



# SN74HC/HCT151 (LX)

## 8-input Multiplexer

### Product Specification

#### Specification Revision History:

| Version    | Date    | Description  |
|------------|---------|--|
| 2021-11-A2 | 2021-11 | Modify Ordering Information; Modify ambient temperature to -40°C~+125°C. |
| 2021-12-A3 | 2021-12 | Modify Ordering Information  |
|            |         |  |



## 1、General Description

The SN74HC/HCT151 are 8-bit multiplexer with eight binary inputs (I0 to I7), three select inputs (S0 to S2) and an enable input ( $\bar{E}$ ). One of the eight binary inputs is selected by the select inputs and routed to the complementary outputs (Y and  $\bar{Y}$ ). A HIGH on  $\bar{E}$  forces the output Y LOW and output  $\bar{Y}$  HIGH. Inputs also include clamp diodes that enable the use of current limiting resistors to interface inputs to voltages in excess of  $V_{CC}$ .

### Features:

- Input levels:
  - For SN74HC151: CMOS level
  - For SN74HCT151: TTL level
- Low-power dissipation
- Non-inverting data path
- Specified from -40°C to +125°C
- Packaging information: DIP16/SOP16/TSSOP16



## Ordering Information:

### Tube packing specifications:

| Part number      | Packaging form | Marking code | Tube quantity | Boxed tube quantity | Boxed quantity | Notes  |
|------------------|----------------|--------------|---------------|---------------------|----------------|--|
| SN74HC151N (LX)  | DIP16          | SN74HC151N   | 25 PCS/tube   | 40 tube/box         | 1000 PCS/box   | Dimensions of plastic enclosure: 19.0mm×6.4mm<br>Pin spacing: 2.54mm |
| SN74HCT151N (LX) | DIP16          | SN74HCT151N  | 25 PCS/tube   | 40 tube/box         | 1000 PCS/box   | Dimensions of plastic enclosure: 19.0mm×6.4mm<br>Pin spacing: 2.54mm |

### Reel packing specifications:

| Part number      | Packaging form | Marking code | Reel quantity | Boxed reel quantity | Notes  |
|------------------|----------------|--------------|---------------|---------------------|--|
| SN74HC151DR (LX) | SOP16          | HC151        | 2500 PCS/reel | 5000 PCS/box        | Dimensions of plastic enclosure: 10.0mm×3.9mm<br>Pin spacing: 1.27mm |
| SN74HCT151       | SOP16          | SN74HCT151   | 2500 PCS/reel | 5000 PCS/box        | Dimensions of plastic enclosure: 10.0mm×3.9mm<br>Pin spacing: 1.27mm |
| SN74HC151        | TSSOP16        | SN74HC151    | 5000 PCS/reel | 10000 PCS/box       | Dimensions of plastic enclosure: 5.0mm×4.4mm<br>Pin spacing: 0.65mm  |
| SN74HCT151       | TSSOP16        | SN74HCT151   | 5000 PCS/reel | 10000 PCS/box       | Dimensions of plastic enclosure: 5.0mm×4.4mm<br>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

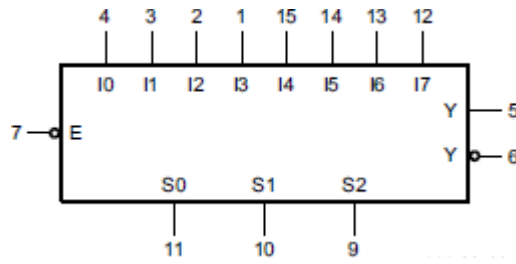


Figure 1. Logic symbol

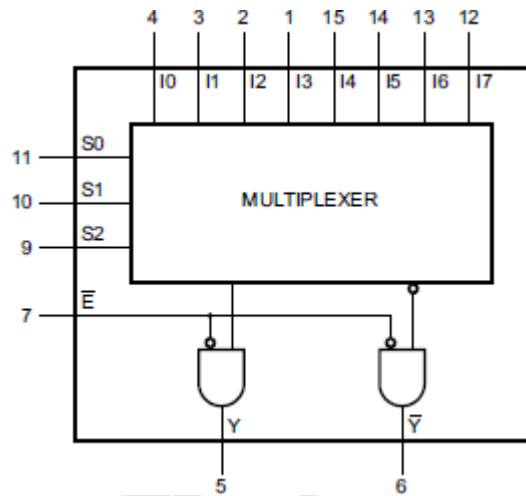


Figure 2. Functional diagram

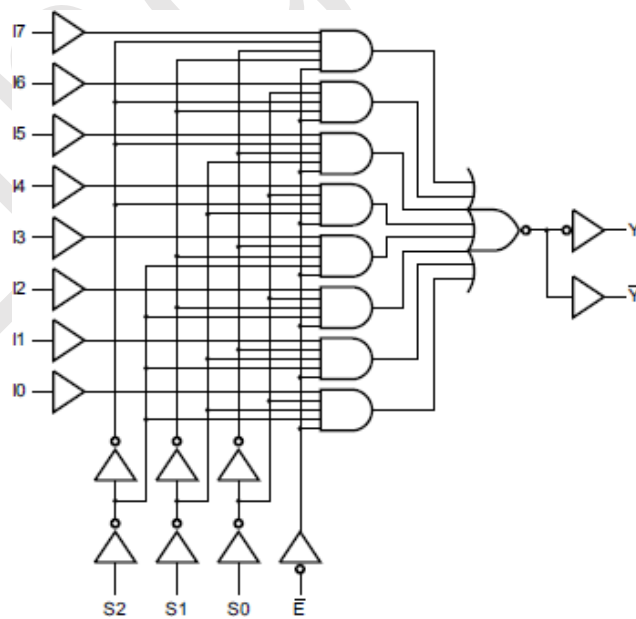
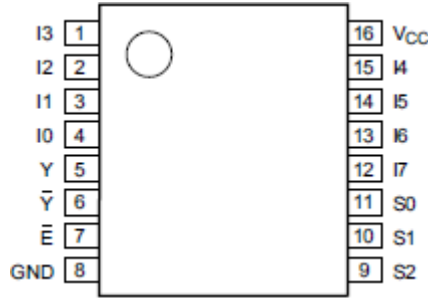


Figure 3. Logic diagram



## 2.2、Pin Configurations



## 2.3、Pin Description

| Pin No. | Pin Name        | Description                      |
|---------|-----------------|----------------------------------|
| 1       | I3              | data input                       |
| 2       | I2              | data input                       |
| 3       | I1              | data input                       |
| 4       | I0              | data input                       |
| 5       | Y               | multiplexer output               |
| 6       | $\bar{Y}$       | complementary multiplexer output |
| 7       | $\bar{E}$       | enable input (active LOW)        |
| 8       | GND             | ground (0V)                      |
| 9       | S2              | common data select input         |
| 10      | S1              | common data select input         |
| 11      | S0              | common data select input         |
| 12      | I7              | data input                       |
| 13      | I6              | data input                       |
| 14      | I5              | data input                       |
| 15      | I4              | data input                       |
| 16      | V <sub>CC</sub> | supply voltage                   |

## 2.4、Function Table

| Input     |    |    |    |    |    |    |    |    |    |    |    | Output |           |
|-----------|----|----|----|----|----|----|----|----|----|----|----|--------|-----------|
| $\bar{E}$ | S2 | S1 | S0 | I0 | I1 | I2 | I3 | I4 | I5 | I6 | I7 | Y      | $\bar{Y}$ |
| H         | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | H      | L         |
| L         | L  | L  | L  | L  | X  | X  | X  | X  | X  | X  | X  | H      | L         |
| L         | L  | L  | L  | H  | X  | X  | X  | X  | X  | X  | X  | L      | H         |
| L         | L  | L  | H  | X  | L  | X  | X  | X  | X  | X  | X  | H      | L         |
| L         | L  | L  | H  | X  | H  | X  | X  | X  | X  | X  | X  | L      | H         |
| L         | L  | H  | L  | X  | X  | L  | X  | X  | X  | X  | X  | H      | L         |
| L         | L  | H  | L  | X  | X  | H  | X  | X  | X  | X  | X  | L      | H         |
| L         | L  | H  | H  | X  | X  | X  | L  | X  | X  | X  | X  | H      | L         |
| L         | L  | H  | H  | X  | X  | X  | H  | X  | X  | X  | X  | L      | H         |
| L         | H  | L  | L  | X  | X  | X  | X  | L  | X  | X  | X  | H      | L         |
| L         | H  | L  | L  | X  | X  | X  | X  | H  | X  | X  | X  | L      | H         |
| L         | H  | L  | H  | X  | X  | X  | X  | X  | L  | X  | X  | H      | L         |



|   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | H | L | H | X | X | X | X | X | H | X | X | L | H |
| L | H | H | L | X | X | X | X | X | X | L | X | H | L |
| L | H | H | L | X | X | X | X | X | X | H | X | L | H |
| L | H | H | H | X | X | X | X | X | X | X | L | H | L |
| L | H | H | H | X | X | X | X | X | X | X | H | L | H |

Note: H=HIGH voltage level; L=LOW voltage level; X=don't care.

### 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 | +7.0     | V    |
| input clamping current  | $I_{IK}$  | $V_I < -0.5V$ or $V_I > V_{CC}+0.5V$ | -    | $\pm 20$ | mA   |
| output clamping current | $I_{OK}$  | $V_O < -0.5V$ or $V_O > V_{CC}+0.5V$ | -    | $\pm 20$ | mA   |
| output current          | $I_O$     | $V_O = -0.5V$ to $(V_{CC}+0.5V)$     | -    | $\pm 25$ | mA   |
| supply current          | $I_{CC}$  | -                                    | -    | +50      | mA   |
| ground current          | $I_{GND}$ | -                                    | -50  | -        | mA   |
| storage temperature     | $T_{stg}$ | -                                    | -65  | +150     | °C   |
| total power dissipation | $P_{tot}$ | -                                    | -    | 500      | mW   |
| soldering temperature   | $T_L$     | 10s                                  | DIP  | 245      | °C   |
|                         |           |                                      | SOP  | 250      |      |

Note:

[1] For DIP16 packages: above 70°C the value of  $P_{tot}$  derates linearly with 12mW/K.

[2] For SOP16 packages: above 70°C the value of  $P_{tot}$  derates linearly with 8mW/K.

[3] For (T)SSOP16 packages: above 60°C the value of  $P_{tot}$  derates linearly with 5.5mW/K.

#### 3.2、Recommended Operating Conditions

| Parameter                           | Symbol              | Conditions    | Min. | Typ. | Max.     | Unit |
|-------------------------------------|---------------------|---------------|------|------|----------|------|
| <b>SN74HC151</b>                    |                     |               |      |      |          |      |
| 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    |
| input transition rise and fall rate | $\Delta t/\Delta V$ | $V_{CC}=2.0V$ | -    | -    | 625      | ns/V |
|                                     |                     | $V_{CC}=4.5V$ | -    | 1.67 | 139      | ns/V |
|                                     |                     | $V_{CC}=6.0V$ | -    | -    | 83       | ns/V |
| ambient temperature                 | $T_{amb}$           | -             | -40  | -    | +105     | °C   |
| <b>SN74HCT151</b>                   |                     |               |      |      |          |      |
| supply voltage                      | $V_{CC}$            | -             | 4.5  | 5.0  | 5.5      | V    |
| input voltage                       | $V_I$               | -             | 0    | -    | $V_{CC}$ | V    |
| output voltage                      | $V_O$               | -             | 0    | -    | $V_{CC}$ | V    |
| input transition rise and fall rate | $\Delta t/\Delta V$ | $V_{CC}=4.5V$ | -    | 1.67 | 139      | ns/V |
| ambient temperature                 | $T_{amb}$           | -             | -40  | +25  | +105     | °C   |



### 3.3、Electrical Characteristics

#### 3.3.1、DC Characteristics 1

( $T_{amb}=25^{\circ}C$ , voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter                 | Symbol          | Conditions   | Min.                              | Typ. | Max.      | Unit    |         |
|---------------------------|-----------------|--|-----------------------------------|------|-----------|---------|---------|
| <b>SN74HC151</b>          |                 |  |                                   |      |           |         |         |
| HIGH-level input voltage  | $V_{IH}$        | $V_{CC}=2.0V$  | 1.5                               | 1.2  | -         | V       |         |
|                           |                 | $V_{CC}=4.5V$  | 3.15                              | 2.4  | -         | V       |         |
|                           |                 | $V_{CC}=6.0V$  | 4.2                               | 3.2  | -         | V       |         |
| LOW-level input voltage   | $V_{IL}$        | $V_{CC}=2.0V$  | -                                 | 0.8  | 0.5       | V       |         |
|                           |                 | $V_{CC}=4.5V$  | -                                 | 2.1  | 1.35      | V       |         |
|                           |                 | $V_{CC}=6.0V$  | -                                 | 2.8  | 1.8       | V       |         |
| HIGH-level output voltage | $V_{OH}$        | $V_I=V_{IH}$ or $V_{IL}$   | $I_O=-20\mu A; V_{CC}=2.0V$       | 1.9  | 2.0       | -       | V       |
|                           |                 |  | $I_O=-20\mu A; V_{CC}=4.5V$       | 4.4  | 4.5       | -       | V       |
|                           |                 |  | $I_O=-20\mu A; V_{CC}=6.0V$       | 5.9  | 6.0       | -       | V       |
|                           |                 |  | $I_O=-4.0mA; V_{CC}=4.5V$         | 3.98 | 4.32      | -       | V       |
|                           |                 |  | $I_O=-5.2mA; V_{CC}=6.0V$         | 5.48 | 5.81      | -       | V       |
| LOW-level output voltage  | $V_{OL}$        | $V_I=V_{IH}$ or $V_{IL}$   | $I_O=20\mu A; V_{CC}=2.0V$        | -    | 0         | 0.1     | V       |
|                           |                 |  | $I_O=20\mu A; V_{CC}=4.5V$        | -    | 0         | 0.1     | V       |
|                           |                 |  | $I_O=20\mu A; V_{CC}=6.0V$        | -    | 0         | 0.1     | V       |
|                           |                 |  | $I_O=4.0mA; V_{CC}=4.5V$          | -    | 0.15      | 0.26    | V       |
|                           |                 |  | $I_O=5.2mA; V_{CC}=6.0V$          | -    | 0.16      | 0.26    | V       |
| input leakage current     | $I_I$           | $V_I=V_{CC}$ or GND; $V_{CC}=6.0V$   | -                                 | -    | $\pm 0.1$ | $\mu A$ |         |
| supply current            | $I_{CC}$        | $V_I=V_{CC}$ or GND; $I_O=0A; V_{CC}=6.0V$   | -                                 | -    | 8.0       | $\mu A$ |         |
| input capacitance         | $C_I$           | -  | -                                 | 3.5  | -         | pF      |         |
| <b>SN74HCT151</b>         |                 |  |                                   |      |           |         |         |
| HIGH-level input voltage  | $V_{IH}$        | $V_{CC}=4.5V$ to $5.5V$  | 2.0                               | 1.6  | -         | V       |         |
| LOW-level input voltage   | $V_{IL}$        | $V_{CC}=4.5V$ to $5.5V$  | -                                 | 1.2  | 0.8       | V       |         |
| HIGH-level output voltage | $V_{OH}$        | $V_I=V_{IH}$ or $V_{IL}; V_{CC}=4.5V$  | $I_O=-20\mu A$                    | 4.4  | 4.5       | -       | V       |
|                           |                 |  | $I_O=-4.0mA$                      | 3.98 | 4.32      | -       | V       |
| LOW-level output voltage  | $V_{OL}$        | $V_I=V_{IH}$ or $V_{IL}; V_{CC}=4.5V$  | $I_O=20\mu A$                     | -    | 0         | 0.1     | V       |
|                           |                 |  | $I_O=4.0mA$                       | -    | 0.15      | 0.26    | V       |
| input leakage current     | $I_I$           | $V_I=V_{CC}$ or GND; $V_{CC}=5.5V$   | -                                 | -    | $\pm 0.1$ | $\mu A$ |         |
| supply current            | $I_{CC}$        | $V_I=V_{CC}$ or GND; $I_O=0A; V_{CC}=5.5V$   | -                                 | -    | 8.0       | $\mu A$ |         |
| additional supply current | $\Delta I_{CC}$ | $V_I=V_{CC}-2.1V;$<br>other inputs at $V_{CC}$<br>or GND; $I_O=0A;$<br>$V_{CC}=4.5V$ to $5.5V$ | per input pin;<br>In inputs       | -    | 45        | 162     | $\mu A$ |
|                           |                 |  | per input pin;<br>$\bar{E}$ input | -    | 30        | 108     | $\mu A$ |
|                           |                 |  | per input pin;<br>Sn input        | -    | 150       | 540     | $\mu A$ |
| input capacitance         | $C_I$           | -  | -                                 | 3.5  | -         | pF      |         |



3.3.2、DC Characteristics 2

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

| Parameter                 | Symbol          | Conditions   | Min.                                     | Typ. | Max.      | Unit          |               |
|---------------------------|-----------------|--|--|------|-----------|---------------|---------------|
| <b>SN74HC151</b>          |                 |  |  |      |           |               |               |
| HIGH-level input voltage  | $V_{IH}$        | $V_{CC}=2.0\text{V}$   | 1.5                                      | -    | -         | V             |               |
|                           |                 | $V_{CC}=4.5\text{V}$   | 3.15                                     | -    | -         | V             |               |
|                           |                 | $V_{CC}=6.0\text{V}$   | 4.2                                      | -    | -         | V             |               |
| LOW-level input voltage   | $V_{IL}$        | $V_{CC}=2.0\text{V}$   | -  | -    | 0.5       | V             |               |
|                           |                 | $V_{CC}=4.5\text{V}$   | -  | -    | 1.35      | V             |               |
|                           |                 | $V_{CC}=6.0\text{V}$   | -  | -    | 1.8       | V             |               |
| HIGH-level output voltage | $V_{OH}$        | $V_I=V_{IH}$ or $V_{IL}$   | $I_O=-20\mu\text{A}; V_{CC}=2.0\text{V}$ | 1.9  | -         | -             | V             |
|                           |                 |  | $I_O=-20\mu\text{A}; V_{CC}=4.5\text{V}$ | 4.4  | -         | -             | V             |
|                           |                 |  | $I_O=-20\mu\text{A}; V_{CC}=6.0\text{V}$ | 5.9  | -         | -             | V             |
|                           |                 |  | $I_O=-4.0\text{mA}; V_{CC}=4.5\text{V}$  | 3.84 | -         | -             | V             |
|                           |                 |  | $I_O=-5.2\text{mA}; V_{CC}=6.0\text{V}$  | 5.34 | -         | -             | V             |
| LOW-level output voltage  | $V_{OL}$        | $V_I=V_{IH}$ or $V_{IL}$   | $I_O=20\mu\text{A}; V_{CC}=2.0\text{V}$  | -    | -         | 0.1           | V             |
|                           |                 |  | $I_O=20\mu\text{A}; V_{CC}=4.5\text{V}$  | -    | -         | 0.1           | V             |
|                           |                 |  | $I_O=20\mu\text{A}; V_{CC}=6.0\text{V}$  | -    | -         | 0.1           | V             |
|                           |                 |  | $I_O=4.0\text{mA}; V_{CC}=4.5\text{V}$   | -    | -         | 0.33          | V             |
|                           |                 |  | $I_O=5.2\text{mA}; V_{CC}=6.0\text{V}$   | -    | -         | 0.33          | V             |
| input leakage current     | $I_I$           | $V_I=V_{CC}$ or GND; $V_{CC}=6.0\text{V}$  | -  | -    | $\pm 1.0$ | $\mu\text{A}$ |               |
| supply current            | $I_{CC}$        | $V_I=V_{CC}$ or GND; $I_O=0\text{A}; V_{CC}=6.0\text{V}$   | -  | -    | 80        | $\mu\text{A}$ |               |
| <b>SN74HCT151</b>         |                 |  |  |      |           |               |               |
| HIGH-level input voltage  | $V_{IH}$        | $V_{CC}=4.5\text{V}$ to $5.5\text{V}$  | 2.0                                      | -    | -         | V             |               |
| LOW-level input voltage   | $V_{IL}$        | $V_{CC}=4.5\text{V}$ to $5.5\text{V}$  | -  | -    | 0.8       | V             |               |
| HIGH-level output voltage | $V_{OH}$        | $V_I=V_{IH}$ or $V_{IL}; V_{CC}=4.5\text{V}$   | $I_O=-20\mu\text{A}$                     | 4.4  | -         | -             | V             |
|                           |                 |  | $I_O=-4.0\text{mA}$                      | 3.84 | -         | -             | V             |
| LOW-level output voltage  | $V_{OL}$        | $V_I=V_{IH}$ or $V_{IL}; V_{CC}=4.5\text{V}$   | $I_O=20\mu\text{A}$                      | -    | -         | 0.1           | V             |
|                           |                 |  | $I_O=4.0\text{mA}$                       | -    | -         | 0.33          | V             |
| input leakage current     | $I_I$           | $V_I=V_{CC}$ or GND; $V_{CC}=5.5\text{V}$  | -  | -    | $\pm 1.0$ | $\mu\text{A}$ |               |
| supply current            | $I_{CC}$        | $V_I=V_{CC}$ or GND; $I_O=0\text{A}; V_{CC}=5.5\text{V}$   | -  | -    | 80        | $\mu\text{A}$ |               |
| additional supply current | $\Delta I_{CC}$ | $V_I=V_{CC}-2.1\text{V};$<br>other inputs at $V_{CC}$<br>or GND; $I_O=0\text{A};$<br>$V_{CC}=4.5\text{V}$ to $5.5\text{V}$ | per input pin;<br>In inputs              | -    | -         | 203           | $\mu\text{A}$ |
|                           |                 |  | per input pin;<br>$\bar{E}$ input        | -    | -         | 135           | $\mu\text{A}$ |
|                           |                 |  | per input pin;<br>Sn input               | -    | -         | 675           | $\mu\text{A}$ |





3.3.3 、 DC Characteristics 2

( $T_{amb}=-40^{\circ}C$  to  $+105^{\circ}C$ , voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter                 | Symbol          | Conditions   | Min.                              | Typ. | Max.      | Unit    |         |
|---------------------------|-----------------|--|-----------------------------------|------|-----------|---------|---------|
| <b>SN74HC151</b>          |                 |  |                                   |      |           |         |         |
| HIGH-level input voltage  | $V_{IH}$        | $V_{CC}=2.0V$  | 1.5                               | -    | -         | V       |         |
|                           |                 | $V_{CC}=4.5V$  | 3.15                              | -    | -         | V       |         |
|                           |                 | $V_{CC}=6.0V$  | 4.2                               | -    | -         | V       |         |
| LOW-level input voltage   | $V_{IL}$        | $V_{CC}=2.0V$  | -                                 | -    | 0.5       | V       |         |
|                           |                 | $V_{CC}=4.5V$  | -                                 | -    | 1.35      | V       |         |
|                           |                 | $V_{CC}=6.0V$  | -                                 | -    | 1.8       | V       |         |
| HIGH-level output voltage | $V_{OH}$        | $V_I=V_{IH}$ or $V_{IL}$   | $I_O=-20\mu A; V_{CC}=2.0V$       | 1.9  | -         | -       | V       |
|                           |                 |  | $I_O=-20\mu A; V_{CC}=4.5V$       | 4.4  | -         | -       | V       |
|                           |                 |  | $I_O=-20\mu A; V_{CC}=6.0V$       | 5.9  | -         | -       | V       |
|                           |                 |  | $I_O=-4.0mA; V_{CC}=4.5V$         | 3.7  | -         | -       | V       |
|                           |                 |  | $I_O=-5.2mA; V_{CC}=6.0V$         | 5.2  | -         | -       | V       |
| LOW-level output voltage  | $V_{OL}$        | $V_I=V_{IH}$ or $V_{IL}$   | $I_O=20\mu A; V_{CC}=2.0V$        | -    | -         | 0.1     | V       |
|                           |                 |  | $I_O=20\mu A; V_{CC}=4.5V$        | -    | -         | 0.1     | V       |
|                           |                 |  | $I_O=20\mu A; V_{CC}=6.0V$        | -    | -         | 0.1     | V       |
|                           |                 |  | $I_O=4.0mA; V_{CC}=4.5V$          | -    | -         | 0.4     | V       |
|                           |                 |  | $I_O=5.2mA; V_{CC}=6.0V$          | -    | -         | 0.4     | V       |
| input leakage current     | $I_I$           | $V_I=V_{CC}$ or GND; $V_{CC}=6.0V$   | -                                 | -    | $\pm 1.0$ | $\mu A$ |         |
| supply current            | $I_{CC}$        | $V_I=V_{CC}$ or GND; $I_O=0A; V_{CC}=6.0V$   | -                                 | -    | 160       | $\mu A$ |         |
| <b>SN74HCT151</b>         |                 |  |                                   |      |           |         |         |
| HIGH-level input voltage  | $V_{IH}$        | $V_{CC}=4.5V$ to $5.5V$  | 2.0                               | -    | -         | V       |         |
| LOW-level input voltage   | $V_{IL}$        | $V_{CC}=4.5V$ to $5.5V$  | -                                 | -    | 0.8       | V       |         |
| HIGH-level output voltage | $V_{OH}$        | $V_I=V_{IH}$ or $V_{IL}; V_{CC}=4.5V$  | $I_O=-20\mu A$                    | 4.4  | -         | -       | V       |
|                           |                 |  | $I_O=-4.0mA$                      | 3.7  | -         | -       | V       |
| LOW-level output voltage  | $V_{OL}$        | $V_I=V_{IH}$ or $V_{IL}; V_{CC}=4.5V$  | $I_O=20\mu A$                     | -    | -         | 0.1     | V       |
|                           |                 |  | $I_O=4.0mA$                       | -    | -         | 0.4     | V       |
| input leakage current     | $I_I$           | $V_I=V_{CC}$ or GND; $V_{CC}=5.5V$   | -                                 | -    | $\pm 1.0$ | $\mu A$ |         |
| supply current            | $I_{CC}$        | $V_I=V_{CC}$ or GND; $I_O=0A; V_{CC}=5.5V$   | -                                 | -    | 160       | $\mu A$ |         |
| additional supply current | $\Delta I_{CC}$ | $V_I=V_{CC}-2.1V;$<br>other inputs at $V_{CC}$<br>or GND; $I_O=0A;$<br>$V_{CC}=4.5V$ to $5.5V$ | per input pin;<br>In inputs       | -    | -         | 221     | $\mu A$ |
|                           |                 |  | per input pin;<br>$\bar{E}$ input | -    | -         | 147     | $\mu A$ |
|                           |                 |  | per input pin;<br>Sn input        | -    | -         | 735     | $\mu A$ |



3.3.4、AC Characteristics 1

( $T_{amb}=25^{\circ}C$ ,  $GND=0V$ ,  $C_L=50pF$ , unless otherwise specified.)

| Parameter                     | Symbol   | Conditions   | Min.                       | Typ. | Max. | Unit |    |
|-------------------------------|----------|--|----------------------------|------|------|------|----|
| <b>SN74HC151</b>              |          |  |                            |      |      |      |    |
| propagation delay             | $t_{pd}$ | In to Y;<br>see Figure 5 <sup>[1]</sup>                      | $V_{CC}=2.0V$              | -    | 52   | 170  | ns |
|                               |          |  | $V_{CC}=4.5V$              | -    | 19   | 34   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 17   | -    | ns |
|                               |          |  | $V_{CC}=6.0V$              | -    | 15   | 29   | ns |
|                               |          | In to $\bar{Y}$ ;<br>see Figure 5 <sup>[1]</sup>             | $V_{CC}=2.0V$              | -    | 58   | 185  | ns |
|                               |          |  | $V_{CC}=4.5V$              | -    | 21   | 37   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 17   | -    | ns |
|                               |          |  | $V_{CC}=6.0V$              | -    | 17   | 31   | ns |
|                               |          | Sn to Y;<br>see Figure 6 <sup>[1]</sup>                      | $V_{CC}=2.0V$              | -    | 61   | 185  | ns |
|                               |          |  | $V_{CC}=4.5V$              | -    | 22   | 37   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 19   | -    | ns |
|                               |          |  | $V_{CC}=6.0V$              | -    | 18   | 31   | ns |
|                               |          | Sn to $\bar{Y}$ ;<br>see Figure 6 <sup>[1]</sup>             | $V_{CC}=2.0V$              | -    | 61   | 205  | ns |
|                               |          |  | $V_{CC}=4.5V$              | -    | 22   | 41   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 19   | -    | ns |
|                               |          |  | $V_{CC}=6.0V$              | -    | 18   | 35   | ns |
|                               |          | $\bar{E}$ to Y;<br>see Figure 6                              | $V_{CC}=2.0V$              | -    | 41   | 125  | ns |
|                               |          |  | $V_{CC}=4.5V$              | -    | 15   | 25   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 12   | -    | ns |
|                               |          |  | $V_{CC}=6.0V$              | -    | 12   | 21   | ns |
|                               |          | $\bar{E}$ to $\bar{Y}$ ;<br>see Figure 6                     | $V_{CC}=2.0V$              | -    | 47   | 145  | ns |
|                               |          |  | $V_{CC}=4.5V$              | -    | 17   | 29   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 14   | -    | ns |
|                               |          |  | $V_{CC}=6.0V$              | -    | 14   | 25   | ns |
| transition time               | $t_t$    | Y, $\bar{Y}$ ;<br>see Figure 5 <sup>[2]</sup>                | $V_{CC}=2.0V$              | -    | 19   | 75   | ns |
|                               |          |  | $V_{CC}=4.5V$              | -    | 7    | 15   | ns |
|                               |          |  | $V_{CC}=6.0V$              | -    | 6    | 13   | ns |
| power dissipation capacitance | $C_{PD}$ | $C_L=50pF$ ; $f=1MHz$ ; $V_I=GND$ to $V_{CC}$ <sup>[3]</sup> | -                          | 40   | -    | pF   |    |
| <b>SN74HCT151</b>             |          |  |                            |      |      |      |    |
| propagation delay             | $t_{pd}$ | In to Y;<br>see Figure 5 <sup>[1]</sup>                      | $V_{CC}=4.5V$              | -    | 22   | 38   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 19   | -    | ns |
|                               |          | In to $\bar{Y}$ ;<br>see Figure 5 <sup>[1]</sup>             | $V_{CC}=4.5V$              | -    | 22   | 38   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 19   | -    | ns |
|                               |          | Sn to Y;<br>see Figure 6 <sup>[1]</sup>                      | $V_{CC}=4.5V$              | -    | 23   | 41   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 20   | -    | ns |
|                               |          | Sn to $\bar{Y}$ ;<br>see Figure 6 <sup>[1]</sup>             | $V_{CC}=4.5V$              | -    | 25   | 43   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 20   | -    | ns |
|                               |          | $\bar{E}$ to Y;<br>see Figure 6                              | $V_{CC}=4.5V$              | -    | 16   | 29   | ns |
|                               |          |  | $V_{CC}=5.0V$ ; $C_L=15pF$ | -    | 13   | -    | ns |



|                               |          |   |                         |   |    |    |    |
|-------------------------------|----------|---|-------------------------|---|----|----|----|
|                               |          | $\bar{E}$ to $\bar{Y}$ ;<br>see Figure 6                      | $V_{CC}=4.5V$           | - | 21 | 36 | ns |
|                               |          |   | $V_{CC}=5.0V; C_L=15pF$ | - | 18 | -  | ns |
| transition time               | $t_t$    | $\bar{Y}, \bar{Y}; V_{CC}=4.5V$ ; see Figure 5 <sup>[2]</sup> |                         | - | 7  | 15 | ns |
| power dissipation capacitance | $C_{PD}$ | $C_L=50pF; f=1MHz; V_I=GND$ to $V_{CC}-1.5V$ <sup>[3]</sup>   |                         | - | 40 | -  | pF |

Note:

[1]  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .

[2]  $t_t$  is the same as  $t_{THL}$  and  $t_{TLH}$ .

[3]  $C_{PD}$  is used to determine the dynamic power dissipation ( $P_D$  in uW).

$$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \sum (C_L \times V_{CC}^2 \times f_o)$$
 where:

$f_i$ =input frequency in MHz;

$f_o$ =output frequency in MHz;

$C_L$ =output load capacitance in pF;

$V_{CC}$ =supply voltage in V;

$N$ =number of inputs switching;

$\sum (C_L \times V_{CC}^2 \times f_o)$ =sum of outputs.

### 3.3.5 、 AC Characteristics 2

( $T_{amb}=-40^{\circ}C$  to  $+85^{\circ}C$ ,  $GND=0V$ ,  $C_L=50pF$ , unless otherwise specified.)

| Parameter         | Symbol   | Conditions   | Min.          | Typ. | Max. | Unit |    |
|-------------------|----------|--|---------------|------|------|------|----|
| <b>SN74HC151</b>  |          |  |               |      |      |      |    |
| propagation delay | $t_{pd}$ | $\bar{In}$ to $\bar{Y}$ ;<br>see Figure 5 <sup>[1]</sup> | $V_{CC}=2.0V$ | -    | -    | 215  | ns |
|                   |          |  | $V_{CC}=4.5V$ | -    | -    | 43   | ns |
|                   |          |  | $V_{CC}=6.0V$ | -    | -    | 37   | ns |
|                   |          | $\bar{In}$ to $\bar{Y}$ ;<br>see Figure 5 <sup>[1]</sup> | $V_{CC}=2.0V$ | -    | -    | 230  | ns |
|                   |          |  | $V_{CC}=4.5V$ | -    | -    | 46   | ns |
|                   |          |  | $V_{CC}=6.0V$ | -    | -    | 39   | ns |
|                   |          | $\bar{Sn}$ to $\bar{Y}$ ;<br>see Figure 6 <sup>[1]</sup> | $V_{CC}=2.0V$ | -    | -    | 230  | ns |
|                   |          |  | $V_{CC}=4.5V$ | -    | -    | 46   | ns |
|                   |          |  | $V_{CC}=6.0V$ | -    | -    | 39   | ns |
|                   |          | $\bar{Sn}$ to $\bar{Y}$ ;<br>see Figure 6 <sup>[1]</sup> | $V_{CC}=2.0V$ | -    | -    | 255  | ns |
|                   |          |  | $V_{CC}=4.5V$ | -    | -    | 51   | ns |
|                   |          |  | $V_{CC}=6.0V$ | -    | -    | 43   | ns |
|                   |          | $\bar{E}$ to $\bar{Y}$ ;<br>see Figure 6                 | $V_{CC}=2.0V$ | -    | -    | 155  | ns |
|                   |          |  | $V_{CC}=4.5V$ | -    | -    | 31   | ns |
|                   |          |  | $V_{CC}=6.0V$ | -    | -    | 26   | ns |
|                   |          | $\bar{E}$ to $\bar{Y}$ ;<br>see Figure 6                 | $V_{CC}=2.0V$ | -    | -    | 180  | ns |
| $V_{CC}=4.5V$     | -        |  | -             | 36   | ns   |      |    |
| $V_{CC}=6.0V$     | -        |  | -             | 31   | ns   |      |    |
| transition time   | $t_t$    | $\bar{Y}, \bar{Y}$ ;<br>see Figure 5 <sup>[2]</sup>      | $V_{CC}=2.0V$ | -    | -    | 95   | ns |
|                   |          |  | $V_{CC}=4.5V$ | -    | -    | 19   | ns |
|                   |          |  | $V_{CC}=6.0V$ | -    | -    | 16   | ns |
| <b>SN74HCT151</b> |          |  |               |      |      |      |    |



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| propagation     | $t_{pd}$ | In to $\bar{Y}$ ;   | $V_{CC}=4.5V$ | - | - | 48 | ns |
|-----------------|----------|---|---------------|---|---|----|----|
| delay           |          | see Figure 5 <sup>[1]</sup>   |               |   |   |    |    |
|                 |          | In to $\bar{Y}$ ;<br>see Figure 5 <sup>[1]</sup>                    | $V_{CC}=4.5V$ | - | - | 48 | ns |
|                 |          | Sn to $\bar{Y}$ ;<br>see Figure 6 <sup>[1]</sup>                    | $V_{CC}=4.5V$ | - | - | 51 | ns |
|                 |          | Sn to $\bar{\bar{Y}}$ ;<br>see Figure 6 <sup>[1]</sup>              | $V_{CC}=4.5V$ | - | - | 54 | ns |
|                 |          | $\bar{E}$ to $\bar{Y}$ ;<br>see Figure 6                            | $V_{CC}=4.5V$ | - | - | 36 | ns |
|                 |          | $\bar{E}$ to $\bar{\bar{Y}}$ ;<br>see Figure 6                      | $V_{CC}=4.5V$ | - | - | 45 | ns |
| transition time | $t_t$    | $\bar{Y}, \bar{\bar{Y}}; V_{CC}=4.5V$ ; see Figure 5 <sup>[2]</sup> |               | - | - | 19 | ns |

Note:

[1]  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .

[2]  $t_t$  is the same as  $t_{THL}$  and  $t_{TLH}$ .

### 3.3.6、AC Characteristics 3

( $T_{amb}=-40^{\circ}C$  to  $+105^{\circ}C$ , GND=0V,  $C_L=50pF$ , unless otherwise specified.)

| Parameter         | Symbol   | Conditions   | Min.          | Typ.  | Max.          | Unit |    |     |    |
|-------------------|----------|--|---------------|---|---------------|------|----|-----|----|
| <b>SN74HC151</b>  |          |  |               |   |               |      |    |     |    |
| propagation delay | $t_{pd}$ | In to $\bar{Y}$ ;<br>see Figure 5 <sup>[1]</sup>       | $V_{CC}=2.0V$ | -   | -             | 255  | ns |     |    |
|                   |          |  | $V_{CC}=4.5V$ | -   | -             | 51   | ns |     |    |
|                   |          |  | $V_{CC}=6.0V$ | -   | -             | 43   | ns |     |    |
|                   |          | In to $\bar{\bar{Y}}$ ;<br>see Figure 5 <sup>[1]</sup> | $V_{CC}=2.0V$ | -   | -             | 280  | ns |     |    |
|                   |          |  | $V_{CC}=4.5V$ | -   | -             | 56   | ns |     |    |
|                   |          |  | $V_{CC}=6.0V$ | -   | -             | 48   | ns |     |    |
|                   |          | Sn to $\bar{Y}$ ;<br>see Figure 6 <sup>[1]</sup>       | $V_{CC}=2.0V$ | -   | -             | 280  | ns |     |    |
|                   |          |  | $V_{CC}=4.5V$ | -   | -             | 56   | ns |     |    |
|                   |          |  | $V_{CC}=6.0V$ | -   | -             | 48   | ns |     |    |
|                   |          | Sn to $\bar{\bar{Y}}$ ;<br>see Figure 6 <sup>[1]</sup> | $V_{CC}=2.0V$ | -   | -             | 310  | ns |     |    |
|                   |          |  | $V_{CC}=4.5V$ | -   | -             | 62   | ns |     |    |
|                   |          |  | $V_{CC}=6.0V$ | -   | -             | 53   | ns |     |    |
|                   |          | $\bar{E}$ to $\bar{Y}$ ;<br>see Figure 6               | $V_{CC}=2.0V$ | -   | -             | 190  | ns |     |    |
|                   |          |  | $V_{CC}=4.5V$ | -   | -             | 38   | ns |     |    |
|                   |          |  | $V_{CC}=6.0V$ | -   | -             | 32   | ns |     |    |
|                   |          | $\bar{E}$ to $\bar{\bar{Y}}$ ;<br>see Figure 6         | $V_{CC}=2.0V$ | -   | -             | 220  | ns |     |    |
|                   |          |  | $V_{CC}=4.5V$ | -   | -             | 44   | ns |     |    |
|                   |          |  | $V_{CC}=6.0V$ | -   | -             | 38   | ns |     |    |
|                   |          | transition time  | $t_t$         | $\bar{Y}, \bar{\bar{Y}}$ ;<br>see Figure 5 <sup>[2]</sup> | $V_{CC}=2.0V$ | -    | -  | 110 | ns |
|                   |          |  |               |   | $V_{CC}=4.5V$ | -    | -  | 22  | ns |
|                   |          |  |               |   | $V_{CC}=6.0V$ | -    | -  | 19  | ns |
|                   |          | <b>SN74HCT151</b>                                      |               |   |               |      |    |     |    |
|                   |          |  |               | In to $\bar{Y}$ ;<br>see Figure 5 <sup>[1]</sup>          | $V_{CC}=4.5V$ | -    | -  | 57  | ns |



|                   |          |   |               |   |   |    |    |
|-------------------|----------|---|---------------|---|---|----|----|
| propagation delay | $t_{pd}$ | In to $\bar{Y}$ ; see Figure 5 <sup>[1]</sup>                 | $V_{CC}=4.5V$ | - | - | 57 | ns |
|                   |          | $S_n$ to $\bar{Y}$ ; see Figure 6 <sup>[1]</sup>              | $V_{CC}=4.5V$ | - | - | 62 | ns |
|                   |          | $S_n$ to $\bar{Y}$ ; see Figure 6 <sup>[1]</sup>              | $V_{CC}=4.5V$ | - | - | 65 | ns |
|                   |          | $\bar{E}$ to $\bar{Y}$ ; see Figure 6                         | $V_{CC}=4.5V$ | - | - | 44 | ns |
|                   |          | $\bar{E}$ to $\bar{Y}$ ; see Figure 6                         | $V_{CC}=4.5V$ | - | - | 54 | ns |
| transition time   | $t_t$    | $\bar{Y}, \bar{Y}; V_{CC}=4.5V$ ; see Figure 5 <sup>[2]</sup> |               | - | - | 22 | ns |

Note:

[1]  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .

[2]  $t_t$  is the same as  $t_{THL}$  and  $t_{TLH}$ .

## 4、Testing Circuit

### 4.1、AC Testing Circuit

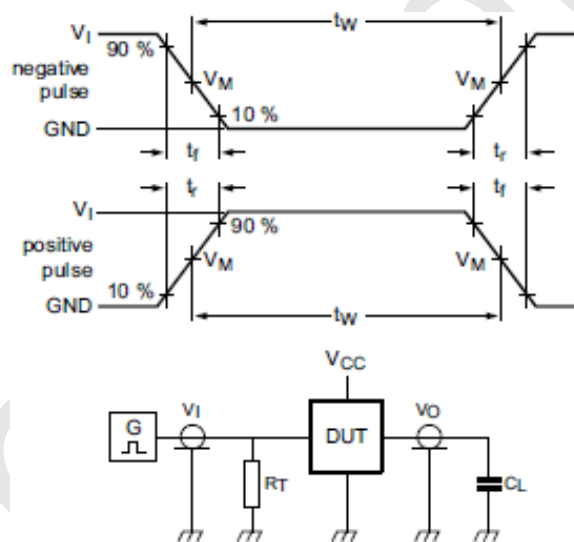


Figure 4. Test circuit for measuring switching times

Definitions for test circuit:

$C_L$ =Load capacitance including jig and probe capacitance.

$R_T$ =Termination resistance should be equal to the output impedance  $Z_o$  of the pulse generator.



## 4.2、AC Testing Waveforms

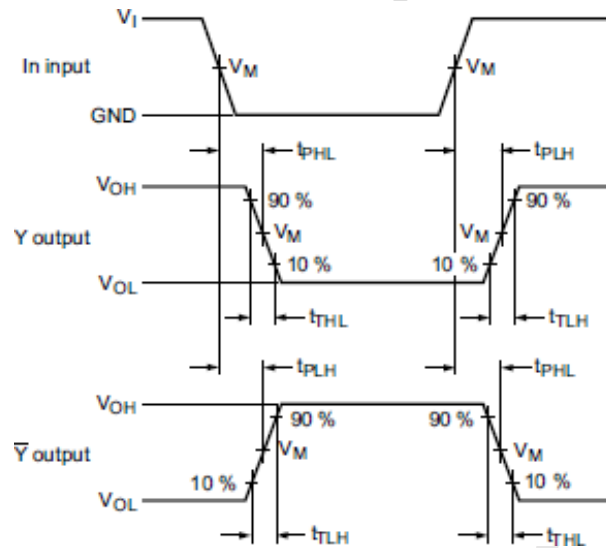


Figure 5. Propagation delay input (In) to output (Y,  $\bar{Y}$ ) and the output (Y,  $\bar{Y}$ ) transition time

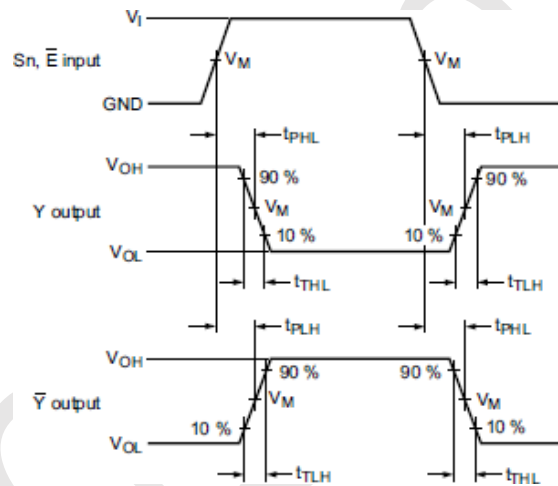


Figure 6. Propagation delay input (Sn,  $\bar{E}$ ) to output (Y,  $\bar{Y}$ ) and output (Y,  $\bar{Y}$ ) transitions time

## 4.3、Measurement Points

| Type       | Input               | Output              |
|------------|---------------------|---------------------|
|            | $V_M$               | $V_M$               |
| SN74HC151  | $0.5 \times V_{CC}$ | $0.5 \times V_{CC}$ |
| SN74HCT151 | 1.3V                | 1.3V                |

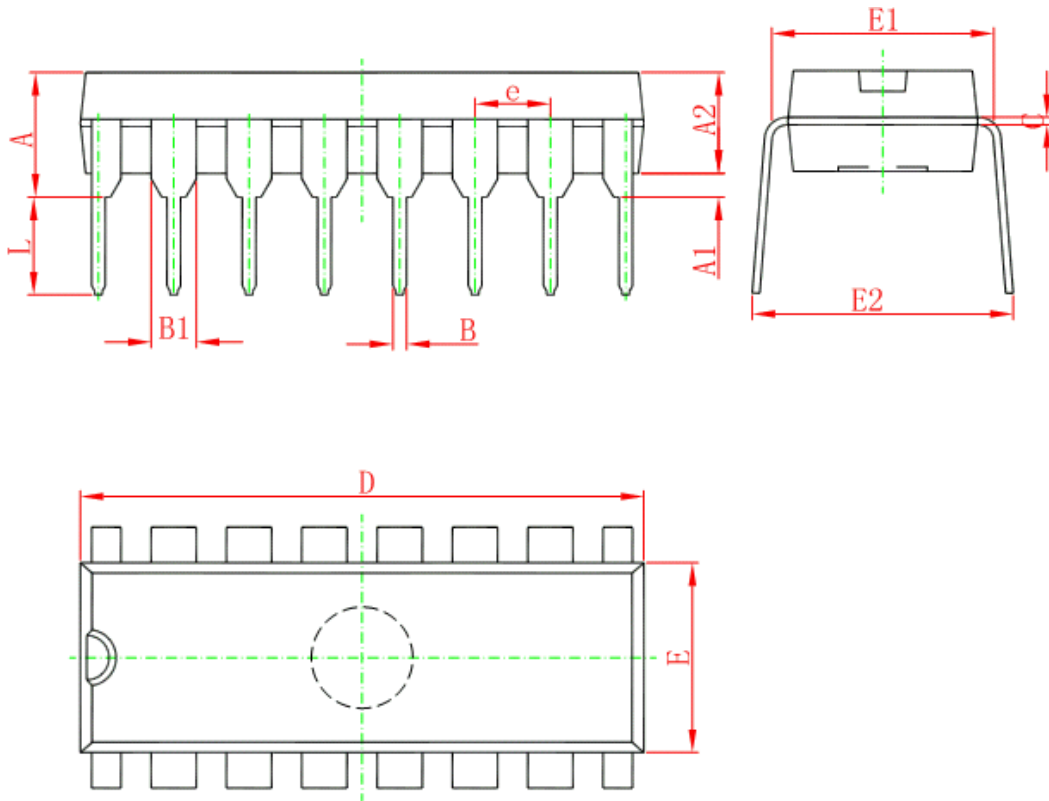
## 4.4、Test Data

| Type       | Input    |            | Load       | Test               |
|------------|----------|------------|------------|--------------------|
|            | $V_I$    | $t_r, t_f$ | $C_L$      |                    |
| SN74HC151  | $V_{CC}$ | 6ns        | 15pF, 50pF | $t_{PHL}, t_{PLH}$ |
| SN74HCT151 | 3V       | 6ns        | 15pF, 50pF | $t_{PHL}, t_{PLH}$ |



## 5、Package Information

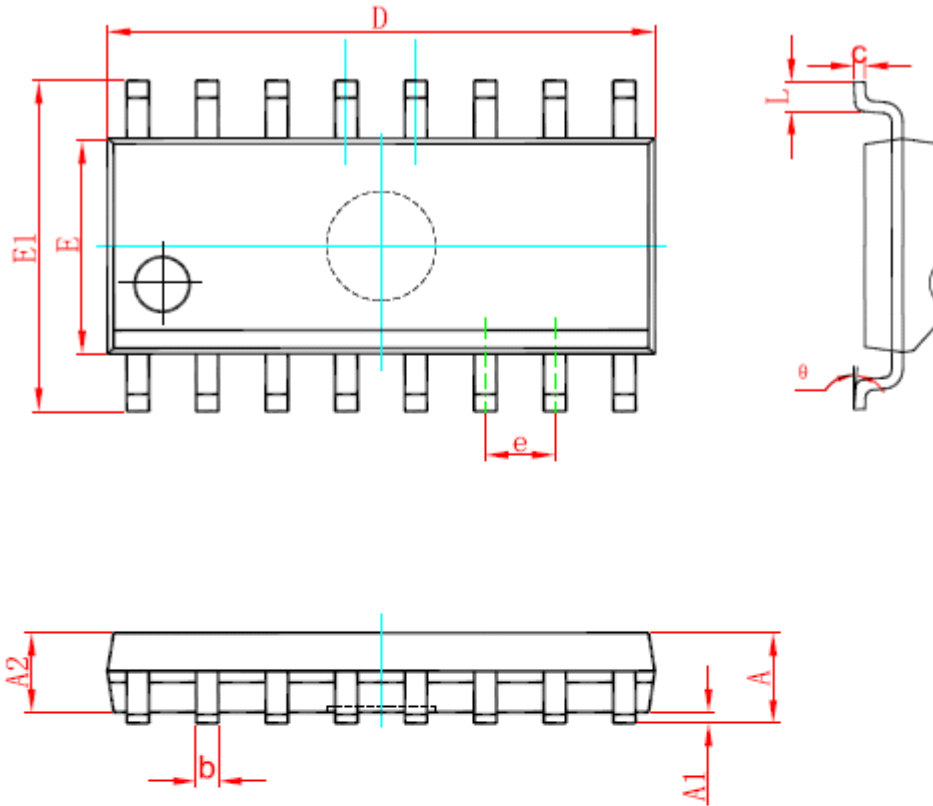
### 5.1、DIP16



| Symbol | Dimensions In Millimeters |        | Dimensions In Inches |       |
|--------|---------------------------|--------|----------------------|-------|
|        | Min                       | Max    | Min                  | Max   |
| A      | 3.710                     | 4.310  | 0.146                | 0.170 |
| A1     | 0.510                     |        | 0.020                |       |
| A2     | 3.200                     | 3.600  | 0.126                | 0.142 |
| B      | 0.380                     | 0.570  | 0.015                | 0.022 |
| B1     | 1.524 (BSC)               |        | 0.060 (BSC)          |       |
| C      | 0.204                     | 0.360  | 0.008                | 0.014 |
| D      | 18.800                    | 19.200 | 0.740                | 0.756 |
| E      | 6.200                     | 6.600  | 0.244                | 0.260 |
| E1     | 7.320                     | 7.920  | 0.288                | 0.312 |
| e      | 2.540 (BSC)               |        | 0.100 (BSC)          |       |
| L      | 3.000                     | 3.600  | 0.118                | 0.142 |
| E2     | 8.400                     | 9.000  | 0.331                | 0.354 |



## 5.2、SOP16

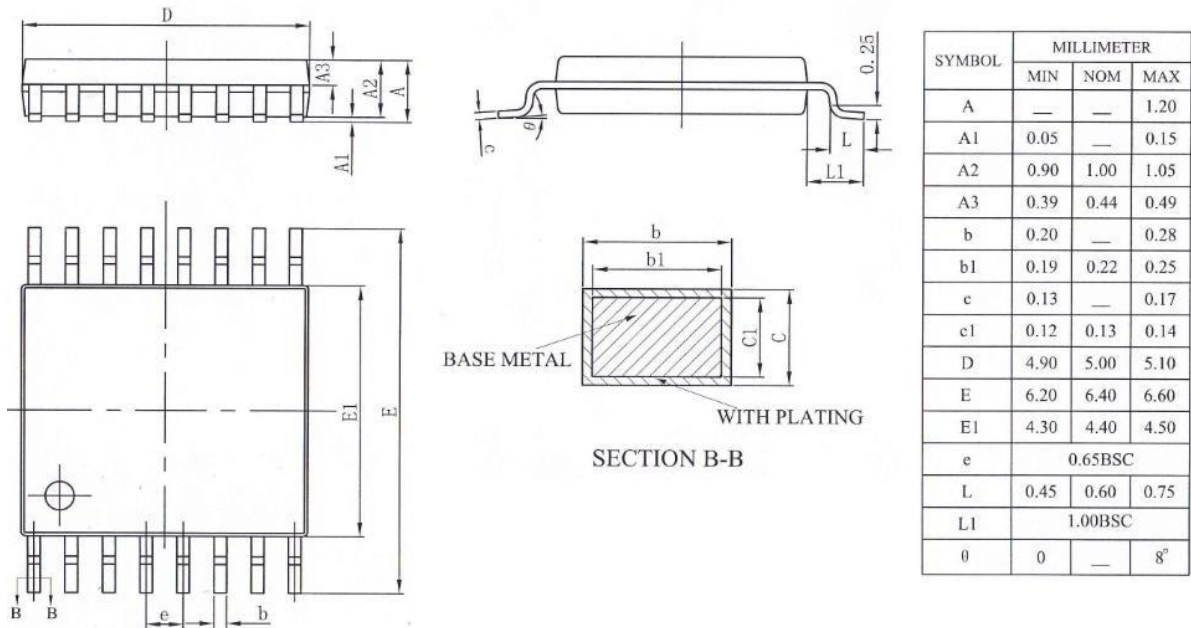


| Symbol | Dimensions In Millimeters |        | Dimensions In Inches |       |
|--------|---------------------------|--------|----------------------|-------|
|        | Min                       | Max    | Min                  | Max   |
| A      | 1.350                     | 1.750  | 0.053                | 0.069 |
| A1     | 0.100                     | 0.250  | 0.004                | 0.010 |
| A2     | 1.350                     | 1.550  | 0.053                | 0.061 |
| b      | 0.330                     | 0.510  | 0.013                | 0.020 |
| c      | 0.170                     | 0.250  | 0.007                | 0.010 |
| D      | 9.800                     | 10.200 | 0.386                | 0.402 |
| E      | 3.800                     | 4.000  | 0.150                | 0.157 |
| E1     | 5.800                     | 6.200  | 0.228                | 0.244 |
| e      | 1.270 (BSC)               |        | 0.050 (BSC)          |       |
| L      | 0.400                     | 1.270  | 0.016                | 0.050 |
| θ      | 0°                        | 8°     | 0°                   | 8°    |





5.3、TSSOP16



Lingxing



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、 Notion

Recommended carefully reading this information before the use of this product;

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