



## U74LVC2G126

CMOS IC

### DUAL BUS BUFFER GATE WITH 3-STATE OUTPUTS

#### DESCRIPTION

The **U74LVC2G126** consists of two bus buffers with 3-state output controlled by enable input (nOE), when nOE is low, the output is disabling.

Inputs can be driven from either 3.3V or 5V devices, so the device can be used in a mix 3.3V/5V system.

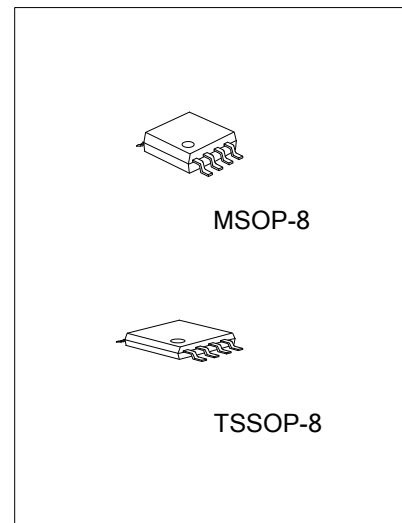
This device is full specified for partial power-down protective circuit, preventing the backflow current through the device when it is powered down.

#### FEATURES

- \* Operation voltage range: 1.65~5.5V
- \* Support 5V V<sub>CC</sub> operation
- \* Low power dissipation
- \* Input accept voltage to 5.5V

#### ORDERING INFORMATION

Ordering Number	Package	Packing
U74LVC2G126G-P08-R	TSSOP-8	Tape Reel
U74LVC2G126G-SM1-R	MSOP-8	Tape Reel

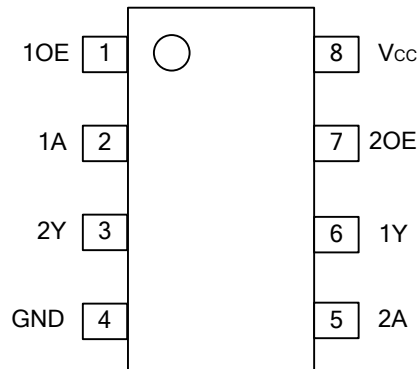


<p>U74LVC2G126G-P08-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) P08: TSSOP-8, SM1:MSOP-8 (3) G: Halogen Free and Lead Free</p>
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#### MARKING

MSOP-8	TSSOP-8
<p>8 7 6 5 → Date Code</p> <p>UTC □□□□</p> <p>3126G</p> <p>□□ → Lot Code</p> <p>1 2 3 4</p>	<p>8 → Date Code</p> <p>7 6 5 → Lot Code</p> <p>1 2 3 4</p> <p>UTC □□□□</p> <p>3126G</p>

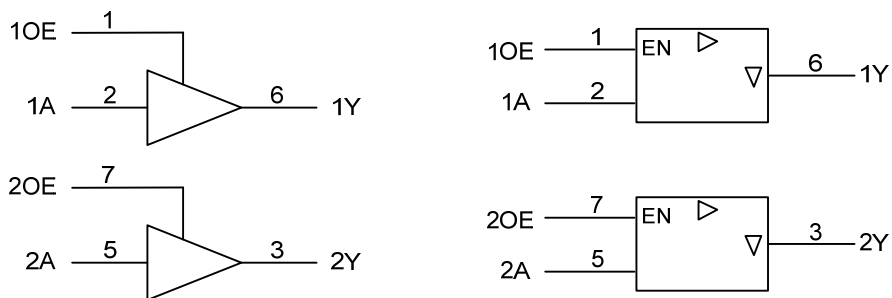
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)

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	$-0.5 \sim V_{CC} + 0.5$	V
	Disable	-0.5~6.5	V
	Power-down	-0.5~6.5	V
$V_{CC}$ or GND Current	$I_{CC}$	$\pm 100$	mA
Input Clamp Current( $V_{IN} < 0$ )	$I_{IK}$	-50	mA
Output Clamp Current( $V_{OUT} < 0$ )	$I_{OK}$	$\pm 50$	mA
Output Current	$I_{OUT}$	$\pm 50$	mA
Power Dissipation	$P_D$	300	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	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$		1.65		5.5	V
Input Voltage	$V_{IN}$		0		5.5	V
Output Voltage	Enable	$V_{CC} = 1.65 \sim 5.5V$	0		$V_{CC}$	V
	Disable	$V_{CC} = 1.65 \sim 5.5V$	0		5.5	V
	Power-down	$V_{CC} = 0V$	0		5.5	V
Input Transition Rise or Fall Rate	$t_R, t_F$	$V_{CC} = 1.65 \sim 2.7V$	0		20	ns/V
		$V_{CC} = 2.7 \sim 5.5V$	0		10	ns/V
Operating Temperature	$T_A$		-40		125	°C

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Positive-Going Input Threshold Voltage	$V_{T+}$	$V_{CC} = 1.65V \sim 1.95V$	$0.65 \times V_{CC}$			V
		$V_{CC} = 2.3V \sim 2.7V$	1.7			V
		$V_{CC} = 2.7V \sim 3.6V$	2			V
		$V_{CC} = 4.5V \sim 5.5V$	$0.7 \times V_{CC}$			V
Negative-Going Input Threshold Voltage	$V_{T-}$	$V_{CC} = 1.65V \sim 1.95V$			$0.35 \times V_{CC}$	V
		$V_{CC} = 2.3V \sim 2.7V$			0.7	V
		$V_{CC} = 2.7V \sim 3.6V$			0.8	V
		$V_{CC} = 4.5V \sim 5.5V$			$0.3 \times V_{CC}$	V
High-Level Output Voltage	$V_{OH}$	$V_{CC} = 1.65V \sim 5.5V, I_{OH} = -100\mu A$	$V_{CC} - 0.1$			V
		$V_{CC} = 1.65V, I_{OH} = -4mA$	1.2			V
		$V_{CC} = 2.3V, I_{OH} = -8mA$	1.9			V
		$V_{CC} = 2.7V, I_{OH} = -12mA$	2.2			V
		$V_{CC} = 3V, I_{OH} = -24mA$	2.3			V
		$V_{CC} = 4.5V, I_{OH} = -32mA$	3.8			V
Low-Level Output Voltage	$V_{OL}$	$V_{CC} = 1.65V \sim 5.5V, I_{OL} = 100\mu A$			0.1	V
		$V_{CC} = 1.65V, I_{OL} = 4mA$			0.45	V
		$V_{CC} = 2.3V, I_{OL} = 8mA$			0.3	V
		$V_{CC} = 2.7V, I_{OL} = 12mA$			0.4	V
		$V_{CC} = 3V, I_{OL} = 24mA$			0.55	V
		$V_{CC} = 4.5V, I_{OL} = 32mA$			0.55	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC} = 5.5V, V_{IN} = 5.5V$ or GND		$\pm 0.1$	$\pm 5$	$\mu A$
Output OFF -State Current	$I_{OZ}$	$V_{CC} = 3.6V, V_{OUT} = V_{CC}$ or GND		$\pm 0.1$	$\pm 10$	$\mu A$
Power OFF Leakage Current	$I_{OFF}$	$V_{CC} = 0V, V_{IN}$ or $V_{OUT} = 5.5V$		$\pm 0.1$	$\pm 10$	$\mu A$

### ■ STATIC CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent Supply Current	$I_Q$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND $I_{OUT}=0$		0.1	10	$\mu A$
Additional Quiescent Supply Current	$\Delta I_Q$	$V_{CC}=2.3V\sim 5.5V$ , One input at $V_{CC}-0.6V$ , other inputs at $V_{CC}$ or GND		5	500	$\mu A$
Input Capacitance	$C_{IN}$	$V_{IN}=V_{CC}$ or GND		2		pF

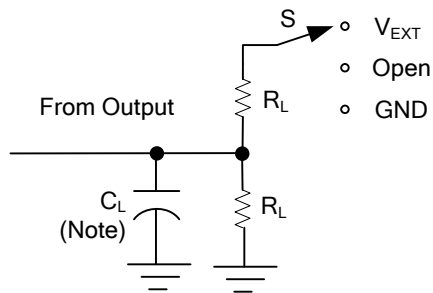
### ■ DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay From Input(A) to Output(Y)	$t_{PHL}/t_{PLH}$	$V_{CC}=1.8V\pm 0.15V$	1	3.9	9.8	ns
		$V_{CC}=2.5V\pm 0.2V$	0.5	2.6	4.9	ns
		$V_{CC}=2.7V$	1	2.8	4.7	ns
		$V_{CC}=3.3V\pm 0.3V$	0.5	2.4	4.3	ns
		$V_{CC}=5.0V\pm 0.5V$	0.5	1.9	3.2	ns
Propagation Delay From Input(nOE) to Output(Y)	$t_{PZH}/t_{PZL}$	$V_{CC}=1.8V\pm 0.15V$	1.0	4.1	10	ns
		$V_{CC}=2.5V\pm 0.2V$	1.0	2.6	5	ns
		$V_{CC}=2.7V$	1.0	2.8	4.7	ns
		$V_{CC}=3.3V\pm 0.3V$	1.0	2.4	4.1	ns
		$V_{CC}=5.0V\pm 0.5V$	0.5	1.8	3.1	ns
Propagation Delay From Input(nOE) to Output(Y)	$t_{PLZ}/t_{PHZ}$	$V_{CC}=1.8V\pm 0.15V$	1	3.3	12.6	ns
		$V_{CC}=2.5V\pm 0.2V$	0.5	1.9	5.7	ns
		$V_{CC}=2.7V$	1	3.0	4.8	ns
		$V_{CC}=3.3V\pm 0.3V$	1	2.5	4.4	ns
		$V_{CC}=5.0V\pm 0.5V$	0.5	1.8	3.3	ns

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	$C_{PD}$	Output Enable		17		pF
		Output Disable		5		pF

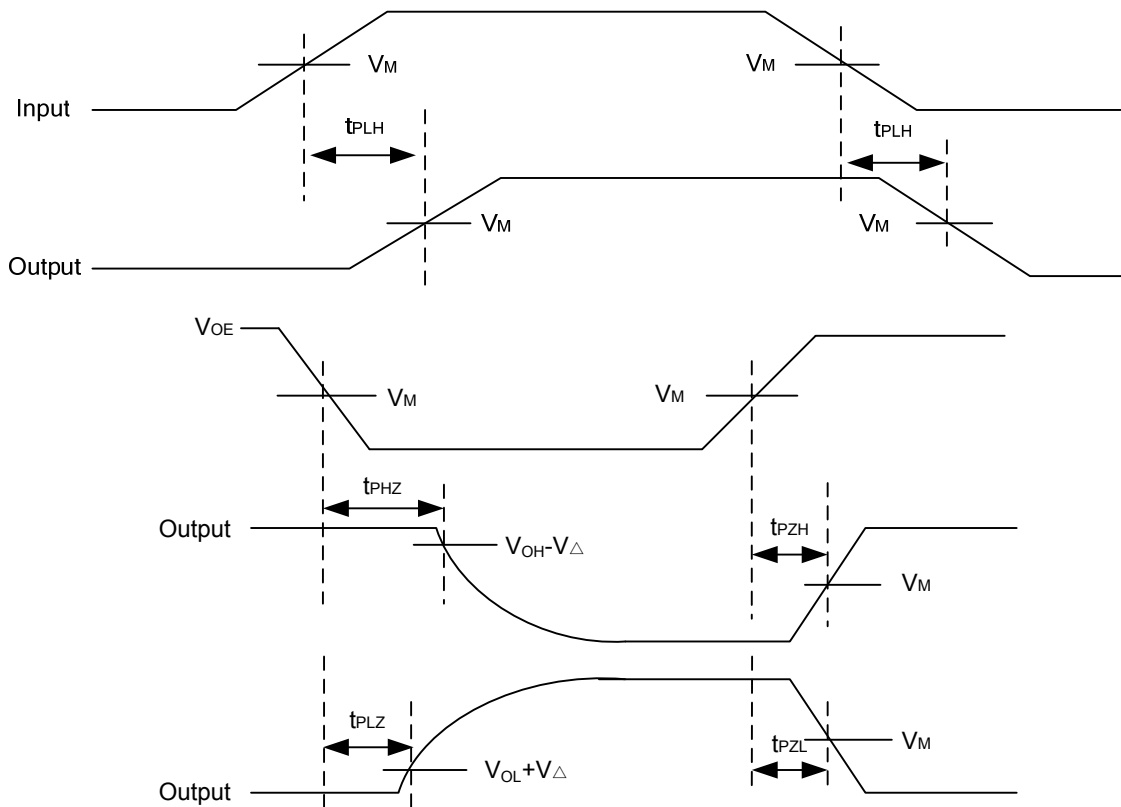
## TEST CIRCUIT AND WAVEFORMS



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

Note :  $C_L$  includes probe and jig capacitance.

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



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