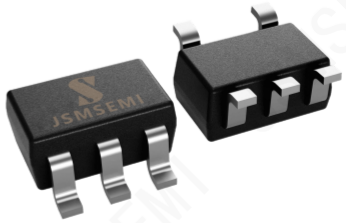
## 1、General Description

The 74AUP1T34GW,125-JSM provides a single buffer with two separate supply voltages. Input A is designed to track $V_{CC(A)}$. Output Y is designed to track $V_{CC(Y)}$. Both, $V_{CC(A)}$ and $V_{CC(Y)}$ accepts any supply voltage from 1.1V to 3.6V. This feature allows universal low voltage interfacing between any of the 1.2V, 1.5V, 1.8V, 2.5V and 3.3V voltage nodes.



**Features:**

- Wide supply voltage range:
  $V_{CC(A)}$: 1.1V to 3.6V
  $V_{CC(Y)}$: 1.1V to 3.6V
- Low static power consumption; $I_{CC}$=1uA (maximum)
- Inputs accept voltages up to 3.6V
- $I_{OFF}$ circuitry provides partial Power-down mode operation
- Specified from -40℃ to +125℃
- Packaging information: TSSOP-5-1.3mm

## 2、Block Diagram And Pin Description

### 2.1、Block Diagram

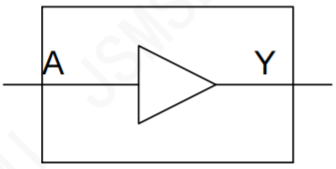



Figure 1. Logic symbol

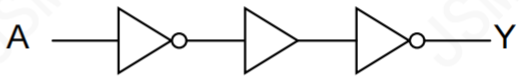



Figure 2. Logic diagram

**Ordering Information**

| Order number | Package | Operation Temperature Range | MSL Grade | Ship, Quantity | Green |
|---|---|---|---|---|---|
| 74AUP1T34GW,125-JSM | TSSOP-5 | -40 to 125°C | 3 | T&R,3000 | Rohs |

### 2.2、Pin Configurations

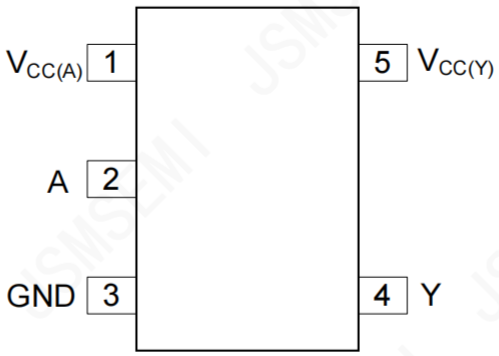



Figure 3. Pin Configuration

### 2.3、Pin Description

| Pin No. | Pin Name | Description |
|---|---|---|
| 1 | $V_{CC(A)}$ | supply voltage A |
| 2 | A | data input |
| 3 | GND | ground (0V) |
| 4 | Y | data output |
| 5 | $V_{CC(Y)}$ | supply voltage Y |

### 2.4、Function Table

| Input | Output |
|---|---|
| **A** | **Y** |
| L | L |
| H | H |

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

## 3、Electrical Parameter

### 3.1、Absolute Maximum Ratings

($T_{amb}$=25℃, voltages are referenced to GND (ground=0V), unless otherwise specified)

| Characteristic | Symbol | Conditions | Min. | Max. | Unit |
|---|---|---|---|---|---|
| supply voltage A | $V_{CC(A)}$ | - | -0.5 | +4.6 | V |
| supply voltage Y | $V_{CC(Y)}$ | - | -0.5 | +4.6 | V |
| input clamping current | $I_{IK}$ | $V_I$<0V | -50 | - | mA |
| input voltage | $V_I$ | - | -0.5 | +4.6 | V |
| output clamping current | $I_{OK}$ | $V_O$<0V | -50 | - | mA |
| output voltage | $V_O$ | active mode and power-down mode | -0.5 | +4.6 | V |
| output current | $I_O$ | $V_O$=0V to $V_{CC(Y)}$ | - | ±20 | mA |
| supply current | $I_{CC}$ | - | - | 50 | mA |
| ground current | $I_{GND}$ | - | -50 | - | mA |
| storage temperature | $T_{stg}$ | - | -65 | +150 | ℃ |
| total power dissipation | $P_{tot}$ | - | - | 250 | mW |
| soldering temperature | $T_L$ | - | 260 | | ℃ |

### 3.2、Recommended Operating Conditions

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| supply voltage A | $V_{CC(A)}$ | - | 1.1 | - | 3.6 | V |
| supply voltage Y | $V_{CC(Y)}$ | - | 1.1 | - | 3.6 | V |
| input voltage | $V_I$ | - | 0 | - | 3.6 | V |
| output voltage | $V_O$ | - | 0 | - | $V_{CC(Y)}$ | V |
| ambient temperature | $T_{amb}$ | - | -40 | - | +125 | ℃ |

### 3.3、Electrical Characteristics

#### 3.3.1、DC Characteristics 1

($T_{amb}$=25℃, voltages are referenced to GND (ground=0V), unless otherwise specified)

| Parameter | Symbol | Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| HIGH-level input voltage | $V_{IH}$ | $V_{CC(A)}$=1.1V to 1.95V; $V_{CC(Y)}$=1.1V to 3.6V | | 0.65× $V_{CC(A)}$ | - | - | V |
| | | $V_{CC(A)}$=2.3V to 2.7V; $V_{CC(Y)}$=1.1V to 3.6V | | 1.6 | - | - | V |
| | | $V_{CC(A)}$=3.0V to 3.6V; $V_{CC(Y)}$=1.1V to 3.6V | | 2.0 | - | - | V |
| LOW-level input voltage | $V_{IL}$ | $V_{CC(A)}$=1.1V to 1.95V; $V_{CC(Y)}$=1.1V to 3.6V | | - | - | 0.35× $V_{CC(A)}$ | V |
| | | $V_{CC(A)}$=2.3V to 2.7V; $V_{CC(Y)}$=1.1V to 3.6V | | - | - | 0.7 | V |
| | | $V_{CC(A)}$=3.0V to 3.6V; $V_{CC(Y)}$=1.1V to 3.6V | | - | - | 0.9 | V |
| HIGH -level output voltage | $V_{OH}$ | $V_I$=$V_{IH}$ | $I_O$=-20uA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | $V_{CC(Y)}$-0.1 | - | - | V |
| | | | $I_O$=-1.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V | 0.75× $V_{CC(Y)}$ | - | - | V |
| | | | $I_O$=-1.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.4V | 1.11 | - | - | V |
| | | | $I_O$=-1.9mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.65V | 1.32 | - | - | V |
| | | | $I_O$=-2.3mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | 2.05 | - | - | V |
| | | | $I_O$=-3.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | 1.9 | - | - | V |
| | | | $I_O$=-2.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | 2.72 | - | - | V |
| | | | $I_O$=-4.0mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | 2.6 | - | - | V |
| LOW-level output voltage | $V_{OL}$ | $V_I$=$V_{IL}$ | $I_O$=20uA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | - | - | 0.1 | V |
| | | | $I_O$=1.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V | - | - | 0.3× $V_{CC(Y)}$ | V |
| | | | $I_O$=1.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.4V | - | - | 0.31 | V |
| | | | $I_O$=1.9mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.65V | - | - | 0.31 | V |
| | | | $I_O$=2.3mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | - | - | 0.31 | V |
| | | | $I_O$=3.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | - | - | 0.44 | V |
| | | | $I_O$=2.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | - | - | 0.31 | V |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | $I_O$=4.0mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | - | - | 0.44 | V |
| input leakage current | $I_I$ | $V_I$=0V to 3.6V; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | | - | - | ±1 | uA |
| power-off leakage current | $I_{OFF}$ | A input; $V_I$=0V to 3.6V; $V_{CC(A)}$=0V; $V_{CC(Y)}$=0V to 3.6V | | - | - | ±1 | uA |
| | | Y output; $V_O$=0V to 3.6V; $V_I$=0V or 3.6V; $V_{CC(Y)}$=0V; $V_{CC(A)}$=0V to 3.6V | | - | - | ±1 | uA |
| additional power-off leakage current | $\Delta I_{OFF}$ | A input; $V_I$=0V to 3.6V; $V_{CC(A)}$=0V to 0.2V; $V_{CC(Y)}$=0V to 3.6V | | - | - | ±1 | uA |
| | | Y output; $V_O$=0V to 3.6V; $V_I$=0V or 3.6V; $V_{CC(Y)}$=0V to 0.2V; $V_{CC(A)}$=0V to 3.6V | | - | - | ±1 | uA |
| supply current | $I_{CC}$ | port A; $V_I$=GND or $V_{CC(A)}$; $I_O$=0A | $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | - | - | 1 | uA |
| | | | $V_{CC(A)}$=3.6V; $V_{CC(Y)}$=0V | - | - | 1 | uA |
| | | | $V_{CC(A)}$=0V; $V_{CC(Y)}$=3.6V | - | 0.0 | - | uA |
| | | port Y; $V_I$=GND or $V_{CC(A)}$; $I_O$=0A | $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | - | - | 1 | uA |
| | | | $V_{CC(A)}$=3.6V; $V_{CC(Y)}$=0V | - | 0.0 | - | uA |
| | | | $V_{CC(A)}$=0V; $V_{CC(Y)}$=3.6V | - | - | 1 | uA |
| additional supply current | $\Delta I_{CC}$ | A input; $V_{CC(A)}$=3.3V; $V_{CC(Y)}$=0V to 3.6V; $V_I$=$V_{CC(A)}$-0.6V | | - | - | 40 | uA |
| input capacitance | $C_I$ | A input; $V_{CC(A)}$=$V_{CC(Y)}$=0V to 3.6V; $V_I$=GND or $V_{CC(A)}$ | | - | 1.0 | - | pF |
| output capacitance | $C_O$ | Y output; $V_O$=GND; $V_{CC(Y)}$=0V; $V_{CC(A)}$=0V to 3.6V | | - | 1.8 | - | pF |

### 3.3.2、DC Characteristics 2

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

| Parameter | Symbol | Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| HIGH-level input voltage | $V_{IH}$ | $V_{CC(A)}$=1.1V to 1.95V; $V_{CC(Y)}$=1.1V to 3.6V | | 0.65× $V_{CC(A)}$ | - | - | V |
| | | $V_{CC(A)}$=2.3V to 2.7V; $V_{CC(Y)}$=1.1V to 3.6V | | 1.6 | - | - | V |
| | | $V_{CC(A)}$=3.0V to 3.6V; $V_{CC(Y)}$=1.1V to 3.6V | | 2.0 | - | - | V |
| LOW-level input voltage | $V_{IL}$ | $V_{CC(A)}$=1.1V to 1.95V; $V_{CC(Y)}$=1.1V to 3.6V | | - | - | 0.35× $V_{CC(A)}$ | V |
| | | $V_{CC(A)}$=2.3V to 2.7V; $V_{CC(Y)}$=1.1V to 3.6V | | - | - | 0.7 | V |
| | | $V_{CC(A)}$=3.0V to 3.6V; $V_{CC(Y)}$=1.1V to 3.6V | | - | - | 0.9 | V |
| HIGH -level output voltage | $V_{OH}$ | $V_I$=$V_{IH}$ | $I_O$=-20uA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | $V_{CC(Y)}$-0.1 | - | - | V |
| | | | $I_O$=-1.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V | 0.7× $V_{CC(Y)}$ | - | - | V |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | $I_O$=-1.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.4V | 1.03 | - | - | V |
| | | | $I_O$=-1.9mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.65V | 1.30 | - | - | V |
| | | | $I_O$=-2.3mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | 1.97 | - | - | V |
| | | | $I_O$=-3.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | 1.85 | - | - | V |
| | | | $I_O$=-2.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | 2.67 | - | - | V |
| | | | $I_O$=-4.0mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | 2.55 | - | - | V |
| LOW-level output voltage | $V_{OL}$ | $V_I$=$V_{IL}$ | $I_O$=20uA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | - | - | 0.1 | V |
| | | | $I_O$=1.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V | - | - | 0.3× $V_{CC(Y)}$ | V |
| | | | $I_O$=1.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.4V | - | - | 0.37 | V |
| | | | $I_O$=1.9mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.65V | - | - | 0.35 | V |
| | | | $I_O$=2.3mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | - | - | 0.33 | V |
| | | | $I_O$=3.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | - | - | 0.45 | V |
| | | | $I_O$=2.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | - | - | 0.33 | V |
| | | | $I_O$=4.0mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | - | - | 0.45 | V |
| input leakage current | $I_I$ | $V_I$=0V to 3.6V; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | | - | - | ±1 | uA |
| power-off leakage current | $I_{OFF}$ | A input; $V_I$=0V to 3.6V; $V_{CC(A)}$=0V; $V_{CC(Y)}$=0V to 3.6V | | - | - | ±1 | uA |
| | | Y output; $V_O$=0V to 3.6V; $V_I$=0V or 3.6V; $V_{CC(Y)}$=0V; $V_{CC(A)}$=0V to 3.6V | | - | - | ±1 | uA |
| additional power-off leakage current | $\Delta I_{OFF}$ | A input; $V_I$=0V to 3.6V; $V_{CC(A)}$=0V to 0.2V; $V_{CC(Y)}$=0V to 3.6V | | - | - | ±1 | uA |
| | | Y output; $V_O$=0V to 3.6V; $V_I$=0V or 3.6V; $V_{CC(Y)}$=0V to 0.2V; $V_{CC(A)}$=0V to 3.6V | | - | - | ±1 | uA |
| supply current | $I_{CC}$ | port A; $V_I$=GND or $V_{CC(A)}$; $I_O$=0A | $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | - | - | 1 | uA |
| | | | $V_{CC(A)}$=3.6V; $V_{CC(Y)}$=0V | - | - | 1 | uA |
| | | | $V_{CC(A)}$=0V; $V_{CC(Y)}$=3.6V | - | 0.0 | - | uA |
| | | port Y; $V_I$=GND or $V_{CC(A)}$; $I_O$=0A | $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | - | - | 1 | uA |
| | | | $V_{CC(A)}$=3.6V; $V_{CC(Y)}$=0V | - | 0.0 | - | uA |
| | | | $V_{CC(A)}$=0V; $V_{CC(Y)}$=3.6V | - | - | 1 | uA |
| additional supply current | $\Delta I_{CC}$ | A input; $V_{CC(A)}$=3.3V; $V_{CC(Y)}$=0V to 3.6V; $V_I$=$V_{CC(A)}$-0.6V | | - | - | 50 | uA |

### 3.3.3、DC Characteristics 3

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

| Parameter | Symbol | Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| HIGH-level input voltage | $V_{IH}$ | $V_{CC(A)}$=1.1V to 1.95V; $V_{CC(Y)}$=1.1V to 3.6V | | 0.7× $V_{CC(A)}$ | - | - | V |
| | | $V_{CC(A)}$=2.3V to 2.7V; $V_{CC(Y)}$=1.1V to 3.6V | | 1.6 | - | - | V |
| | | $V_{CC(A)}$=3.0V to 3.6V; $V_{CC(Y)}$=1.1V to 3.6V | | 2.0 | - | - | V |
| LOW-level input voltage | $V_{IL}$ | $V_{CC(A)}$=1.1V to 1.95V; $V_{CC(Y)}$=1.1V to 3.6V | | - | - | 0.3× $V_{CC(A)}$ | V |
| | | $V_{CC(A)}$=2.3V to 2.7V; $V_{CC(Y)}$=1.1V to 3.6V | | - | - | 0.7 | V |
| | | $V_{CC(A)}$=3.0V to 3.6V; $V_{CC(Y)}$=1.1V to 3.6V | | - | - | 0.9 | V |
| HIGH -level output voltage | $V_{OH}$ | $V_I$=$V_{IH}$ | $I_O$=-20uA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | $V_{CC(Y)}$-0.11 | - | - | V |
| | | | $I_O$=-1.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V | 0.6× $V_{CC(Y)}$ | - | - | V |
| | | | $I_O$=-1.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.4V | 0.93 | - | - | V |
| | | | $I_O$=-1.9mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.65V | 1.17 | - | - | V |
| | | | $I_O$=-2.3mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | 1.77 | - | - | V |
| | | | $I_O$=-3.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | 1.67 | - | - | V |
| | | | $I_O$=-2.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | 2.40 | - | - | V |
| | | | $I_O$=-4.0mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | 2.30 | - | - | V |
| LOW-level output voltage | $V_{OL}$ | $V_I$=$V_{IL}$ | $I_O$=20uA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | - | - | 0.11 | V |
| | | | $I_O$=1.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V | - | - | 0.33× $V_{CC(Y)}$ | V |
| | | | $I_O$=1.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.4V | - | - | 0.41 | V |
| | | | $I_O$=1.9mA; $V_{CC(A)}$=$V_{CC(Y)}$=1.65V | - | - | 0.39 | V |
| | | | $I_O$=2.3mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | - | - | 0.36 | V |
| | | | $I_O$=3.1mA; $V_{CC(A)}$=$V_{CC(Y)}$=2.3V | - | - | 0.50 | V |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | $I_O$=2.7mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | - | - | 0.36 | V |
| | | | $I_O$=4.0mA; $V_{CC(A)}$=$V_{CC(Y)}$=3.0V | - | - | 0.50 | V |
| input leakage current | $I_I$ | $V_I$=0V to 3.6V; $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | | - | - | ±1 | uA |
| power-off leakage current | $I_{OFF}$ | A input; $V_I$=0V to 3.6V; $V_{CC(A)}$=0V; $V_{CC(Y)}$=0V to 3.6V | | - | - | ±1 | uA |
| | | Y output; $V_O$=0V to 3.6V; $V_I$=0V or 3.6V; $V_{CC(Y)}$=0V; $V_{CC(A)}$=0V to 3.6V | | - | - | ±1 | uA |
| additional power-off leakage current | $\Delta I_{OFF}$ | A input; $V_I$=0V to 3.6V; $V_{CC(A)}$=0V to 0.2V; $V_{CC(Y)}$=0V to 3.6V | | - | - | ±1 | uA |
| | | Y output; $V_O$=0V to 3.6V; $V_I$=0V or 3.6V; $V_{CC(Y)}$=0V to 0.2V; $V_{CC(A)}$=0V to 3.6V | | - | - | ±1 | uA |
| supply current | $I_{CC}$ | port A; $V_I$=GND or $V_{CC(A)}$; $I_O$=0A | $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | - | - | 1 | uA |
| | | | $V_{CC(A)}$=3.6V; $V_{CC(Y)}$=0V | - | - | 1 | uA |
| | | | $V_{CC(A)}$=0V; $V_{CC(Y)}$=3.6V | - | 0.0 | - | uA |
| | | port Y; $V_I$=GND or $V_{CC(A)}$; $I_O$=0A | $V_{CC(A)}$=$V_{CC(Y)}$=1.1V to 3.6V | - | - | 1 | uA |
| | | | $V_{CC(A)}$=3.6V; $V_{CC(Y)}$=0V | - | 0.0 | - | uA |
| | | | $V_{CC(A)}$=0V; $V_{CC(Y)}$=3.6V | - | - | 1 | uA |
| additional supply current | $\Delta I_{CC}$ | A input; $V_{CC(A)}$=3.3V; $V_{CC(Y)}$=0V to 3.6V; $V_I$=$V_{CC(A)}$-0.6V | | - | - | 75 | uA |

### 3.3.4、AC Characteristics 1

($T_{amb}$=25℃, voltages are referenced to GND (ground=0V), unless otherwise specified)

| Parameter | Symbol | Conditions | | Min. | Typ.[1] | Max. | Unit |
|---|---|---|---|---|---|---|---|
| propagation delay | $t_{pd}$ | A to Y[2] | $C_L$=5pF; $V_{CC(A)}$=1.1V to 1.3V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.6 | 9.8 | 25. | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.4 | 7.1 | 415. | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.1 | 6.0 | 312. | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.0 | 5.1 | 7 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.1 | 4.7 | 9.8 | ns |
| | | | $C_L$=5pF; $V_{CC(A)}$=1.4V to 1.6V | | | 8.8 | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.3 | 9.1 | 23. | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.1 | 6.4 | 913. | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 1.8 | 5.3 | 610. | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.7 | 4.3 | 9 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.8 | 3.9 | 7.8 | ns |
| | | | $C_L$=5pF; $V_{CC(A)}$=1.65V to 1.95V | | | 6.6 | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.2 | 8.8 | 23.2 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.0 | 6.0 | 13.0 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 1.8 | 4.9 | 10.3 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.6 | 3.9 | 7.2 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.7 | 3.5 | 5.9 | ns |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | $C_L$=5pF; $V_{CC(A)}$=2.3V to 2.7V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.2 | 8.4 | 22.8 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 1.9 | 5.7 | 12.3 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 1.7 | 4.6 | 9.6 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.5 | 3.5 | 6.3 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.6 | 3.1 | 5.1 | ns |
| | | | $C_L$=5pF; $V_{CC(A)}$=3.0V to 3.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.2 | 8.1 | 22.5 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 1.9 | 5.4 | 12.0 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 1.7 | 4.3 | 9.2 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.5 | 3.3 | 6.0 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.6 | 2.9 | 4.8 | ns |
| | | | $C_L$=10pF; $V_{CC(A)}$=1.1V to 1.3V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.6 | 10.7 | 27.1 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.6 | 7.7 | 16.7 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.7 | 6.6 | 13.4 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.2 | 5.6 | 10.3 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.5 | 5.3 | 9.5 | ns |
| | | | $C_L$=10pF; $V_{CC(A)}$=1.4V to 1.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.4 | 10.0 | 25.6 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.4 | 7.0 | 15.0 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.4 | 5.9 | 11.6 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.0 | 4.8 | 8.4 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.2 | 4.4 | 7.4 | ns |
| | | | $C_L$=10pF; $V_{CC(A)}$=1.65V to 1.95V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.3 | 9.7 | 24.8 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.3 | 6.6 | 14.3 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.3 | 5.5 | 11.0 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.9 | 4.4 | 7.7 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.1 | 4.0 | 6.6 | ns |
| | | | $C_L$=10pF; $V_{CC(A)}$=2.3V to 2.7V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.3 | 9.3 | 24.4 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.2 | 6.3 | 13.6 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.2 | 5.1 | 10.3 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.8 | 4.1 | 6.9 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.0 | 3.6 | 5.8 | ns |
| | | | $C_L$=10pF; $V_{CC(A)}$=3.0V to 3.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.3 | 9.0 | 24.2 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.2 | 6.0 | 13.3 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.2 | 4.9 | 9.9 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.8 | 3.9 | 6.5 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.0 | 3.5 | 5.4 | ns |
| | | | $C_L$=15pF; $V_{CC(A)}$=1.1V to 1.3V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.0 | 11.5 | 28.6 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.1 | 8.3 | 17.3 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.8 | 7.1 | 14.1 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.6 | 6.1 | 11.1 | ns |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.9 | 5.7 | 9.9 | ns |
| | | | $C_L$=15pF; $V_{CC(A)}$=1.4V to 1.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.8 | 10.8 | 27.1 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.8 | 7.6 | 15.7 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.5 | 6.3 | 12.3 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.3 | 5.3 | 9.2 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.6 | 4.9 | 7.8 | ns |
| | | | $C_L$=15pF; $V_{CC(A)}$=1.65V to 1.95V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.7 | 10.5 | 26.4 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.7 | 7.2 | 15.0 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.4 | 6.0 | 11.7 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.2 | 4.9 | 8.5 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.5 | 4.5 | 7.1 | ns |
| | | | $C_L$=15pF; $V_{CC(A)}$=2.3V to 2.7V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.6 | 10.1 | 26.0 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.7 | 6.9 | 14.3 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.4 | 5.6 | 10.9 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.1 | 4.5 | 7.6 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.4 | 4.1 | 6.2 | ns |
| | | | $C_L$=15pF; $V_{CC(A)}$=3.0V to 3.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.6 | 9.8 | 25.7 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.7 | 6.6 | 14.0 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.4 | 5.4 | 10.5 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.1 | 4.3 | 7.3 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.4 | 3.9 | 5.9 | ns |
| | | | $C_L$=30pF; $V_{CC(A)}$=1.1V to 1.3V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.7 | 13.7 | 32.9 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.6 | 9.8 | 19.5 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 3.7 | 8.4 | 15.9 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 3.0 | 7.2 | 12.2 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 3.8 | 6.8 | 10.9 | ns |
| | | | $C_L$=30pF; $V_{CC(A)}$=1.4V to 1.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.5 | 13.1 | 31.5 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.3 | 9.1 | 17.8 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 3.4 | 7.6 | 14.2 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.8 | 6.4 | 10.3 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 3.5 | 5.9 | 8.9 | ns |
| | | | $C_L$=30pF; $V_{CC(A)}$=1.65V to 1.95V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.4 | 12.7 | 30.7 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.2 | 8.8 | 17.2 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 3.3 | 7.3 | 13.5 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.7 | 6.0 | 9.6 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 3.4 | 5.6 | 8.2 | ns |
| | | | $C_L$=30pF; $V_{CC(A)}$=2.3V to 2.7V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.3 | 12.4 | 30.3 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.2 | 8.4 | 16.5 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 3.2 | 6.9 | 12.8 | ns |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.6 | 5.6 | 8.8 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 3.3 | 5.2 | 7.3 | ns |
| | | | $C_L$=30pF; $V_{CC(A)}$=3.0V to 3.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.3 | 12.0 | 30.0 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.2 | 8.1 | 16.2 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 3.2 | 6.7 | 12.4 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.6 | 5.5 | 8.5 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 3.2 | 5.0 | 7.0 | ns |

Note:

[1] All typical values are measured at nominal $V_{CC}$.

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

### 3.3.5、AC Characteristics 2

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

| Parameter | Symbol | Conditions | | Min. | Max. (85℃) | Max. (125℃) | Unit |
|---|---|---|---|---|---|---|---|
| propagation delay | $t_{pd}$ | A to Y[1] | $C_L$=5pF; $V_{CC(A)}$=1.1V to 1.3V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.3 | 25.9 | 25.9 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.2 | 16.3 | 16.7 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 1.9 | 13.8 | 14.3 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.0 | 10.5 | 10.9 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.9 | 9.1 | 9.3 | ns |
| | | | $C_L$=5pF; $V_{CC(A)}$=1.4V to 1.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.0 | 24.5 | 24.5 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 1.9 | 14.7 | 15.2 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 1.6 | 12.1 | 12.6 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.6 | 8.7 | 9.2 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.6 | 7.1 | 7.5 | ns |
| | | | $C_L$=5pF; $V_{CC(A)}$=1.65V to 1.95V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 1.9 | 23.9 | 24.0 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 1.8 | 14.1 | 14.6 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 1.8 | 11.4 | 12.0 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.5 | 8.0 | 8.5 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.5 | 6.4 | 6.8 | ns |
| | | | $C_L$=5pF; $V_{CC(A)}$=2.3V to 2.7V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 1.9 | 23.4 | 23.4 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 1.8 | 13.4 | 14.0 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 1.5 | 10.7 | 11.2 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.5 | 7.2 | 7.7 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.4 | 5.6 | 6.0 | ns |
| | | | $C_L$=5pF; $V_{CC(A)}$=3.0V to 3.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 1.9 | 22.9 | 22.9 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 1.8 | 12.9 | 13.4 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 1.5 | 10.2 | 10.7 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.5 | 6.7 | 7.2 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.4 | 5.2 | 5.5 | ns |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | $C_L$=10pF; $V_{CC(A)}$=1.1V to 1.3V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.5 | 27.6 | 27.6 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.3 | 17.5 | 17.6 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.4 | 14.2 | 14.7 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.2 | 11.0 | 11.4 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.2 | 9.7 | 10.0 | ns |
| | | | $C_L$=10pF; $V_{CC(A)}$=1.4V to 1.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.2 | 26.1 | 26.1 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.0 | 15.8 | 16.4 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.1 | 12.5 | 13.1 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.9 | 9.2 | 9.7 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.9 | 7.7 | 8.1 | ns |
| | | | $C_L$=10pF; $V_{CC(A)}$=1.65V to 1.95V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.1 | 26.1 | 26.1 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.0 | 15.8 | 16.4 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.0 | 12.5 | 13.1 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.8 | 9.2 | 9.7 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.8 | 7.1 | 8.1 | ns |
| | | | $C_L$=10pF; $V_{CC(A)}$=2.3V to 2.7V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.1 | 25.1 | 25.1 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 1.9 | 14.6 | 15.1 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.0 | 11.2 | 11.7 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.8 | 7.7 | 8.2 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.7 | 6.3 | 6.6 | ns |
| | | | $C_L$=10pF; $V_{CC(A)}$=3.0V to 3.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.1 | 24.6 | 24.6 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 1.9 | 14.1 | 14.6 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.0 | 10.6 | 11.2 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 1.8 | 7.3 | 7.7 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 1.7 | 5.8 | 6.2 | ns |
| | | | $C_L$=15pF; $V_{CC(A)}$=1.1V to 1.3V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.8 | 29.2 | 29.2 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.7 | 18.6 | 19.1 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.7 | 15.2 | 15.8 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.7 | 11.6 | 12.1 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.6 | 10.3 | 10.6 | ns |
| | | | $C_L$=15pF; $V_{CC(A)}$=1.4V to 1.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.6 | 27.7 | 27.7 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.4 | 17.0 | 17.6 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.4 | 13.5 | 14.1 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.4 | 9.9 | 10.3 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.3 | 8.3 | 8.7 | ns |
| | | | $C_L$=15pF; $V_{CC(A)}$=1.65V to 1.95V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.5 | 27.1 | 27.3 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.3 | 16.4 | 17.0 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.3 | 12.8 | 13.5 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.2 | 9.2 | 9.7 | ns |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.2 | 7.7 | 8.0 | ns |
| | | | $C_L$=15pF; $V_{CC(A)}$=2.3V to 2.7V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.4 | 26.7 | 26.7 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.3 | 15.7 | 16.3 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.3 | 12.1 | 12.7 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.2 | 8.4 | 8.9 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.1 | 6.8 | 7.2 | ns |
| | | | $C_L$=15pF; $V_{CC(A)}$=3.0V to 3.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 2.4 | 26.2 | 26.2 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 2.3 | 15.2 | 15.7 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 2.2 | 11.6 | 12.1 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.2 | 7.9 | 8.4 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.1 | 6.4 | 6.8 | ns |
| | | | $C_L$=30pF; $V_{CC(A)}$=1.1V to 1.3V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.5 | 33.5 | 33.5 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.6 | 20.9 | 21.4 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 3.5 | 17.0 | 17.1 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 3.4 | 12.7 | 13.2 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 3.4 | 12.2 | 12.5 | ns |
| | | | $C_L$=30pF; $V_{CC(A)}$=1.4V to 1.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.2 | 32.0 | 32.0 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.3 | 19.2 | 19.9 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 3.2 | 15.4 | 16.0 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 3.1 | 11.0 | 11.5 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 3.1 | 10.1 | 10.5 | ns |
| | | | $C_L$=30pF; $V_{CC(A)}$=1.65V to 1.95V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.1 | 31.5 | 31.5 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.2 | 18.7 | 19.3 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 3.1 | 14.7 | 15.4 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 3.0 | 10.4 | 10.9 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.9 | 9.4 | 9.8 | ns |
| | | | $C_L$=30pF; $V_{CC(A)}$=2.3V to 2.7V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.1 | 31.0 | 31.0 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.1 | 18.0 | 18.7 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 3.0 | 14.0 | 14.6 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.9 | 9.6 | 10.1 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.9 | 8.5 | 9.0 | ns |
| | | | $C_L$=30pF; $V_{CC(A)}$=3.0V to 3.6V | | | | |
| | | | $V_{CC(Y)}$=1.1V to 1.3V | 3.1 | 30.5 | 30.5 | ns |
| | | | $V_{CC(Y)}$=1.4V to 1.6V | 3.1 | 17.5 | 18.1 | ns |
| | | | $V_{CC(Y)}$=1.65V to 1.95V | 3.0 | 13.4 | 14.1 | ns |
| | | | $V_{CC(Y)}$=2.3V to 2.7V | 2.9 | 9.1 | 9.6 | ns |
| | | | $V_{CC(Y)}$=3.0V to 3.6V | 2.9 | 8.1 | 8.5 | ns |

Note:

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

## 4、Testing Circuit

### 4.1、AC Testing Circuit

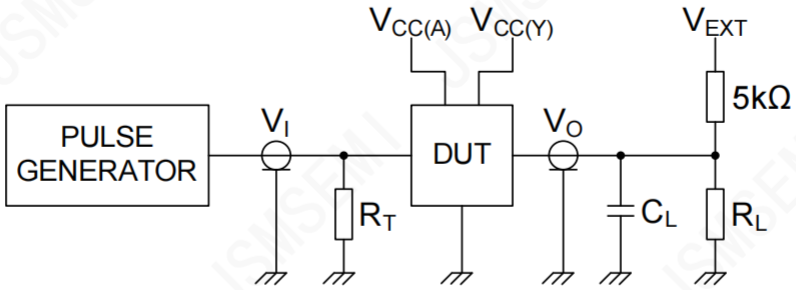



Figure 4. Test circuit for measuring switching times

Definitions for test circuit:

$R_L$=Load resistance.

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

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

$V_{EXT}$=External voltage for measuring switching times.

### 4.2、AC Testing Waveforms

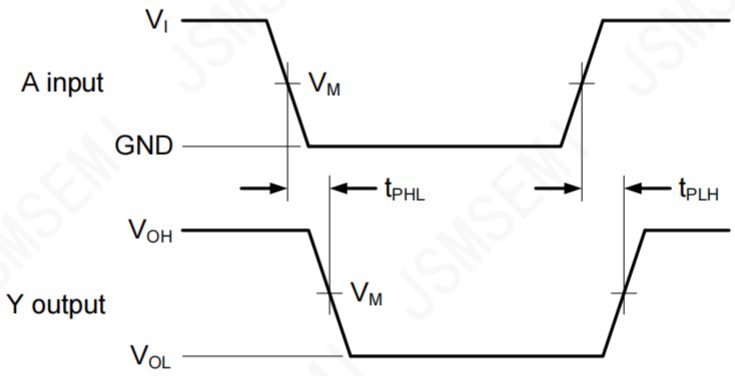



Figure 5. The data input (A) to output (Y) propagation delays

### 4.3、Measurement Points

| Supply voltage | Input | Output | | |
|---|---|---|---|---|
| $V_{CC(A)}/V_{CC(Y)}$ | $V_M$ | $V_M$ | $V_I$ | $t_r=t_f$ |
| 1.1V to 3.6V | $0.5\times V_{CC(Y)}$ | $0.5\times V_{CC(A)}$ | $V_{CC(A)}$ | ≤3.0ns |

### 4.4、Test Data

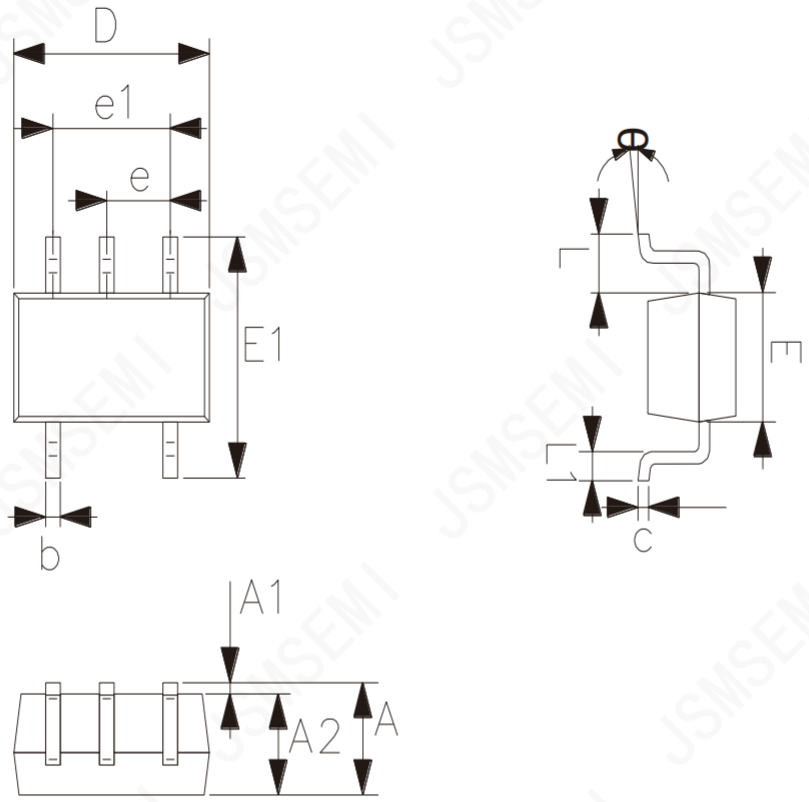
| Supply voltage | Load | | $V_{EXT}$ |
|---|---|---|---|
| $V_{CC}$ | $C_L$ | $R_L$[1] | $t_{PLH}$, $t_{PHL}$ |
| 1.1V to 3.6V | 5pF, 10pF, 15pF and 30pF | 5kΩ or 1MΩ | open |

Note:

[1] For measuring enable and disable times $R_L$=5kΩ, for measuring propagation delays, setup and hold times and pulse width $R_L$=1MΩ.

## 5、Package Information

### 5.1、TSSOP-5




| Symbol | Dimensions In Millimeters | |
|---|---|---|
| | Min. | Max. |
| A | 0.90 | 1.10 |
| A1 | 0.00 | 0.10 |
| A2 | 0.90 | 1.00 |
| b | 0.15 | 0.35 |
| c | 0.11 | 0.175 |
| D | 2.00 | 2.20 |
| E | 1.15 | 1.35 |
| E1 | 2.15 | 2.45 |
| e | 0.65 | |
| e1 | 1.20 | 1.40 |
| L | 0.525 | |
| L1 | 0.26 | 0.46 |
| 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. | | | | | | | | | |

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