



# U74LVC1G126

**CMOS IC**

## BUS BUFFER/LINE DRIVER; 3-STATE

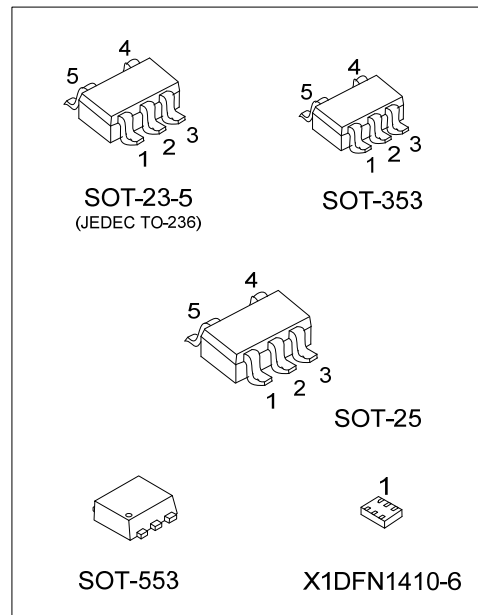
### DESCRIPTION

The **U74LVC1G126** is single bus buffer/line driver with 3-state output. The output is disabled When the output enable (OE) is low. When OE is high, true data is will pass A input to the Y output.

This device has power-down protective circuit preventing device from destruction when it is powered down.

### FEATURES

- \* Operate From 1.65V to 5.5V
- \* Inputs Accept Voltages to 5.5V
- \* High Noise Immunity
- \* Low Power Dissipation
- \* Direct Interface With TTL level



### ORDERING INFORMATION

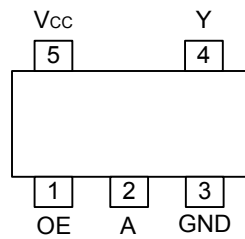
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC1G126L-AE5-R	U74LVC1G126G-AE5-R	SOT-23-5	Tape Reel
U74LVC1G126L-AF5-R	U74LVC1G126G-AF5-R	SOT-25	Tape Reel
U74LVC1G126L-AL5-R	U74LVC1G126G-AL5-R	SOT-353	Tape Reel
U74LVC1G126L-AN5-R	U74LVC1G126G-AN5-R	SOT-553	Tape Reel
U74LVC1G126L-K06-1410X1-R	U74LVC1G126G-K06-1410X1-R	X1DFN1410-6	Tape Reel

<p>U74LVC1G126G-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 AN5: SOT-553, K06-1410X1: X1DFN1410-6 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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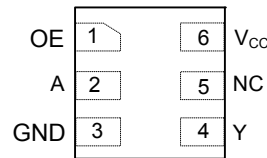
### MARKING

SOT-23-5 / SOT-25 / SOT-353 / SOT-553	X1DFN1410-6
<p>L: Lead Free G: Halogen Free</p>	<p>L: Lead Free G: Halogen Free</p>

■ PIN CONFIGURATION



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



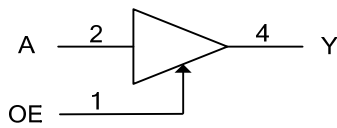
X1DFN1410-6  
(TOP VIEW)

■ FUNCTION TABLE

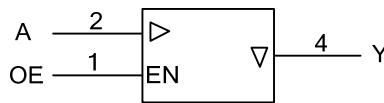
INPUT(OE)	INPUT(A)	OUTPUT(Y)
H	L	L
H	H	H
L	X	Z

Note: H: HIGH voltage level; L: LOW voltage level; X=don't care; Z=high-impedance OFF-state.

■ LOGIC DIAGRAM (Positive Logic)



Logic Symbol



IEC Logic Symbol

## ■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		$V_{CC}$	-0.5 ~ +6.5	V
Input Voltage		$V_{IN}$	-0.5 ~ +6.5	V
Output Voltage	Enable mode	$V_{OUT}$	-0.5 ~ $V_{CC} + 0.5$	V
	Disable mode		-0.5 ~ +6.5	V
	Power-down mode		-0.5 ~ +6.5	V
$V_{CC}$ or GND Current		$I_{CC}$	±100	mA
Continuous Output Current ( $V_{OUT}=0$ to $V_{CC}$ )		$I_{OUT}$	±50	mA
Input Clamp Current ( $V_{IN}<0$ )		$I_{IK}$	-50	mA
Output Clamp Current ( $V_{OUT}>V_{CC}$ or $V_{OUT}<0$ )		$I_{OK}$	-50	mA
Power Dissipation ( $T_A=-40^{\circ}C \sim +125^{\circ}C$ )	SOT-23-5	$P_D$	300	mW
	SOT-25		360	mW
	SOT-353		250	mW
	SOT-553		210	mW
	X1DFN1410-6		200	mW
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	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$	Operating	1.65		5.5	V
Input Voltage	$V_{IN}$		0		5.5	V
Output Voltage	$V_{OUT}$	$V_{CC}=1.65V \sim 5.5V$ ; Enable mode	0		$V_{CC}$	V
		$V_{CC}=1.65V \sim 5.5V$ ; Disable mode	0		5.5	V
		$V_{CC}=0V$ ; Power-Down Mode	0		5.5	V
Input Transition Rise or Fall Rate	$t_R / t_F$	$V_{CC}=1.65V \sim 2.7V$			20	ns/V
		$V_{CC}=2.7V \sim 5.5V$			10	ns/V
Operating Temperature	$T_A$		-40		+125	°C

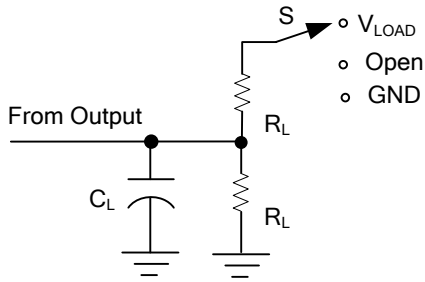
■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T <sub>A</sub> =25°C			T <sub>A</sub> =-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =1.65V ~ 1.95V	0.65× V <sub>CC</sub>			0.65× V <sub>CC</sub>			V
		V <sub>CC</sub> =2.3V ~ 2.7V	1.7			1.7			V
		V <sub>CC</sub> =2.7V ~ 3.6V	2			2			V
		V <sub>CC</sub> =4.5V ~ 5.5V	0.7× V <sub>CC</sub>			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>			0.35× V <sub>CC</sub>	V
		V <sub>CC</sub> =2.3V ~ 2.7V			0.7			0.7	V
		V <sub>CC</sub> =2.7V ~ 3.6V			0.8			0.8	V
		V <sub>CC</sub> =4.5V ~ 5.5V			0.3× V <sub>CC</sub>			0.3× V <sub>CC</sub>	V
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =1.65 ~ 5.5V, I <sub>OH</sub> =-100μA	V <sub>CC</sub> - 0.1			V <sub>CC</sub> - 0.1			V
		V <sub>CC</sub> =1.65V, I <sub>OH</sub> =-4mA	1.2			0.95			V
		V <sub>CC</sub> =2.3V, I <sub>OH</sub> =-8mA	1.9			1.7			V
		V <sub>CC</sub> =2.7V, I <sub>OH</sub> =-12mA	2.2			1.9			V
		V <sub>CC</sub> =3.0V, I <sub>OH</sub> =-24mA	2.3			2.0			V
		V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-32mA	3.8			3.4			V
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =1.65 ~ 5.5V, I <sub>OL</sub> =100μA			0.1			0.1	V
		V <sub>CC</sub> =1.65V, I <sub>OL</sub> =4mA			0.45			0.7	V
		V <sub>CC</sub> =2.3V, I <sub>OL</sub> =8mA			0.3			0.45	V
		V <sub>CC</sub> =2.7V, I <sub>OL</sub> =12mA			0.4			0.6	V
		V <sub>CC</sub> =3.0V, I <sub>OL</sub> =24mA			0.55			0.8	V
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =32mA			0.55			0.8	V
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =5.5V or GND		±0.1	±5			±5	μA
Power OFF Leakage Current	I <sub>OFF</sub>	V <sub>CC</sub> =0V, V <sub>IN</sub> or V <sub>OUT</sub> =5.5V		±0.1	±10			±10	μA
3-State Output OFF-State 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			±10	μA
Quiescent Supply Current	I <sub>CC</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND, I <sub>OUT</sub> =0		0.1	10			10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI <sub>CC</sub>	V <sub>CC</sub> =2.3 ~ 5.5V, V <sub>IN</sub> =V <sub>CC</sub> -0.6V, I <sub>OUT</sub> =0		5	500			500	μA

■ SWITCHING CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T <sub>A</sub> =25°C			T <sub>A</sub> =-40°C~+125°C			UNIT	
			MIN	TYP	MAX	MIN	TYP	MAX		
Propagation Delay From Input (A) to Output (Y)	t <sub>PLH</sub> / t <sub>PHL</sub>	C <sub>L</sub> =30pF	V <sub>CC</sub> =1.8±0.15V, R <sub>L</sub> =1KΩ	1.0		16			20	ns
			V <sub>CC</sub> =2.5±0.2V, R <sub>L</sub> =500Ω	0.5		10			14	ns
		C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω	V <sub>CC</sub> =2.7V	0.5		10			14	ns
			V <sub>CC</sub> =3.3±0.3V	0.5		7			11	ns
			V <sub>CC</sub> =5±0.5V	0.5		5			9	ns
3-State Output Enable Time From Input (OE) to Output (Y)	t <sub>PZH</sub> / t <sub>PZL</sub>	C <sub>L</sub> =30pF	V <sub>CC</sub> =1.8±0.15V, R <sub>L</sub> =1KΩ	1.0		18			22	ns
			V <sub>CC</sub> =2.5±0.2V, R <sub>L</sub> =500Ω	0.5		11			14	ns
		C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω	V <sub>CC</sub> =2.7V	0.5		11			14	ns
			V <sub>CC</sub> =3.3±0.3V	0.5		7			11	ns
			V <sub>CC</sub> =5±0.5V	0.5		6			9	ns
3-State Output Disable Time From Input (OE) to Output (Y)	t <sub>PLZ</sub> / t <sub>PHZ</sub>	C <sub>L</sub> =30pF	V <sub>CC</sub> =1.8±0.15V, R <sub>L</sub> =1KΩ	1.0		10			13	ns
			V <sub>CC</sub> =2.5±0.2V, R <sub>L</sub> =500Ω	0.5		7			10	ns
		C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω	V <sub>CC</sub> =2.7V	0.5		7			9	ns
			V <sub>CC</sub> =3.3±0.3V	0.5		6			8	ns
			V <sub>CC</sub> =5±0.5V	0.5		5			7	ns

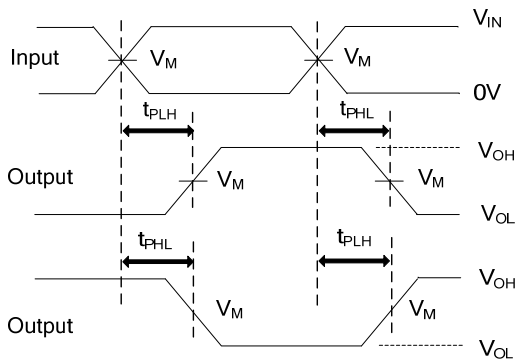
## TEST CIRCUIT AND WAVEFORMS



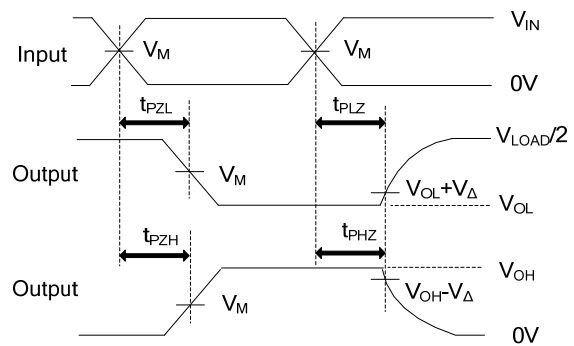
TEST	S
$t_{PLH}/t_{PHL}$	Open
$t_{PHZ}/t_{PZH}$	GND
$t_{PLZ}/t_{PZL}$	$V_{LOAD}$

TEST CIRCUIT

$V_{CC}$	INPUTS		$V_M$	$V_{LOAD}$	$V_{\Delta}$	$C_L$	$R_L$
	$V_{IN}$	$t_R, t_F$					
$1.8V \pm 0.15V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	0.15V	30pF	1K $\Omega$
$2.5V \pm 0.2V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	0.15V	30pF	500 $\Omega$
2.7V	2.7V	$\leq 2.5ns$	1.5V	6V	0.3V	50pF	500 $\Omega$
$3.3V \pm 0.3V$	2.7V	$\leq 2.5ns$	1.5V	6V	0.3V	50pF	500 $\Omega$
$5V \pm 0.5V$	$V_{CC}$	$\leq 2.5ns$	$V_{CC}/2$	$2 \times V_{CC}$	0.3V	50pF	500 $\Omega$



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

Notes: 1.  $C_L$  includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics:  $P_{RR} \leq 10MHz$ ,  $Z_O = 50\Omega$ .

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