



U74LVC1G07

CMOS IC

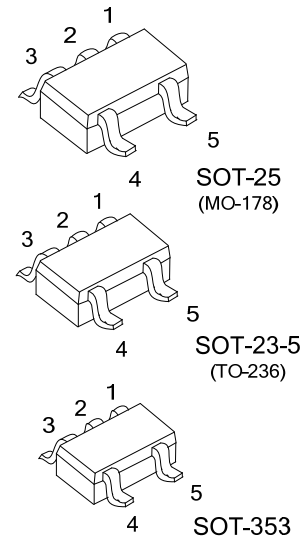
BUFFER/DRIVER WITH OPEN-DRAIN OUTPUT

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

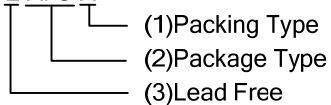
- * Inputs and open-drain output accept voltage up to 5.5V
- * Low power Current: $I_{CC}=10\mu A(\text{Max})$
- * $\pm 24\text{mA}$ output drive($V_{CC}=3.3\text{V}$)
- * Power down protection



ORDERING INFORMATION

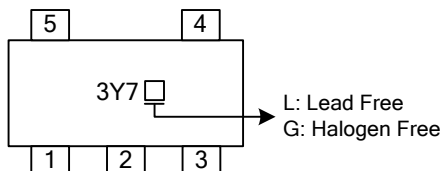
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G07L-AE5-R	U74LVC1G07G-AE5-R	SOT-23-5	Tape Reel
U74LVC1G07L-AF5-R	U74LVC1G07G-AF5-R	SOT-25	Tape Reel
U74LVC1G07L-AL5-R	U74LVC1G07G-AL5-R	SOT-353	Tape Reel

U74LVC1G07L-AF5-R

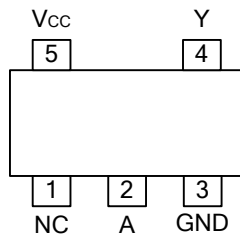


- (1) R: Tape Reel
- (2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353
- (3) G: Halogen Free, L: Lead Free

MARKING



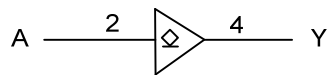
■ PIN CONFIGURATION



■ 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	Active	V_{OUT}	V
Input Clamp Current($V_{IN}<0$)	I_{IK}	-50	mA
Output Clamp Current($V_{OUT}<0$)	I_{OK}	-50	mA
Output Current	I_{OUT}	± 50	mA
V_{CC} or GND Current	I_{CC}	± 100	mA
Storage Temperature	T_{STG}	-65 ~ +150	°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	°C

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

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

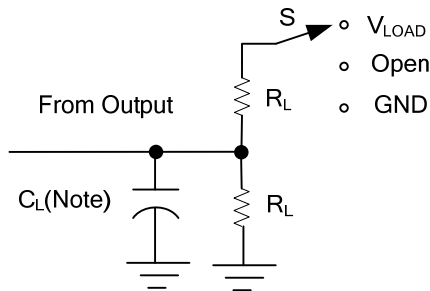
■ DYNAMIC CHARACTERISTICS (T_A=25°C)

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

■ OPERATING CHARACTERISTICS (T_A=25°C)

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

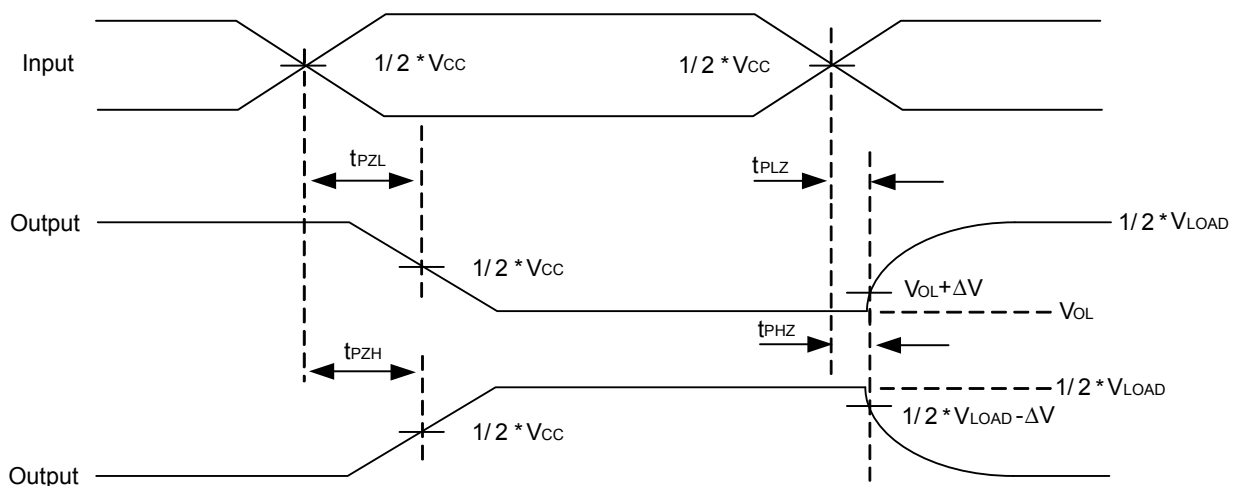
■ TEST CIRCUIT AND WAVEFORMS



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_{Δ}
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 * V_{CC}$	30pF	1K Ω	0.15V
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 * V_{CC}$	30pF	500 Ω	0.15V
$3.3V \pm 0.3V$	3 V	$\leq 2.5ns$	1.5V	6V	50pF	500 Ω	0.3V
$5V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	$2 * V_{CC}$	50pF	500 Ω	0.3V



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