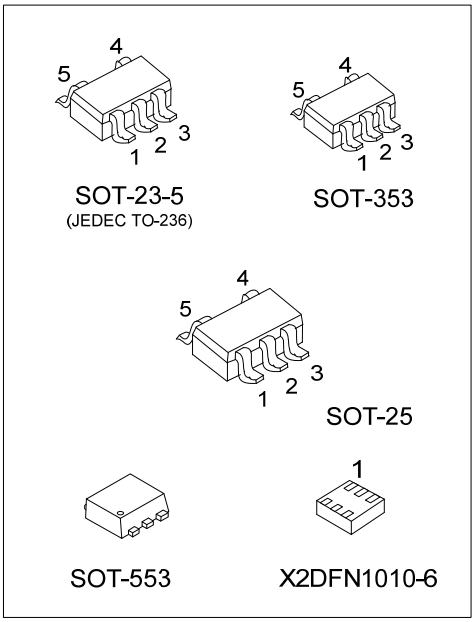
U74LVC1G07B

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}=10μA(Max)
*±24mA output drive(V_{CC}=3.3V)
* Power down protection
* High ESD (2kV, HBM)

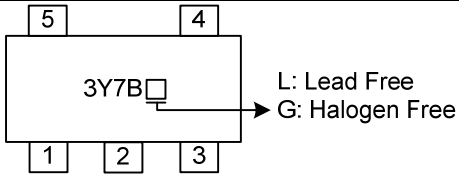
■ ORDERING INFORMATION

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

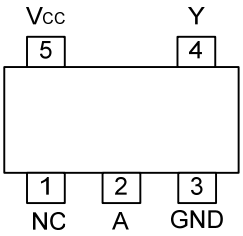
U74LVC1G07BG-AE5-R
(1)Packing Type
(2)Package Type
(3)Green Package

(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

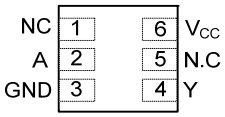
■ MARKING

SOT-23-5 / SOT-25 / SOT-353 / SOT-553	X2DFN1010-6
	

■ PIN CONFIGURATION



SOT-23-5/SOT-25
SOT-353/SOT-553

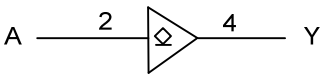


X2DFN1010-6
(TOP VIEW)

■ 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
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

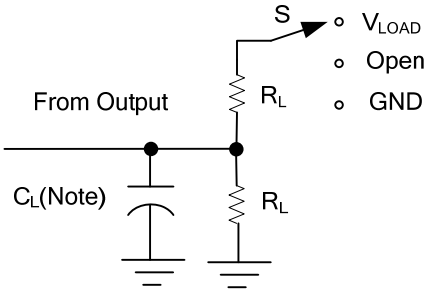
■ DYNAMIC CHARACTERISTICS (T_A=25°C, unless otherwise specified)

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	3		pF
		V_{CC}=2.5V	3	3		pF
		V_{CC}=3.3V	3	4		pF
		V_{CC}=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	$V_\triangle$
1.8V±0.15V	V_{CC}	≤2ns	$V_{CC}/2$	$2\times V_{CC}$	30pF	1KΩ	0.15V
2.5V±0.2V	V_{CC}	≤2ns	$V_{CC}/2$	$2\times V_{CC}$	30pF	500Ω	0.15V
3.3V±0.3V	3 V	≤2.5ns	1.5V	6V	50pF	500Ω	0.3V
5V±0.5V	V_{CC}	≤2.5ns	$V_{CC}/2$	$2\times V_{CC}$	50pF	500Ω	0.3V