



## U74LVC1G126

CMOS IC

### BUS BUFFER/LINE DRIVER; 3-STATE

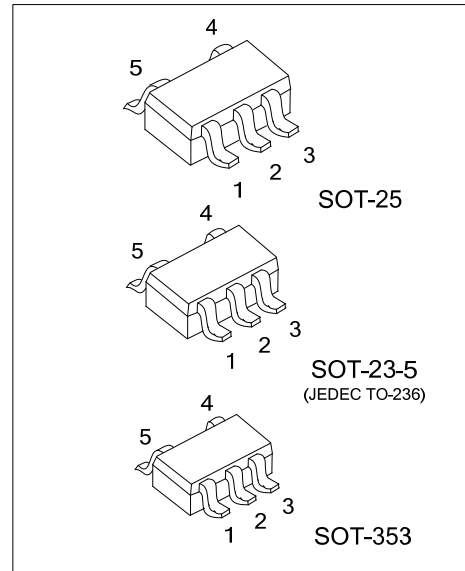
#### DESCRIPTION

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

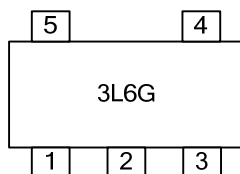


#### ORDERING INFORMATION

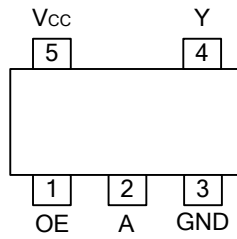
Ordering Number	Package	Packing
U74LVC1G126-AE5-R	SOT-23-5	Tape Reel
U74LVC1G126-AF5-R	SOT-25	Tape Reel
U74LVC1G126-AL5-R	SOT-353	Tape Reel

<p>U74LVC1G126G-AF5-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353</p> <p>(3) G: Halogen Free and Lead Free</p>
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#### MARKING



■ PIN CONFIGURATION

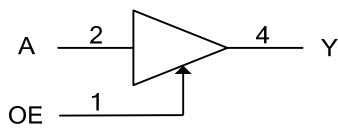


■ FUNCTION TABLE

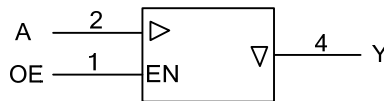
INPUT(OE)	INPUT(A)	OUTPUT(Y)
H	L	L
H	H	H
L	X	Z

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 ( $T_A=-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$ )	SOT-23-5	$P_D$	300	mW
	SOT-25		360	
	SOT-353		250	
Operating Temperature		$T_{OPR}$	-40 ~ +125	$^{\circ}\text{C}$
Storage Temperature		$T_{STG}$	-65 ~ +150	$^{\circ}\text{C}$

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	$V_{OUT}$	$V_{CC}=1.65\text{V} \sim 5.5\text{V}$ ; Enable mode	0		$V_{CC}$	V
		$V_{CC}=1.65\text{V} \sim 5.5\text{V}$ ; Disable mode	0		5.5	V
		$V_{CC}=0\text{V}$ ; Power-Down Mode	0		5.5	V
Input Transition Rise or Fall Rate	$t_R / t_F$	$V_{CC}=1.65\text{V} \sim 2.7\text{V}$			20	ns/V
		$V_{CC}=2.7\text{V} \sim 5.5\text{V}$			10	ns/V

## ■ ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	$V_{IH}$	$V_{CC}=1.65\text{V} \sim 1.95\text{V}$	$0.65 \times V_{CC}$			V
		$V_{CC}=2.3\text{V} \sim 2.7\text{V}$	1.7			V
		$V_{CC}=2.7\text{V} \sim 3.6\text{V}$	2			V
		$V_{CC}=4.5\text{V} \sim 5.5\text{V}$	$0.7 \times V_{CC}$			V
Low-Level Input Voltage	$V_{IL}$	$V_{CC}=1.65\text{V} \sim 1.95\text{V}$			$0.35 \times V_{CC}$	V
		$V_{CC}=2.3\text{V} \sim 2.7\text{V}$			0.7	V
		$V_{CC}=2.7\text{V} \sim 3.6\text{V}$			0.8	V
		$V_{CC}=4.5\text{V} \sim 5.5\text{V}$			$0.3 \times V_{CC}$	V
High-Level Output Voltage	$V_{OH}$	$V_{CC}=1.65 \sim 5.5\text{V}$ , $I_{OH}=-100\mu\text{A}$	$V_{CC}-0.1$			V
		$V_{CC}=1.65\text{V}$ , $I_{OH}=-4\text{mA}$	1.2			V
		$V_{CC}=2.3\text{V}$ , $I_{OH}=-8\text{mA}$	1.9			V
		$V_{CC}=2.7\text{V}$ , $I_{OH}=-12\text{mA}$	2.2			V
		$V_{CC}=3.0\text{V}$ , $I_{OH}=-24\text{mA}$	2.3			V
		$V_{CC}=4.5\text{V}$ , $I_{OH}=-32\text{mA}$	3.8			V
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=1.65 \sim 5.5\text{V}$ , $I_{OL}=100\mu\text{A}$			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
		$V_{CC}=2.7\text{V}$ , $I_{OL}=12\text{mA}$			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

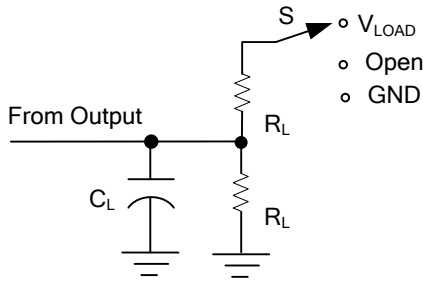
## ■ ELECTRICAL CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=5.5V, V_{IN}=5.5V$ or GND		$\pm 0.1$	$\pm 5$	$\mu A$
Power OFF Leakage Current	$I_{OFF}$	$V_{CC}=0V, V_{IN}$ or $V_{OUT}=5.5V$		$\pm 0.1$	$\pm 10$	$\mu A$
3-State Output OFF-State Current	$I_{OZ}$	$V_{CC}=5.5V, V_{IN}=V_{IH}$ or $V_{IL}, V_{OUT}=V_{CC}$ or GND		$\pm 0.1$	$\pm 10$	$\mu A$
Quiescent Supply Current	$I_{CC}$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$		0.1	10	$\mu A$
Additional Quiescent Supply Current Per Input Pin	$\Delta I_{CC}$	$V_{CC}=2.3 \sim 5.5V, V_{IN}=V_{CC}-0.6V, I_{OUT}=0$		5	500	$\mu A$

## ■ SWITCHING CHARACTERISTICS ( $T_A = 25^\circ C$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation Delay From Input A to Output Y	$t_{PLH} / t_{PHL}$	$C_L=30pF$	$V_{CC}=1.8\pm 0.15V, R_L=1K\Omega$	1.0	3.0	8.0	ns
			$V_{CC}=2.5\pm 0.2V, R_L=500\Omega$	0.5	2.1	5.5	ns
		$C_L=50pF, R_L=500\Omega$	$V_{CC}=2.7V$	0.5	2.3	5.5	ns
			$V_{CC}=3.3\pm 0.3V$	0.5	2.0	4.5	ns
3-State Output Enable Time From Input OE to Output Y	$t_{PZH} / t_{PZL}$	$C_L=30pF$	$V_{CC}=1.8\pm 0.15V, R_L=1K\Omega$	1.0	3.2	9.4	ns
			$V_{CC}=2.5\pm 0.2V, R_L=500\Omega$	0.5	2.2	6.6	ns
		$C_L=50pF, R_L=500\Omega$	$V_{CC}=2.7V$	0.5	2.4	6.6	ns
			$V_{CC}=3.3\pm 0.3V$	0.5	2.1	5.3	ns
3-State Output Disable Time From Input OE to Output Y	$t_{PLZ} / t_{PLH}$	$C_L=30pF$	$V_{CC}=1.8\pm 0.15V, R_L=1K\Omega$	1.0	4.3	9.2	ns
			$V_{CC}=2.5\pm 0.2V, R_L=500\Omega$	0.5	2.7	5.5	ns
		$C_L=50pF, R_L=500\Omega$	$V_{CC}=2.7V$	0.5	3.4	5.5	ns
			$V_{CC}=3.3\pm 0.3V$	0.5	3.0	5.5	ns
		$V_{CC}=5\pm 0.5V$	0.5	2.2	4.2	ns	

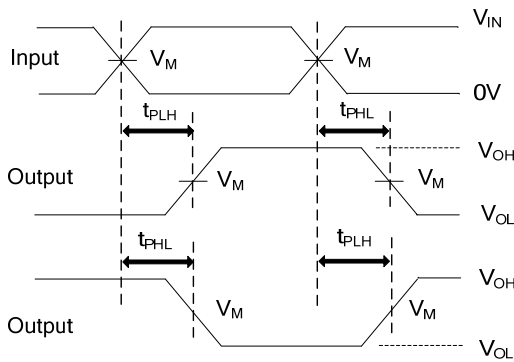
## TEST CIRCUIT AND WAVEFORMS



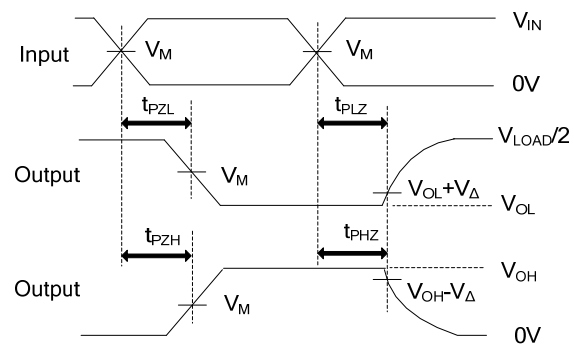
TEST	S
$t_{PLH}/t_{PHL}$	Open
$t_{PHZ}/t_{PZH}$	GND
$t_{PLZ}/t_{PZL}$	$V_{LOAD}$

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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