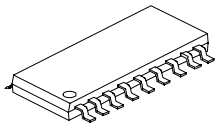
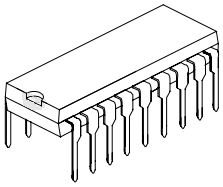
ULN2803

LINEAR INTEGRATED CIRCUIT

EIGHT DARLINGTON ARRAYS



SOP-18



DIP-18

*Pb-free plating product number: ULN2803L

■ 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

Order Number		Package	Packing
Normal	Lead Free Plating		
ULN2803-S18-R	ULN2803L-S18-R	SOP-18	Tape Reel
ULN2803-S18-T	ULN2803L-S18-T	SOP-18	Tube
ULN2803-D18-T	ULN2803L-D18-T	DIP-18	Tube

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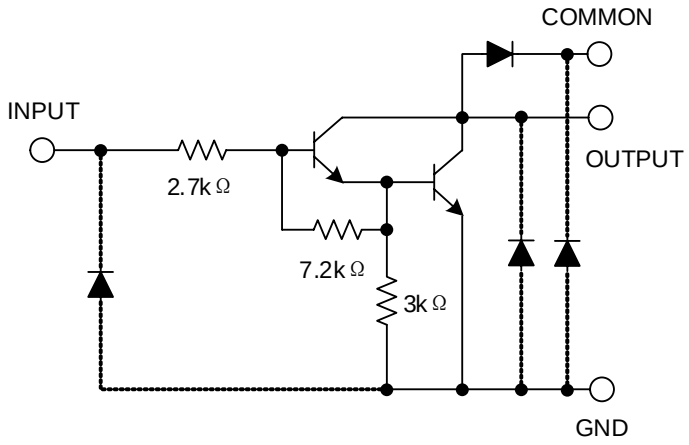
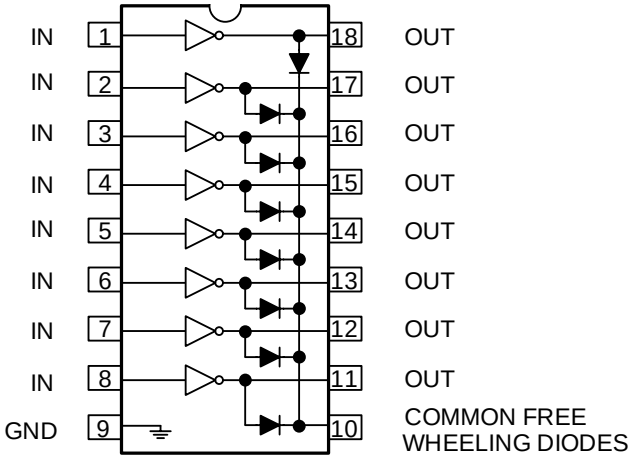
■ SCHEMATICS (EACH DRIVER)



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		VR	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}	0 ~ +70	°C
Storage Temperature		T_{STG}	-40 ~ +150	°C

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

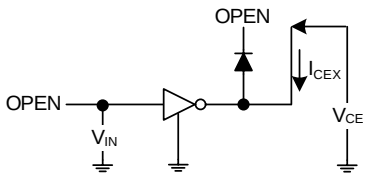
2. Absolute maximum ratings are stress ratings only and functional device operation is not implied. The device could be damaged beyond Absolute maximum ratings.
3. The device is guaranteed to meet performance specifications within 0℃~70℃ operating temperature range and assured by design from –40℃~ 85℃.

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

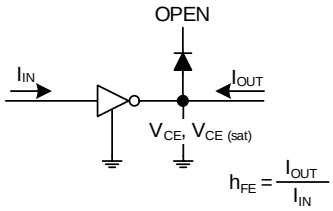
PARAMETER		SYMBOL	TEST CIRCUIT	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Leakage Current		I_{CEX}	1	V_{CE}=50V,T_a=25°C V_{CE}=50V,T_a=85°C			50 100	μA
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	2	I_{OUT}=350mA,I_{IN}=500μA I_{OUT}=200mA,I_{IN}=350μA I_{OUT}=100mA,I_{IN}=250μA		1.3 1.1 0.9	1.6 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}=500μA, T_a=85°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°C V_R=50V, T_a=85°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=125Ω,C_L=15pF		0.1	1	μS
Turn-Off Delay		t_{OFF}	8	V_{OUT}=50V,R_L=125Ω,C_L=15pF		0.2	1	μS

■ TEST CIRCUIT

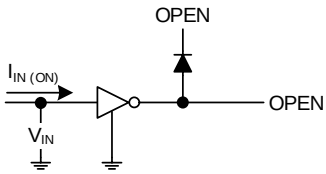
1. I_{CEX}



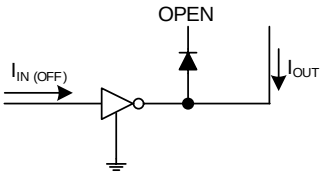
2. $V_{CE\ (sat)}$, h_{FE}



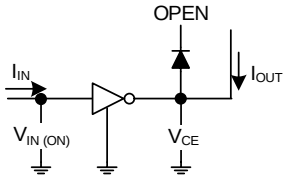
3. $I_{IN\ (ON)}$



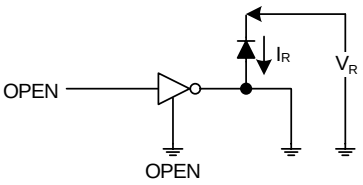
4. $I_{IN\ (OFF)}$



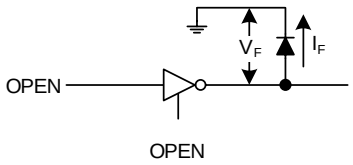
5. $V_{IN\ (ON)}$



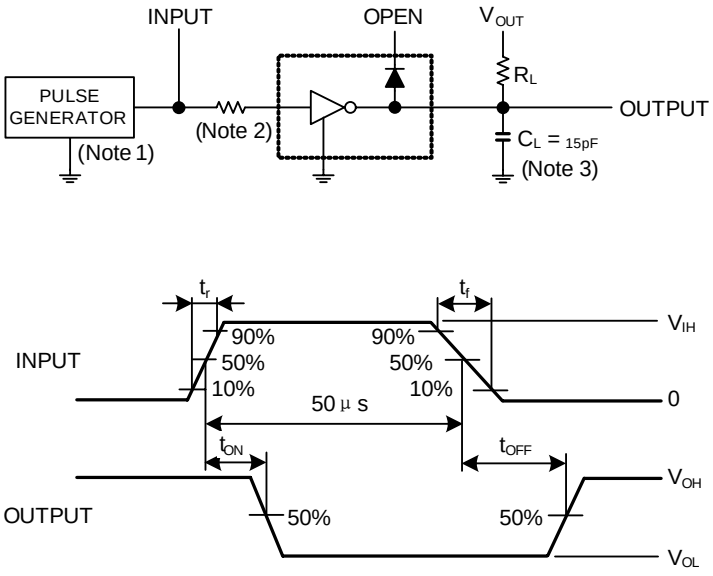
6. I_R



7. V_F

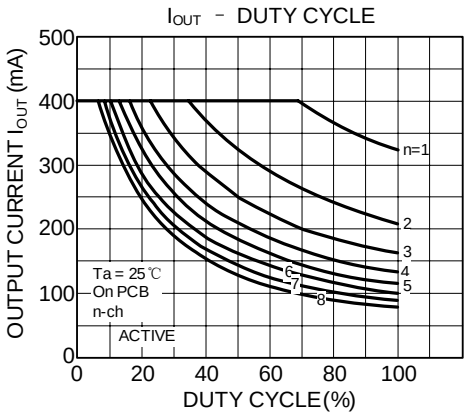


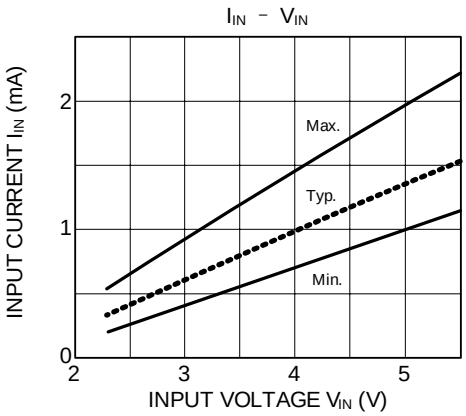
8. t_{ON}, t_{OFF}

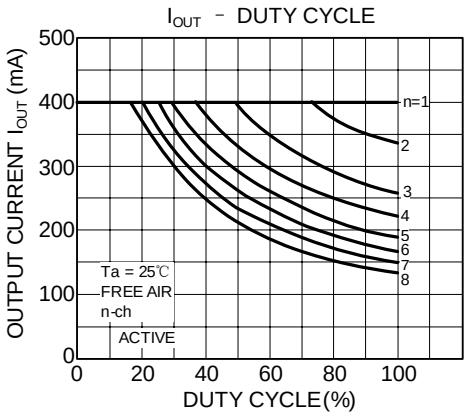


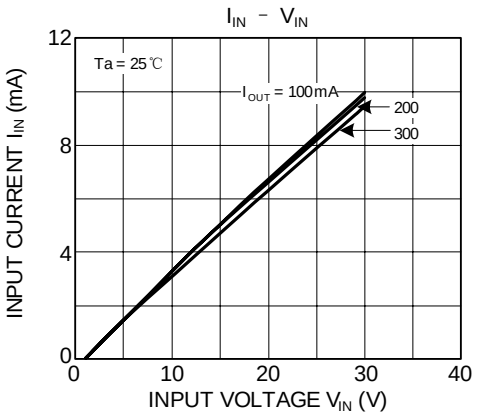
Note1: Pulse width 50μs, duty cycle 10%
Output impedance 50Ω, tr<=5ns, tf<=10ns
Note2: R1: 0, V_{IH}: 3V
Note3: CL includes probe and jig capacitance.

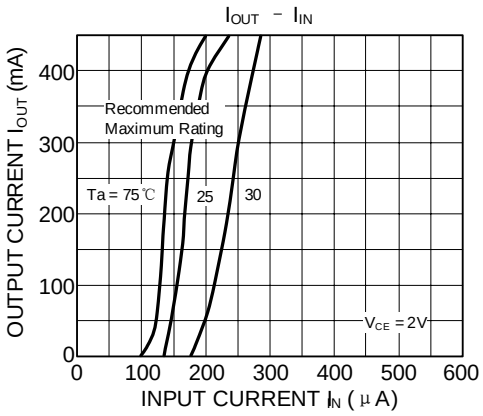
■ TYPICAL CHARACTERISTICS

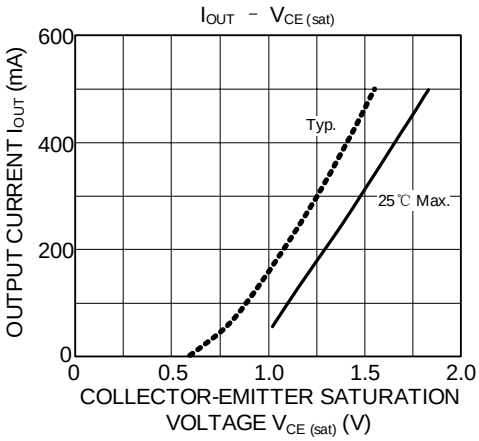




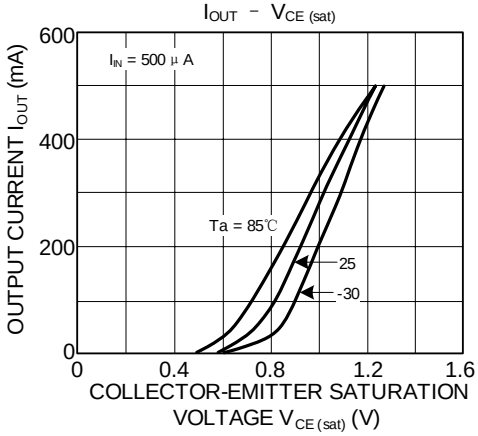


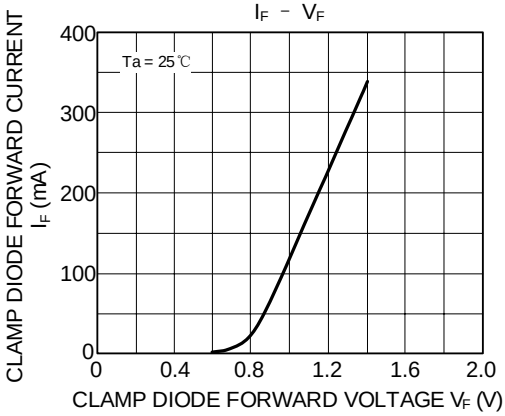


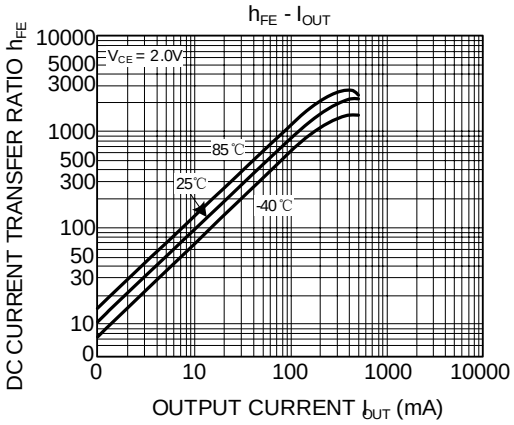


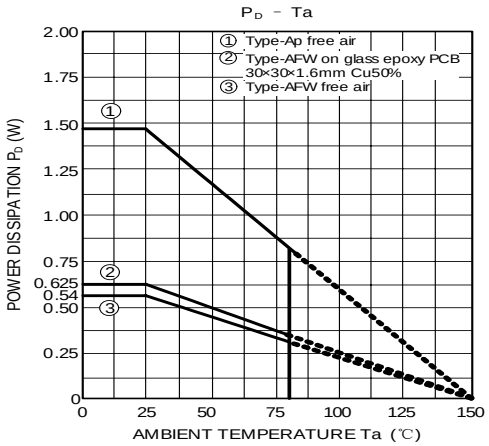


■ TYPICAL CHARACTERISTICS(cont.)









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