

**U74LVC1G07B**

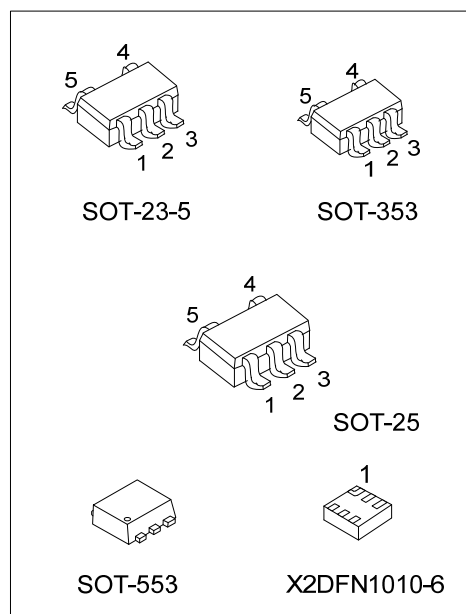
Preliminary

CMOS IC**BUFFER/DRIVER WITH
OPEN-DRAIN OUTPUT****DESCRIPTION**

The **U74LVC1G07B** 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: $I_{CC}=10\mu A$ (Max.)
- * $\pm 24mA$ output drive ($V_{CC}=3.3V$)
- * Power down protection
- * High ESD (2kV, HBM)

**ORDERING INFORMATION**

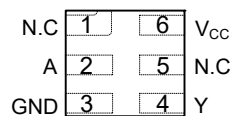
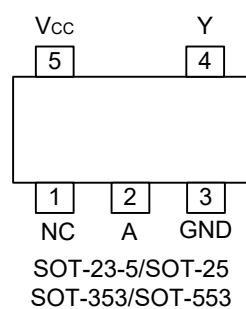
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G07BL-AE5-R	U74LVC1G07BG-AE5-R	SOT-23-5	Tape Reel
U74LVC1G07BL-AF5-R	U74LVC1G07BG-AF5-R	SOT-25	Tape Reel
U74LVC1G07BL-AL5-R	U74LVC1G07BG-AL5-R	SOT-353	Tape Reel
U74LVC1G07BL-AN5-R	U74LVC1G07BG-AN5-R	SOT-553	Tape Reel
U74LVC1G07BL-K06-1010X2-R	U74LVC1G07BG-K06-1010X2-R	X2DFN1010-6	Tape Reel

U74LVC1G07BG-AE5-R (1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353 AN5: SOT-553, K06-1010X2: X2DFN1010-6 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

SOT-23-5 / SOT-25 / SOT-353 / SOT-553	X2DFN1010-6
3Y7B □ L: Lead Free G: Halogen Free	

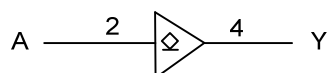
■ PIN CONFIGURATION

X2DFN1010-6
(TOP VIEW)

■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



■ **ABSOLUTE MAXIMUM RATING** (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	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	V
		Power-Down	-0.5 ~ 6.5	V
Continuous V _{CC} or GND Current	I _{CC}		±100	mA
Continuous Output Current	I _{OUT}		±50	mA
Input Clamp Current	I _{IK}	V _{IN} <0	-50	mA
Output Clamp Current	I _{OK}	V _{OUT} <0	-50	mA
Electrostatic Discharge	V _{ESD}	Human-Body Model (HBM)	2000	V
Storage Temperature Range	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
Input Transition Rise or Fall Rate	Δt/Δv	V _{CC} =1.65V~2.7V			20	ns/V
		V _{CC} =3.0V~3.6V			10	ns/V
		V _{CC} =4.5V~5.5V			5	ns/V
Operating Temperature	T _A		-40		+125	°C

■ **STATIC CHARACTERISTICS** (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V _{IH}	V _{CC} =1.65V~1.95V	0.65× V _{CC}			0.65× V _{CC}			V
		V _{CC} =2.3V~2.7V	1.7			1.7			V
		V _{CC} =3.0V~3.6V	2			2			V
		V _{CC} =4.5V~5.5V	0.7× V _{CC}			0.7× V _{CC}			V
Low-Level Input Voltage	V _{IL}	V _{CC} =1.65V~1.95V			0.35× V _{CC}			0.35× V _{CC}	V
		V _{CC} =2.3V~2.7V			0.7			0.7	V
		V _{CC} =3.0V~3.6V			0.8			0.8	V
		V _{CC} =4.5V~5.5V			0.3× V _{CC}			0.3× V _{CC}	V
Low-Level Output Voltage	V _{OL}	V _{CC} =1.65V ~ 5.5V, I _{OL} =100μA			0.1			0.1	V
		V _{CC} =1.65V, I _{OL} =4mA			0.45			0.7	V
		V _{CC} =2.3V, I _{OL} =8mA			0.3			0.45	V
		V _{CC} =3.0V, I _{OL} =16mA			0.4			0.6	V
		V _{CC} =3.0V, I _{OL} =24mA			0.55			0.8	V
		V _{CC} =4.5V, I _{OL} =32mA			0.55			0.8	V

■ **STATIC CHARACTERISTICS (Cont.)**

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0V~5.5V, V _{IN} =V _{CC} or GND			±5			±5	μA
Power OFF Leakage Current	I _{OFF}	V _{CC} =0V, V _{IN} or V _{OUT} =5.5V			±10			±10	μA
OFF-State Output Current	I _{OZ}	V _{CC} =5.5V, V _{IN} =V _{IH} or V _{IL} , V _{OUT} =V _{CC} or GND		±0.1	±10			±10	μA
Quiescent Supply Current	I _Q	V _{CC} =1.65V~5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0			10			10	μA
Additional Quiescent Supply Current	ΔI _Q	V _{CC} =3V~5.5V, One input at V _{CC} -0.6V, other inputs at V _{CC} or GND			500			500	μA

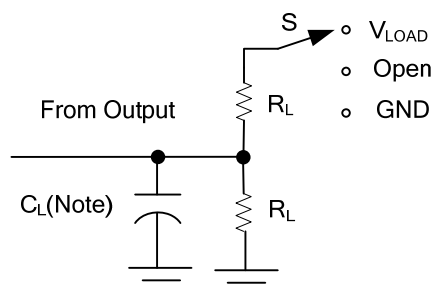
■ **DYNAMIC CHARACTERISTICS (T_A=25°C, unless otherwise specified)**

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay from input (A) to output (Y)	t _{PLZ} / t _{PZL}	V _{CC} =1.8V±0.15V, C _L =30pF, R _L =1KΩ	1		13.6	1		14	ns
		V _{CC} =2.5V±0.2V, C _L =30pF, R _L =500Ω	0.5		9.8	0.5		10	ns
		V _{CC} =3.3V±0.3V, C _L = 50 pF, R _L =500Ω	1		7.5	1		8	ns
		V _{CC} = 5V±0.5V, C _L = 50 pF, R _L =500Ω	0.5		6.6	0.5		7	ns

■ **OPERATING CHARACTERISTICS (f=10MHz, T_A=25°C, unless otherwise specified)**

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

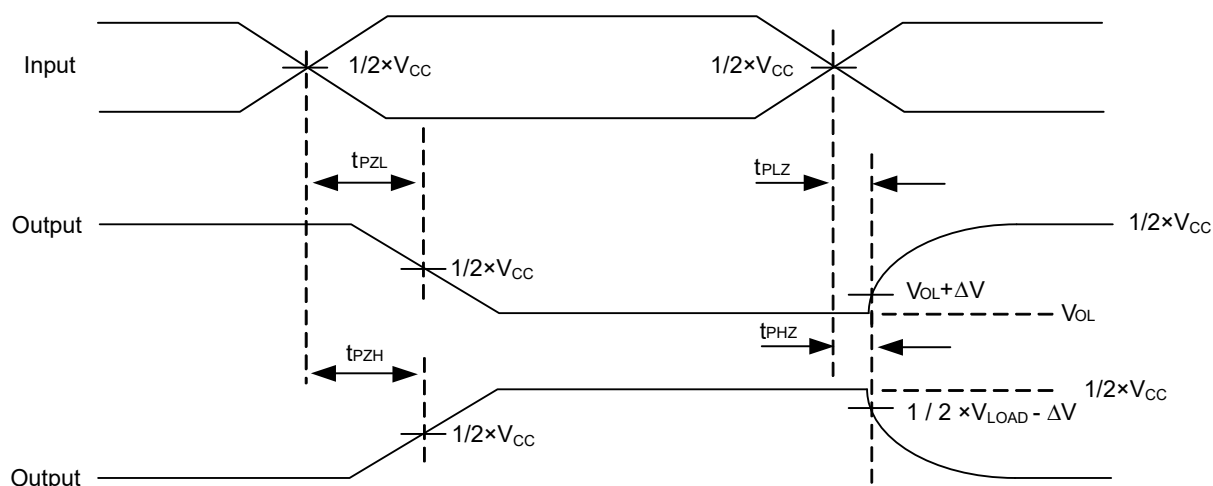
■ TEST CIRCUIT AND WAVEFORMS



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}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	30pF	1K Ω	0.15V
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	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}	$\leq 2.5ns$	$V_{CC}/2$	$2 \times V_{CC}$	50pF	500 Ω	0.3V



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