



# Product Specification

XBLW ULN2001D

Three way Darlington transistor array circuit

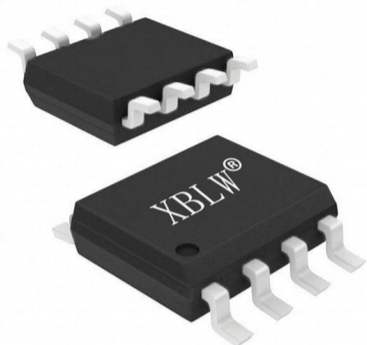
WEB | [www.xinboleic.com](http://www.xinboleic.com)



## Descriptions

ULN2001D is a high-voltage, high current Darlington transistor Array. Each device consists of three NPN Darlington pairs, These Darlington pairs have high voltage outputs and are equipped with switches for use Common cathode clamp diode for inductive loads.

It adopts SOP-8 packaging form.



SOP-8

## Feature

- Withstanding High Voltage
- Internal Overvoltage Protection Circuit(prevent overvoltage damage introduced by inductive load)
- The Peak Influx Current reaches 500mA, which can drive the incandescent lamp.
- The input impedance is 2.7k  $\Omega$ , which can be used in conjunction with TTL or CMOS logic circuits that use 5V voltage.

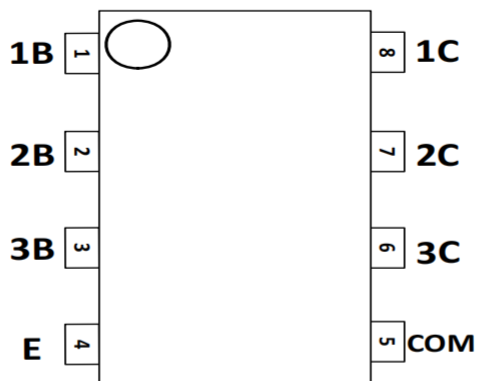
## Applications

- Relay drive
- Indicator light drive
- Display screen driver

## Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
XBLW ULN2001DTR	SOP-8	ULN2001D	Tape	2500Pcs/Reel

## Pins Configuration



## Pin Descriptions

Pin Number	Pin Name	Function
1	1B	Input pair1
2	2B	Input pair2
3	3B	Input pair3
4	E	Common Emitter (ground)
5	COM	Common Clamp Diodes
6	3C	Output pair3
7	2C	Output pair2
8	1C	Output pair1

## Extreme Ratings

( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise noted)

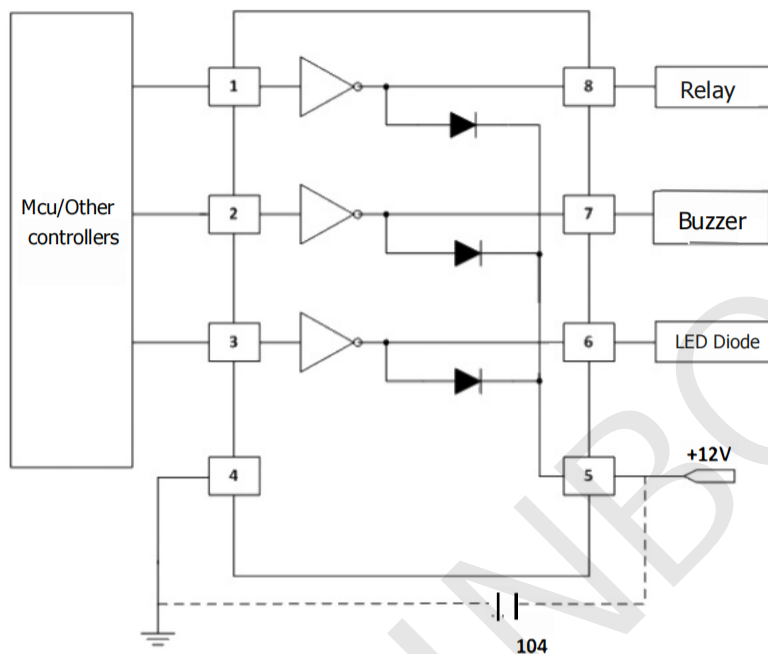
Parameter	Symbol	Value		Unit
		Min.	Max.	
Output Voltage	$V_o$	-	50	V
Input Voltage	$V_i$		30	V
Continuous Collector Current	$I_c$	-	500	mA
Continuous Base Current	$I_B$		25	mA
Junction Temperature	$T_j$		125	$^{\circ}\text{C}$
Operating Ambient Temperature Range	$T_{amb}$	-40	85	$^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	-55	150	$^{\circ}\text{C}$

## Electrical Characteristics

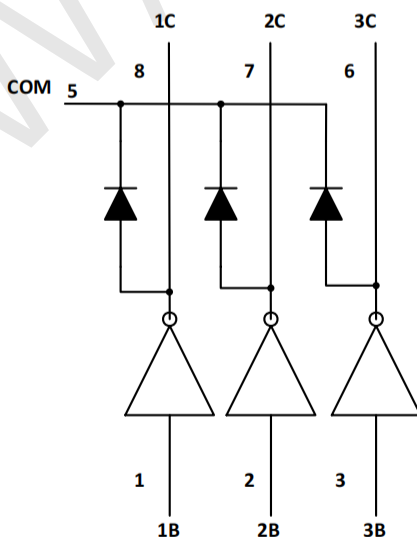
( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise noted)

Characteristics	Test Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
Output Leakage Current	$V_o = 50\text{V}$ , $T_{amb} = +85^{\circ}\text{C}$	$I_{CEX}$			100	$\mu\text{A}$
	$V_o = 50\text{V}$ , $T_{amb} = +25^{\circ}\text{C}$				50	$\mu\text{A}$
Collector-Emitter Voltage	$I_c = 350\text{mA}$ , $I_B = 500\mu\text{A}$	$V_{CES}$		1.1	1.7	V
	$I_c = 200\text{mA}$ , $I_B = 350\mu\text{A}$			0.95	1.3	V
	$I_c = 100\text{mA}$ , $I_B = 250\mu\text{A}$			0.85	1.1	V
Input Current (On)	$V_i = 3.85\text{V}$	$I_i (\text{ON})$		0.93	1.35	mA
Input Voltage	$V_{CE} = 2.0\text{V}$ , $I_c = 200\text{mA}$	$V_i (\text{ON})$			2.4	V
	$V_{CE} = 2.0\text{V}$ , $I_c = 250\text{mA}$				2.7	
	$V_{CE} = 2.0\text{V}$ , $I_c = 300\text{mA}$				3.0	
Input Current (Off)	$V_{CE} = 2.0\text{V}$ , $I_c = 300\text{mA}$	$I_i (\text{OFF})$	50	100		$\mu\text{A}$
Input Capacitance		$C_i$		15	30	pF
Turn-On Delay Time	50% $E_i$ to 50% $E_o$	$t_{ON}$		0.25	1	$\mu\text{s}$
Turn-Off Delay Time	50% $E_i$ to 50% $E_o$	$t_{OFF}$		0.25	1	$\mu\text{s}$
Clamp Diode Leakage Current	$V_R = 50\text{V}$	$T_{amb} = +25^{\circ}\text{C}$			50	$\mu\text{A}$
		$T_{amb} = +85^{\circ}\text{C}$			100	
Clamp Diode Forward Voltage	$I_F = 350\text{mA}$	$V_F$		1.5	2	V

## Typical Application Diagram



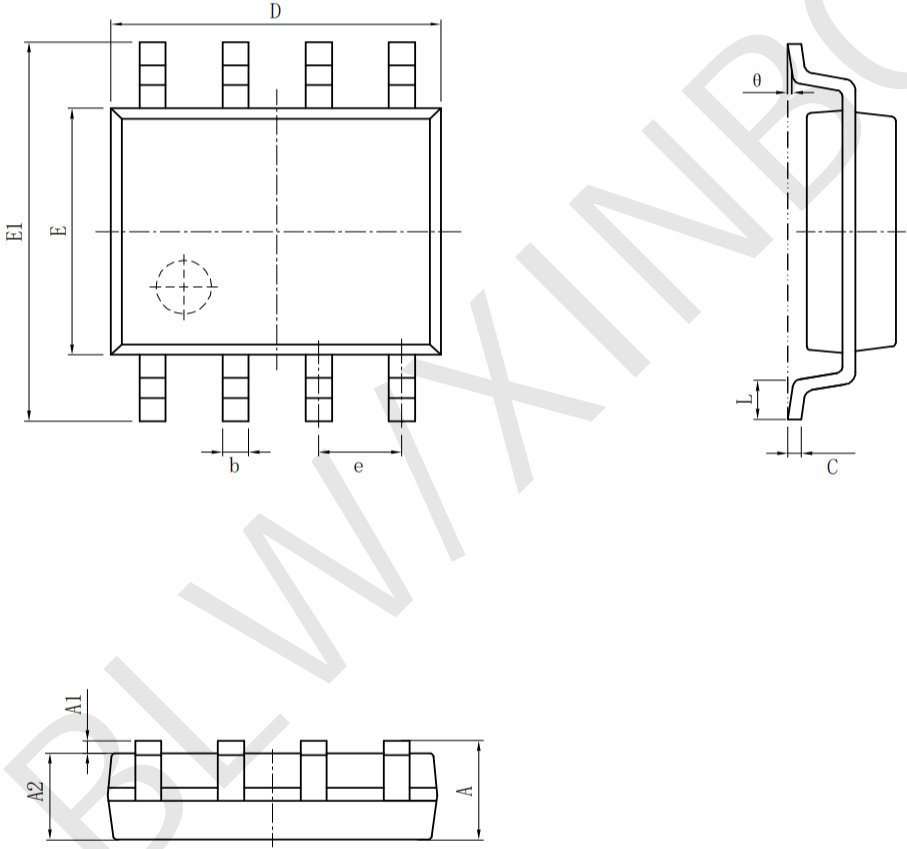
## Logic Diagram



Package Information

- SOP-8

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Inches	
	Min (mm)	Max (mm)		Min (in)	Max (in)
A	1.350	1.750	A	0.053	0.069
A1	0.100	0.250	A1	0.004	0.010
A2	1.350	1.550	A2	0.053	0.061
b	0.330	0.510	b	0.013	0.020
c	0.170	0.250	c	0.006	0.010
D	4.700	5.100	D	0.185	0.200
E	3.800	4.000	E	0.150	0.157
E1	5.800	6.200	E1	0.228	0.224
e	1.270 (BSC)		e	0.050 (BSC)	
L	0.400	1.270	L	0.016	0.050
θ	0°	8°	θ	0°	8°



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