



## ULN62381

Preliminary

LINEAR INTEGRATED CIRCUIT

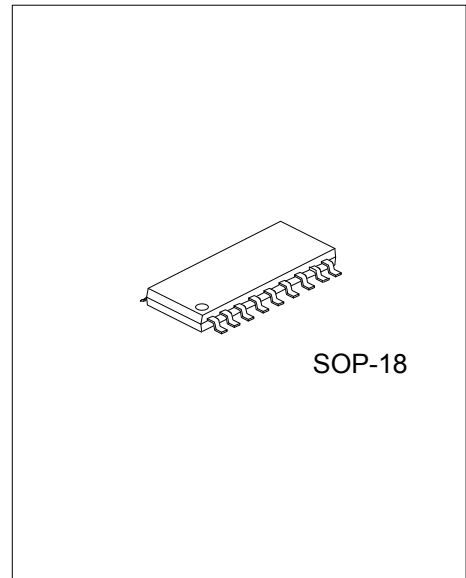
### 8CH LOW SATURATION SINK DRIVER

#### DESCRIPTION

The UTC **ULN62381** is comprised of eight NPN low saturation drivers. The device is specifically designed for multiplexed digit driving of eight digit common-cathode LED and also can be employed as a sink driver for multiplexed LED displays. Applications include relay, hammer, lamp and LED display drivers.

#### FEATURES

- \* Low saturation output voltage:  $V_{CE(sat)} = 0.9V$  (Max.) @  $I_{OUT} = 500mA$
- \* Output rating 15V (Min.) / 500mA (Max.)
- \* Input compatible with TTL and 5V CMOS
- \* Low level active inputs
- \* Standard supply voltage

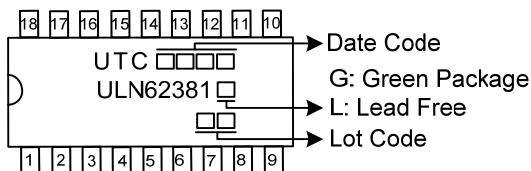


#### ORDERING INFORMATION

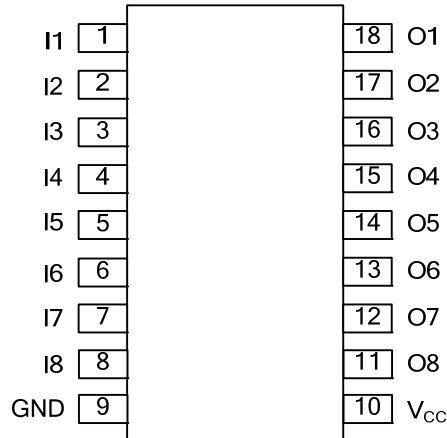
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULN62381L-S18-R	ULN62381G-S18-R	SOP-18	Tape Reel

<p>ULN62381G-S18-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) S18: SOP-18</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



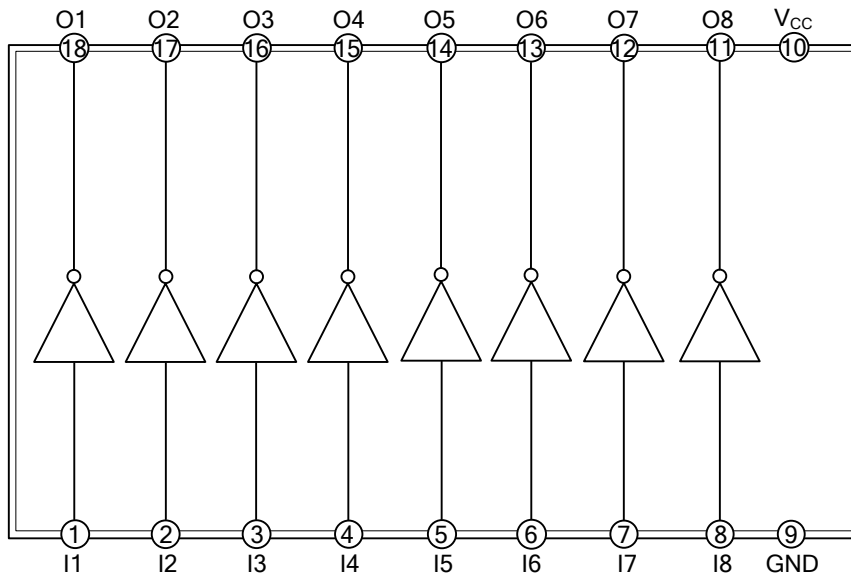
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	I1	1 Channel Input pin
2	I2	2 Channel Input pin
3	I3	3 Channel Input pin
4	I4	4 Channel Input pin
5	I5	5 Channel Input pin
6	I6	6 Channel Input pin
7	I7	7 Channel Input pin
8	I8	8 Channel Input pin
9	GND	GND pin
10	V <sub>CC</sub>	Power supply
11	O8	8 Channel Output pin
12	O7	7 Channel Output pin
13	O6	6 Channel Output pin
14	O5	5 Channel Output pin
15	O4	4 Channel Output pin
16	O3	3 Channel Output pin
17	O2	2 Channel Output pin
18	O1	1 Channel Output pin

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	7	V
Output Sustaining Voltage	$V_{CE(SUS)}$	15	V
Output Current	$I_{OUT}$	500	mA / ch
Input Voltage	$V_{IN}$	7	V
Input Current	$I_{IN}$	5	mA
Power Dissipation	$P_D$	0.96	W
Operating Temperature	$T_{OPR}$	-40 ~ +85	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^{\circ}\text{C}$

Note: 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.

■ RECOMMENDED OPERATING CONDITIONS ( $T_A= -40\sim 85^{\circ}\text{C}$ )

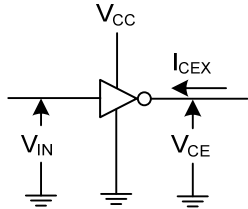
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$		4.5	5.0	5.5	V
Output Voltage	$V_{OUT}$				12	V
		Duty =50%	0		330	mA / ch
Input Voltage	$V_{IN}$		0		$V_{CC}$	V
	Output On	$V_{IN(ON)}$	2.4		$V_{CC}$	V
	Output Off	$V_{IN(OFF)}$	0		0.4	V

■ ELECTRICAL CHARACTERISTICS ( $V_{CC}=5\text{V}$ ,  $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

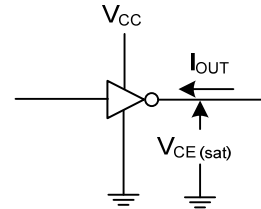
PARAMETER	SYMBOL	TEST CIRCUIT	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Leakage Current	$I_{CEX}$	1	$V_{IN}=\text{OPEN}$ , $V_{OUT}=12\text{V}$ , $T_a=85^{\circ}\text{C}$			100	$\mu\text{A}$
Output Saturation Voltage	$V_{CE(sat)}$	2	$I_{OUT}=500\text{mA}$			0.9	V
			$I_{OUT}=350\text{mA}$			0.7	V
Input Current	$I_{IN(ON)}$	3	$V_{CC}=5\text{V}$ , $V_{IN}=2.4\text{V}$		0.4	0.7	mA
Input Voltage (Output on)	$V_{IN(ON)}$		$V_{CC}=5\text{V}$			2.4	V
Supply Current	$I_{CC}$	4	$V_{CC}=V_{IN}=5\text{V}$			17	mA / ch
Turn-On Delay	$t_{ON}$	5	$V_{OUT}=10\text{V}$ , $R_L=20\Omega$ $C_L=15\text{pF}$		0.1		$\mu\text{s}$
Turn-Off Delay	$t_{OFF}$				1.2		$\mu\text{s}$

■ TEST CIRCUIT

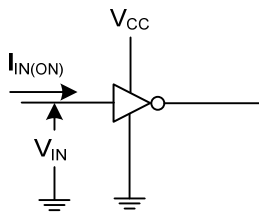
1.  $I_{CEX}$



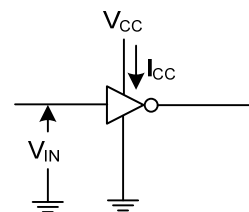
2.  $V_{CE(sat)}$



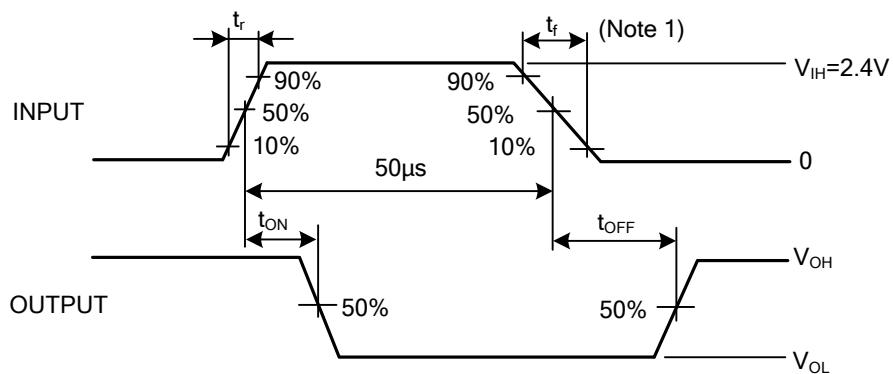
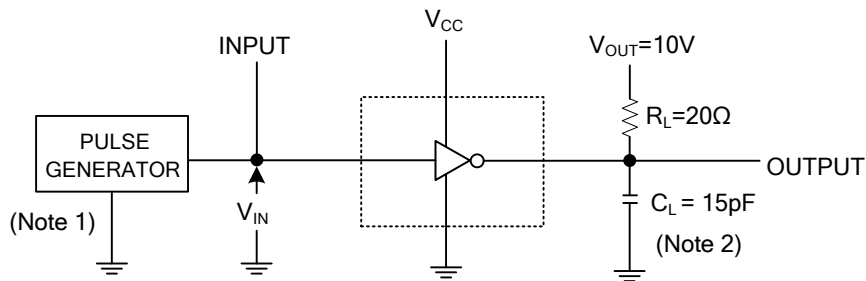
3.  $I_{IN(ON)}$



4.  $I_{CC}$

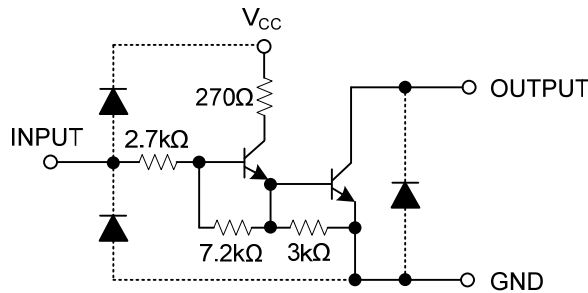


5.  $t_{ON}$ ,  $t_{OFF}$



Notes: 1. Pulse width 50μs, Duty cycle 10%.  
 Output impedance 50Ω,  $t_r \leq 5ns$ ,  $t_f \leq 10ns$ .  
 2.  $C_L$  includes probe and jig capacitance.

■ SCHEMATICS (EACH DRIVER)



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

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