JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD

SOP-18 Plastic-Encapsulate Transistors

ULN2803 DARLINGTON TRANSISTOR (NPN)

Description

The ULN2803 device is a 40V, 500mA Darlington transistor array. The device consists of eight NPN Darlington pairs that feature high-voltage outputs with common-cathode clamp diodes for switching inductive loads. The collector-current rating of each Darlington pair is 500mA. The Darlington pairs may be connected in parallel for higher current capability.

Applications include relay drivers, hammer drivers, lamp drivers, display drivers (LED and gas discharge), line drivers, and logic buffers. The ULN2803 device has a 2.7-kΩ series base resistor for each Darlington pair for operation directly with TTL or 5-V CMOS devices.

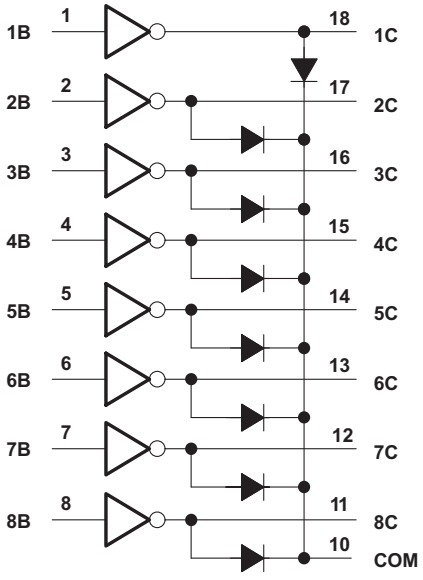
Features

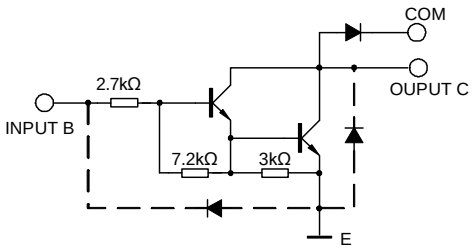
- 500-mA-Rated Collector Current (Single Output)
- High-Voltage Outputs: 40 V
- Output Clamp Diodes
- Inputs Compatible With Various Types of Logic

Applications

- Relay Drivers
- Hammer Drivers
- Lamp Drivers
- Line Drivers
- Logic Buffers
- Stepper Motors
- IP Camera
- HVAC Valve and LED Dot Matrix

Logic Diagram

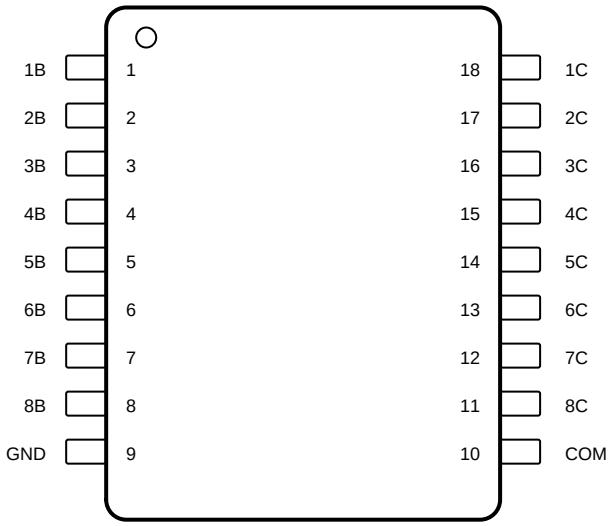




Note: The input and output parasitic diodes cannot be used as clamp diodes.

Pin Configuration and Functions

Package
SOP-18
Top View



Not to scale

Pin Functions

PIN		TYPE	DESCRIPTION
NAME	NO.		
1B	1	I	Channel 1 through 8 Darlington base input
2B	2		
3B	3		
4B	4		
5B	5		
6B	6		
7B	7		
8B	8		
1C	18	O	Channel 1 through 8 Darlington collector output
2C	17		
3C	16		
4C	15		
5C	14		
6C	13		
7C	12		
8C	11		
GND	9	—	Common emitter shared by all channels (typically tied to ground)
COM	10	I/O	Common cathode node for flyback diodes (required for inductive loads)

Typical Characteristics

ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	ULN2803			UNIT
		MIN	TYP	MAX	
Output voltage	V_O			40	V
Input voltage	V_I			30	V
Collector current(continuous current)	I_C			500	mA
Base current(continuous current)	I_B			25	mA
Operating Ambient Temperature	T_A	0		70	℃
Operating Junction Temperature	T_J			125	℃
Storage Temperature	T_{stg}	-55		150	℃

ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

PARAMETER		TEST CONDITIONS		ULN2803			UNIT
				MIN	TYP	MAX	
I_{CEX}	Collector cutoff current	V_{CE} = 40 V, Tamb=+70℃				100.0	μA
		V_{CE} = 40 V, Tamb=+25℃				50.0	μA
V_{CES}	Collector-emitter saturation voltage	I_C = 350 mA, I_B=500uA			1.1	1.6	V
		I_C = 200 mA, I_B=350uA			0.95	1.3	
		I_C = 100 mA, I_B=250uA			0.85	1.1	
$II_{(ON)}$	Input current(ON)	V_I = 3.85 V			0.93	1.35	mA
$VI_{(ON)}$	Input voltage(ON)	V_{CE} = 2.0 V, I_C=200mA				2.4	V
		V_{CE} = 2.0 V, I_C=250mA				2.7	
		V_{CE} = 2.0 V, I_C=300mA				3.0	
$II_{(OFF)}$	Input current(OFF)	V_{CE} = 2.0 V, I_C=350mA		50	100		μA
C_I	Input capacitance				15	30	pF
t_{ON}	On delay time	50%EI to 50% EO			0.25	1.0	μs
t_{OFF}	Off delay time	50%EI to 50% EO			0.25	1.0	μs
I_R	Clamp reverse current	V_R = 40 V	TA=+25℃			50.0	μA
			TA=+70℃			100.0	
V_F	Clamp forward voltage	IF=350mA			1.5	2.0	V

Typical Characteristics Measurement

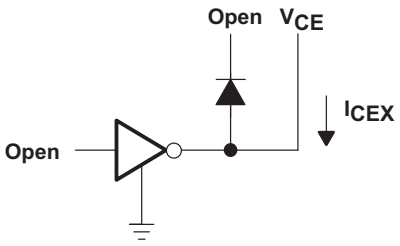


Figure 1. I_{CEX} Test Circuit

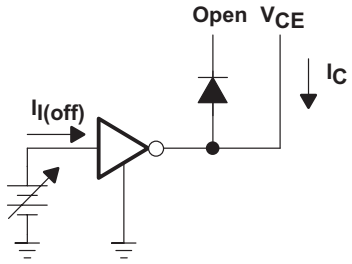


Figure 2. $I_{I(off)}$ Test Circuit

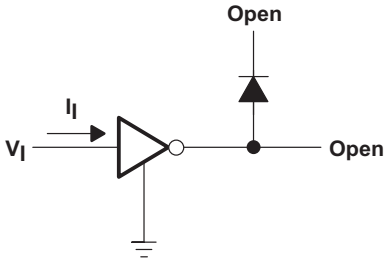


Figure 3. $I_{I(on)}$ Test Circuit

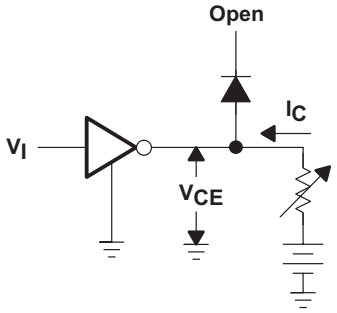


Figure 4. $V_{I(on)}$ Test Circuit

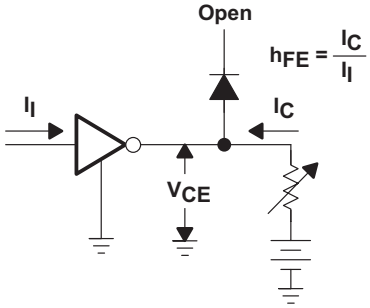


Figure 5. h_{FE}, $V_{CE(sat)}$ Test Circuit

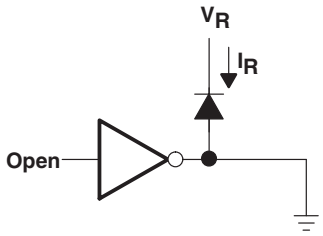


Figure 6. I_R Test Circuit

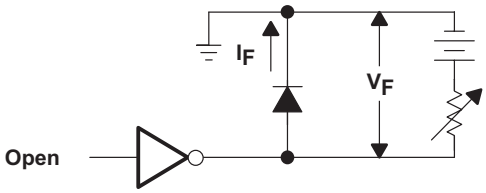


Figure 7. V_F Test Circuit

Typical Application

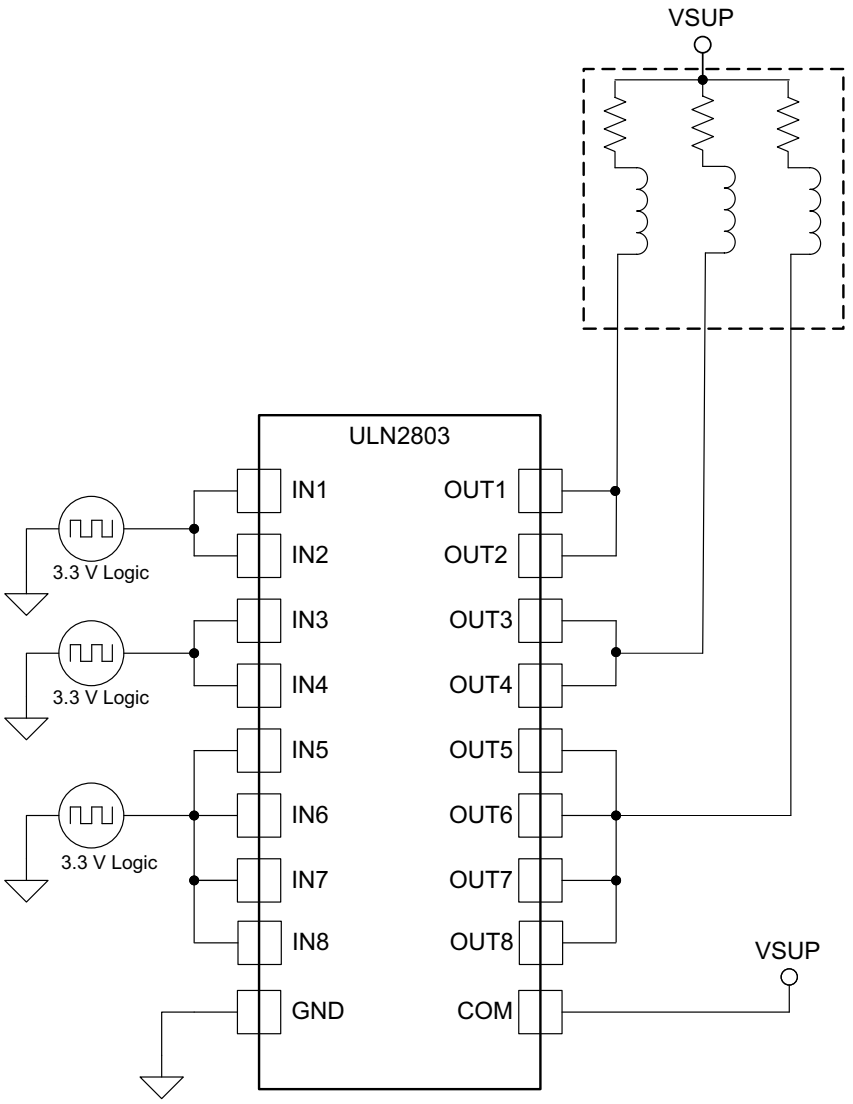
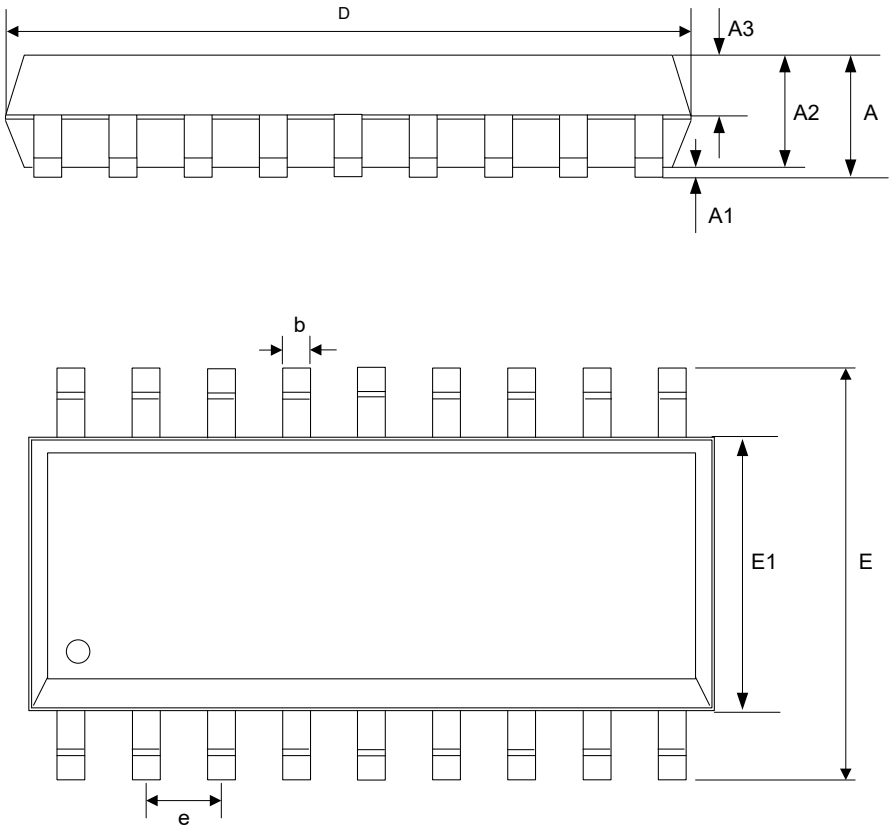
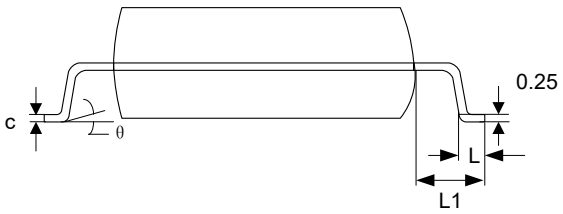


Figure 8. ULN2803 as Inductive Load Driver

SOP-18 Package Outline Dimensions





SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	-	-	2.65
A1	0.10	-	0.30
A2	2.25	2.3	2.35
A3	0.97	1.02	1.07
b	0.35	-	0.44
c	0.26	-	0.31
D	11.25	11.45	11.65
E	10.10	10.30	10.50
E1	7.30	7.50	7.70
e	1.27BSC		
L	0.70	-	1.00
L1	1.40BSC		
θ	0	-	8°

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Darlington Transistors ***category:***

Click to view products by Changjing Electronics Technology ***manufacturer:***

Other Similar products are found below :

281287X BDV64B SBSP52T1G LB1205-L-E 2N6053 MPSA63 2N6667 NTE256 TIP120 MJ11028 TIP140 TIP127L-BP 2N6383 ULN2803 ULN2803 2SB1560 2SB852KT146B 2SD2560 TIP112TU BCV27 MMBTA13-TP MMBTA14-TP MMSTA28T146 NTE2557 NJVNJD35N04T4G CP527-2N6299-CT5 CP127-2N6301-CT5 MPSA29-D26Z FJB102TM FMMT38C BCV29 BCV47 FMMT734 BCV46E6327HTSA1 BSP61H6327XTSA1 BU941ZPFI FZT600 FZT605 FZT705 2SB1316TL NTE2350 NTE245 NTE2649 NTE46 NTE98 ULN2003ADR2G NTE2344 NTE2349 NTE2405 NTE243