



# U74LVC1G07

**CMOS IC**

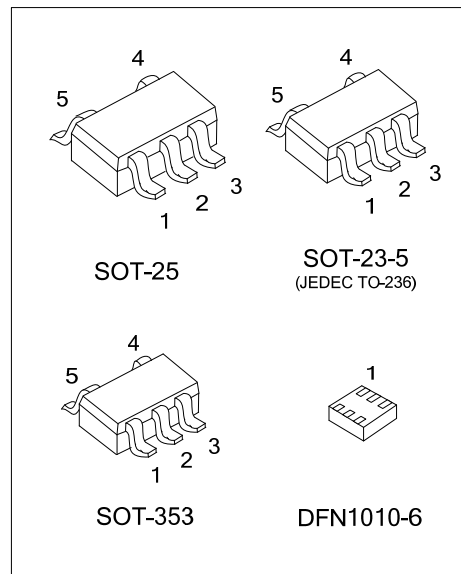
## BUFFER/DRIVER WITH OPEN-DRAIN OUTPUT

### 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		
U74LVC1G07G-AE5-R	U74LVC1G07G-AE5-R	SOT-23-5	Tape Reel
U74LVC1G07G-AF5-R	U74LVC1G07G-AF5-R	SOT-25	Tape Reel
U74LVC1G07G-AL5-R	U74LVC1G07G-AL5-R	SOT-353	Tape Reel
U74LVC1G07G-K06-1010-R	U74LVC1G07G-K06-1010-R	DFN1010-6	Tape Reel

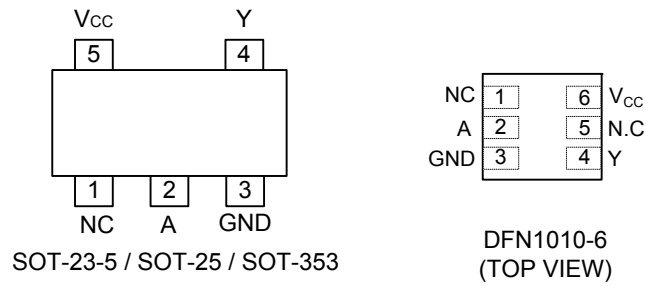
<p>U74LVC1G07G-AE5-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353 K06-1010: DFN1010-6 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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### MARKING

SOT-23-5 / SOT-25 / SOT-353	DFN1010-6



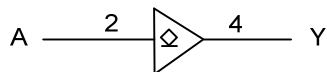
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATING (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>		-0.5 ~ 6.5	V
Input Voltage	V <sub>IN</sub>		-0.5 ~ 6.5	V
Output Voltage	V <sub>OUT</sub>	Active	-0.5 ~ 6.5	V
		Power-Down	-0.5 ~ 6.5	V
Continuous V <sub>CC</sub> or GND Current	I <sub>CC</sub>		±100	mA
Continuous Output Current	I <sub>OUT</sub>		±50	mA
Input Clamp Current	I <sub>IK</sub>	V <sub>IN</sub> <0	-50	mA
Output Clamp Current	I <sub>OK</sub>	V <sub>OUT</sub> <0	-50	mA
Storage Temperature Range	T <sub>STG</sub>		-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 <sub>CC</sub>	Operating	1.65		5.5	V
		Data retention only	1.5			V
Input Voltage	V <sub>IN</sub>		0		5.5	V
Output Voltage	V <sub>OUT</sub>		0		5.5	V
Operating Temperature	T <sub>OPR</sub>		-40		+125	°C

■ STATIC CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =1.65V~1.95V	0.65×V <sub>CC</sub>			V
		V <sub>CC</sub> =2.3V~2.7V	1.7			V
		V <sub>CC</sub> =3.0V~3.6V	2			V
		V <sub>CC</sub> =4.5V~5.5V	0.7×V <sub>CC</sub>			V
Low-Level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =1.65V~1.95V			0.35×V <sub>CC</sub>	V
		V <sub>CC</sub> =2.3V~2.7V			0.7	V
		V <sub>CC</sub> =3.0V~3.6V			0.8	V
		V <sub>CC</sub> =4.5V~5.5V			0.3×V <sub>CC</sub>	V
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =1.65V ~ 5.5V, I <sub>OL</sub> =100μA			0.1	V
		V <sub>CC</sub> =1.65V, I <sub>OL</sub> =4mA			0.45	V
		V <sub>CC</sub> =2.3V, I <sub>OL</sub> =8mA			0.3	V
		V <sub>CC</sub> =3.0V, I <sub>OL</sub> =16mA			0.4	V
		V <sub>CC</sub> =3.0V, I <sub>OL</sub> =24mA			0.55	V
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =32mA			0.55	V
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>CC</sub> =0V~5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND			±5	μA
Power OFF Leakage Current	I <sub>off</sub>	V <sub>CC</sub> =0V, V <sub>IN</sub> or V <sub>CC</sub> =5.5V			±10	μA
OFF-state output current	I <sub>OZ</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>IH</sub> or V <sub>IL</sub> , V <sub>OUT</sub> =V <sub>CC</sub> or GND		±0.1	±10	μA
Quiescent Supply Current	I <sub>Q</sub>	V <sub>CC</sub> =1.65V~5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND, I <sub>OUT</sub> =0			10	μA
Additional Quiescent Supply Current	ΔI <sub>Q</sub>	V <sub>CC</sub> =3V~5.5V, One input at V <sub>CC</sub> -0.6V, other inputs at V <sub>CC</sub> or GND			500	μA
Input Capacitance	C <sub>IN</sub>	V <sub>CC</sub> =3.3V, V <sub>IN</sub> =V <sub>CC</sub> or GND		4		pF
Output Capacitance	C <sub>OUT</sub>	V <sub>CC</sub> =3.3V, V <sub>OUT</sub> =V <sub>CC</sub> or GND		5		pF

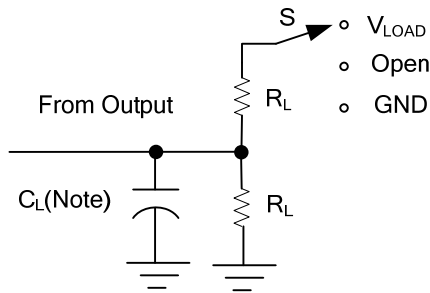
■ DYNAMIC CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

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 (f=10MHz, T<sub>A</sub>=25°C, unless otherwise specified)

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

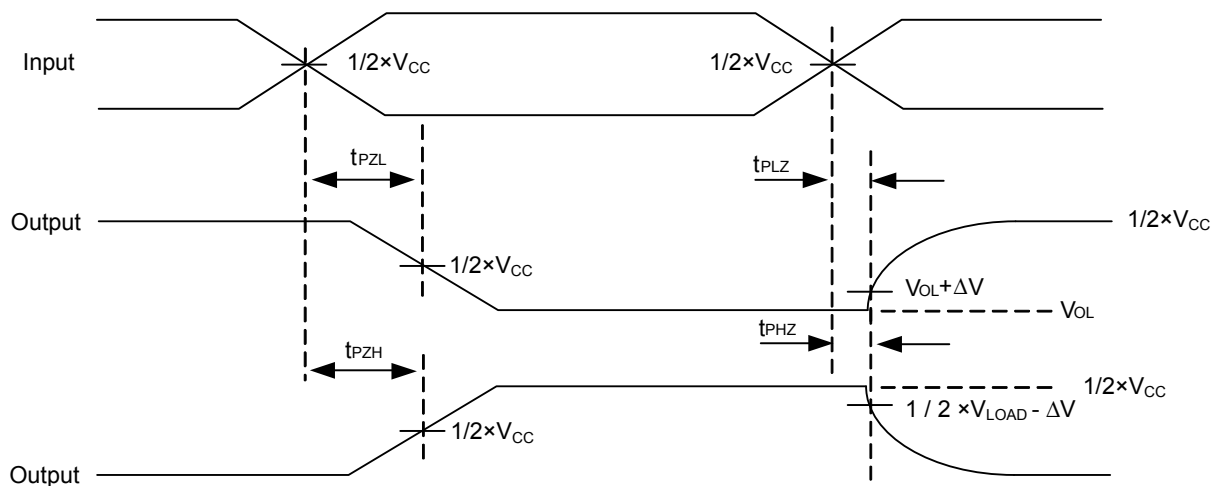
### TEST CIRCUIT AND WAVEFORMS



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.

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



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