



ULN2803

LINEAR INTEGRATED CIRCUIT

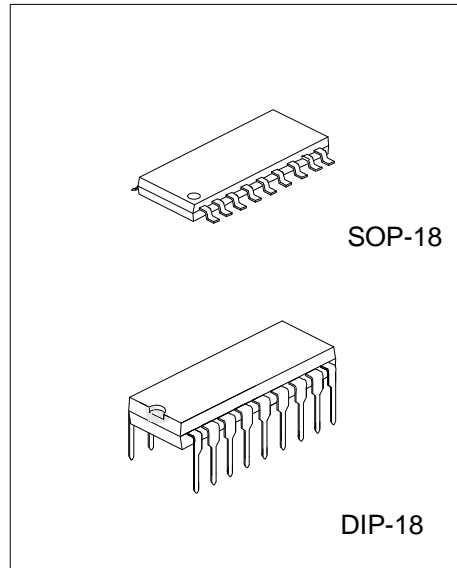
EIGHT DARLINGTON ARRAYS

DESCRIPTION

The UTC **ULN2803** is high-voltage, high-current Darlington drivers comprised of eight NPN Darlington pairs.

FEATURES

- *Output current (single output) 500mA MAX.
- *High sustaining voltage output 50V MIN.
- *Output clamp diodes
- *Inputs compatible with various types of logic

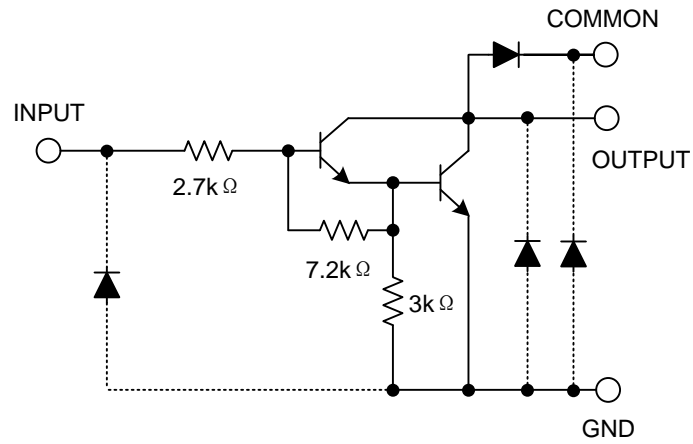


ORDERING INFORMATION

Ordering Number			Package	Packing
Normal	Lead Free	Halogen Free		
ULN2803-D18-T	ULN2803L-D18-T	ULN2803G-D18-T	DIP-18	Tube
ULN2803-S18-R	ULN2803L-S18-R	ULN2803G-S18-R	SOP-18	Tape Reel
ULN2803-S18-T	ULN2803L-S18-T	ULN2803G-S18-T	SOP-18	Tube

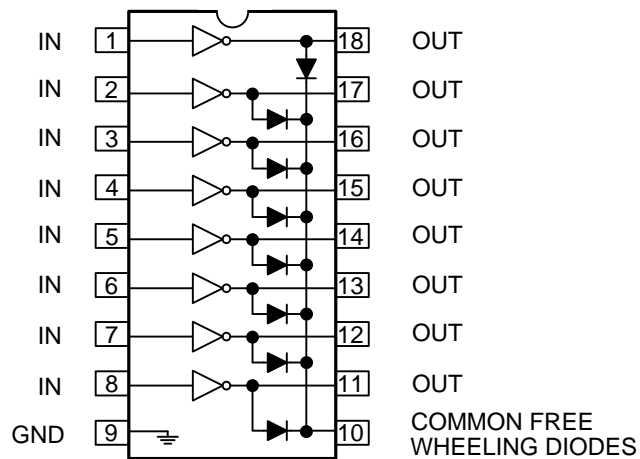
<p>ULN2803L-D18-T</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) T: Tube, R: Tape Reel (2) D18: DIP-18, S18: SOP-18 (3)G: Halogen Free L: Lead Free , Blank: Pb/Sn</p>
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■ SCHEMATICS (EACH DRIVER)



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

■ PIN CONFIGURATIONS



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V_{IN}	-0.5~30	V
Output Sustaining Voltage		$V_{CE(SUS)}$	-0.5~50	V
Output Current		I_{OUT}	500	mA/ch
Clamp Diode Reverse Voltage		V_R	50	V
Clamp Diode Forward Current		I_F	500	mA
Power Dissipation	DIP-18	P_D	1.47	W
	SOP-18		0.54/0.625(Note)	
Operating Temperature		T_{OPR}	-40 ~ +85	°C
Storage Temperature		T_{STG}	-40 ~ +150	°C

Note 1. On glass epoxy PCB (30x30x1.6mm Cu 50%)

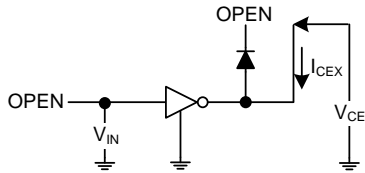
2. Absolute maximum ratings are stress ratings only and functional device operation is not implied. The device could be damaged beyond Absolute maximum ratings.

■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified.)

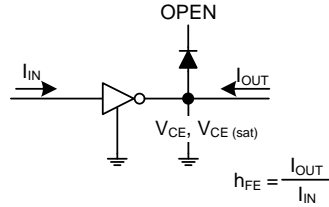
PARAMETER		SYMBOL	TEST CIRCUIT	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Leakage Current		I_{CEX}	1	$V_{CE}=50V, T_a=25^\circ C$ $V_{CE}=50V, T_a=85^\circ C$			50 100	μA
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	2	$I_{OUT}=350mA, I_{IN}=500\mu A$ $I_{OUT}=200mA, I_{IN}=350\mu A$ $I_{OUT}=100mA, I_{IN}=250\mu A$		1.3 1.1 0.9	1.6 1.3 1.1	V
Input Current	ON	$I_{IN(ON)}$	3	$V_{IN}=3.85V, I_{OUT}=350mA$		0.93	1.35	mA
	OFF	$I_{IN(OFF)}$	4	$I_{OUT}=500\mu A, T_a=85^\circ C$	50	65		μA
Input Voltage (output on)		$V_{IN(ON)}$	5	$V_{CE}=2.0V$ $I_{OUT}=200mA$ $I_{OUT}=250mA$ $I_{OUT}=300mA$			2.4 2.7 3.0	V
Clamp Diode Reverse Current		I_R	6	$V_R=50V, T_a=25^\circ C$ $V_R=50V, T_a=85^\circ C$			50 100	μA
Clamp Diode Forward Voltage		V_F	7	$I_F=350mA$			2.0	V
Input Capacitance		C_{IN}				15	25	pF
Turn-On Delay		t_{ON}	8	$V_{OUT}=50V, R_L=125\Omega, C_L=15pF$		0.1	1	μS
Turn-Off Delay		t_{OFF}	8	$V_{OUT}=50V, R_L=125\Omega, C_L=15pF$		0.2	1	μS

TEST CIRCUIT

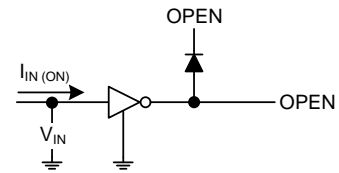
1. I_{CEX}



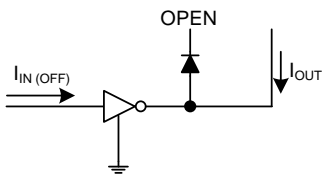
2. $V_{CE(sat)}$, h_{FE}



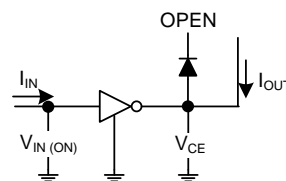
3. $I_{IN(ON)}$



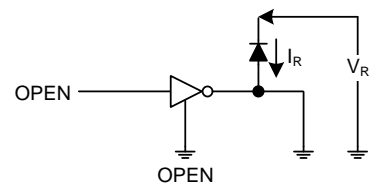
4. $I_{IN(OFF)}$



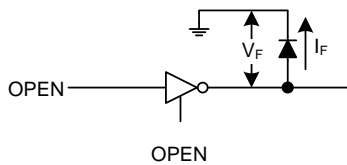
5. $V_{IN(ON)}$



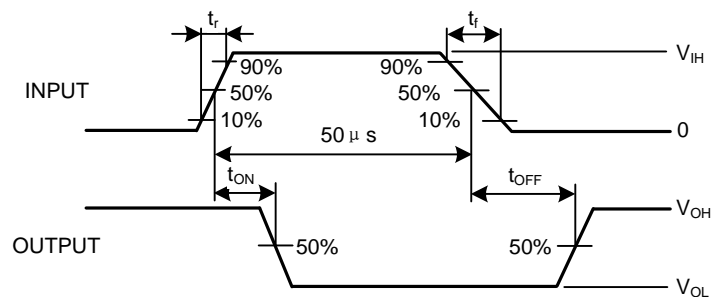
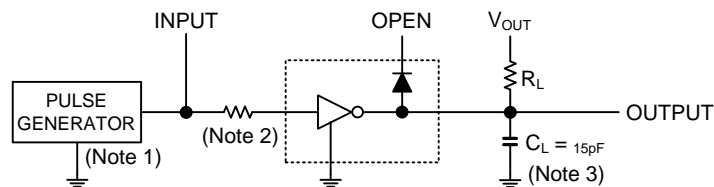
6. I_R



7. V_F



8. t_{ON} , t_{OFF}



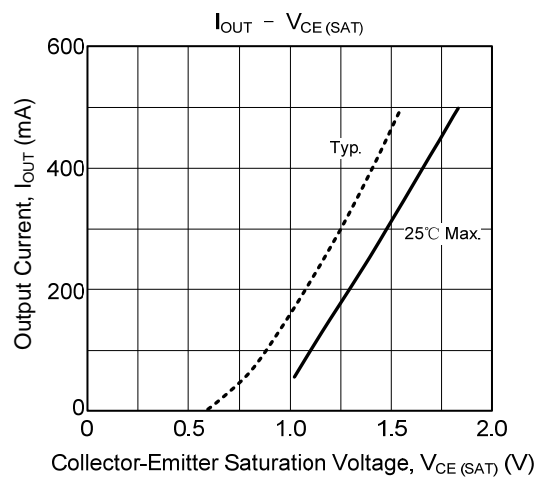
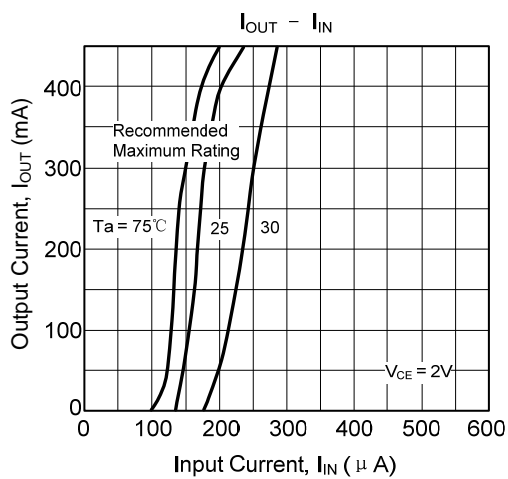
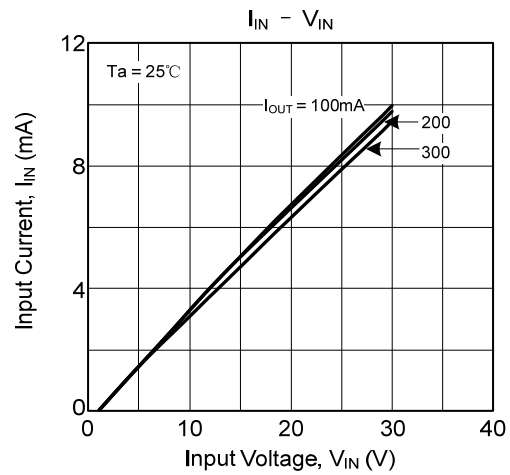
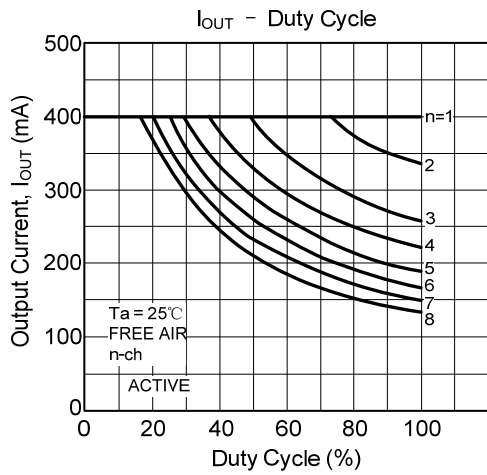
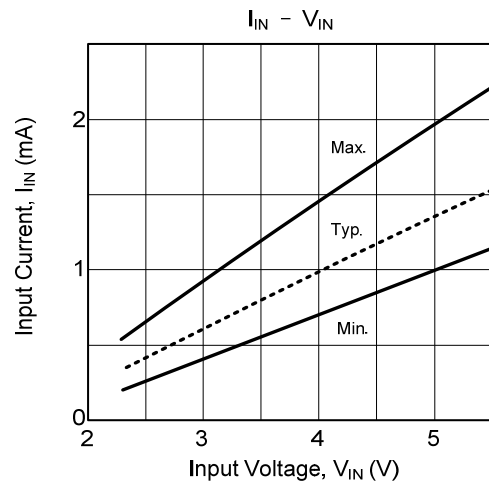
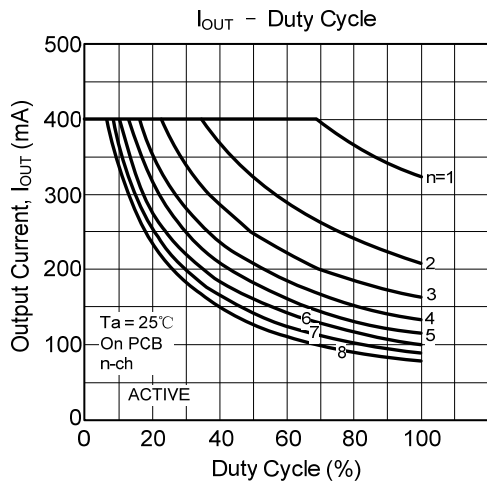
Note1: Pulse width 50μs, duty cycle 10%

Output impedance 50Ω, $t_r \leq 5ns$, $t_f \leq 10ns$

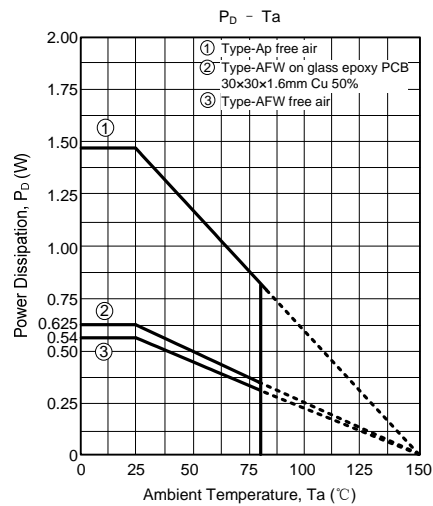
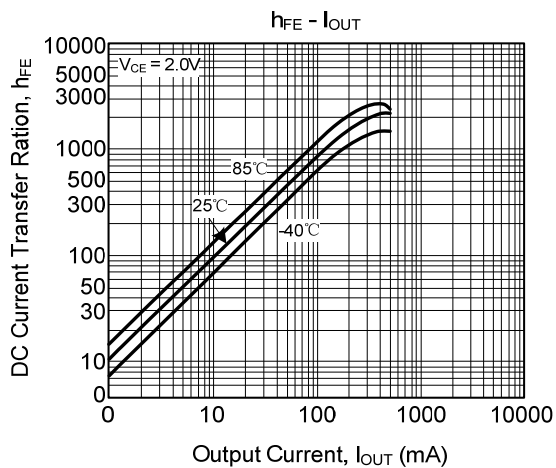
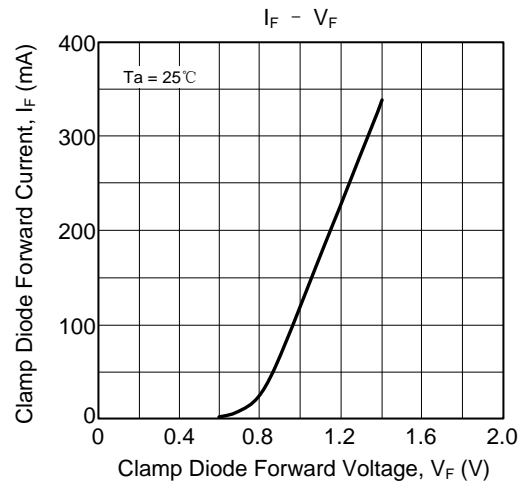
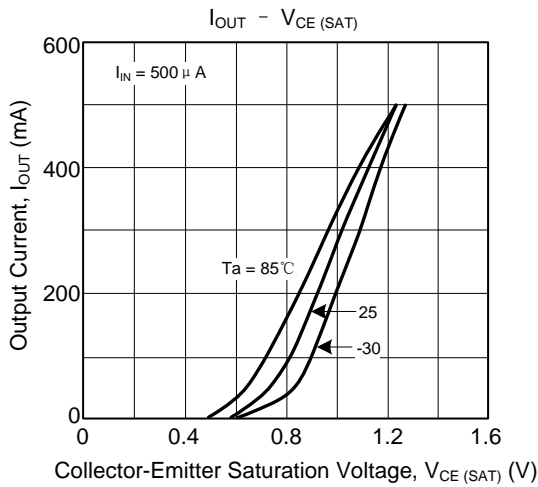
Note2: $R_1 = 0$, $V_{IH} = 3V$

Note3: C_L includes probe and jig capacitance.

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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