
HD74LV2G126A

Dual Bus Buffer with 3-state Output

HITACHI

ADE-205-348 (Z)
1st. Edition
May 2000

Description

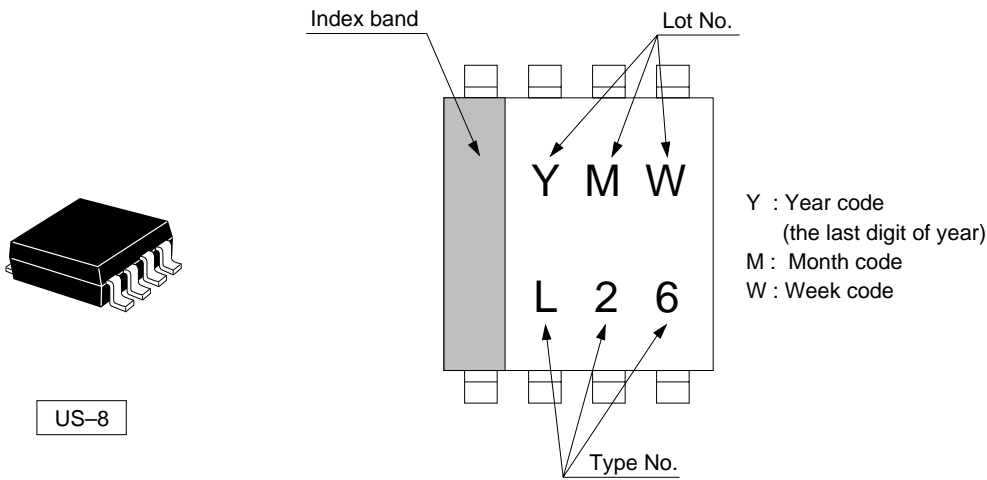
The HD74LV2G126A has dual bus buffer with 3-state output in a 8 pin package. Output is disabled when the associated output enable (OE) input is low. To ensure the high impedance state during power up or power down, OE should be connected to V_{CC} through a pull-down resistor; the minimum value of the resistor is determined by the current sourcing capability of the driver. Low voltage and high speed operation is suitable for the battery powered products (e.g., notebook computers), and the low power consumption extends the battery life.

Features

- The basic gate function is lined up as hitachi uni logic series.
- Supplied on emboss taping for high speed automatic mounting.
- Electrical characteristics equivalent to the HD74LV126A
Supply voltage range : 1.65 to 5.5 V
Operating temperature range : -40 to +85°C
- All inputs V_{IH} (Max.) = 5.5 V (@ V_{CC} = 0 V to 5.5 V)
All outputs V_O (Max.) = 5.5 V (@ V_{CC} = 0 V)
- Output current ± 6 mA (@ V_{CC} = 3.0 V to 3.6 V), ± 12 mA (@ V_{CC} = 4.5 V to 5.5 V)
- All the logical input has hysteresis voltage for the slow transition.

Outline and Article Indication

• HD74LV2G126A

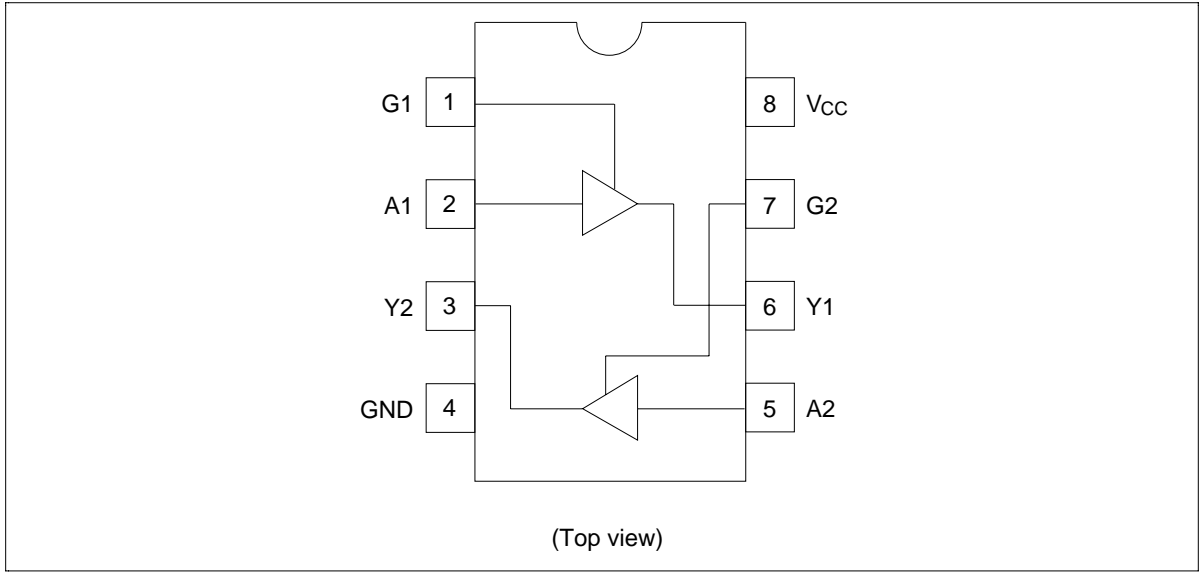


Function Table

Inputs		Output Y
OE	A	
H	H	H
H	L	L
L	X	Z

H : High level
L : Low level
X : Immaterial
Z : High impedance

Pin Arrangement



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit	Test Conditions
Supply voltage	V_{CC}	-0.5 to 7.0	V	
Input voltage	V_{IN}	-0.5 to 7.0	V	
Output voltage	V_{OUT}	-0.5 to $V_{CC} + 0.5$ -0.5 to 7.0	V	Output : H or L V_{CC} : OFF or Output : Z
Input diode current	I_{IK}	-20	mA	
Output diode current	I_{OK}	± 50	mA	
Output current	I_{OUT}	± 25	mA	
V_{CC} , GND current	I_{CC} or I_{GND}	± 50	mA	
Power dissipation	P_T	200	mW	
Storage temperature	Tstg	-65 to 150	°C	

Recommended Operating Conditions

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}	1.65 to 5.5	V
Input voltage	V_{IN}	0 to 5.5	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Operating temperature	T_{opr}	−40 to +85	°C
Input rise / fall time	t_r, t_f	0 to 300 ($V_{CC} = 1.65$ to 1.95 V)	ns
		0 to 200 ($V_{CC} = 2.3$ to 2.7 V)	
		0 to 100 ($V_{CC} = 3.0$ to 3.6 V)	
		0 to 20 ($V_{CC} = 4.5$ to 5.5 V)	

Electrical Characteristic

• Ta = -40 to 85°C

Item	Symbol	V _{CC} (V) *	Min	Typ	Max	Unit	Test condition
Input voltage	V _{IH}	1.65 to 1.95	V _{CC} ×0.75	—	—	V	
		2.3 to 2.7	V _{CC} ×0.7	—	—		
		3.0 to 3.6	V _{CC} ×0.7	—	—		
		4.5 to 5.5	V _{CC} ×0.7	—	—		
	V _{IL}	1.65 to 1.95	—	—	V _{CC} ×0.25		
		2.3 to 2.7	—	—	V _{CC} ×0.3		
		3.0 to 3.6	—	—	V _{CC} ×0.3		
		4.5 to 5.5	—	—	V _{CC} ×0.3		
Hysteresis voltage	V _H	1.8	—	0.25	—	V	V _T ⁺ - V _T ⁻
		2.5	—	0.30	—		
		3.3	—	0.35	—		
		5.0	—	0.45	—		
Output voltage	V _{OH}	Min to Max	V _{CC} -0.1	—	—	V	I _{OH} = -50 μA
		1.65	1.4	—	—		I _{OH} = -1 mA
		2.3	2.0	—	—		I _{OH} = -2 mA
		3.0	2.48	—	—		I _{OH} = -6 mA
		4.5	3.8	—	—		I _{OH} = -12 mA
	V _{OL}	Min to Max	—	—	0.1		I _{OL} = 50 μA
		1.65	—	—	0.3		I _{OL} = 1 mA
		2.3	—	—	0.4		I _{OL} = 2 mA
		3.0	—	—	0.44		I _{OL} = 6 mA
		4.5	—	—	0.55		I _{OL} = 12 mA
Input current	I _{IN}	0 to 5.5	—	—	±1	μA	V _{IN} = 5.5 V or GND
Off state output current	I _{OZ}	5.5	—	—	±5	μA	V _O = V _{CC} or GND
Quiescent supply current	I _{CC}	5.5	—	—	10	μA	V _{IN} = V _{CC} or GND, I _O = 0
Output leakage current	I _{OFF}	0	—	—	5	μA	V _O = 5.5 V
Input capacitance	C _{IN}	3.3	—	3.0	—	pF	V _{IN} = V _{CC} or GND

Note: For conditions shown as Min or Max, use the appropriate values under recommended operating conditions.

Switching Characteristics

• $V_{CC} = 1.8 \pm 0.15\text{ V}$

Item	Symbol	T _a = 25°C			T _a = -40 to 85°C		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t _{PLH} t _{PHL}	—	13.5 19.0	23.5 33.0	1.0 1.0	26.0 36.0	ns	C _L = 15 pF C _L = 50 pF	A	Y
Enable time	t _{ZH} t _{ZL}	—	13.7 20.5	26.5 36.0	1.0 1.0	29.0 38.0	ns	C _L = 15 pF C _L = 50 pF	OE	Y
Disable time	t _{HZ} t _{LZ}	—	8.3 13.0	20.0 29.5	1.0 1.0	22.5 32.0	ns	C _L = 15 pF C _L = 50 pF	OE	Y

• $V_{CC} = 2.5 \pm 0.2\text{ V}$

Item	Symbol	T _a = 25°C			T _a = -40 to 85°C		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t _{PLH} t _{PHL}	—	7.1 9.2	13.0 16.5	1.0 1.0	15.5 18.5	ns	C _L = 15 pF C _L = 50 pF	A	Y
Enable time	t _{ZH} t _{ZL}	—	7.4 9.5	13.0 16.5	1.0 1.0	15.5 18.5	ns	C _L = 15 pF C _L = 50 pF	OE	Y
Disable time	t _{HZ} t _{LZ}	—	5.7 8.1	14.7 18.2	1.0 1.0	17.0 20.5	ns	C _L = 15 pF C _L = 50 pF	OE	Y

• $V_{CC} = 3.3 \pm 0.3\text{ V}$

Item	Symbol	T _a = 25°C			T _a = -40 to 85°C		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t _{PLH} t _{PHL}	—	5.0 6.4	8.0 11.5	1.0 1.0	9.5 13.0	ns	C _L = 15 pF C _L = 50 pF	A	Y
Enable time	t _{ZH} t _{ZL}	—	5.1 6.6	8.0 11.5	1.0 1.0	9.5 13.0	ns	C _L = 15 pF C _L = 50 pF	OE	Y
Disable time	t _{HZ} t _{LZ}	—	4.4 6.1	9.7 13.2	1.0 1.0	11.5 15.0	ns	C _L = 15 pF C _L = 50 pF	OE	Y

Switching Characteristics (cont)

- $V_{CC} = 5.0 \pm 0.5 \text{ V}$

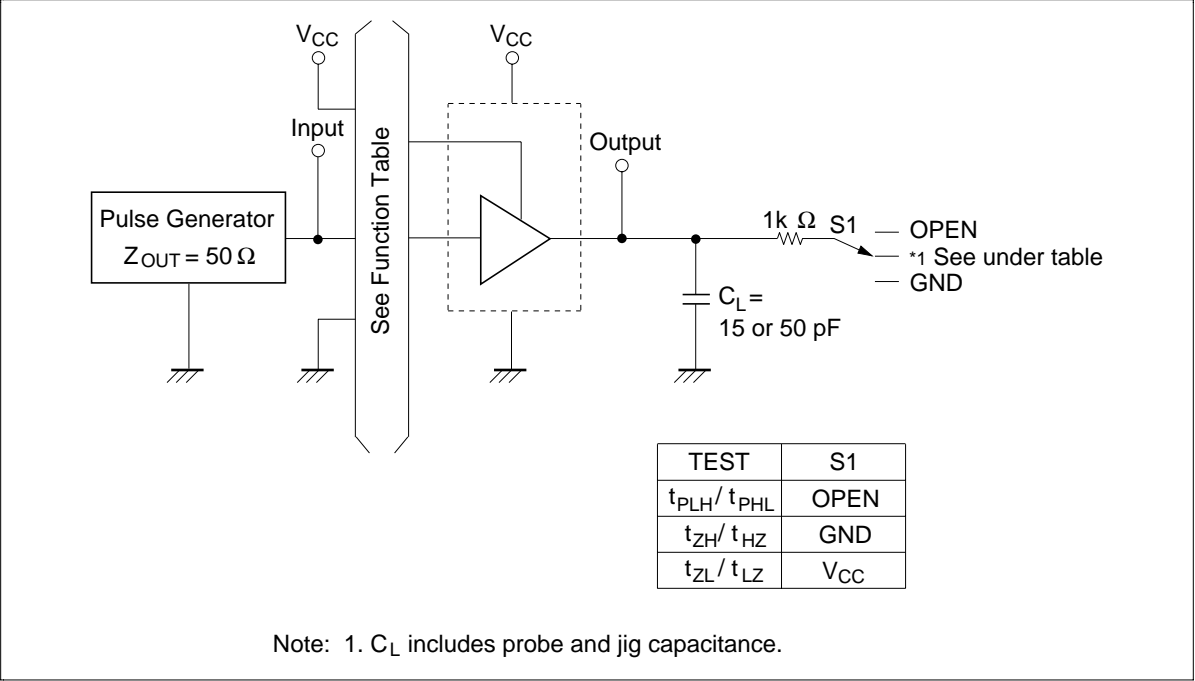
Item	Symbol	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t_{PLH}	—	3.5	5.5	1.0	6.5	ns	$C_L = 15 \text{ pF}$	A	Y
	t_{PHL}	—	4.6	7.5	1.0	8.5		$C_L = 50 \text{ pF}$		
Enable time	t_{ZH}	—	3.6	5.1	1.0	6.0	ns	$C_L = 15 \text{ pF}$	OE	Y
	t_{ZL}	—	4.6	7.1	1.0	8.0		$C_L = 50 \text{ pF}$		
Disable time	t_{HZ}	—	3.3	6.8	1.0	8.0	ns	$C_L = 15 \text{ pF}$	OE	Y
	t_{LZ}	—	4.3	8.8	1.0	10.0		$C_L = 50 \text{ pF}$		

Operating Characteristics

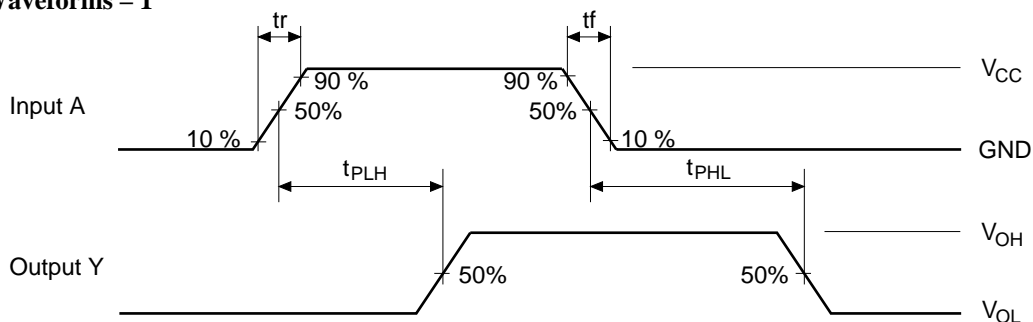
- $C_L = 50 \text{ pF}$

Item	Symbol	$V_{CC} \text{ (V)}$	$T_a = 25^\circ\text{C}$			Unit	Test Conditions
			Min	Typ	Max		
Power dissipation capacitance	C_{PD}	3.3	—	10.5	—	pF	$f = 10 \text{ MHz}$
		5.0	—	11.5	—		

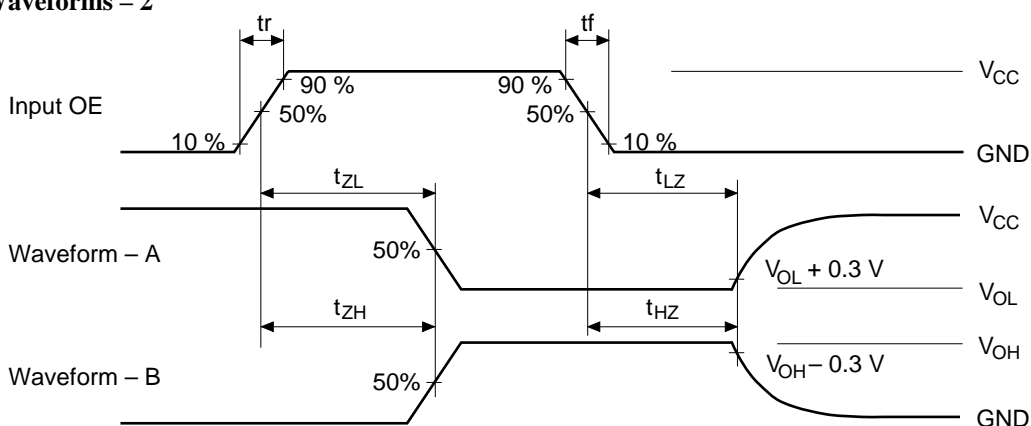
Test Circuit



• Waveforms – 1



• Waveforms – 2



Notes: 1. $t_r \leq 3 \text{ ns}$, $t_f \leq 3 \text{ ns}$

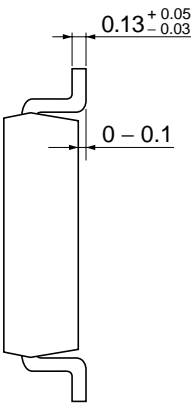
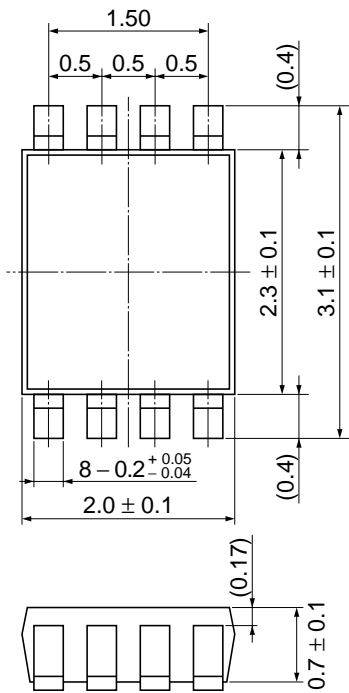
2. Input waveform : $\text{PRR} \leq 1 \text{ MHz}$, duty cycle 50%

3. Waveform – A is for an output with internal conditions such that the output is low except when disabled by the output control.

4. Waveform – B is for an output with internal conditions such that the output is high except when disabled by the output control.

Package Dimensions

Unit : mm



Hitachi Code	US-8
JEDEC	SSOP-8
EIAJ	—
Mass (reference value)	—

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