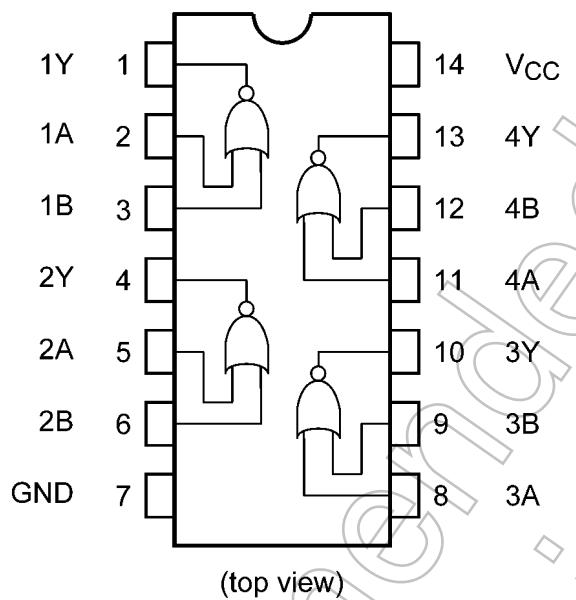
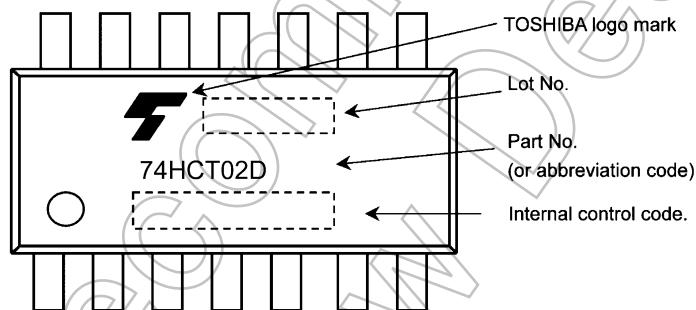


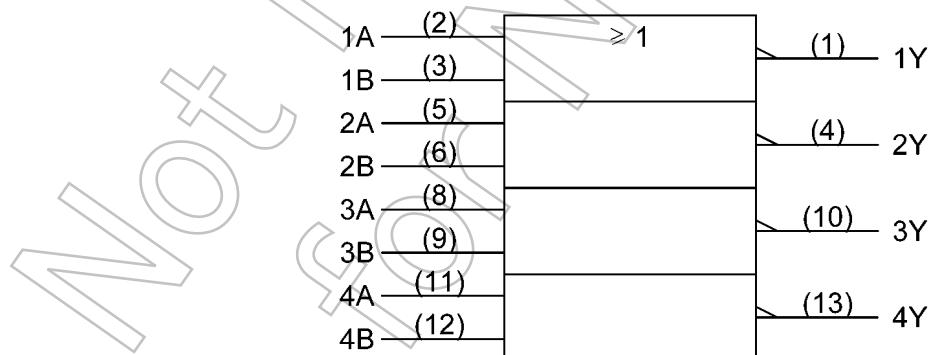
## 5. Pin Assignment



## 6. Marking



## 7. IEC Logic Symbol



## 8. Truth Table

A	B	Y
L	L	H
L	H	L
H	L	L
H	H	L

## 9. Absolute Maximum Ratings (Note)

Characteristics	Symbol	Rating	Unit
Supply voltage	$V_{CC}$	-0.5 to 7.0	V
Input voltage	$V_{IN}$	-0.5 to $V_{CC} + 0.5$	V
Output voltage	$V_{OUT}$	-0.5 to $V_{CC} + 0.5$	V
Input diode current	$I_{IK}$	$\pm 20$	mA
Output diode current	$I_{OK}$	$\pm 20$	mA
Output current	$I_{OUT}$	$\pm 25$	mA
$V_{CC}$ /ground current	$I_{CC}$	$\pm 50$	mA
Power dissipation	$P_D$	500	mW
Storage temperature	$T_{stg}$	-65 to 150	°C

Note: Exceeding any of the absolute maximum ratings, even briefly, lead to deterioration in IC performance or even destruction.

Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings and the operating ranges.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

## 10. Operating Ranges (Note)

Characteristics	Symbol	Rating	Unit
Supply voltage	$V_{CC}$	4.5 to 5.5	V
Input voltage	$V_{IN}$	0 to $V_{CC}$	V
Output voltage	$V_{OUT}$	0 to $V_{CC}$	V
Operating temperature	$T_{opr}$	-40 to 85	°C
Input rise and fall times	$t_r, t_f$	0 to 500	ns

Note: The operating ranges are required to ensure the normal operation of the device.

Unused inputs must be tied to either  $V_{CC}$  or GND.

## 11. Electrical Characteristics

### 11.1. DC Characteristics (Unless otherwise specified, $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Test Condition		$V_{CC}$ (V)	Min	Typ.	Max	Unit
High-level input voltage	$V_{IH}$	—		4.5 to 5.5	2.0	—	—	V
Low-level input voltage	$V_{IL}$	—		4.5 to 5.5	—	—	0.8	V
High-level output voltage	$V_{OH}$	$V_{IN} = V_{IL}$	$I_{OH} = -20 \mu\text{A}$	4.5	4.4	4.5	—	V
			$I_{OH} = -4 \text{ mA}$	4.5	4.18	4.31	—	
Low-level output voltage	$V_{OL}$	$V_{IN} = V_{IH}$ or $V_{IL}$	$I_{OL} = 20 \mu\text{A}$	4.5	—	0.0	0.1	V
			$I_{OL} = 4 \text{ mA}$	4.5	—	0.17	0.26	
Input leakage current	$I_{IN}$	$V_{IN} = V_{CC}$ or GND		5.5	—	—	$\pm 0.1$	$\mu\text{A}$
Quiescent supply current	$I_{CC}$	$V_{IN} = V_{CC}$ or GND		5.5	—	—	1.0	$\mu\text{A}$
	$I_{CCT}$	Per input: $V_{IN} = 0.5 \text{ V}$ or $2.4 \text{ V}$ Other input: $V_{CC}$ or GND		5.5	—	—	2.0	mA

### 11.2. DC Characteristics (Unless otherwise specified, $T_a = -40$ to $85^\circ\text{C}$ )

Characteristics	Symbol	Test Condition		$V_{CC}$ (V)	Min	Max	Unit
High-level input voltage	$V_{IH}$	—		4.5 to 5.5	2.0	—	V
Low-level input voltage	$V_{IL}$	—		4.5 to 5.5	—	0.8	V
High-level output voltage	$V_{OH}$	$V_{IN} = V_{IL}$	$I_{OH} = -20 \mu\text{A}$	4.5	4.4	—	V
			$I_{OH} = -4 \text{ mA}$	4.5	4.13	—	
Low-level output voltage	$V_{OL}$	$V_{IN} = V_{IH}$ or $V_{IL}$	$I_{OL} = 20 \mu\text{A}$	4.5	—	0.1	V
			$I_{OL} = 4 \text{ mA}$	4.5	—	0.33	
Input leakage current	$I_{IN}$	$V_{IN} = V_{CC}$ or GND		5.5	—	$\pm 1.0$	$\mu\text{A}$
Quiescent supply current	$I_{CC}$	$V_{IN} = V_{CC}$ or GND		5.5	—	10.0	$\mu\text{A}$
	$I_{CCT}$	Per input: $V_{IN} = 0.5 \text{ V}$ or $2.4 \text{ V}$ Other input: $V_{CC}$ or GND		5.5	—	2.9	mA

## 11.3. AC Characteristics

(Unless otherwise specified,  $C_L = 15 \text{ pF}$ ,  $V_{CC} = 5 \text{ V}$ ,  $T_a = 25 \text{ }^\circ\text{C}$ , Input:  $t_r = t_f = 6 \text{ ns}$ )

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Output transition time	$t_{TLH}, t_{THL}$	—	—	6	12	ns
Propagation delay time	$t_{PLH}, t_{PHL}$	—	—	9	15	ns

## 11.4. AC Characteristics

(Unless otherwise specified,  $C_L = 50 \text{ pF}$ ,  $T_a = 25 \text{ }^\circ\text{C}$ , Input:  $t_r = t_f = 6 \text{ ns}$ )

Characteristics	Symbol	Note	$V_{CC} (\text{V})$	Min	Typ.	Max	Unit
Output transition time	$t_{TLH}, t_{THL}$		4.5	—	8	15	ns
			5.5	—	7	13	ns
Propagation delay time	$t_{PLH}, t_{PHL}$		4.5	—	12	18	ns
			5.5	—	11	16	ns
Input capacitance	$C_{IN}$		—	—	5	—	pF
Power dissipation capacitance	$C_{PD}$	(Note 1)	—	—	18	—	pF

Note 1:  $C_{PD}$  is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load. Average operating current can be obtained by the equation.

$$I_{CC(\text{opr})} = C_{PD} \times V_{CC} \times f_{IN} + I_{CC}/4 \text{ (per gate)}$$

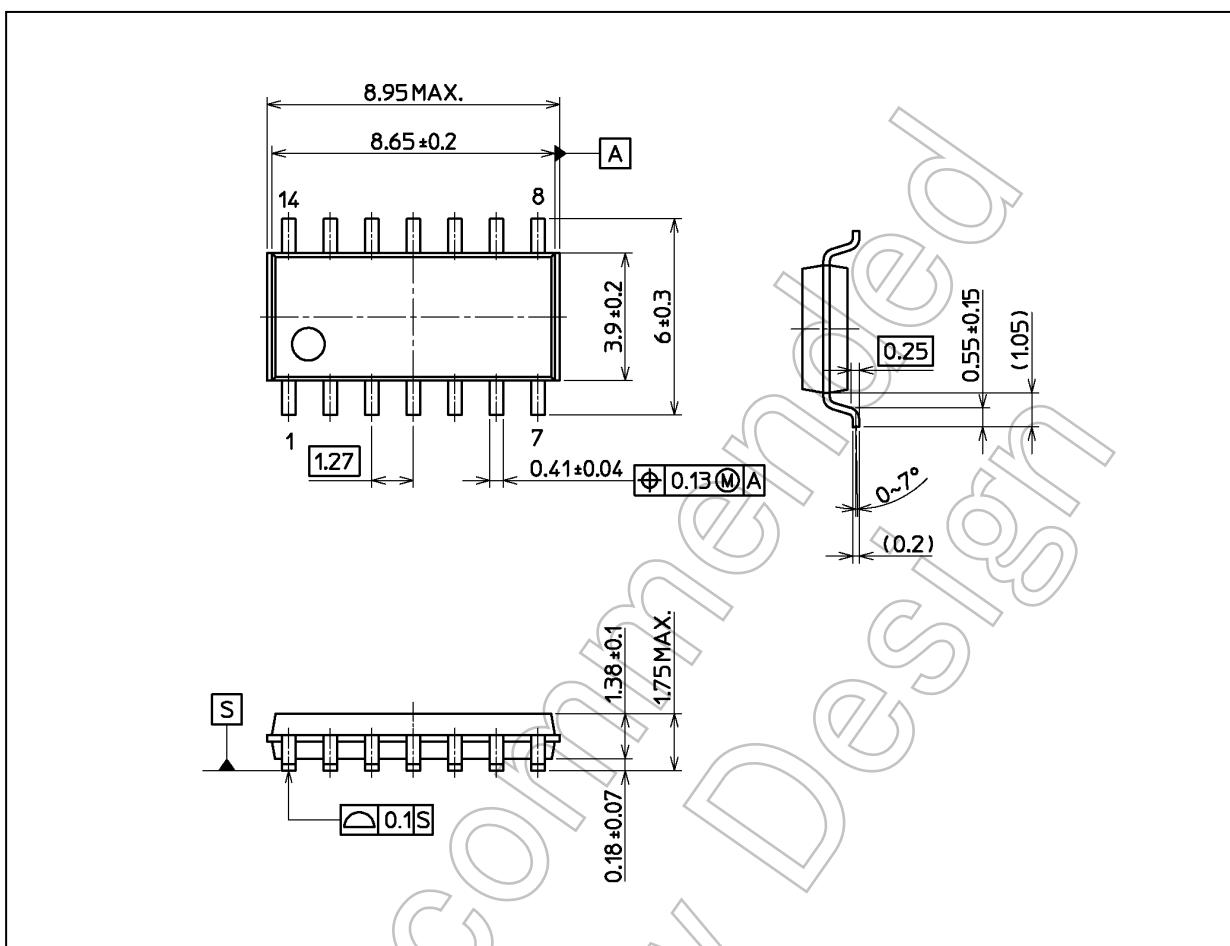
## 11.5. AC Characteristics

(Unless otherwise specified,  $C_L = 50 \text{ pF}$ ,  $T_a = -40 \text{ to } 85 \text{ }^\circ\text{C}$ , Input:  $t_r = t_f = 6 \text{ ns}$ )

Characteristics	Symbol	$V_{CC} (\text{V})$	Min	Max	Unit
Output transition time	$t_{TLH}, t_{THL}$	4.5	—	19	ns
		5.5	—	16	ns
Propagation delay time	$t_{PLH}, t_{PHL}$	4.5	—	23	ns
		5.5	—	20	ns

## Package Dimensions

Unit: mm



Weight: 0.13 g (typ.)

Package Name(s)
Nickname: SOIC14

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