

HD74LV2GT157A

2-channle Multiplexer

HITACHI

ADE-205-686 (Z)

Rev.0
May. 2002

Description

The HD74LV2GT157A has 2-channel multiplexer in 8 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.

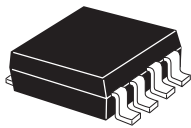
Features

- The basic gate function is lined up as hitachi uni logic series.
- Supplied on emboss taping for high speed automatic mounting.
- TTL compatible input level.
Supply voltage range : 4.5 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 ± 12 mA (@ V_{CC} = 4.5 V to 5.5 V)
- All the logical input has hysteresis voltage for the slow transition.
- Package type

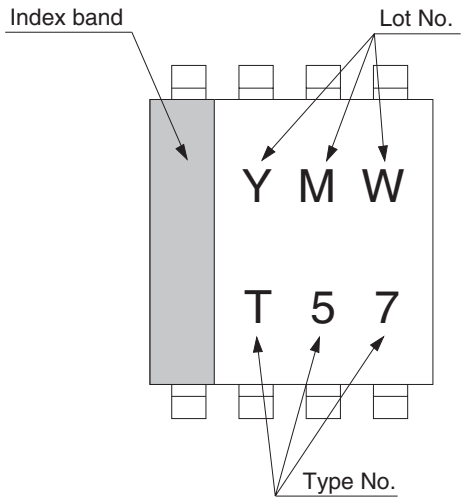
Package type	Package code	Package suffix	Taping code
SSOP-8 pin	TTP-8DB	US	E (3,000 pcs / Reel)

Outline and Article Indication

• HD74LV2GT157A



SSOP-8



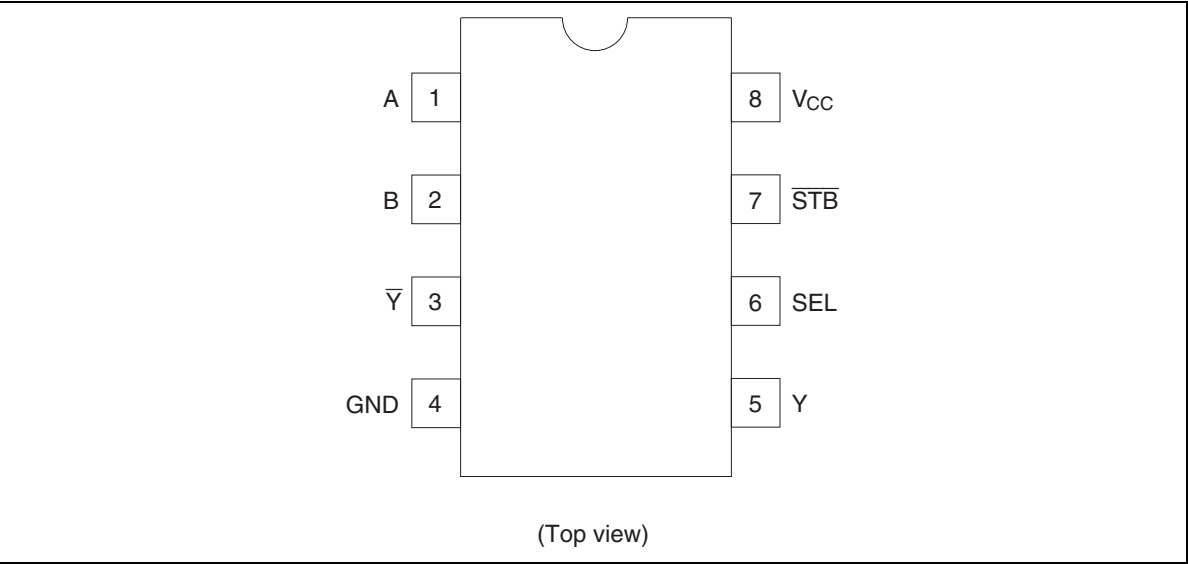
Y : Year code
(the last digit of year)
M : Month code
W : Week code

Function Table

Inputs				Outputs	
STB	SEL	A	B	Y	Y̅
H	X	X	X	L	H
L	L	L	X	L	H
L	L	H	X	H	L
L	H	X	L	L	H
L	H	X	H	H	L

H : High level
L : Low level
X : Immaterial

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 : H or L V_{CC} : OFF
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	$^{\circ}\text{C}$	

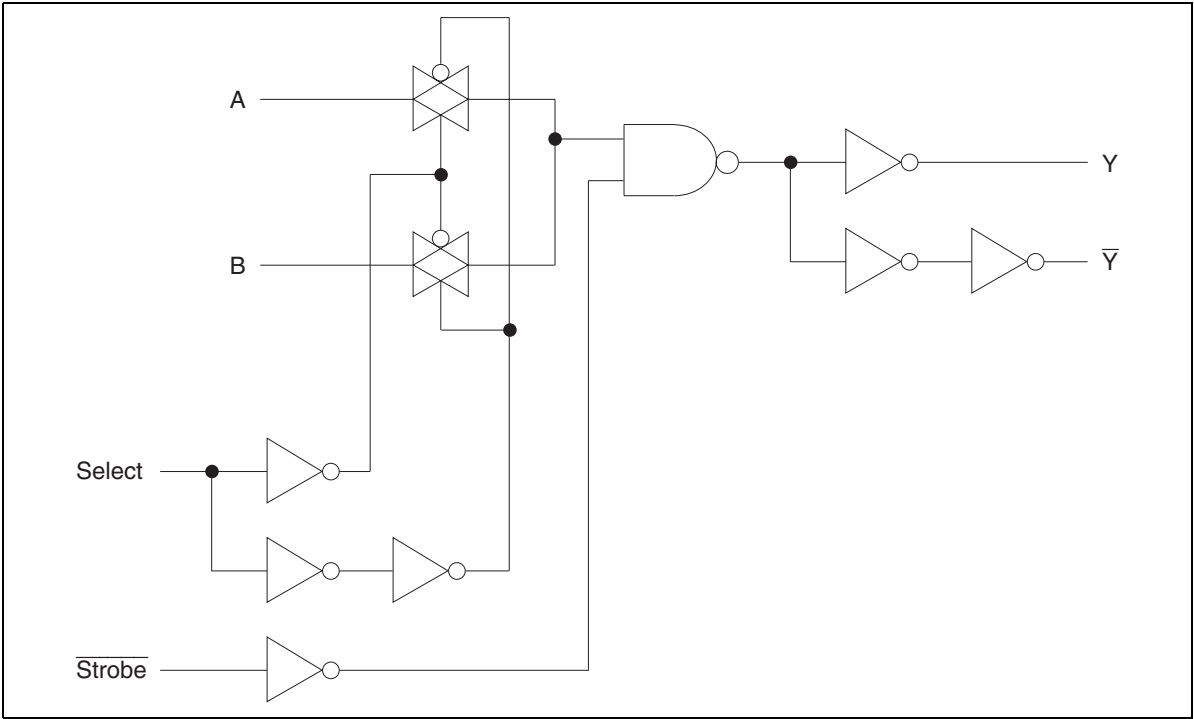
- Notes:
- The absolute maximum ratings are values which must not individually be exceeded, and furthermore no two of which may be realized at the same time.
 - 1. The input and output voltage ratings may be exceeded if the input and output clamp-current ratings are observed.
 - 2. This value is limited to 5.5 V maximum.
 - 3. 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}	4.5	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}	—	12	mA	$V_{CC} = 4.5$ to 5.5 V
	I_{OH}	—	−12		$V_{CC} = 4.5$ to 5.5 V
Input transition rise or fall rate	$\Delta t / \Delta v$	0	20	ns / V	$V_{CC} = 4.5$ 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.

Logic Diagram



Electrical Characteristic

- Ta = -40 to 85°C

Item	Symbol	V _{cc} (V) *	Min	Typ	Max	Unit	Test condition
Input voltage	V _{IH}	4.5 to 5.5	2.0	—	—	V	
	V _{IL}	4.5 to 5.5	—	—	0.8		
Hysteresis voltage	V _H	5.0	—	0.15	—	V	V _T ⁺ - V _T ⁻
Output voltage	V _{OH}	Min to Max	V _{cc} -0.1	—	—	V	I _{OH} = -50 μA
		4.5	3.8	—	—		I _{OH} = -12 mA
	V _{OL}	Min to Max	—	—	0.1		I _{OL} = 50 μA
		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
Quiescent supply current	I _{CC}	5.5	—	—	10	μA	V _{IN} = V _{cc} or GND, I _O = 0
	ΔI _{CC}	5.5	—	—	1.5	mA	One input V _{IN} = 3.4 V, other input V _{cc} or GND
Output leakage current	I _{OFF}	0	—	—	5	μA	V _{IN} or V _O = 0 to 5.5 V
Input capacitance	C _{IN}	5.0	—	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} = 5.0 ±0.5 V

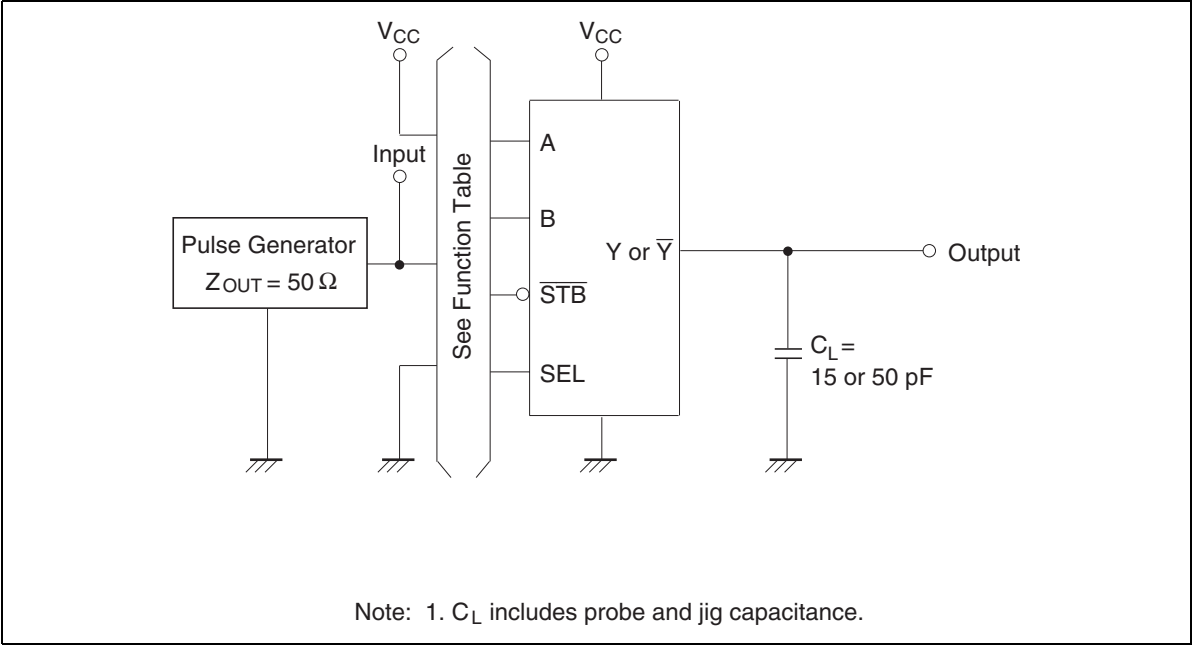
Item	Symbol	Ta = 25°C			Ta = -40 to 85°C		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t _{PLH}	—	5.1	7.4	1.0	8.5	ns	C _L = 15 pF	A or B	Y
	t _{PHL}	—	6.6	9.4	1.0	10.5		C _L = 50 pF		
		—	6.3	9.1	1.0	10.5		C _L = 15 pF	SEL	Y
		—	7.8	11.1	1.0	12.5		C _L = 50 pF		
		—	5.6	8.6	1.0	10.0		C _L = 15 pF	STB	Y
		—	7.1	10.6	1.0	12.0		C _L = 50 pF		

Operating Characteristics

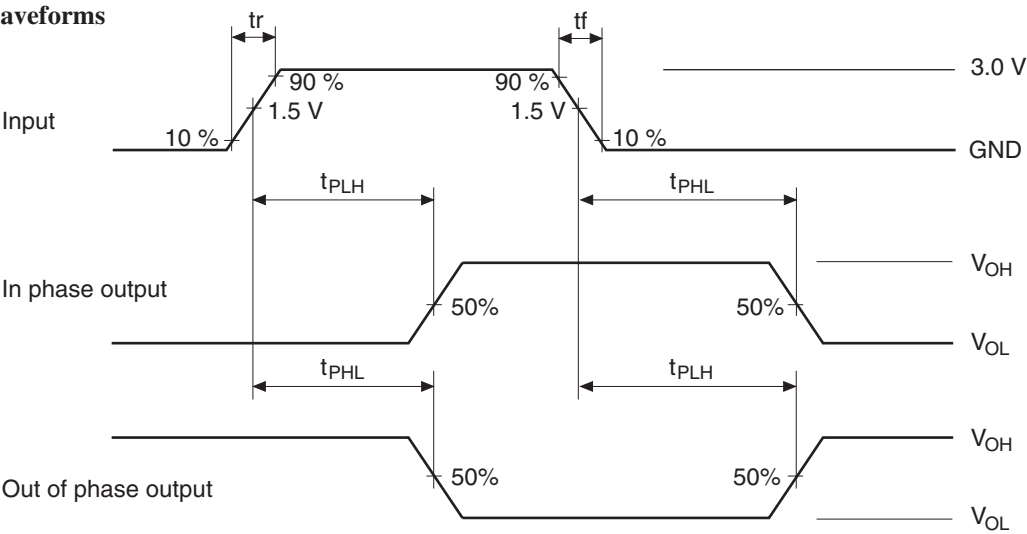
- $C_L = 50\text{ pF}$

Item	Symbol	V_{cc} (V)	$T_a = 25^{\circ}\text{C}$			Unit	Test Conditions
			Min	Typ	Max		
Power dissipation capacitance	C_{PD}	5.0	—	35.0	—	pF	$f = 10\text{ MHz}$

Test Circuit



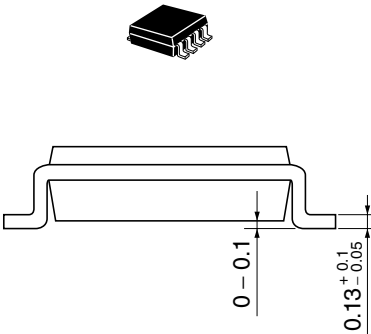
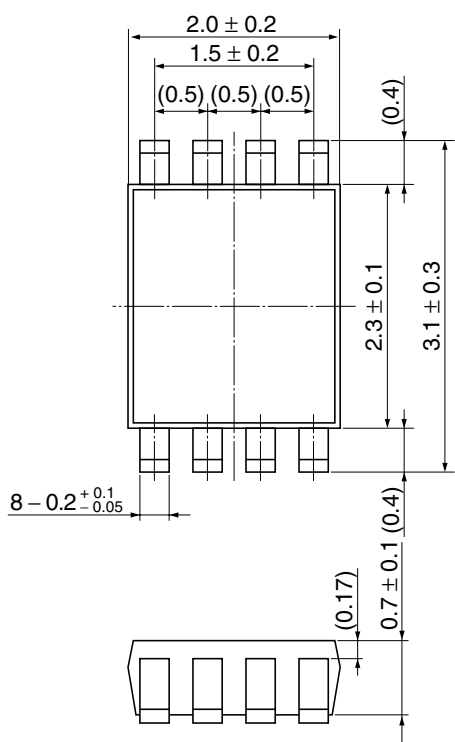
• Waveforms



- Notes: 1. Input waveform : $PRR \leq 1 \text{ MHz}$, $Z_o = 50 \Omega$, $t_r \leq 3 \text{ ns}$, $t_f \leq 3 \text{ ns}$.
2. The output are measured one at a time with one transition per measurement.

Package Dimensions

As of January, 2002
Unit: mm



Hitachi Code	TTP-8DB
JEDEC	—
JEITA	—
Mass (reference value)	0.010 g

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