

**NTE2088**  
**Integrated Circuit**  
**4-Segment Darlington Array, w/Pre-Driver Stage**  
**for use with PMOS and 12V CMOS**

**Description:**

The NTE2088 is a High voltage, high current Darlington array in a 16-Lead DIP type package designed as an interface between low-level logic and a variety of peripheral loads such as relays, solenoids, DC and stepper motors, multiplexed LED and incandescent displays, heaters, and similar loads to 480 Watts (1.5A per output, 80V, 26% duty cycle).

This device has a minimum output breakdown of 50V and a minimum  $V_{CE(sus)}$  of 35V measured at 100mA, or a minimum output breakdown of 80V and a minimum  $V_{CE(sus)}$  of 50V.

A copper-alloy lead frame provides maximum power dissipation using standard cooling methods. This lead configuration facilitates attachment of external heat sinks for increased power dissipation with standard IC sockets and printed wiring boards.

**Features:**

- TTL, DTL, PMOS, CMOS Compatible Inputs
- Transient-Protected Outputs
- Loads to 480 Watts
- Heat Sink Contact Tabs on Quad Arrays

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Output Voltage, $V_{CEX}$ .....	80V
Output Sustaining Voltage, $V_{CE(sus)}$ .....	50V
Output Current, $I_{OUT}$ .....	1.75A
Input Voltage, $V_{IN}$ .....	30V
Input Current (Note 1), $I_B$ .....	25mA
Supply Voltage, $V_S$ .....	20V
Operating Temperature Range, $T_A$ .....	$-20^\circ$ to $+85^\circ\text{C}$
Storage Temperature Range, $T_S$ .....	$-55^\circ$ to $-150^\circ\text{C}$

Note 1. Input current may be limited by maximum allowable input voltage.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Leakage Current	$I_{CEX}$	$V_{CE} = 80\text{V}$	–	–	100	$\mu\text{A}$
		$V_{CE} = 80\text{V}, T_A = +70^\circ\text{C}$	–	–	500	$\mu\text{A}$
Output Sustaining Voltage	$V_{CE(sus)}$	$I_C = 100\text{mA}, V_{IN} = -400\text{mV}$	50	–	–	V

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 500\text{mA}, V_{IN} = 5\text{V}$	–	–	1.1	V
		$I_C = 750\text{mA}, V_{IN} = 5\text{V}$	–	–	1.2	V
		$I_C = 1\text{A}, V_{IN} = 5\text{V}$	–	–	1.3	V
		$I_C = 1.25\text{A}, V_{IN} = 5\text{V}$	–	–	1.4	V
		$I_C = 1.5\text{A}, V_{IN} = 5\text{V}$	–	–	1.5	V
Input Current	$I_{IN(ON)}$	$V_{IN} = 5\text{V}$	–	–	400	$\mu\text{A}$
		$V_{IN} = 12\text{V}$	–	–	1250	$\mu\text{A}$
Input Voltage	$V_{IN(ON)}$	$V_{CE} = 2\text{V}, I_C = 1.5\text{A}$	–	–	5	V
Supply Current	$I_S$	$I_C = 500\text{mA}, V_{IN} = 5\text{V}$	–	–	4.5	mA
Turn–On Delay	$t_{PLH}$	$0.5 E_{IN}$ to $0.5 E_{OUT}$	–	–	1.0	$\mu\text{s}$
Turn–Off Delay	$t_{PHL}$	$0.5 E_{IN}$ to $0.5 E_{OUT}, I_C = 1.25\text{A}$	–	–	1.5	$\mu\text{s}$
Clamp Diode Leakage Current	$I_R$	$V_R = 80\text{V}$	–	–	50	$\mu\text{A}$
		$V_R = 80\text{V}, T_A = +70^\circ\text{C}$	–	–	100	$\mu\text{A}$
Clamp Diode Forward Voltage	$V_F$	$I_F = 1\text{A}$	–	–	1.75	V
		$I_F = 1.5\text{A}$	–	–	2.0	V

**Pin Connection Diagram**



