_{OL\ (1)} = 300mA$	–	0.18	0.5	V
				$I_{OL\ (1)} = 500mA$	–	0.3	0.65	V
			$V_{11} = V_{12} = 2V$		–	0.3	0.65	V
	$V_{OL\ (2)}$		$V_{11} = 2V$ $V_{12} = 0V$	$I_{OL\ (1)} = 300mA$	–	0.18	0.5	V
				$I_{OL\ (1)} = 500mA$	–	0.3	0.65	V
			$V_{11} = V_{12} = 2V$		–	0.3	0.65	V
Input Current, High	$I_{IN\ (1)}$	$V_{CC} = V_{CC}' = 12V$, $V_{11} = 2V$, $V_{12} = 0V$			70	–	200	μA
	$I_{IN\ (2)}$	$V_{CC} = V_{CC}' = 12V$, $V_{11} = 0V$, $V_{12} = 2V$			70	–	200	μA
Supply Current	I_{CC}	$V_{CC} = V_{CC}' = 15V$		$V_1 = 2V$, $V_2 = 0V$	–	–	40	mA
				$V_1 = 0V$, $V_2 = 2V$				
				$V_1 = V_2 = 2V$	–	–	60	mA
				$V_1 = V_2 = 0V$	–	0	–	mA

Logic Truth Table

INPUT		OUTPUT		NOTE
IN_1	IN_2	$\overline{O}_1$	$\overline{O}_2$	
L	L	"OFF" state	"OFF" state	Open
H	L	H	L	Forward
L	H	L	H	Reverse
H	H	L	L	Braking

Pin Connection Diagram
(Front View)