



WLN2803CF

HIGH VOLTAGE, HIGH CURRENT DARLINGTON TRANSISTOR ARRAYS

Description

The WLN2803CF are high voltage, high current Darlington arrays each containing eight open collector common emitter pairs. Each pair is rated at 500mA. Suppression diodes are included for inductive load driving, the inputs and outputs are pinned in opposition to simplify board layout.



Features

- ESD Capability: 8KV(HBM)
- 500mA Rated Collector Current (Single Output)
- High Voltage Outputs: 50V
- Output Clamp Diodes
- Inputs Compatible with Popular Logic Types (5V TTL,CMOS)
- Relay Driver Applications

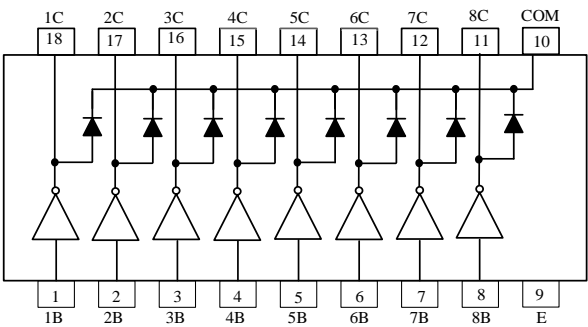
Mechanical Characteristics

- JEDEC SOP18 package
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant & HF
- Device meets MSL3 requirement

Applications

- Solenoids
- Relays
- DC motors
- LED displays
- Filament lamps
- Thermal print-heads
- High-power buffers

Functional Diagram

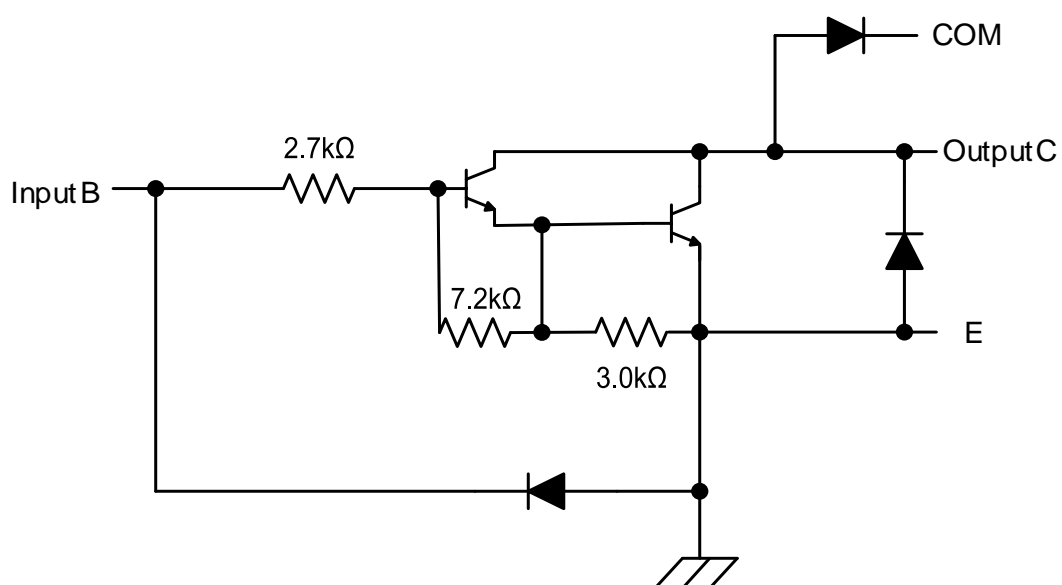


SOP18 (Top View)

Pin Descriptions

Pin Number	Pin Name	Function
1	1B	Input Pair 1
2	2B	Input Pair 2
3	3B	Input Pair 3
4	4B	Input Pair 4
5	5B	Input Pair 5
6	6B	Input Pair 6
7	7B	Input Pair 7
8	8B	Input Pair 8
9	E	Common Emitter (Ground)
10	COM	Common Clamp Diodes
11	8C	Output Pair 8
12	7C	Output Pair 7
13	6C	Output Pair 6
14	5C	Output Pair 5
15	4C	Output Pair 4
16	3C	Output Pair 3
17	2C	Output Pair 2
18	1C	Output Pair 1

Functional Block Diagram



Absolute Maximum Ratings (Note 1) (@T_A = +25°C, unless otherwise specified.)

Symbol	Parameter	Rating	Unit
V _{CC}	Collector to Emitter Voltage	50	V
V _R	Clamp Diode Reverse Voltage (Note 2)	50	V
V _I	Input Voltage (Note 2)	30	V
I _{CP}	Peak Collector Current	500	mA
I _{OK}	Output Clamp Current	500	mA
I _{TE}	Total Emitter Current	-2.5	A
T _J	Junction Temperature	+150	°C
T _{STG}	Storage Temperature	-65 to +150	°C

- Notes:
- Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
 - All voltage values are with respect to the emitter/substrate terminal E, unless otherwise noted.

Recommended Operating Conditions

Symbol	Parameter	MIN	MAX	Unit
V _{CC}	Collector to Emitter Voltage	-	50	V
T _A	Operating Ambient Temperature	-40	+105	°C

Switching Characteristics (@T_A = +25°C, unless otherwise specified.)

Parameter		Test Figure	Min	Typ	Max	Unit
t _{PLH}	Propagation Delay Time, Low to High Level Output	9	-	0.25	1	μs
t _{PHL}	Propagation Delay Time, High to Low Level Output	9	-	0.25	1	μs
V _{OH}	High Level Output Voltage after Switching	9 (V _S = 50V, I _O = 300mA)	V _S -20	-	-	mV

Switching Characteristics (@T_A = -40 to +105°C, unless otherwise specified.)

Parameter		Test Figure	Min	Typ	Max	Unit
t _{PLH}	Propagation Delay Time, Low to High Level Output	9	-	1	10	μs
t _{PHL}	Propagation Delay Time, High to Low Level Output	9	-	1	10	μs
V _{OH}	High Level Output Voltage after Switching	9 (V _S = 50V, I _O = 300mA)	V _S -50	-	-	mV

Electrical Characteristics (Cont.) (@T_A = +25°C, unless otherwise specified.)

Parameter		Test Figure	Test Conditions		Min	Typ	Max	Unit
V _{I(ON)}	On State Input Voltage	6	V _{CE} = 2V	I _C = 200mA	-	-	2.4	V
				I _C = 250mA	-	-	2.7	
				I _C = 300mA	-	-	3	
V _{CE(SAT)}	Collector Emitter Saturation Voltage	5	I _I = 250μA, I _C = 100mA		-	0.9	1.1	V
			I _I = 350μA, I _C = 200mA		-	1	1.3	
			I _I = 500μA, I _C = 350mA		-	1.2	1.6	
V _F	Clamp Forward Voltage	8	I _F = 350mA		-	1.7	2	V
I _{CEX}	Collector Cut-off Current	1	V _{CE} = 50V, I _I = 0		-	-	50	μA
		2	V _{CE} = 50V, T _A = +105°C	I _I = 0	-	-	100	
I _{I(OFF)}	Off State Input Current	3	V _{CE} = 50V, I _C = 500μA		50	65	-	μA
I _I	Input Current	4	V _I = 3.85V		-	0.93	1.35	mA
I _R	Clamp Reverse Current	7	V _R = 50V	T _A = +105°C	-	-	100	μA
		-		-	-	-	50	
C _I	Input Capacitance	-	V _I = 0, f = 1MHz		-	15	25	pF

Electrical Characteristics (Cont.) (@T_A = -40°C to +105°C, unless otherwise specified.)

Parameter		Test Figure	Test Conditions		Min	Typ	Max	Unit
V _{I(ON)}	On State Input Voltage	6	V _{CE} = 2V	I _C = 200mA	-	-	2.7	V
				I _C = 250mA	-	-	2.9	
				I _C = 300mA	-	-	3	
V _{CE(SAT)}	Collector Emitter Saturation Voltage	5	I _I = 250μA, I _C = 100mA		-	0.9	1.2	V
			I _I = 350μA, I _C = 200mA		-	1	1.4	
			I _I = 500μA, I _C = 350mA		-	1.2	1.7	
V _F	Clamp Forward Voltage	8	I _F = 350mA		-	1.7	2.2	V
I _{CEX}	Collector Cut-off Current	1	V _{CE} = 50V, I _I = 0		-	-	100	μA
I _{I(OFF)}	Off State Input Current	3	V _{CE} = 50V, I _C = 500μA		30	65	-	μA
I _I	Input Current	4	V _I = 3.85V		-	0.93	1.35	mA
I _R	Clamp Reverse Current	7	V _R = 50V		-	-	100	μA
C _I	Input Capacitance	-	V _I = 0, f = 1MHz		-	15	25	pF

Parameter Measurement Circuits

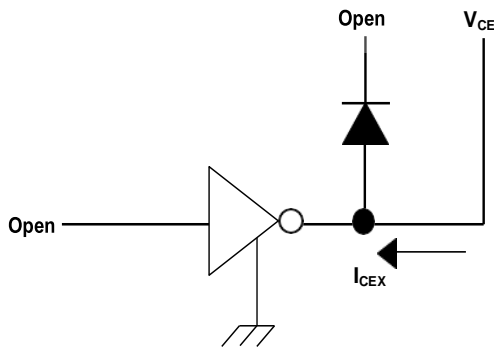


Fig.1 I_{CEX} Test Circuit

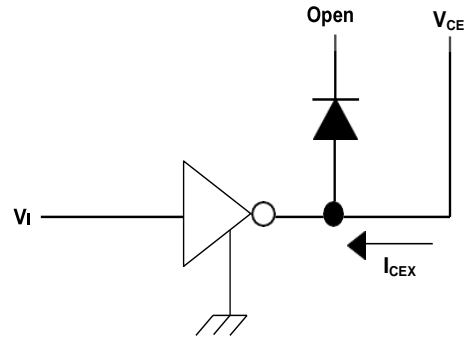


Fig.2 I_{CEX} Test Circuit

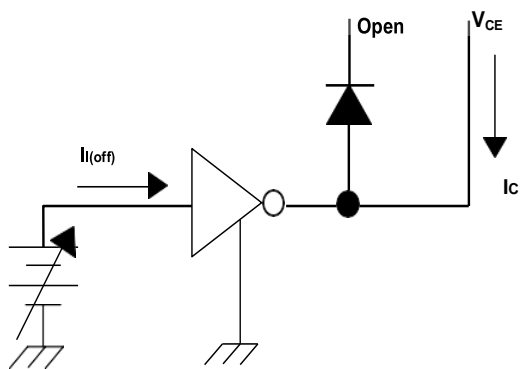


Fig.3 $I_{I(off)}$ Test Circuit

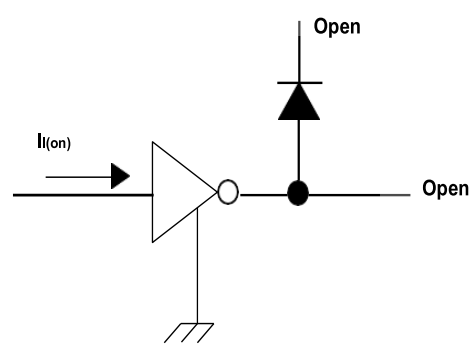


Fig.4 I_I Test Circuit

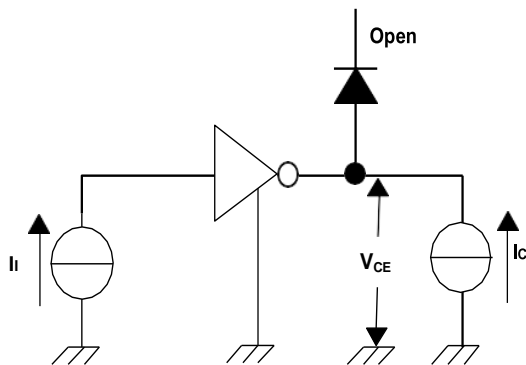


Fig.5 h_{FE} , $V_{CE(sat)}$ Test Circuit

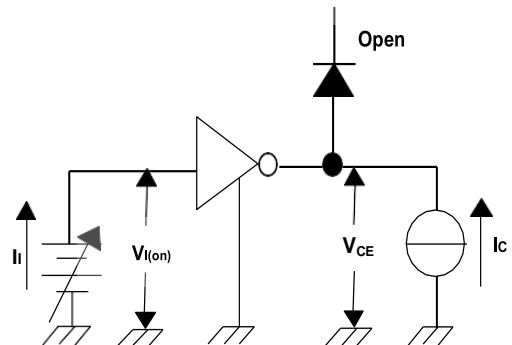


Fig.6 $V_{I(on)}$ Test Circuit

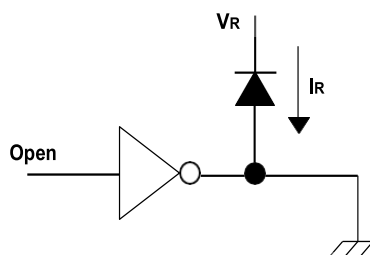


Fig.7 I_R Test Circuit

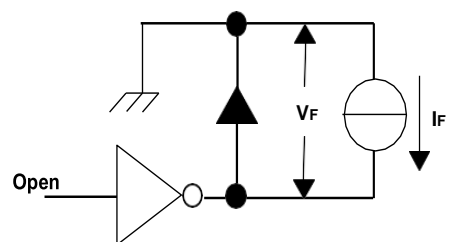


Fig.8 V_F Test Circuit

Parameter Measurement Circuits (Cont.)

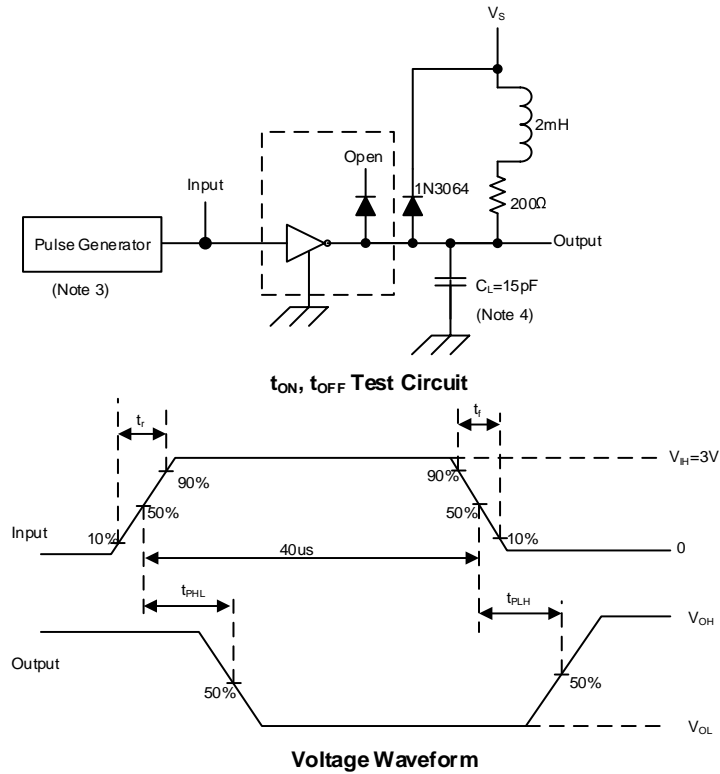
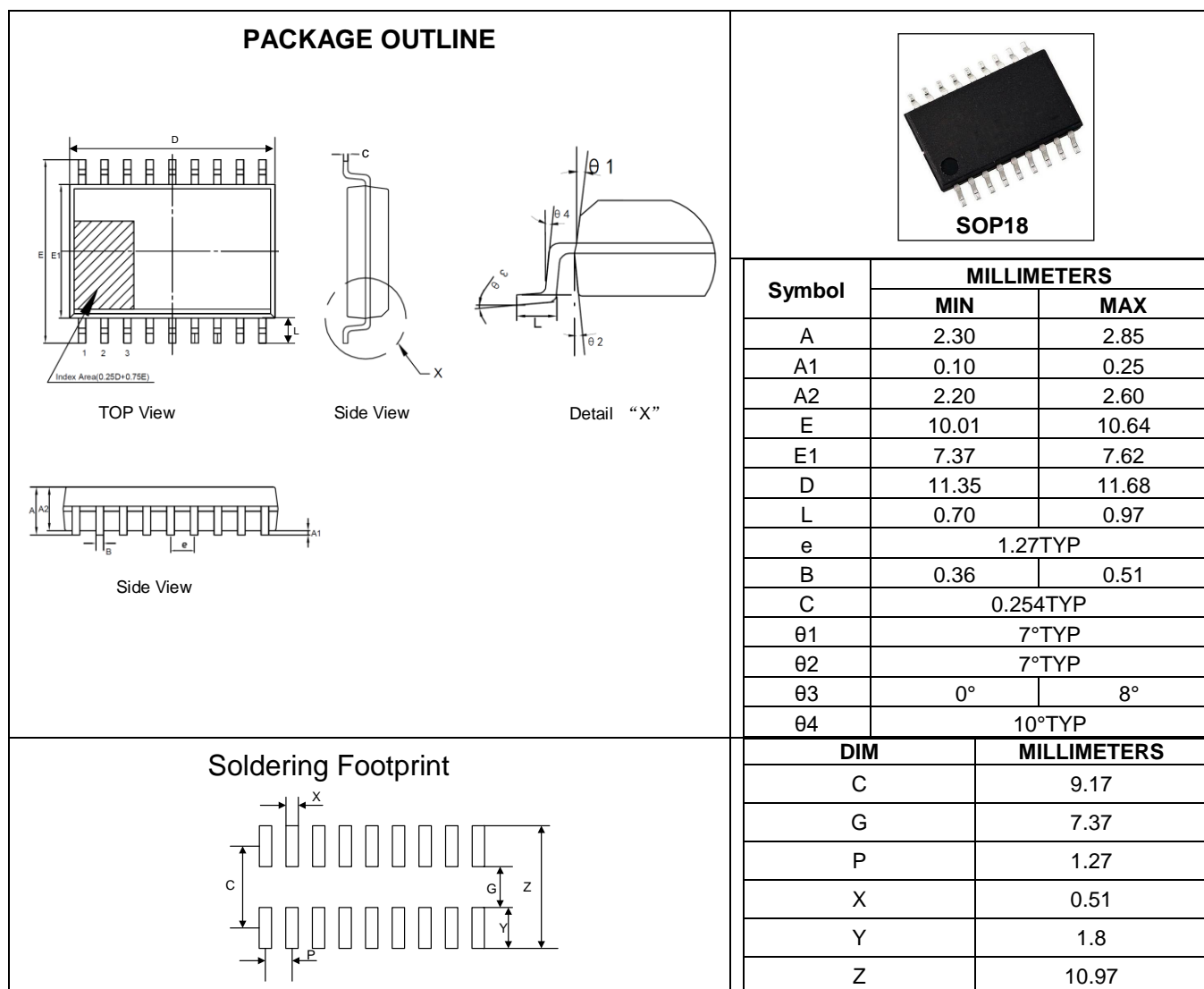


Fig. 9 Latch-Up Test Circuit and Voltage Waveform

Notes:

- 3 The pulse generator has the following characteristics: Pulse Width = 12.5μs, output impedance 50Ω, $t_r \leq 5\text{ns}$, $t_f \leq 10\text{ns}$.
- 4 C_L includes probe and jig capacitance.

Outline Drawing – SOP18



Marking Codes

Part Number	WLN2803CF
Marking Code	<p>WLN2803CF=Specific Device Code XXXX=Lot Code</p>

Package Information

Qty: 1500/Reel

CONTACT INFORMATION

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2. The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. WAYON shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and WAYON assumes no responsibility for the application of the product.
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