

HD74LV1GW07A

Dual Buffer Open Drain

REJ03D0076-0100Z
(Previous ADE-205-706 (Z))
Rev.1.00
Sep.11.2003

Description

The HD74LV1GW07A has dual buffer open drain in a 6 pin package. 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.

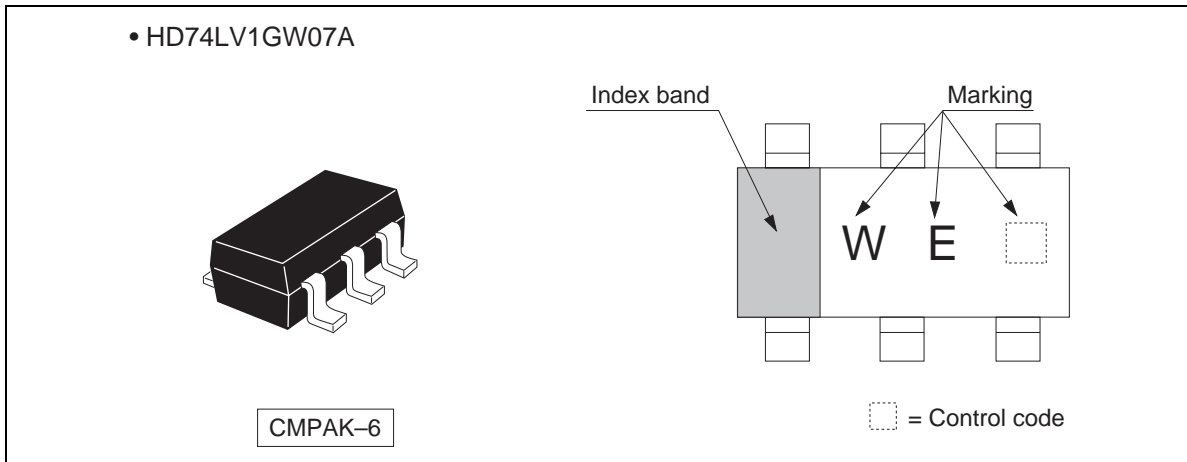
Features

- The basic gate function is lined up as Renesas uni logic series.
- Supplied on emboss taping for high-speed automatic mounting.
- 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: Z)
- 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.
- Ordering Information

Part Name	Package Type	Package Code	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LV1GW07ACME	CMPAK-6 pin	CMPAK-6V(O)	CM	E (3,000 pcs / Reel)

HD74LV1GW07A

Outline and Article Indication



Function Table

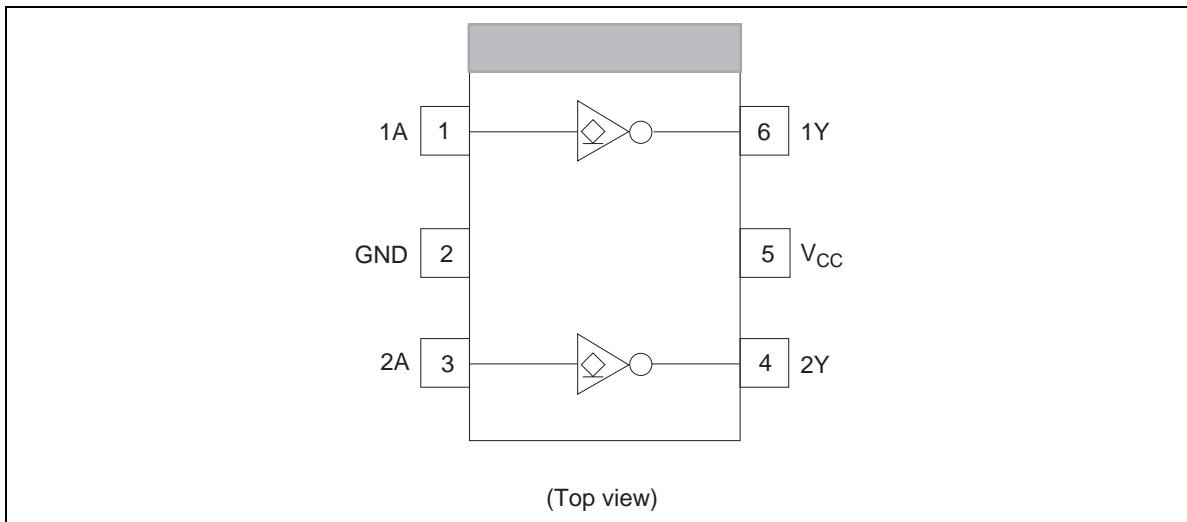
Input A	Output Y
H	Z
L	L

H : High level

L : Low level

Z : High impedance

Pin Arrangement



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit	Test Conditions
Supply voltage range	V_{CC}	-0.5 to 7.0	V	
Input voltage range ^{*1}	V_I	-0.5 to 7.0	V	
Output voltage range ^{*1, 2}	V_O	-0.5 to $V_{CC} + 0.5$ -0.5 to 7.0	V	Output : L V_{CC} : OFF or Output : Z
Input clamp current	I_{IK}	-20	mA	$V_I < 0$
Output clamp current	I_{OK}	± 50	mA	$V_O < 0$ or $V_O > V_{CC}$
Continuous output current	I_O	± 25	mA	$V_O = 0$ to V_{CC}
Continuous current through V_{CC} or GND	I_{CC} or I_{GND}	± 50	mA	
Maximum power dissipation at $T_a = 25^\circ\text{C}$ (in still air) ^{*3}	P_T	200	mW	
Storage temperature	T_{stg}	-65 to 150	$^\circ\text{C}$	

- Notes: The absolute maximum ratings are values, which must not individually be exceeded, and furthermore no two of which may be realized at the same time.
- The input and output voltage ratings may be exceeded if the input and output clamp-current ratings are observed.
 - This value is limited to 5.5 V maximum.
 - The maximum package power dissipation was calculated using a junction temperature of 150°C .

Recommended Operating Conditions

Item	Symbol	Min	Max	Unit	Conditions
Supply voltage range	V_{CC}	1.65	5.5	V	
Input voltage range	V_I	0	5.5	V	
Output voltage range	V_O	0	V_{CC}	V	
Output current	I_{OL}	—	1	mA	$V_{CC} = 1.65$ to 1.95 V
		—	2		$V_{CC} = 2.3$ to 2.7 V
		—	6		$V_{CC} = 3.0$ to 3.6 V
		—	12		$V_{CC} = 4.5$ to 5.5 V
Input transition rise or fall rate	$\Delta t / \Delta v$	0	300	ns / V	$V_{CC} = 1.65$ to 1.95 V
		0	200		$V_{CC} = 2.3$ to 2.7 V
		0	100		$V_{CC} = 3.0$ to 3.6 V
		0	20		$V_{CC} = 4.5$ to 5.5 V
Operating free-air temperature	T_a	-40	85	$^\circ\text{C}$	

Note: Unused or floating inputs must be held high or low.

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 _{OL}	Min to Max	—	—	0.1	V	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}	Min to Max	—	—	±5	μA	V _O = 5.5 V 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 _{IN} or V _O = 0 to 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.

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Switching Characteristics

- $V_{CC} = 1.8 \pm 0.15 \text{ V}$

Item	Symbol	Ta = 25°C			Ta = -40 to 85°C		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t _{ZL}	—	12.6	22.0	1.0	24.0	ns	C _L = 15 pF	A	Y
	t _{LZ}	—	19.7	33.0	1.0	36.0		C _L = 50 pF		

- $V_{CC} = 2.5 \pm 0.2 \text{ V}$

Item	Symbol	Ta = 25°C			Ta = -40 to 85°C		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t _{ZL}	—	7.0	11.7	1.0	14.0	ns	C _L = 15 pF	A	Y
	t _{LZ}	—	10.5	15.5	1.0	18.0		C _L = 50 pF		

- $V_{CC} = 3.3 \pm 0.3 \text{ V}$

Item	Symbol	Ta = 25°C			Ta = -40 to 85°C		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t _{ZL}	—	5.0	7.1	1.0	8.5	ns	C _L = 15 pF	A	Y
	t _{LZ}	—	7.5	10.6	1.0	12.0		C _L = 50 pF		

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

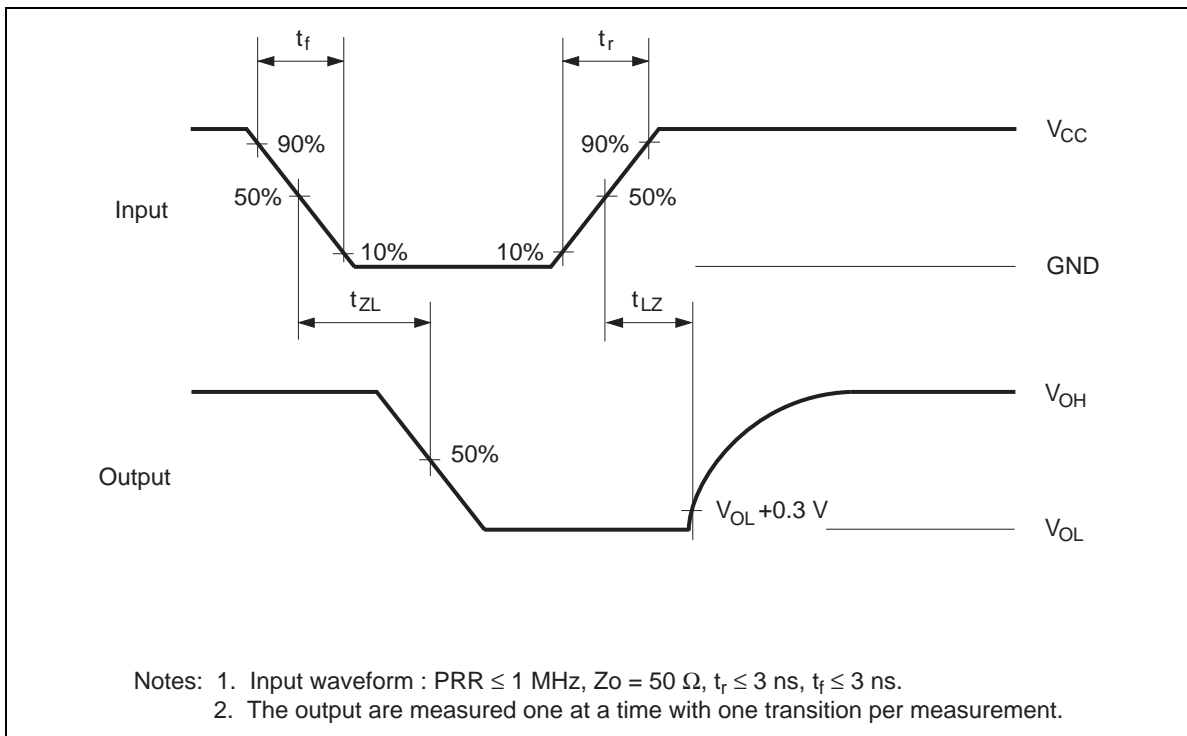
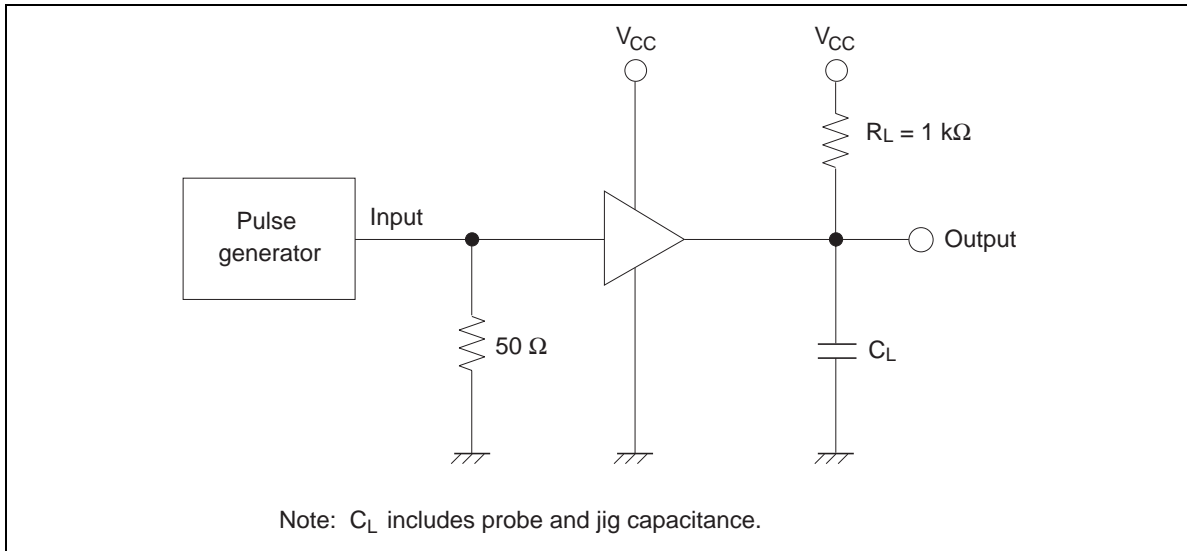
Item	Symbol	Ta = 25°C			Ta = -40 to 85°C		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t _{ZL}	—	3.8	5.5	1.0	6.5	ns	C _L = 15 pF	A	Y
	t _{LZ}	—	5.3	7.5	1.0	8.5		C _L = 50 pF		

Operating Characteristics

- C_L = 50 pF

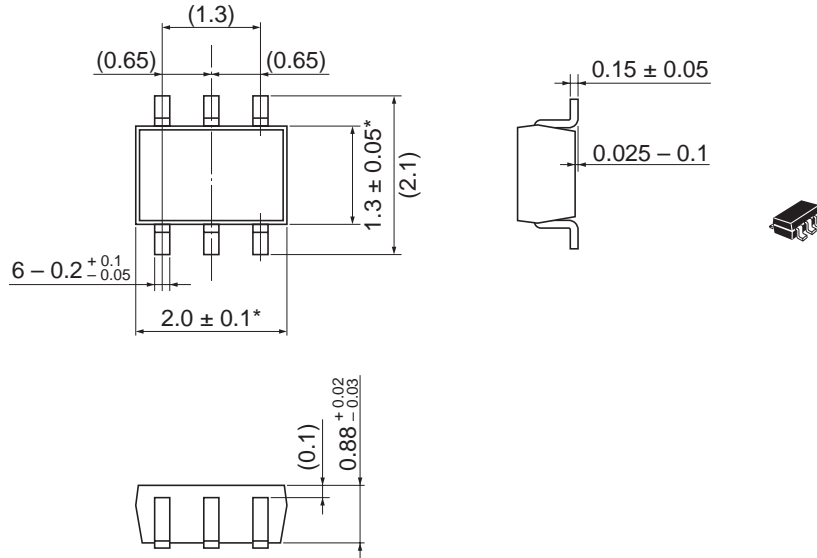
Item	Symbol	V _{CC} (V)	Ta = 25°C			Unit	Test Conditions
			Min	Typ	Max		
Power dissipation capacitance	C _{PD}	3.3	—	8.5	—	pF	f = 10 MHz
			5.0	—	10.0		

Test Circuit



Package Dimensions

Unit: mm



* Sn-Bi plating.

** The value does not include Resin Bar.
(One side: 0.15 mm (max))

Package Code	CMPAK-6V(O)
JEDEC	—
JEITA	Conforms
Mass (reference value)	0.006 g