## General Description

The SN74HC/HCT112 is a dual negative-edge triggered JK flip-flop.

## Features

- Supply voltage range:
  SN74HC112: 2~6V
  SN74HCT112: 4.5~5.5V
- Input levels:
  SN74HC112: CMOS level
  SN74HCT112: TTL level
- Temperature range:-40℃ to +125℃
- Packaging information: DIP16/SOP16/TSSOP16

## Ordering Information

| Product Model | Package Type | Marking | Packing | Packing Qty |
|---|---|---|---|---|
| XBLW SN74HC112N | DIP-16 | 74HC112N | Tube | 1000Pcs/Box |
| XBLW SN74HC112DTR | SOP-16 | 74HC112 | Tape | 2500Pcs/Reel |
| XBLW SN74HC112TDTR | TSSOP-16 | 74HC112 | Tape | 3000Pcs/Reel |
| XBLW SN74HCT112N | DIP-16 | 74HCT112N | Tube | 1000Pcs/Box |
| XBLW SN74HCT112DTR | SOP-16 | 74HCT112 | Tape | 2500Pcs/Reel |
| XBLW SN74HCT112TDTR | TSSOP-16 | 74HCT112 | Tape | 3000Pcs/Reel |

## Block Diagram And Pin Description

**Block Diagram**

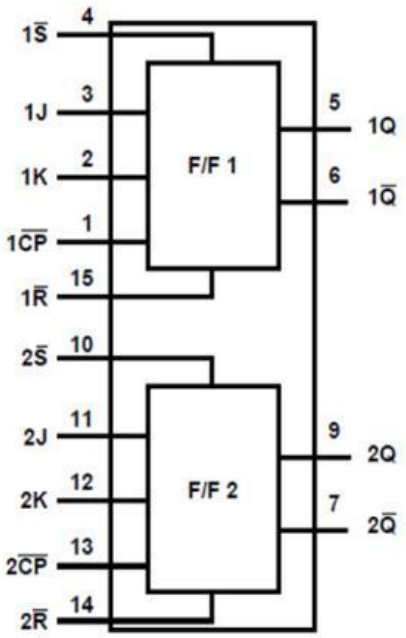
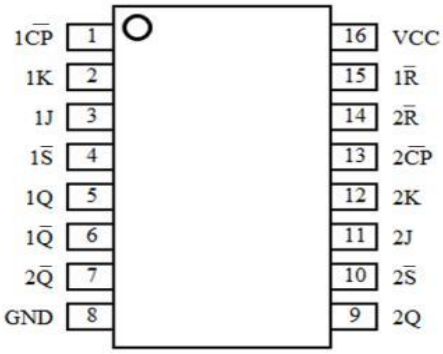



Figure 1. Functional diagram

**Pin Configurations**




**Pin Description**

| Pin No. | Pin Name | Description |
|---|---|---|
| 1 | $1\overline{CP}$ | clock input (HIGH-to-LOW; edge-triggered) |
| 2 | 1K | data input |
| 3 | 1J | data input |
| 4 | $1\overline{S}$ | set input (active LOW) |
| 5 | 1Q | true flip-flop output |
| 6 | $1\overline{Q}$ | complement flip-flop output |
| 7 | $2\overline{Q}$ | complement flip-flop output |
| 8 | GND | ground (0V) |
| 9 | 2Q | true flip-flop output |
| 10 | $2\overline{S}$ | set input (active LOW) |
| 11 | 2J | data input |
| 12 | 2K | data input |
| 13 | $2\overline{CP}$ | clock input (HIGH-to-LOW; edge-triggered) |
| 14 | $2\overline{R}$ | reset input (active LOW) |
| 15 | $1\overline{R}$ | reset input (active LOW) |
| 16 | VCC | supply voltage |

**Function Table**

| Inputs | | | | | Outputs | |
|---|---|---|---|---|---|---|
| $\overline{S}$ | $\overline{R}$ | $\overline{CP}$ | J | K | Q | $\overline{Q}$ |
| L | H | X | X | X | H | L |
| H | L | X | X | X | L | H |
| L | L | X | X | X | H(Note 1) | H(Note 1) |
| H | H | ↓ | L | L | No Change | |
| H | H | ↓ | H | L | H | L |
| H | H | ↓ | L | H | L | H |
| H | H | ↓ | H | H | Toggle | |
| H | H | H | X | X | No Change | |

H= High Level (Steady State)

L= Low Level (Steady State)

X= Don't Care

↓ = High-to-Low Transition

NOTE 1： Output states unpredictable if both S and R go High simultaneously after both being low at the sametime

# Electrical Parameter

### Absolute Maximum Ratings

($T_{amb}$=25℃, All voltage referenced to Vss, unless otherwise specified)

| Parameter | Symbol | Conditions | | Min. | Max. | Unit |
|---|---|---|---|---|---|---|
| supply voltage | $V_{CC}$ | - | | -0.5 | +7 | V |
| 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 | | |

# Electrical Characteristics

### DC Characteristics 1

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

| Parameter | Symbol | $V_{CC}$ | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| **SN74HC112** | | | | | | | |
| 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 output voltage | $V_{OL}$ | 2.0V | $I_O$=20uA | - | 0 | 0.1 | V |
| | | 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 |
| **SN74HCT112** | | | | | | | |
| HIGH-level input voltage | $V_{IH}$ | 4.5~5.5V | - | 2.0 | 1.6 | - | V |
| LOW-level input voltage | $V_{IL}$ | 4.5~5.5V | - | - | 1.2 | 0.8 | V |
| HIGH-level output voltage | $V_{OH}$ | 4.5V | $I_O$=-20uA | 4.4 | 4.5 | - | V |
| | | | $I_O$=-4.0mA | 3.84 | 4.32 | - | V |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LOW-level output voltage | $V_{OL}$ | 4.5V | $I_O$=20uA | - | 0 | 0.1 | V |
| | | | $I_O$=4.0mA | - | 0.15 | 0.33 | V |
| input leakage current | $I_I$ | 5.5V | $V_I$=$V_{CC}$ or GND | - | - | ±1 | uA |
| supply current | $I_{CC}$ | 6.0V | $V_I$=$V_{CC}$ or GND;$I_O$=0A | - | - | 80 | uA |
| additional supply current | $\Delta I_{CC}$ | 4.5~5.5V | One input at $V_I$=$V_{CC}$-2.1V; Other inputs at $V_{CC}$ or GND; $I_O$=0A | - | - | 135 | uA |

**DC Characteristics 2**

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

| Parameter | Symbol | $V_{CC}$ | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| **SN74HC112** | | | | | | | |
| 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 |
| **SN74HCT112** | | | | | | | |
| HIGH-level input voltage | $V_{IH}$ | 4.5~5.5V | - | 2.0 | - | - | V |
| LOW-level input voltage | $V_{IL}$ | 4.5~5.5V | - | - | - | 0.8 | V |
| HIGH-level output voltage | $V_{OH}$ | 4.5V | $I_O$=-20uA | 4.4 | - | - | V |
| | | | $I_O$=-4.0mA | 3.7 | - | - | V |
| LOW-level output voltage | $V_{OL}$ | 4.5V | $I_O$=20uA | - | - | 0.1 | V |
| | | | $I_O$=4.0mA | - | - | 0.4 | V |
| input leakage current | $I_I$ | 5.5V | $V_I$=$V_{CC}$ or GND | - | - | ±1 | uA |
| supply current | $I_{CC}$ | 6.0V | $V_I$=$V_{CC}$ or GND;$I_O$=0A | - | - | 160 | uA |
| additional supply current | $\Delta I_{CC}$ | 4.5~5.5V | One input at $V_I$=$V_{CC}$-2.1V; Other inputs at $V_{CC}$ or GND; $I_O$=0A | - | - | 147 | uA |

**AC Characteristics 1**

($T_{amb}$=-40℃ to +85℃, $V_{SS}$=0V, unless otherwise specified.)

| Parameter | Symbol | Vcc | Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| **SN74HC112** | | | | | | | | |
| nCP tonQ propagation delay | $t_{PLH}$, $t_{PHL}$ | 2.0V | $C_L$=50pF | see Figure 5 | - | 55 | 220 | ns |
| | | 4.5V | $C_L$=50pF | | - | 20 | 44 | ns |
| | | 5.0V | $C_L$=15pF | | - | 17 | - | ns |
| | | 6.0V | $C_L$=50pF | | - | 16 | 37 | ns |
| nCP tonQ propagation delay | | 2.0V | $C_L$=50pF | see Figure 5 | - | 55 | 220 | ns |
| | | 4.5V | $C_L$=50pF | | - | 20 | 44 | ns |
| | | 5.0V | $C_L$=15pF | | - | 17 | - | ns |
| | | 6.0V | $C_L$=50pF | | - | 16 | 37 | ns |
| nR tonQ、nQ propagation delay | | 2.0V | $C_L$=50pF | see Figure 6 | - | 58 | 225 | ns |
| | | 4.5V | $C_L$=50pF | | - | 21 | 45 | ns |
| | | 5.0V | $C_L$=15pF | | - | 18 | - | ns |
| | | 6.0V | $C_L$=50pF | | - | 17 | 38 | ns |
| nS tonQ、nQ propagation delay | | 2.0V | $C_L$=50pF | see Figure 6 | - | 50 | 295 | ns |
| | | 4.5V | $C_L$=50pF | | - | 18 | 39 | ns |
| | | 5.0V | $C_L$=15pF | | - | 15 | - | ns |
| | | 6.0V | $C_L$=50pF | | - | 14 | 33 | ns |
| transition time | $t_{THL}$, $t_{TLH}$ | 2.0V | $C_L$=50pF | see Figure 5 | - | 19 | 95 | ns |
| | | 4.5V | $C_L$=50pF | | - | 7 | 19 | ns |
| | | 6.0V | $C_L$=50pF | | - | 6 | 16 | ns |
| nCP HIGH or LOW pulse width | tw | 2.0V | $C_L$=50pF | see Figure 5 | 100 | 22 | - | ns |
| | | 4.5V | $C_L$=50pF | | 20 | 8 | - | ns |
| | | 6.0V | $C_L$=50pF | | 17 | 6 | - | ns |
| nS,nR LOW pulse width | | 2.0V | $C_L$=50pF | see Figure 6 | 100 | 22 | - | ns |
| | | 4.5V | $C_L$=50pF | | 20 | 8 | - | ns |
| | | 6.0V | $C_L$=50pF | | 17 | 6 | - | ns |
| nR tonCP recovery time | trec | 2.0V | $C_L$=50pF | see Figure 6 | 125 | 22 | - | ns |
| | | 4.5V | $C_L$=50pF | | 25 | 8 | - | ns |
| | | 6.0V | $C_L$=50pF | | 21 | 6 | - | ns |
| nS tonCP recovery time | | 2.0V | $C_L$=50pF | see Figure 6 | 100 | -19 | - | ns |
| | | 4.5V | $C_L$=50pF | | 20 | -7 | - | ns |
| | | 6.0V | $C_L$=50pF | | 17 | -6 | - | ns |
| nJ and nK ton CP set-up time | tsu | 2.0V | $C_L$=50pF | see Figure 5 | 100 | 19 | - | ns |
| | | 4.5V | $C_L$=50pF | | 20 | 7 | - | ns |
| | | 6.0V | $C_L$=50pF | | 17 | 6 | - | ns |
| nJ and nK ton CP hold time | th | 2.0V | $C_L$=50pF | see Figure 5 | 0 | -11 | - | ns |
| | | 4.5V | $C_L$=50pF | | 0 | -4 | - | ns |
| | | 6.0V | $C_L$=50pF | | 0 | -3 | - | ns |
| maxiumum frequency | fmax | 2.0V | $C_L$=50pF | see Figure 5 | 4.8 | 20 | - | MHz |
| | | 4.5V | $C_L$=50pF | | 24 | 60 | - | MHz |
| | | 5.0V | $C_L$=15pF | | - | 66 | - | MHz |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 6.0V | $C_L$=50pF | | 28 | 71 | - | MHz |
| **SN74HCT112** | | | | | | | | |
| nCP̄ tonQ propagation delay | $t_{PLH}$, $t_{PHL}$ | 4.5V | $C_L$=50pF | see Figure 5 | - | 21 | 44 | ns |
| | | 5.0V | $C_L$=15pF | | - | 19 | - | ns |
| nCP̄ tonQ̄ propagation delay | | 4.5V | $C_L$=50pF | see Figure 5 | - | 23 | 50 | ns |
| | | 5.0V | $C_L$=15pF | | - | 19 | - | ns |
| nR̄ tonQ̄、nQ propagation delay | | 4.5V | $C_L$=50pF | see Figure 6 | - | 22 | 46 | ns |
| | | 5.0V | $C_L$=15pF | | - | 19 | - | ns |
| nS̄ tonQ̄、nQ propagation delay | | 4.5V | $C_L$=50pF | see Figure 6 | - | 18 | 40 | ns |
| | | 5.0V | $C_L$=15pF | | - | 15 | - | ns |
| transition time | $t_{THL}$, $t_{TLH}$ | 4.5V | $C_L$=50pF | see Figure 5 | - | 7 | 19 | ns |
| nCP̄ HIGH or LOW pulse width | tw | 4.5V | $C_L$=50pF | see Figure 5 | 20 | 8 | - | ns |
| nS̄,nR̄ LOW pulse width | | 4.5V | $C_L$=50pF | see Figure 6 | 23 | 10 | - | ns |
| nR̄ tonCP̄ recovery time | trec | 4.5V | $C_L$=50pF | see Figure 6 | 25 | 11 | - | ns |
| nS̄ tonCP̄ recovery time | | 4.5V | $C_L$=50pF | see Figure 6 | 25 | -8 | - | ns |
| nJ and nK ton CP̄ set-up time | tsu | 4.5V | $C_L$=50pF | see Figure 5 | 20 | 7 | - | ns |
| nJ and nK ton CP̄ hold time | th | 4.5V | $C_L$=50pF | see Figure 5 | 0 | -7 | - | ns |
| maxiumum frequency | fmax | 4.5V | $C_L$=50pF | see Figure 5 | 24 | 64 | - | MHz |
| | | 5.0V | $C_L$=15pF | | - | 70 | - | MHz |

**AC Characteristics 2**

($T_{amb}$=-40℃ to +125℃, $V_{SS}$=0V, unless otherwise specified.)

| Parameter | Symbol | $V_{CC}$ | Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| **SN74HC112** | | | | | | | | |
| nCP̄ tonQ propagation delay | $t_{PLH}$, $t_{PHL}$ | 2.0V | $C_L$=50pF | see Figure 3 | - | - | 265 | ns |
| | | 4.5V | $C_L$=50pF | | - | - | 53 | ns |
| | | 6.0V | $C_L$=50pF | | - | - | 45 | ns |
| nCP̄ tonQ̄ propagation delay | | 2.0V | $C_L$=50pF | see Figure 3 | - | - | 265 | ns |
| | | 4.5V | $C_L$=50pF | | - | - | 53 | ns |
| | | 6.0V | $C_L$=50pF | | - | - | 45 | ns |
| nR̄ tonQ̄、nQ propagation delay | | 2.0V | $C_L$=50pF | see Figure 4 | - | - | 270 | ns |
| | | 4.5V | $C_L$=50pF | | - | - | 54 | ns |
| | | 6.0V | $C_L$=50pF | | - | - | 46 | ns |
| nS̄ tonQ̄、nQ | | 2.0V | $C_L$=50pF | see Figure 4 | - | - | 235 | ns |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| propagation delay | | 4.5V | $C_L$=50pF | | - | - | 47 | ns |
| | | 6.0V | $C_L$=50pF | | - | - | 40 | ns |
| transition time | $t_{THL}$, $t_{TLH}$ | 2.0V | $C_L$=50pF | see Figure 3 | - | - | 110 | ns |
| | | 4.5V | $C_L$=50pF | | - | - | 22 | ns |
| | | 6.0V | $C_L$=50pF | | - | - | 19 | ns |
| nCP HIGH or LOW pulse width | tw | 2.0V | $C_L$=50pF | see Figure 3 | 120 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 24 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 20 | - | - | ns |
| $n\overline{S}$,$n\overline{R}$ LOW pulse width | | 2.0V | $C_L$=50pF | see Figure 4 | 120 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 24 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 20 | - | - | ns |
| $n\overline{R}$ to$n\overline{CP}$ recovery time | trec | 2.0V | $C_L$=50pF | see Figure 4 | 150 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 30 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 26 | - | - | ns |
| $n\overline{S}$ to$n\overline{CP}$ recovery time | | 2.0V | $C_L$=50pF | see Figure 4 | 120 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 24 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 20 | - | - | ns |
| nJ and nK to$n\overline{CP}$ set-up time | tsu | 2.0V | $C_L$=50pF | see Figure 3 | 120 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 24 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 20 | - | - | ns |
| nJ and nK to$n\overline{CP}$ hold time | th | 2.0V | $C_L$=50pF | see Figure 3 | 0 | - | - | ns |
| | | 4.5V | $C_L$=50pF | | 0 | - | - | ns |
| | | 6.0V | $C_L$=50pF | | 0 | - | - | ns |
| maxiumum frequency | fmax | 2.0V | $C_L$=50pF | see Figure 3 | 4.0 | - | - | MHZ |
| | | 4.5V | $C_L$=50pF | | 20 | - | - | MHZ |
| | | 6.0V | $C_L$=50pF | | 24 | - | - | NHZ |
| **SN74HCT112** | | | | | | | | |
| nCP to Q propagation delay | $t_{PLH}$, $t_{PHL}$ | 4.5V | $C_L$=50pF | see Figure 3 | - | - | 53 | ns |
| $n\overline{CP}$ to$n\overline{Q}$ propagation delay | | 4.5V | $C_L$=50pF | see Figure 3 | - | - | 60 | ns |
| $n\overline{R}$ to$n\overline{Q}$、nQ propagation delay | | 4.5V | $C_L$=50pF | see Figure 4 | - | - | 56 | ns |
| $n\overline{S}$ to$n\overline{Q}$、nQ propagation delay | | 4.5V | $C_L$=50pF | see Figure 4 | - | - | 48 | Ns |
| transition time | $t_{THL}$, $t_{TLH}$ | 4.5V | $C_L$=50pF | see Figure 3 | - | - | 22 | ns |
| nCP HIGH or LOW pulse width | tw | 4.5V | $C_L$=50pF | see Figure 3 | 24 | - | - | ns |
| $n\overline{S}$,$n\overline{R}$ LOW pulse width | | 4.5V | $C_L$=50pF | see Figure 4 | 27 | - | - | ns |
| $n\overline{R}$ to$n\overline{CP}$ recovery time | trec | 4.5V | $C_L$=50pF | see Figure 4 | 30 | - | - | ns |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $n\overline{S}$ ton$\overline{CP}$ recovery time | | 4.5V | $C_L$=50pF | see Figure 4 | 30 | - | - | ns |
| nJ and nK ton $\overline{CP}$ set-up time | tsu | 4.5V | $C_L$=50pF | see Figure 3 | 24 | - | - | ns |
| nJ and nK ton $\overline{CP}$ hold time | th | 4.5V | $C_L$=50pF | see Figure 3 | 0 | - | - | ns |
| maxiumum frequency | fmax | 4.5V | $C_L$=50pF | see Figure 3 | 20 | - | - | MHZ |

## Testing Circuit

### AC Testing Circuit

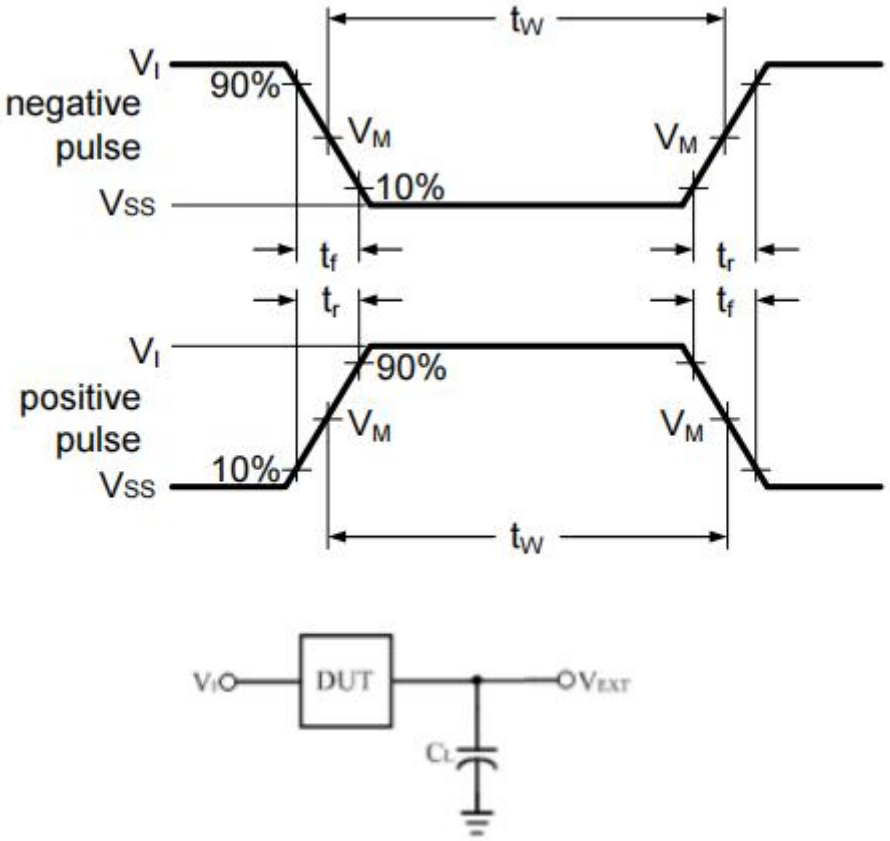



Figure 2 Load circuit

$C_L$ includes probe and jig capacitance.

### AC Testing Waveforms

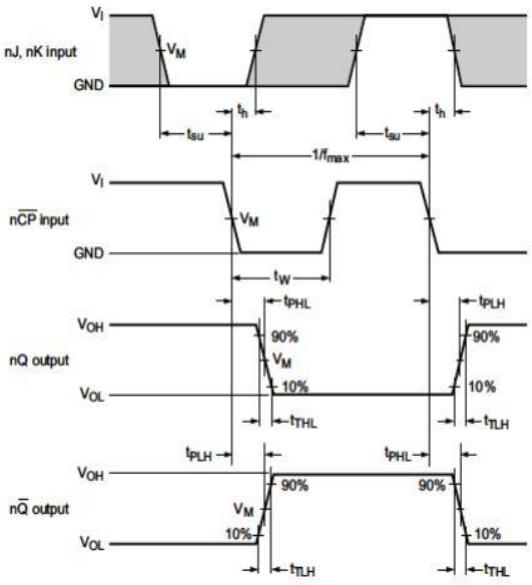



Figure 3 Clock propagation delays, output transition time, pulse width, set-up, hold times, and maximum frequency

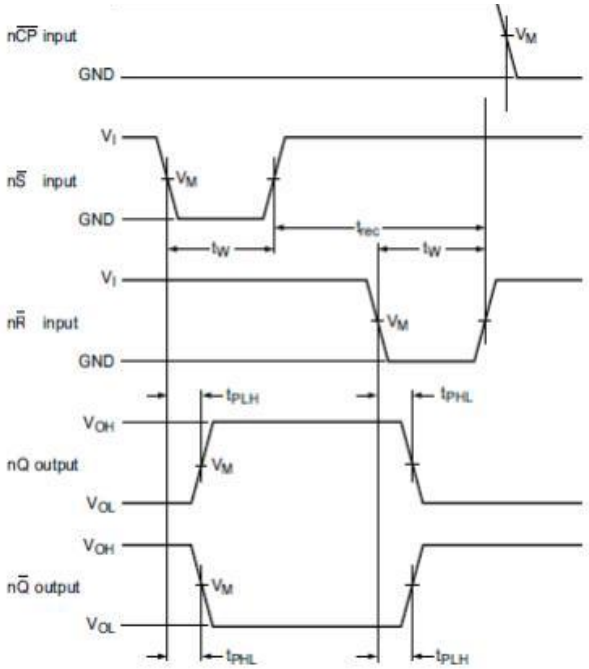



Figure 4 Set and reset propagation delays, pulse widths and recovery time

**Measurement Points**

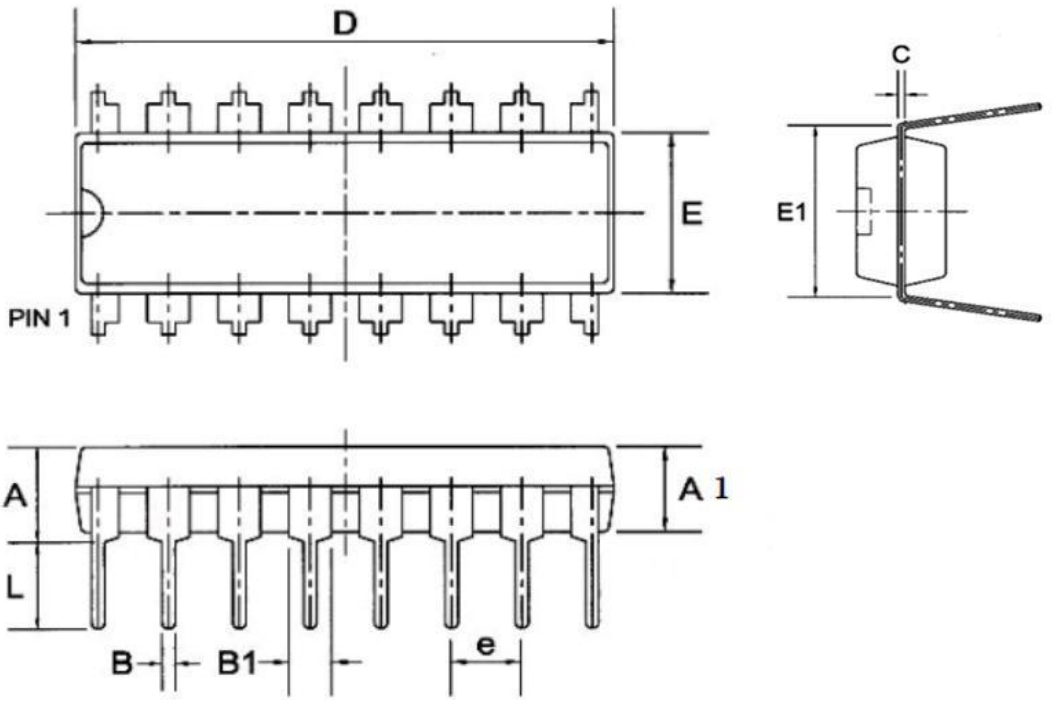
| Type | Input | Output | | |
|---|---|---|---|---|
| | $V_M$ | $V_M$ | $V_X$ | $V_Y$ |
| SN74HC112 | 0.5×$V_{CC}$ | 0.5×$V_{CC}$ | 0.1×$V_{CC}$ | 0.9×$V_{CC}$ |
| SN74HCT112 | 1.3V | 1.3V | 0.1×$V_{CC}$ | 0.9×$V_{CC}$ |

**Test Data**

| Type | Input | | Load | $V_{EXT}$ | | |
|---|---|---|---|---|---|---|
| | $V_I$ | $t_r = t_f$ | $C_L$ | $t_{PLH}/t_{PHL}$ | $t_{PLZ}/t_{PZL}$ | $t_{PHZ}/t_{PZH}$ |
| SN74HC112 | $V_{CC}$ | 6.0ns | 50pF | Open | $V_{CC}$ | GND |
| SN74HCT112 | 3.0V | 6.0ns | 50pF | Open | $V_{CC}$ | GND |

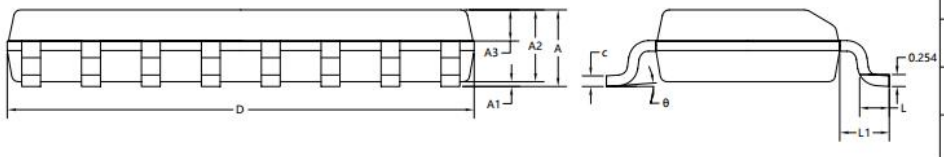
## Package Information

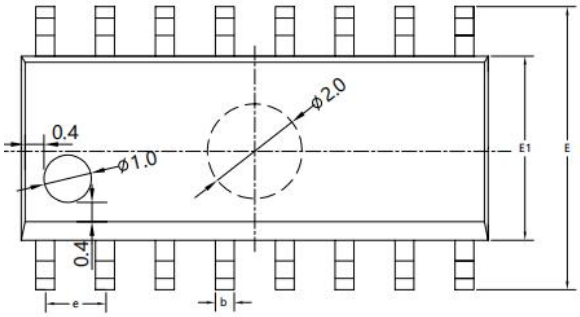
**DIP16**




| Symbol | Dimensions in Millimeters | | |
|---|---|---|---|
| | Min | Nom | Max |
| A | -- | -- | 4.31 |
| A1 | 3.15 | 3.30 | 3.65 |
| B | -- | 0.50 | -- |
| B1 | -- | 1.6 | -- |
| C | -- | 0.27 | -- |
| D | 19.00 | 19.20 | 19.60 |
| E | 6.20 | 6.50 | 6.60 |
| E1 | -- | 8.0 | -- |
| e | -- | 2.3 | -- |
| L | 3.00 | 3.20 | 3.60 |

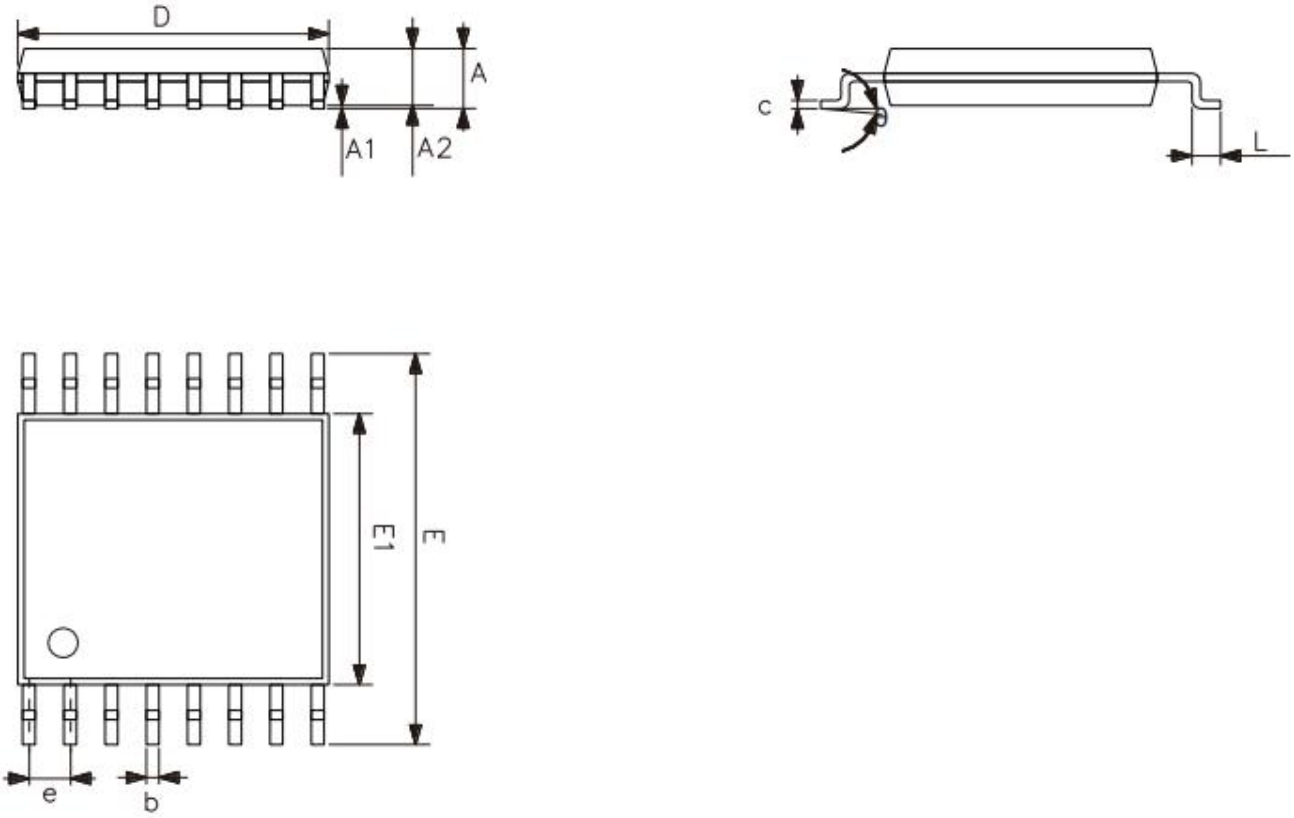
**SOP16**




| SYMBOL | MILLIMETER | | |
|---|---|---|---|
| | MIN | NOM | MAX |
| A | 1.50 | 1.60 | 1.70 |
| A1 | 0.10 | 0.15 | 0.25 |
| A2 | 1.40 | 1.45 | 1.50 |
| A3 | 0.60 | 0.65 | 0.70 |
| b | 0.30 | 0.40 | 0.50 |
| c | 0.15 | 0.20 | 0.25 |
| D | 9.80 | 9.90 | 10.00 |
| E | 5.80 | 6.00 | 6.20 |
| E1 | 3.85 | 3.90 | 3.95 |
| e | 1.27BSC | | |
| L | 0.50 | 0.60 | 0.70 |
| L1 | 1.05BSC | | |
| θ | 0° | 4° | 8° |

**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° |

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