



ULN2068B

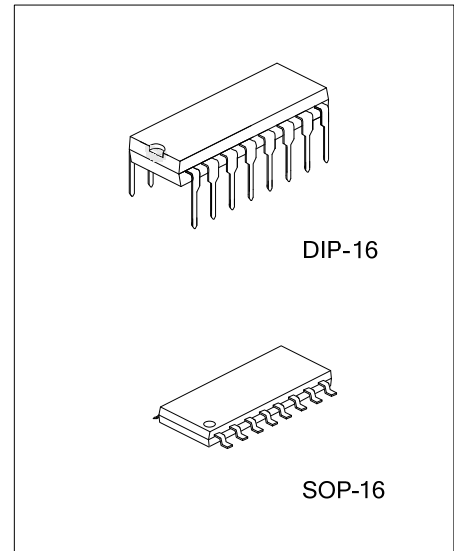
Advance

LINEAR INTEGRATED CIRCUIT

50V, 1.5A QUAD DARLINGTON SWITCHES

DESCRIPTION

Designed to interface logic to a wide variety of high current, high voltage loads, this device contains four NPN Darlington switches delivering up to 1.5A with a specified minimum breakdown of 50V and a sustaining voltage of 35V measured at 100mA. The UTC **ULN2068B** contains integral suppression diodes for inductive loads have common emitters. The UTC **ULN2068B** is compatible with popular 5V logic families. The UTC **ULN2068B** includes a pre-driver stage to reduce loading on the control logic.



FEATURES

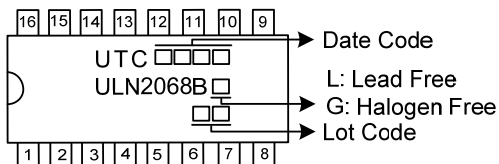
- * Output current to 1.5A for each Darlington
- * Sustaining voltage at least 35V
- * Minimum breakdown 50V
- * Integral suppression diodes
- * Versions compatible with all popular logic families

ORDERING INFORMATION

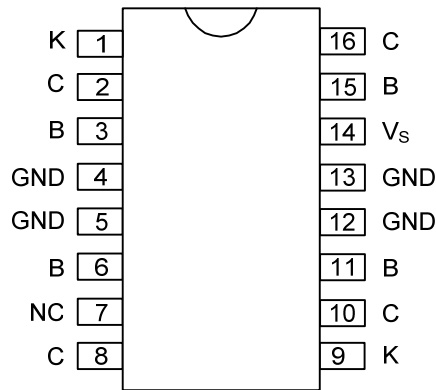
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULN2068BL-D16-T	ULN2068BG-D16-T	DIP-16	Tube
ULN2068BL-S16-R	ULN2068BG-S16-R	SOP-16	Tape Reel

<p>ULN2068BG-D16-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) D16: DIP-16, S16: SOP-16</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



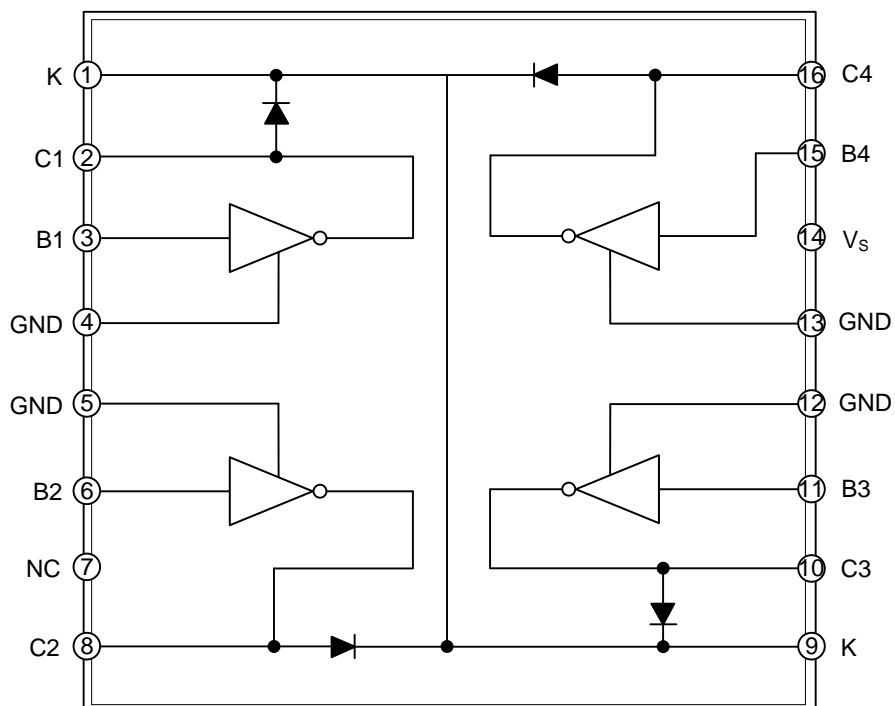
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1, 9	K	Clamp diode
2, 8, 10, 16	C	Output
3, 6, 11, 15	B	Input
4, 5, 12, 13	GND	Ground
7	NC	Not connected
14	V _s	Power supply

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Output Voltage		V_{CEX}	50	V
Output Sustaining Voltage		$V_{CE(SUS)}$	35	V
Output Current		I_O	1.75	A
Input Voltage		V_I	15	V
Input Current		I_I	25	mA
Supply Voltage		V_S	10	V
Power Dissipation	DIP-16	P_D	1.47	W
	SOP-16		1.25 (Note 2)	W
Operating Ambient Temperature Range		T_{AMB}	-20 ~ +85	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. On PCB (Test Board: JEDEC 2s2p)

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Leakage Current	I_{CEX}	$V_{CE}=50\text{V}, T_A=25^\circ\text{C}$			100	μA
Collector-Emitter Sustaining Voltage	$V_{CE(SUS)}$	$I_C=100\text{mA}, V_I=0.4\text{V}$	35			V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=500\text{mA}, I_B=325\mu\text{A}$			1.1	V
		$I_C=750\text{mA}, I_B=935\mu\text{A}$			1.2	V
		$I_C=1\text{A}, I_B=1.25\text{mA}$			1.3	V
		$I_C=1.25\text{A}, I_B=2\text{mA}$			1.4	V
Input Current	$I_{I(ON)}$	$V_I=2.75\text{V}$			0.55	mA
		$V_I=3.75\text{V}$			1.0	mA
Input Voltage	$V_{I(ON)}$	$V_{CE}=2\text{V}, I_C=1.5\text{A}$			3.0	V
Supply Current	I_S	$V_I=2.75\text{V}, I_C=500\text{mA}$			6	mA
Turn-On Delay Time	t_{PLH}	$0.5 V_I$ to $0.5 V_O$			1	μs
Turn-Off Delay Time	t_{PHL}	$0.5 V_I$ to $0.5 V_O$		2.5		μs
Clamp Diode Leakage Current	I_R	$V_R=50\text{V}, T_A=25^\circ\text{C}$			50	μA
Clamp Diode Forward Voltage	V_F	$I_F=1\text{A}$			1.75	V
		$I_F=1.5\text{A}$			2	V

■ TEST CIRCUIT

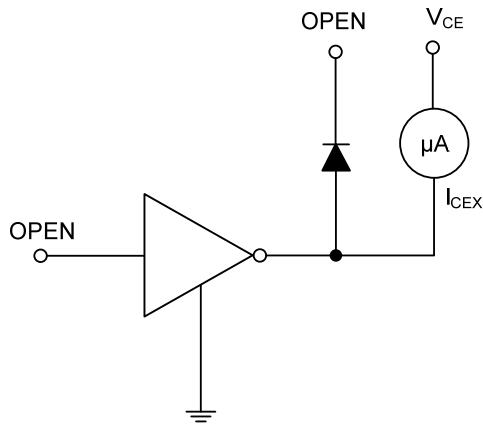


Figure 1. Output leakage current

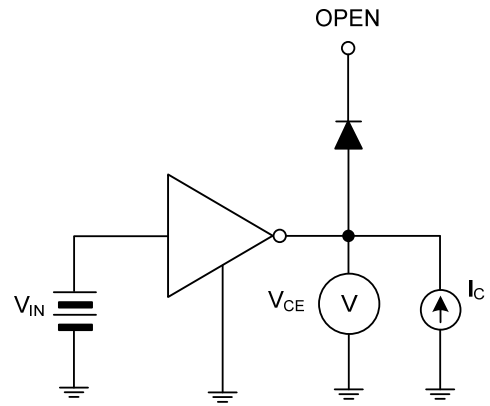


Figure 2. Collector-emitter sustaining voltage

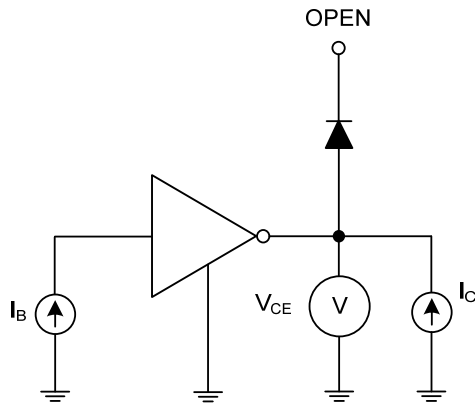


Figure 3. Collector-emitter saturation voltage

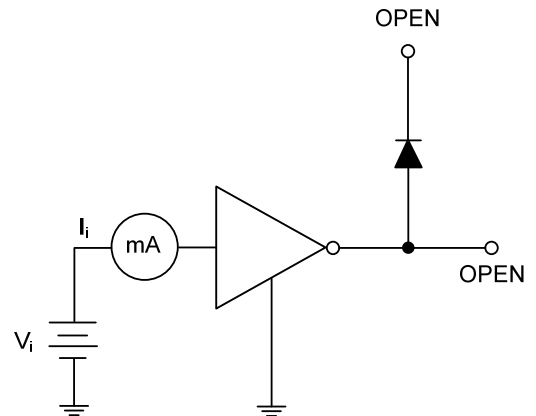


Figure 4. Input current (ON)

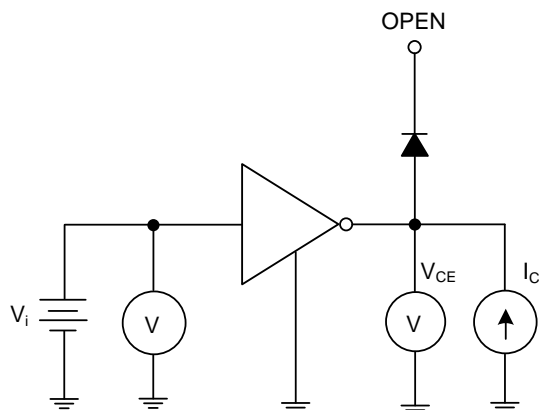


Figure 5. Input voltage

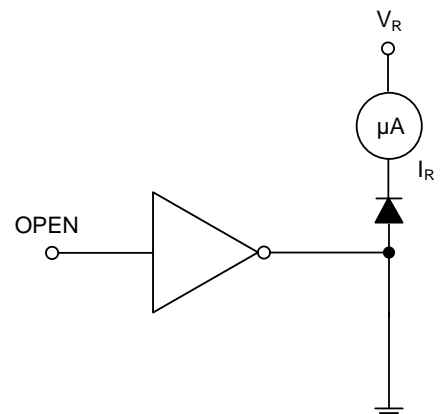


Figure 6. Clamp diode leakage current

■ TEST CIRCUIT (Cont.)

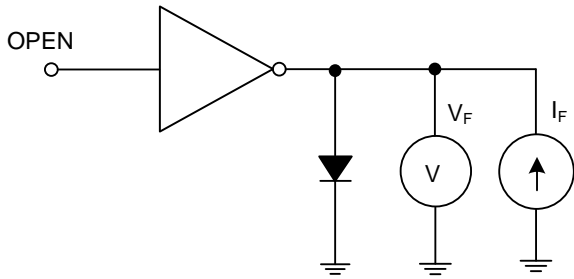


Figure 7. Clamp diode forward voltage

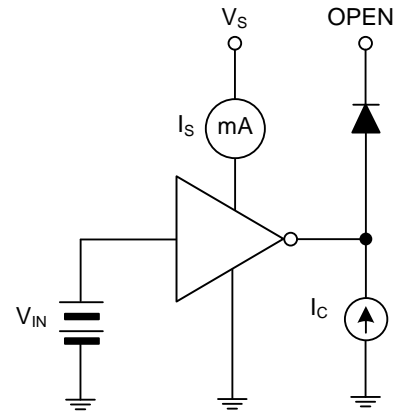
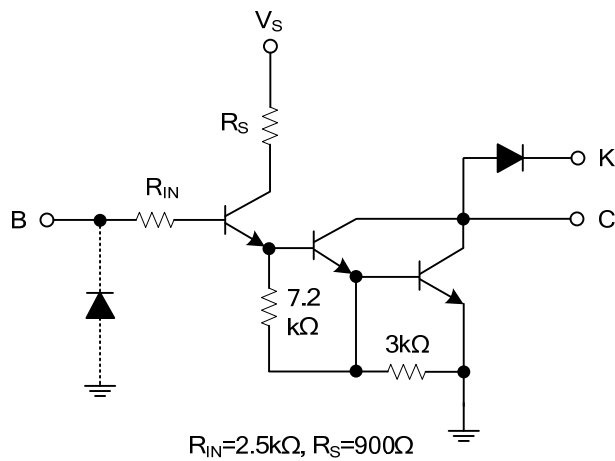


Figure 8. Supply current

■ SCHEMATIC DIAGRAMS



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