# SN74LS194 (LX)
# 4-bit Bidirectional Universal Shift Register

# Product Specification

**Specification Revision History：**

| Version | Date | Description |
|---|---|---|
| 2023-05-A1 | 2023-05 | New |
| | | |
| | | |
| | | |
| | | |

# Contents

## 1、General Description

The SN74LS194 is a 4-bit bidirectional universal shift register.

**Features:**

- Temperature range:-40℃ to +125℃
- Packaging information: DIP16/SOP16/TSSOP16

**Ordering Information:**

**Tube packing specifications:**

| Part number | Packaging form | Marking code | Tube quantity | Boxed tube quantity | Boxed quantity | Notes |
|---|---|---|---|---|---|---|
| SN74LS194N (LX) | DIP16 | SN74LS194N | 25 PCS/tube | 40 tube/box | 1000 PCS/box | Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm |
| SN74LS194D (LX) | SOP16 | LS194 | 50 PCS/tube | 200 tube/box | 10000 PCS/box | Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm |
| SN74LS194PW(LX) | TSSOP16 | LS194 | 96 PCS/tube | 200 tube/box | 19200 PCS/box | Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm |

**Reel packing specifications:**

| Part number | Packaging form | Marking code | Reel quantity | Boxed reel quantity | Notes |
|---|---|---|---|---|---|
| SN74LS194DR (LX) | SOP16 | LS194 | 2500 PCS/reel | 5000 PCS/box | Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm |
| SN74LS194PW (LX) | TSSOP16 | LS194 | 5000 PCS/reel | 10000 PCS/box | Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm |

Note: If the physical information is inconsistent with the ordering information, please refer to the actual product.

## 2、Block Diagram And Pin Description

### 2.1、Block Diagram

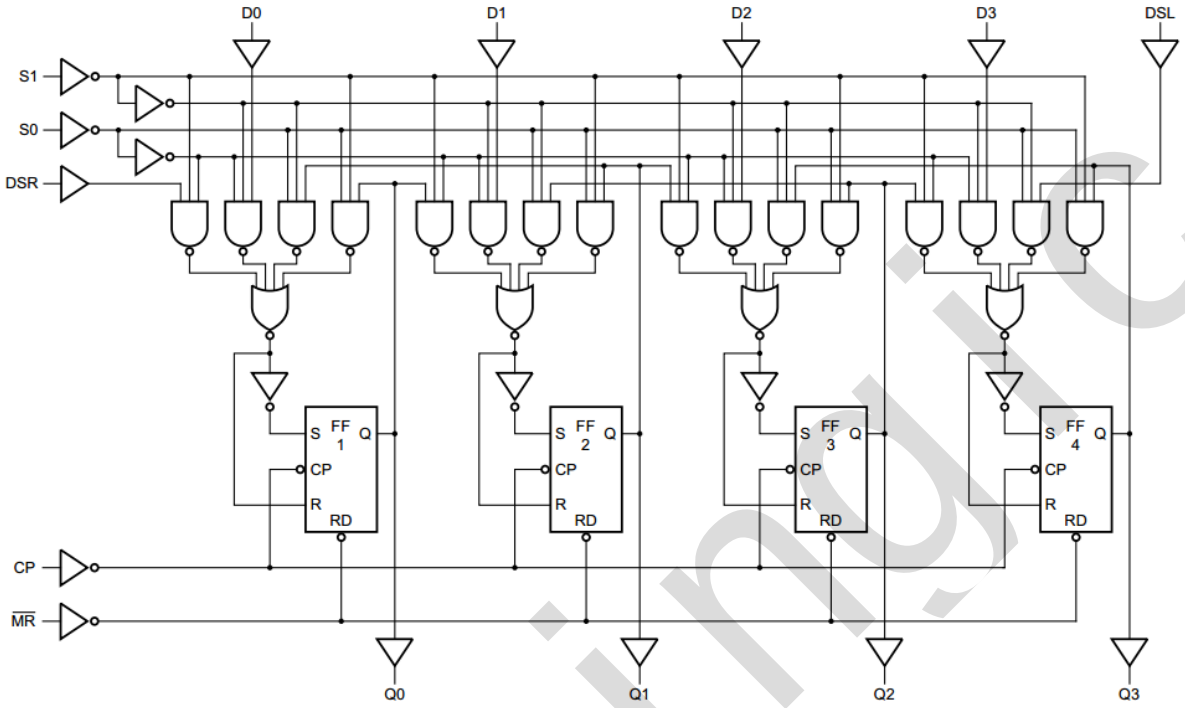



Figure 1. Logic symbol

### 2.2、Pin Configurations

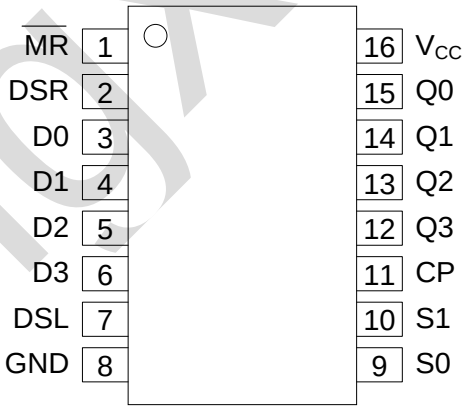



Figure 2. Pin configurations

### 2.3、Pin Description

| Pin No. | Pin Name | Description |
|---|---|---|
| 1 | | Asynchronous master reset input(active low) |
| 2 | DSR | serious data input(shift right) |
| 3 | D0 | parallel data input |
| 4 | D1 | parallel data input |
| 5 | D2 | parallel data input |
| 6 | D3 | parallel data input |
| 7 | DSL | Serial data input(shift left) |
| 8 | GND | ground (0V) |
| 9 | S0 | mode control input |
| 10 | S1 | mode control input |
| 11 | CP | Clock input(LOW-to-HIGH edge-triggered) |
| 12 | Q3 | Parallel output |
| 13 | Q2 | Parallel output |
| 14 | Q1 | Parallel output |
| 15 | Q0 | Parallel output |
| 16 | $V_{CC}$ | supply voltage |

### 2.4、Function Table

| Operation mode | inputs | | | | | | | Outputs | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | CP | $\overline{MR}$ | S1 | S0 | DSR | DSL | Dn | Q0 | Q1 | Q2 | Q3 |
| reset(clear) | X | L | X | X | X | X | X | L | L | L | L |
| Hold(do nothing) | X | H | l | l | X | X | X | Q0 | Q1 | Q2 | Q3 |
| Shift left | ↑ | H | h | l | X | l | X | Q1 | Q2 | Q3 | L |
| | ↑ | H | h | l | X | h | X | Q1 | Q2 | Q3 | H |
| Shift right | ↑ | H | l | h | l | X | X | L | Q0 | Q1 | Q2 |
| | ↑ | H | l | h | h | X | X | H | Q0 | Q1 | Q2 |
| Parallel load | ↑ | H | h | h | X | X | Dn | D0 | D1 | D2 | D3 |

Note:

H=HIGH voltage level; L=LOW voltage level.

h=HIGH voltage level one set-up time prior to the LOW-to-HIGH CP transition.

l=LOW voltage level one set-up time prior to the LOW-to-HIGH CP transition.

X=don’t care.

↑=LOW to HIGH CP transition.

# 3、Electrical Parameter

## 3.1、Absolute Maximum Ratings

(Voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter | Symbol | Conditions | | Min. | Max. | Unit |
|---|---|---|---|---|---|---|
| supply voltage | $V_{CC}$ | - | | -0.5 | +7 | V |
| supply current | $I_{CC}$ | - | | - | 50 | mA |
| ground current | $I_{GND}$ | - | | -50 | - | mA |
| input clamping current | $I_{IK}$ | $V_I$<-0.5V or $V_I$>$V_{CC}$+0.5V | | - | ±20 | mA |
| output clamping current | $I_{OK}$ | $V_O$<-0.5V or $V_O$>$V_{CC}$+0.5V | | - | ±20 | mA |
| output current | $I_O$ | -0.5V<$V_O$<$V_{CC}$+0.5V | | - | ±25 | mA |
| storage temperature | $T_{stg}$ | - | | -65 | +150 | ℃ |
| soldering temperature | $T_L$ | 10s | DIP | 245 | | ℃ |
| | | | SOP/TSSOP | 260 | | |

## 3.2、Recommended Operating Conditions

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| supply voltage | $V_{CC}$ | - | 2.0 | 5.0 | 6.0 | V |
| input voltage | $V_I$ | - | 0 | - | $V_{CC}$ | V |
| output voltage | $V_O$ | - | 0 | - | $V_{CC}$ | V |
| ambient temperature | $T_{amb}$ | - | -40 | - | +125 | ℃ |

## 3.3、Electrical Characteristics

### 3.3.1、DC Characteristics 1

($T_{amb}$=-40℃ to +85℃, voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter | Symbol | $V_{CC}$ | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| HIGH-level input voltage | $V_{IH}$ | 2.0V | - | 1.5 | 1.2 | - | V |
| | | 4.5V | - | 3.15 | 2.4 | - | V |
| | | 6.0V | - | 4.2 | 3.2 | - | V |
| LOW-level input voltage | $V_{IL}$ | 2.0V | - | - | 0.8 | 0.5 | V |
| | | 4.5V | - | - | 2.1 | 1.35 | V |
| | | 6.0V | - | - | 2.8 | 1.8 | V |
| HIGH-level output voltage | $V_{OH}$ | 2.0V | $I_O$=-20uA | 1.9 | 2.0 | - | V |
| | | 4.5V | $I_O$=-20uA | 4.4 | 4.5 | - | V |
| | | 6.0V | $I_O$=-20uA | 5.9 | 6.0 | - | V |
| | | 4.5V | $I_O$=-4.0mA | 3.84 | 4.32 | - | V |
| | | 6.0V | $I_O$=-5.2mA | 5.34 | 5.81 | - | V |
| LOW-level | $V_{OL}$ | 2.0V | $I_O$=20uA | - | 0 | 0.1 | V |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| output voltage | | 4.5V | $I_O$=20uA | - | 0 | 0.1 | V |
| | | 6.0V | $I_O$=20uA | - | 0 | 0.1 | V |
| | | 4.5V | $I_O$=4.0mA | - | 0.15 | 0.33 | V |
| | | 6.0V | $I_O$=5.2mA | - | 0.16 | 0.33 | V |
| input leakage current | $I_I$ | 6.0V | $V_I$=$V_{CC}$ or GND | - | - | ±1 | uA |
| supply current | $I_{CC}$ | 6.0V | $V_I$=$V_{CC}$ or GND; $I_O$=0A | - | - | 80 | uA |

### 3.3.2、DC Characteristics 2

($T_{amb}$=-40℃ to +125℃, voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter | Symbol | $V_{CC}$ | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| HIGH-level input voltage | $V_{IH}$ | 2.0V | - | 1.5 | - | - | V |
| | | 4.5V | - | 3.15 | - | - | V |
| | | 6.0V | - | 4.2 | - | - | V |
| LOW-level input voltage | $V_{IL}$ | 2.0V | - | - | - | 0.5 | V |
| | | 4.5V | - | - | - | 1.35 | V |
| | | 6.0V | - | - | - | 1.8 | V |
| HIGH-level output voltage | $V_{OH}$ | 2.0V | $I_O$=-20uA | 1.9 | - | - | V |
| | | 4.5V | $I_O$=-20uA | 4.4 | - | - | V |
| | | 6.0V | $I_O$=-20uA | 5.9 | - | - | V |
| | | 4.5V | $I_O$=-4.0mA | 3.7 | - | - | V |
| | | 6.0V | $I_O$=-5.2mA | 5.2 | - | - | V |
| LOW-level output voltage | $V_{OL}$ | 2.0V | $I_O$=20uA | - | - | 0.1 | V |
| | | 4.5V | $I_O$=20uA | - | - | 0.1 | V |
| | | 6.0V | $I_O$=20uA | - | - | 0.1 | V |
| | | 4.5V | $I_O$=4.0mA | - | - | 0.4 | V |
| | | 6.0V | $I_O$=5.2mA | - | - | 0.4 | V |
| input leakage current | $I_I$ | 6.0V | $V_I$=$V_{CC}$ or GND | - | - | ±1 | uA |
| supply current | $I_{CC}$ | 6.0V | $V_I$=$V_{CC}$ or GND; $I_O$=0A | - | - | 160 | uA |

### 3.3.3、AC Characteristics 1

($T_{amb}$=-40℃ to +85℃, voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter | Symbol | $V_{CC}$ | Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| CP to Qn propagation delay | $t_{PLH}$, $t_{PHL}$ | 2.0V | $C_L$=50pF | see Figure 4 | - | 47 | 155 | ns |
| | | 4.5V | $C_L$=50pF | | - | 17 | 36 | ns |
| | | 6.0V | $C_L$=50pF | | - | 14 | 31 | ns |
| to Qn propagation delay | $t_{PHL}$ | 2.0V | $C_L$=50pF | see Figure 5 | - | 39 | 175 | ns |
| | | 4.5V | $C_L$=50pF | | - | 14 | 35 | ns |
| | | 6.0V | $C_L$=50pF | | - | 11 | 30 | ns |
| transition time | $t_{THL}$, $t_{TLH}$ | 2.0V | $C_L$=50pF | see Figure 5 | 100 | 17 | - | ns |
| | | 4.5V | $C_L$=50pF | | 20 | 6 | - | ns |
| | | 6.0V | $C_L$=50pF | | 17 | 5 | - | ns |
| clock pulse width | $t_W$ | 2.0V | $C_L$=50pF | see Figure 4 | 100 | 17 | - | ns |
| | | 4.5V | $C_L$=50pF | | 20 | 6 | - | ns |
| | | 6.0V | $C_L$=50pF | | 17 | 5 | - | ns |
| master reset pulse | $t_W$ | 2.0V | $C_L$=50pF | see Figure 5 | 100 | 17 | - | ns |
| | | 4.5V | $C_L$=50pF | | 20 | 6 | - | ns |
| | | 6.0V | $C_L$=50pF | | 17 | 5 | - | ns |
| to CP removal time | trem | 2.0V | $C_L$=50pF | see Figure 5 | 60 | 17 | - | ns |
| | | 4.5V | $C_L$=50pF | | 12 | 6 | - | ns |
| | | 6.0V | $C_L$=50pF | | 10 | 5 | - | ns |
| Dn to CP set-up time | tsu | 2.0V | $C_L$=50pF | see Figure 6 | 90 | 17 | - | ns |
| | | 4.5V | $C_L$=50pF | | 18 | 6 | - | ns |
| | | 6.0V | $C_L$=50pF | | 15 | 5 | - | ns |
| S0, S1 to CP set-up time | | 2.0V | $C_L$=50pF | see Figure 7 | 100 | 22 | - | ns |
| | | 4.5V | $C_L$=50pF | | 20 | 8 | - | ns |
| | | 6.0V | $C_L$=50pF | | 17 | 6 | - | ns |
| DSR, DSL to CP set-up time | | 2.0V | $C_L$=50pF | see Figure 6 | 90 | 19 | - | ns |
| | | 4.5V | $C_L$=50pF | | 18 | 7 | - | ns |
| | | 6.0V | $C_L$=50pF | | 15 | 6 | - | ns |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dn to CP hold time | th | 2.0V | $C_L$=50pF | see Figure 6 | 0 | -14 | - | ns |
| | | 4.5V | $C_L$=50pF | | 0 | -5 | - | ns |
| | | 6.0V | $C_L$=50pF | | 0 | -4 | - | ns |
| S0, S1 to CP hold time | | 2.0V | $C_L$=50pF | see Figure 7 | 0 | -11 | - | ns |
| | | 4.5V | $C_L$=50pF | | 0 | -4 | - | ns |
| | | 6.0V | $C_L$=50pF | | 0 | -3 | - | ns |
| DSR, DSL to CP hold time | | 2.0V | $C_L$=50pF | see Figure 6 | 0 | -17 | - | ns |
| | | 4.5V | $C_L$=50pF | | 0 | -6 | - | ns |
| | | 6.0V | $C_L$=50pF | | 0 | -5 | - | ns |
| maximum clock pulse frequency | fmax | 2.0V | $C_L$=50pF | see Figure 4 | 4.8 | 31 | - | MHz |
| | | 4.5V | $C_L$=50pF | | 24 | 93 | - | MHz |
| | | 6.0V | $C_L$=50pF | | 28 | 111 | - | MHz |

### 3.3.4、AC Characteristics 2

($T_{amb}$=-40℃ to +125℃, voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter | Symbol | $V_{CC}$ | Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| CP to Qn propagation delay | $t_{PLH}$, $t_{PHL}$ | 2.0V | $C_L$=50pF | see Figure 4 | - | - | 220 | ns |
| | | 4.5V | $C_L$=50pF | | - | - | 44 | ns |
| | | 6.0V | $C_L$=50pF | | - | - | 38 | ns |
| to Qn propagation delay | $t_{PHL}$ | 2.0V | $C_L$=50pF | see Figure 5 | - | - | 210 | ns |
| | | 4.5V | $C_L$=50pF | | - | - | 42 | ns |
| | | 6.0V | $C_L$=50pF | | - | - | 36 | ns |
| transition time | $t_{THL}$, $t_{TLH}$ | 2.0V | $C_L$=50pF | see Figure 5 | - | - | 110 | ns |
| | | 4.5V | $C_L$=50pF | | - | - | 22 | ns |
| | | 6.0V | $C_L$=50pF | | - | - | 19 | ns |
| clock pulse width | $t_W$ | 2.0V | $C_L$=50pF | see Figure 4 | 120 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 24 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 20 | - | - | ns |
| master reset pulse | $t_W$ | 2.0V | $C_L$=50pF | see Figure 5 | 120 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 24 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 20 | - | - | ns |
| to CP removal time | trem | 2.0V | $C_L$=50pF | see Figure 5 | 90 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 18 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 15 | - | - | ns |
| Dn to CP set-up time | tsu | 2.0V | $C_L$=50pF | see Figure 6 | 105 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 21 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 18 | - | - | ns |
| S0, S1 to CP set-up time | | 2.0V | $C_L$=50pF | see Figure 7 | 120 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 24 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 20 | - | - | ns |
| DSR, DSL to CP set-up time | | 2.0V | $C_L$=50pF | see Figure 6 | 105 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 21 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 18 | - | - | ns |
| Dn to CP hold time | th | 2.0V | $C_L$=50pF | see Figure 6 | 0 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 0 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 0 | - | - | ns |
| S0, S1 to CP hold time | | 2.0V | $C_L$=50pF | see Figure 7 | 0 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 0 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 0 | - | - | ns |
| DSR, DSL to CP hold time | | 2.0V | $C_L$=50pF | see Figure 6 | 0 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 0 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 0 | - | - | ns |
| maximum clock pulse frequency | fmax | 2.0V | $C_L$=50pF | see Figure 4 | 4.0 | - | - | MHz |
| | | 4.5V | $C_L$=50pF | | 20 | - | - | MHz |
| | | 6.0V | $C_L$=50pF | | 24 | - | - | MHz |

# 4、Testing Circuit

## 4.1、AC Testing Circuit

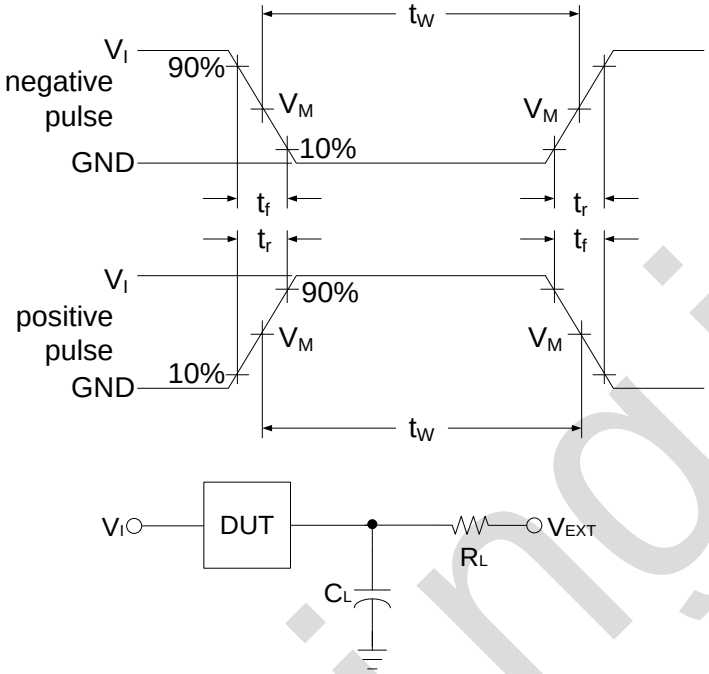



Figure 3. Test circuit for measuring switching times

$C_L$ includes probe and jig capacitance.

## 4.2、Test Data

| **Input** | | **Load** | | **$V_{EXT}$** | | |
|---|---|---|---|---|---|---|
| **$V_I$** | **$t_r = t_f$** | **$C_L$** | **$R_L$** | **$t_{PLH}/t_{PHL}$** | **$t_{PLZ}/t_{PZL}$** | **$t_{PHZ}/t_{PZH}$** |
| $V_{CC}$ | 6.0ns | 50pF | 1KΩ | Open | $V_{CC}$ | GND |

**4.3、AC Testing Waveforms**

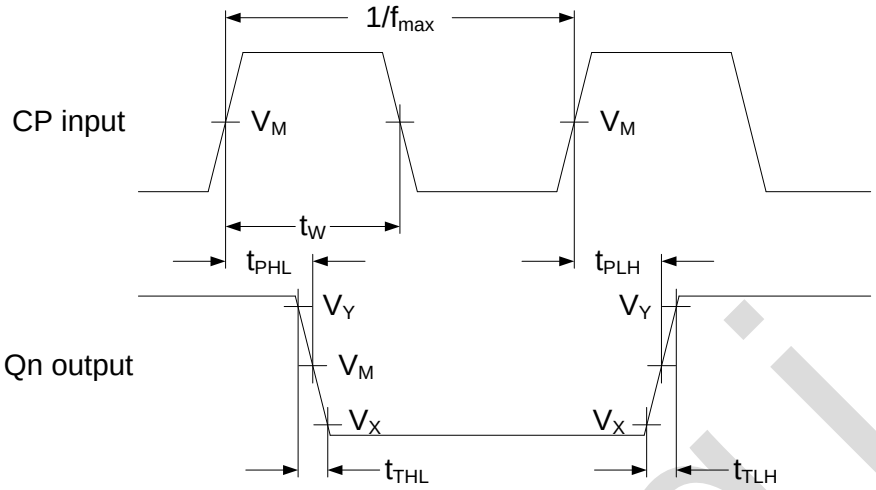



Figure 4. Waveforms showing the clock (CP) to output (Qn) propagation delays, the clock pulse width, the output transition times and the maximum clock frequency

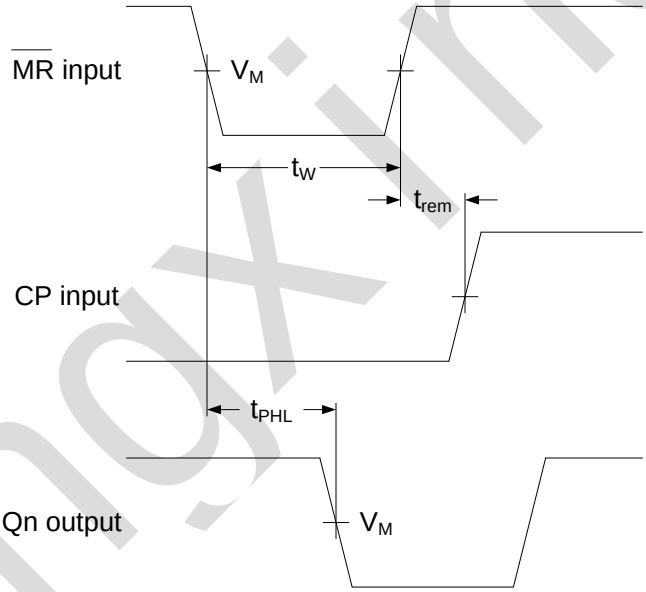



Figure 5. Waveforms showing the master reset (MR) pulse width, the master reset to output (Qn) propagation delays and the master reset to clock (CP) removal time

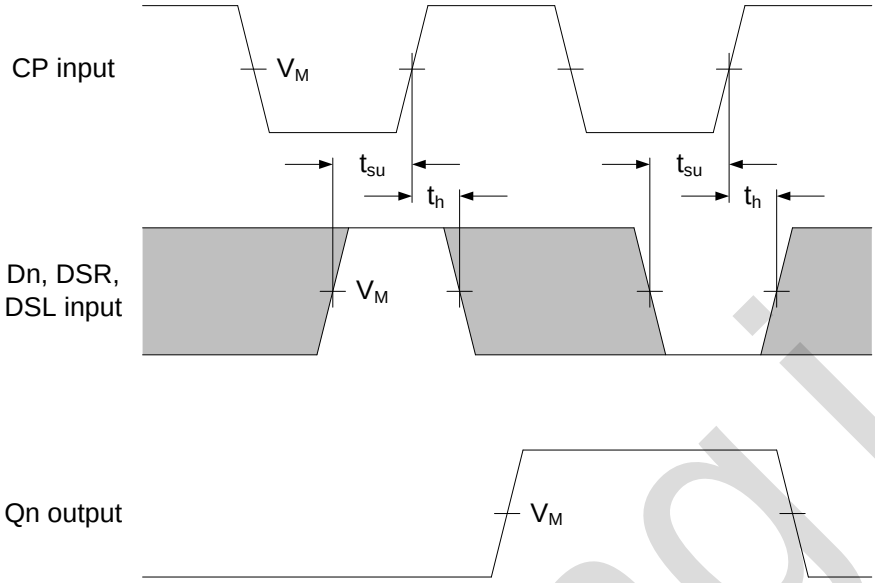



Figure 6. Waveforms showing the set-up and holdtimes from the data inputs (Dn, DSR and DSL) to the clock (CP).

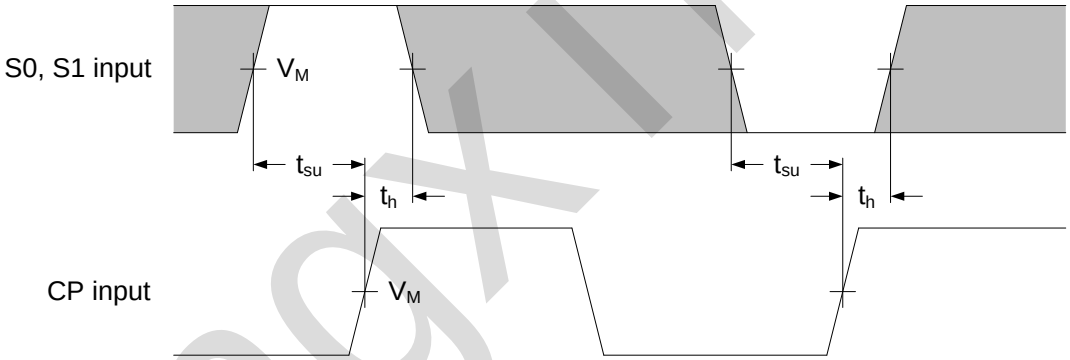


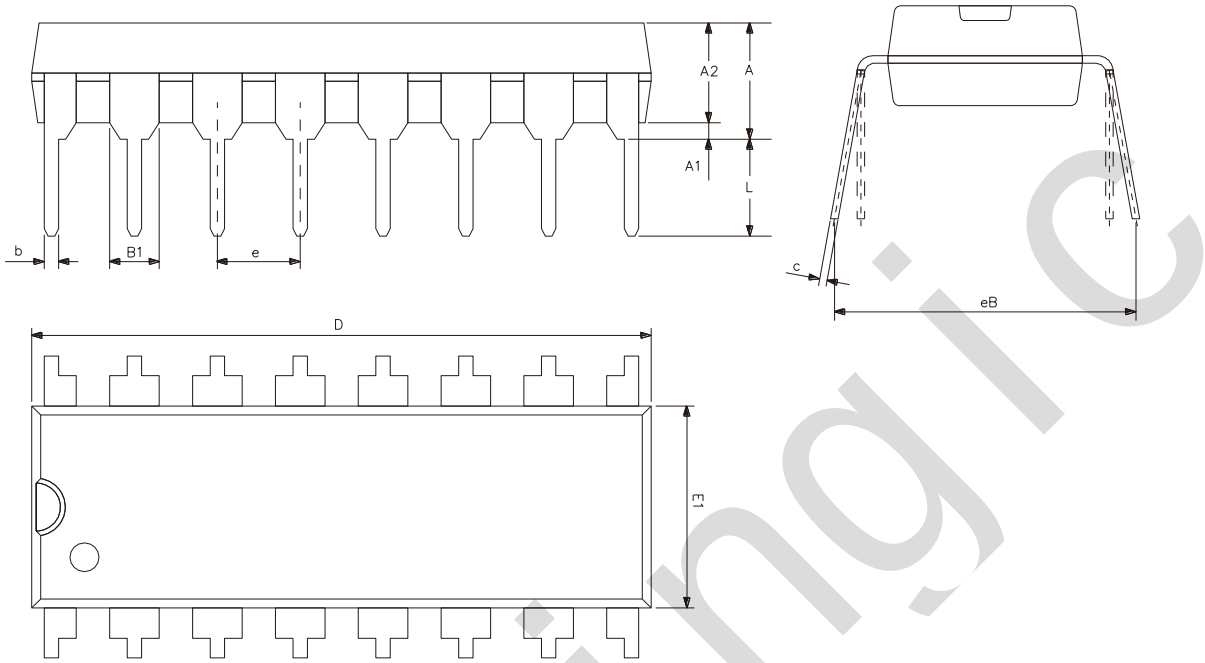

Figure 7. Waveforms showing the set-up and hold times from the mode control inputs (Sn) to the clock input (CP).

### 4.4、Measurement Points

| Input | Output | | |
|---|---|---|---|
| $V_M$ | $V_M$ | $V_X$ | $V_Y$ |
| $0.5\times V_{CC}$ | $0.5\times V_{CC}$ | $0.1\times V_{CC}$ | $0.9\times V_{CC}$ |

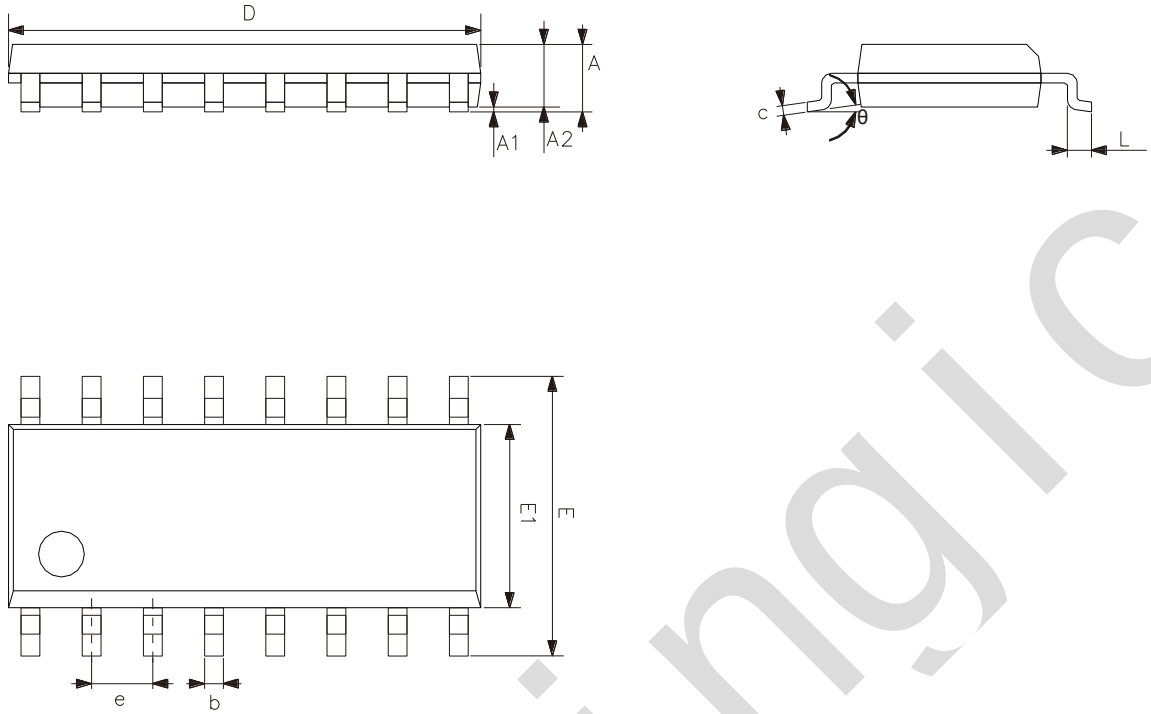
# 5、Package Information

## 5.1、DIP16



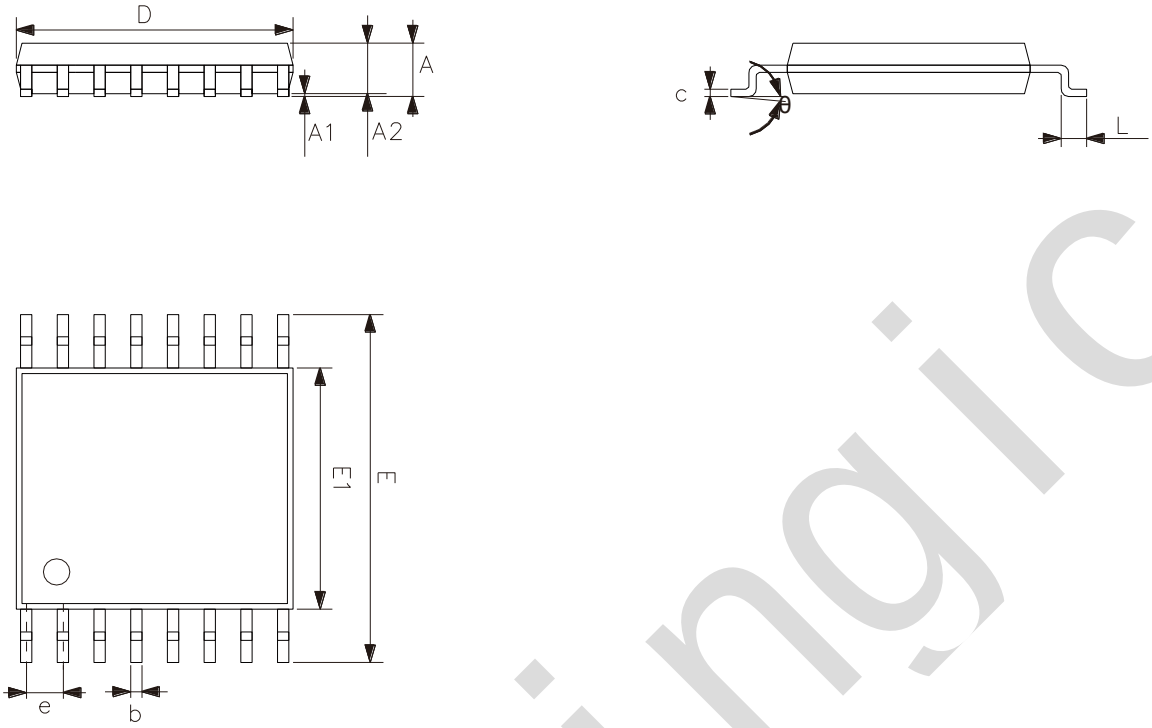

| Symbol | Dimensions (mm) | |
|---|---|---|
| | Min. | Max. |
| A2 | 3.20 | 3.60 |
| A1 | 0.51 | - |
| A | 3.60 | 5.33 |
| L | 3.00 | 3.60 |
| b | 0.36 | 0.56 |
| B1 | 1.52 | |
| D | 18.80 | 19.94 |
| E1 | 6.20 | 6.60 |
| e | 2.54 | |
| c | 0.20 | 0.36 |
| eB | 7.62 | 9.30 |

**5.2、SOP16**




| Symbol | Dimensions (mm) | |
|---|---|---|
| | Min. | Max. |
| A | 1.35 | 1.80 |
| A1 | 0.10 | 0.25 |
| A2 | 1.25 | 1.55 |
| b | 0.33 | 0.51 |
| c | 0.19 | 0.25 |
| D | 9.50 | 10.10 |
| E | 5.80 | 6.30 |
| E1 | 3.70 | 4.10 |
| e | 1.27 | |
| L | 0.35 | 0.89 |
| θ | 0° | 8° |

**5.3、TSSOP16**




| Symbol | Dimensions (mm) | |
|---|---|---|
| | Min. | Max. |
| A | - | 1.20 |
| A1 | 0.05 | 0.15 |
| A2 | 0.80 | 1.05 |
| b | 0.19 | 0.30 |
| c | 0.09 | 0.20 |
| D | 4.90 | 5.10 |
| E1 | 4.30 | 4.50 |
| E | 6.20 | 6.60 |
| e | 0.65 | |
| L | 0.45 | 0.75 |
| θ | 0° | 8° |

# 6、Statements And Notes

## 6.1、The name and content of Hazardous substances or Elements in the product

| Part name | Hazardous substances or Elements | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Lead and lead compounds | Mercury and mercury compounds | Cadmium and cadmium compounds | Hexavalent chromium compounds | Polybrominated biphenyls | Polybrominated biphenyl ethers | Dibutyl phthalate | Butylbenzyl phthalate | Di-2-ethylhexyl phthalate | Diisobutyl phthalate |
| Lead frame | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Plastic resin | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Chip | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| The lead | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Plastic sheet installed | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| explanation | ○：Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard.<br>×：Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements. | | | | | | | | | |

## 6.2、Notes

We recommend you to read this chapter carefully before using this product.

The information in this chapter is provided for reference only and Lingxing disclaims any express or implied warranties, including but not limited to applicability, special application or non-infringement of third party rights.

This product is not suitable for critical equipment such as life-saving, life-sustaining or safety equipment. It is also not suitable for applications that may result in personal injury, death, or serious property or environmental damage due to product malfunction or failure. Lingxing will not be liable for any damages incurred by the customers at their own risk for such applications.

The customer is responsible for conducting all necessary tests Lingxing's application to avoid failure in the application or the application of the customer' s third party users. Lingxing does not accept any liability.

The Company reserves the right to change or improve the information published in this chapter at any time. The information in this chapter are subject to change without notice. We recommend the customer to consult our sales staff before purchasing.

Please obtain related materials form Lingxing's regular channels and we are not responsible for its content if it is provided by sources other than our company.

In case of any conflict between the Chinese and English version, the version is subject to the Chinese one.

# X-ON Electronics

Largest Supplier of Electrical and Electronic Components

***Click to view similar products for*** Counter Shift Registers ***category:***

***Click to view products by*** lingxingic ***manufacturer:***

Other Similar products are found below :

CD4031BE CD4034BE NLV74HC165ADTR2G 5962-9172201M2A MC100EP142MNG MC100EP016AMNG MC74LV594ADR2G NLV14094BDTR2G NLV74HC589ADR2G AiP74HC595TA16.TR SN74LS295BN AIP74HC164TA14.TR TM74HC164 74HC164D AiP74HC165SA16.TR 74HC573D AiP74HC165TA16.TR XL74HC597-TS 74HC164MT/TR XL74HC595TS 74HC595DMT/TR CD4094DMT/TR 74HC595D(MS) CD4094DM/TR 74HC164D GN165D 74HC595DM/TR AIP74HC595SA.TR XL4021B 74HC164D(MS) 74HC595MT/TR XL74HC165-TS 74HC595D 74HC595D 74HC595D. 74HCT595BQ RS595SXTSS16 Aip74HC595SA16.TR SN74LS164DR-HXY 74HC164DR RS595SXS16 74HC165-HXY RS164XQ GN74HC595D 74HC164DRG XD74HC165 SN74LV165AQWBQBRQ1 AiP74HC4094SA16.TR HX74HC595IDRG CD4094DN