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NTE1892 & NTE1892A Integrated Circuit Dual Bi-Directional Motor Driver with Brake Function and Thermal Shutdown

Description:

The NTE1892 and NTE1892A are bi-directional motor drivers in a 12-Lead SIP type package and consists of two full bridge drivers designed for use in a two DC motor control circuit.

Features:

- Two Separate Full Bridge Drivers (Only one circuit can be switched by the Select (S_E) Input).
- Wide Operating Voltage Range: V_{CC} = 4V to 16V
- TTL, PMOS, CMOS Outputs, Capable of Direct Drive
- Low Output Saturation Voltage
- Built-in Clamp Diode
- High Output Drive Current: I_{Omax} = ±2A
- Braking Mode Input
- Internal Thermal Shutdown Protection

Applications:

- Audio Tape Deck Player
- Radio/Cassette Player
- Video Cassette Recorder
- Home Equipment Use

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

Supply Voltage 1, V _{CC(1)}	-0.5V to +18V
Supply Voltage 2 (NTE1892 Only , Note 1), V _{CC(2)}	-0.5V to +18V
Driver Supply Voltage, V _{CC'}	-0.5V to +18V
Input Voltage, V _i	0 to V _{CC} V
Output Voltage, V _O	-2V to V _{CC} +2.5V
Peak Output Current (t _{op} = 10ms, relative cycle 0.2Hz Max), I _{Omax}	
NTE1892	±2.0A
NTE1892A	±1.2A
Continuous Output Current 1, I _{O(1)}	± 330mA
Continuous Output Current 2 (NTE1892 Only , Note 1), I _{O(2)}	± 600mA
Power Dissipation (T _A = +75°C), P _D	
NTE1892	1.6W
NTE1892A	830mW
Operating Temperature Range, T _{opr}	
NTE1892	-10° to +75°C
NTE1892A	-20° to +75°C
Storage Temperature Range, T _{stg}	-55° to +125°C

Note 1. With external heat sink (3000mm² x 1.5mm)

Recommended Operating Conditions: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}		4	12	16	V
Output Current	I_O		-	-	± 300	mA
High-Level Input Voltage	V_{IH}	Input S_1, S_2, S_E	2	-	V_{CC}	V
Low-Level Input Voltage	V_{IL}	Input S_1, S_2, S_E	0	-	0.4	V
Motor Braking Interval NTE1892	t_s		10	100	-	ms
NTE1892A			100	-	-	ms
Thermal Shutdown Temperature	$t_{j(\text{shut})}$	$V_{CC} \geq 7V$	-	150	-	$^\circ\text{C}$

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Output Leakage Current	$I_{O(\text{LEAK})}$	$V_{CC} = V_{CC'} = 18V, V_{S1} = V_{S2} = 0V, V_{SE} = 0V \text{ or } 2V$	$V_O = 18V$	-	-	100	μA
			$V_O = 0V$	-	-	-100	μA
High-Level Output Voltage	V_{OH}	$V_{CC} = V_{CC'} = 12V$	$I_{OH(1)} = -200\text{mA}$	10.8	-	-	V
			$I_{OH(1)} = -500\text{mA}$	10.7	-	-	V
Low-Level Output Voltage	V_{OL}	$V_{CC} = V_{CC'} = 12V$	$I_{OL} = 200\text{mA}$	-	-	0.5	V
			$I_{OL} = 500\text{mA}$	-	-	1.35	V
High-Level Input Current	I_{IH}	$V_{CC} = V_{CC'} = 12V, V_i = 2V$	50	-	120	μA	
Low-Level Input Current	I_{IL}	$V_{CC} = V_{CC'} = 12V, V_i = 0V$	50	-	120	μA	
Supply Current	I_{CC}	$V_{CC} = V_{CC'} = 12V$	$V_{SE} = 0V, V_{S1} = V_{S2} = 0V$	-	-	10	mA
			$V_{SE} = 0V, V_{S1} = 0V, V_{S2} = 2V$	-	-	20	mA

Function:

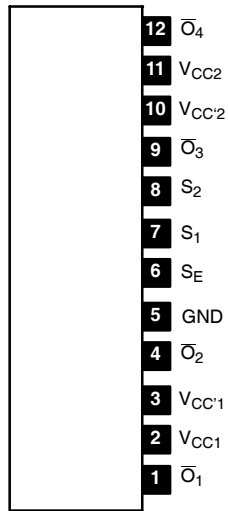
The NTE1892/NTE1892A, two full bridge motor driver, has the logic circuitry and the quasi-darlington power driver for bi-directional control of two DC motors operating at currents up to 2A.

The input S_E selects one of the bridges and S_1 and S_2 determines the output polarity.

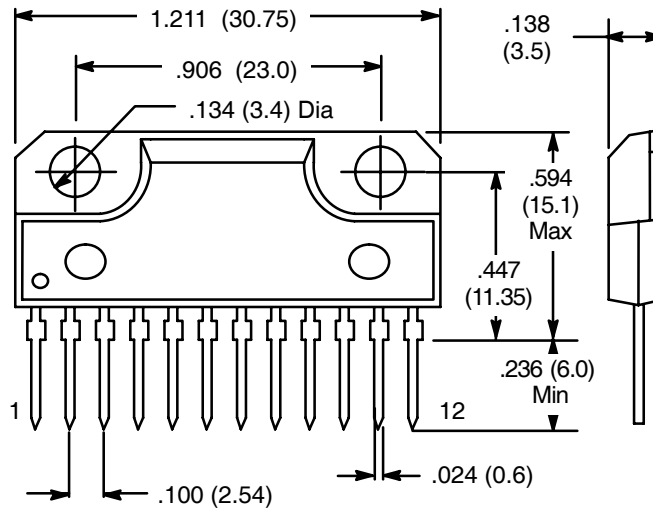
Logic Truth Table:

Input			Output				Note	
S_E	S_1	S_2	\bar{O}_1	\bar{O}_2	\bar{O}_3	\bar{O}_4	Output \bar{O}_1, \bar{O}_2	Output \bar{O}_3, \bar{O}_4
0	0	0	OFF	OFF	OFF	OFF	OPEN	OPEN
0	1	0	1	0	OFF	OFF	Motor Forward	OPEN
0	0	1	0	1	OFF	OFF	Motor Reverse	OPEN
0	1	1	0	0	OFF	OFF	BRAKING	OPEN
1	0	0	OFF	OFF	OFF	OFF	OPEN	OPEN
1	1	0	OFF	OFF	1	0	OPEN	Motor Forward
1	0	1	OFF	OFF	0	1	OPEN	Motor Reverse
1	1	1	OFF	OFF	0	0	OPEN	BRAKING

Pin Connection Diagram
(Front View)



NTE1892



NTE1892A

