



## U74LVC1G07

CMOS IC

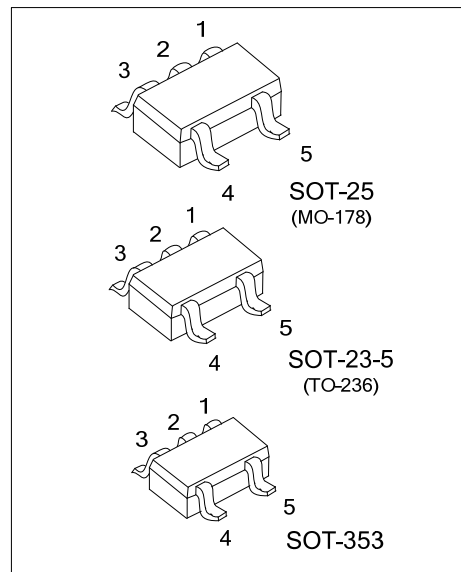
### BUFFER/DRIVER WITH OPEN-DRAIN OUTPUT

#### DESCRIPTION

The **U74LVC1G07** is a single Buffer/Driver with open-drain output. This device has power-down protective circuit, preventing device destruction when it is powered down.

#### FEATURES

- \* Inputs and open-drain output accept voltage up to 5.5V
- \* Low power Current:  $I_{CC}=10\mu A(\text{Max})$
- \*  $\pm 24\text{mA}$  output drive ( $V_{CC}=3.3\text{V}$ )
- \* Power down protection

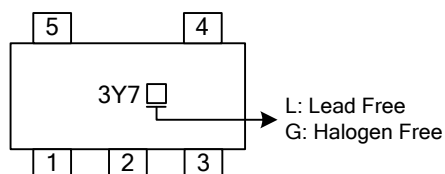


#### ORDERING INFORMATION

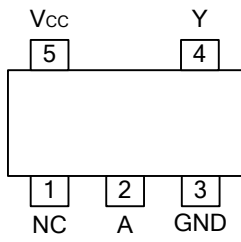
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G07L-AE5-R	U74LVC1G07G-AE5-R	SOT-23-5	Tape Reel
U74LVC1G07L-AF5-R	U74LVC1G07G-AF5-R	SOT-25	Tape Reel
U74LVC1G07L-AL5-R	U74LVC1G07G-AL5-R	SOT-353	Tape Reel

<p>U74LVC1G07L-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Free</p>	<p>(1) R: Tape Reel (2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free, L: Lead Free</p>
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#### MARKING



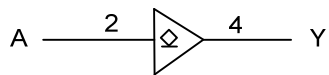
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

INPUT(A)	OUTPUT(Y)
H	Z
L	L

■ LOGIC DIAGRAM (positive logic)



### ■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	-0.5~6.5	V
Input Voltage	$V_{IN}$	-0.5~6.5	V
Output Voltage	$V_{OUT}$	Active	-0.5~6.5
		Power-Down	-0.5~6.5
Input Clamp Current( $V_{IN}<0$ )	$I_{IK}$	-50	mA
Output Clamp Current( $V_{OUT}<0$ )	$I_{OK}$	-50	mA
Output Current	$I_{OUT}$	$\pm 50$	mA
$V_{CC}$ or GND Current	$I_{CC}$	$\pm 100$	mA
Storage Temperature	$T_{STG}$	-65 ~ +150	$^{\circ}C$

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

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$	Operating	1.65		5.5	V
		Data retention only	1.5			V
Input Voltage	$V_{IN}$		0		5.5	V
Output Voltage	$V_{OUT}$		0		5.5	V
Operating Temperature	$T_{OPR}$		-40		125	$^{\circ}C$

### ■ STATIC CHARACTERISTICS ( $T_A=25^{\circ}C$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	$V_{IH}$	$V_{CC}=1.65V\sim 1.95V$	$0.65 \cdot V_{CC}$			V
		$V_{CC}=2.3V\sim 2.7V$	1.7			V
		$V_{CC}=3.0V\sim 3.6V$	2			V
		$V_{CC}=4.5V\sim 5.5V$	$0.7 \cdot V_{CC}$			V
Low-Level Input Voltage	$V_{IL}$	$V_{CC}=1.65V\sim 1.95V$			$0.35 \cdot V_{CC}$	V
		$V_{CC}=2.3V\sim 2.7V$			0.7	V
		$V_{CC}=3.0V\sim 3.6V$			0.8	V
		$V_{CC}=4.5V\sim 5.5V$			$0.3 \cdot V_{CC}$	V
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=1.65V \sim 5.5V, I_{OL}=100\mu A$			0.1	V
		$V_{CC}=1.65V, I_{OL}=4mA$			0.45	V
		$V_{CC}=2.3V, I_{OL}=8mA$			0.3	V
		$V_{CC}=3.0V, I_{OL}=16mA$			0.4	V
		$V_{CC}=3.0V, I_{OL}=24mA$			0.55	V
		$V_{CC}=4.5V, I_{OL}=32mA$			0.55	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0V \sim 5.5V, V_{IN}=V_{CC}$ or GND			$\pm 5$	$\mu A$
Power OFF Leakage Current	$I_{OFF}$	$V_{CC}=0V, V_{IN}$ or $V_{CC}=5.5V$			$\pm 10$	$\mu A$
Quiescent Supply Current	$I_Q$	$V_{CC}=1.65V\sim 5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			10	$\mu A$
Additional Quiescent Supply Current	$\Delta I_Q$	$V_{CC}=3V\sim 5.5V$ , One input at $V_{CC}-0.6V$ , other inputs at $V_{CC}$ or GND			500	$\mu A$
Input Capacitance	$C_{IN}$	$V_{CC}=3.3V, V_{IN}=V_{CC}$ or GND		4		pF
Output Capacitance	$C_{OUT}$	$V_{CC}=3.3V, V_{OUT}=V_{CC}$ or GND		5		pF

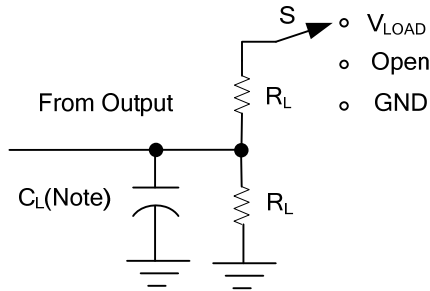
■ DYNAMIC CHARACTERISTICS (T<sub>A</sub>=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A) to output(Y)	t <sub>PLZ</sub> /t <sub>PZL</sub>	V <sub>CC</sub> =1.8V±0.15V, C <sub>L</sub> =30pF, R <sub>L</sub> =1KΩ	2.4		8.3	ns
		V <sub>CC</sub> =2.5V±0.2V, C <sub>L</sub> =30pF, R <sub>L</sub> =500Ω	1		5.5	ns
		V <sub>CC</sub> =3.3V±0.3V, C <sub>L</sub> = 50 pF, R <sub>L</sub> =500Ω	1.5		4.2	ns
		V <sub>CC</sub> = 5V±0.5V, C <sub>L</sub> = 50 pF, R <sub>L</sub> =500Ω	1		3.5	ns

■ OPERATING CHARACTERISTICS (T<sub>A</sub>=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C <sub>PD</sub>	V <sub>CC</sub> =1.8V, f=10MHz	3	3		pF
		V <sub>CC</sub> =2.5V, f=10MHz	3	3		pF
		V <sub>CC</sub> =3.3V, f=10MHz	3	4		pF
		V <sub>CC</sub> =5V, f=10MHz	3	6		pF

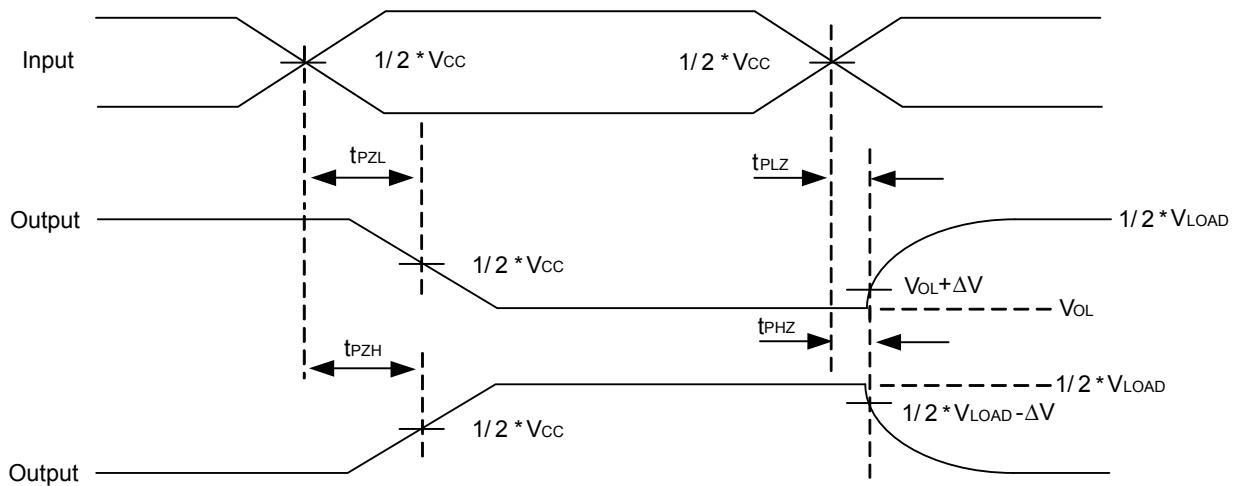
## ■ TEST CIRCUIT AND WAVEFORMS



TEST	S
$t_{PLH}/t_{PHL}$	Open
$t_{PHZ}/t_{PZH}$	GND
$t_{PLZ}/t_{PZL}$	$V_{LOAD}$

Note:  $C_L$  includes probe and jig capacitance.

$V_{CC}$	$V_{IN}$	$t_R/t_F$	$V_M$	$V_{LOAD}$	$C_L$	$R_L$	$V_{\Delta}$
$1.8V \pm 0.15V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	$2 * V_{CC}$	30pF	1K $\Omega$	0.15V
$2.5V \pm 0.2V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	$2 * V_{CC}$	30pF	500 $\Omega$	0.15V
$3.3V \pm 0.3V$	3 V	$\leq 2.5ns$	1.5V	6V	50pF	500 $\Omega$	0.3V
$5V \pm 0.5V$	$V_{CC}$	$\leq 2.5ns$	$V_{CC}/2$	$2 * V_{CC}$	50pF	500 $\Omega$	0.3V



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