



# SN74HC/HCT365 (LX) Hex Buffer/Line Driver; 3-state

## Product Specification

### Specification Revision History:

| Version    | Date    | Description         |
|------------|---------|---------------------|
| 2021-06-A1 | 2021-06 | New                 |
| 2023-04-B1 | 2023-04 | Update the template |
|            |         |                     |
|            |         |                     |



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## 1、General Description

The SN74HC/HCT365 is a hex buffer/line driver with 3-state outputs controlled by the output enable inputs ( $\overline{OEn}$ ). A HIGH on  $\overline{OEn}$  causes the outputs to assume a high impedance OFF-state. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of  $V_{CC}$ .

### Features:

- Input levels:
  - For SN74HC365: CMOS level
  - For SN74HCT365: TTL level
- 3-state outputs
- 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                                                                |
|-----------------|----------------|--------------|---------------|---------------------|----------------|----------------------------------------------------------------------|
| SN74HC365N(LX)  | DIP16          | SN74HC365N   | 25 PCS/tube   | 40 tube/box         | 1000 PCS/box   | Dimensions of plastic enclosure: 19.0mm×6.4mm<br>Pin spacing: 2.54mm |
| SN74HCT365N(LX) | DIP16          | SN74HCT365N  | 25 PCS/tube   | 40 tube/box         | 1000 PCS/box   | Dimensions of plastic enclosure: 19.0mm×6.4mm<br>Pin spacing: 2.54mm |
| SN74HC365D(LX)  | SOP16          | HC365        | 50 PCS/tube   | 200 tube/box        | 10000 PCS/box  | Dimensions of plastic enclosure: 10.0mm×3.9mm<br>Pin spacing: 1.27mm |
| SN74HCT365D(LX) | SOP16          | HCT365       | 50 PCS/tube   | 200 tube/box        | 10000 PCS/box  | Dimensions of plastic enclosure: 10.0mm×3.9mm<br>Pin spacing: 1.27mm |
| SN74HC365P(LX)  | TSSOP16        | HC365        | 96 PCS/tube   | 200 tube/box        | 19200 PCS/box  | Dimensions of plastic enclosure: 5.0mm×4.4mm<br>Pin spacing: 0.65mm  |
| SN74HCT365P(LX) | TSSOP16        | HCT365       | 96 PCS/tube   | 200 tube/box        | 19200 PCS/box  | Dimensions of plastic enclosure: 5.0mm×4.4mm<br>Pin spacing: 0.65mm  |



**Reel packing specifications:**

| Part number      | Packaging form | Marking code | Reel quantity    | Boxed reel quantity | Notes                                                                  |
|------------------|----------------|--------------|------------------|---------------------|------------------------------------------------------------------------|
| SN74HC365DR(LX)  | SOP16          | HC365        | 4000<br>PCS/reel | 8000<br>PCS/box     | Dimensions of plastic enclosure:<br>10.0mm×3.9mm<br>Pin spacing:1.27mm |
| SN74HCT365DR(LX) | SOP16          | HCT365       | 4000<br>PCS/reel | 8000<br>PCS/box     | Dimensions of plastic enclosure:<br>10.0mm×3.9mm<br>Pin spacing:1.27mm |
| SN74HC365PW(LX)  | TSSOP16        | HC365        | 5000<br>PCS/reel | 10000<br>PCS/box    | Dimensions of plastic enclosure:<br>5.0mm×4.4mm<br>Pin spacing:0.65mm  |
| SN74HCT365PW(LX) | TSSOP16        | HCT365       | 5000<br>PCS/reel | 10000<br>PCS/box    | Dimensions of plastic enclosure:<br>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

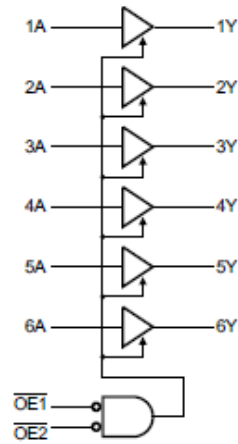


Figure 1. Logic symbol

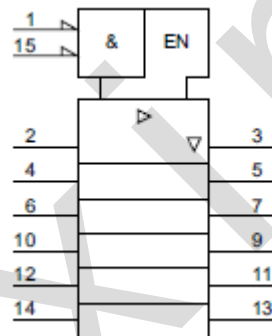


Figure 2. IEC logic symbol

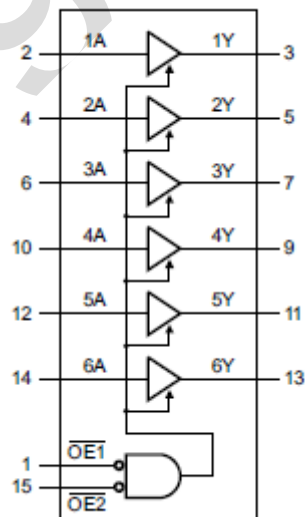


Figure 3. Functional diagram

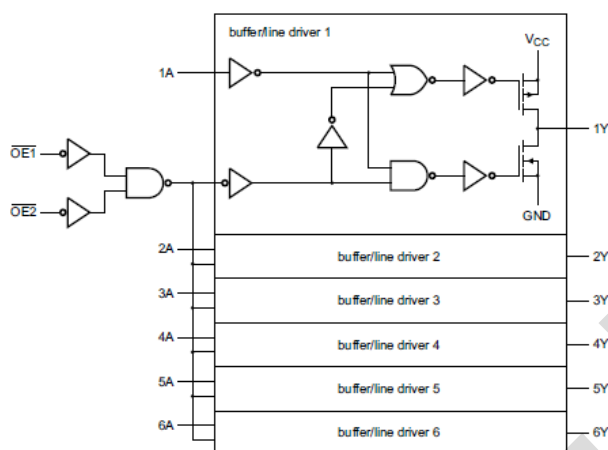
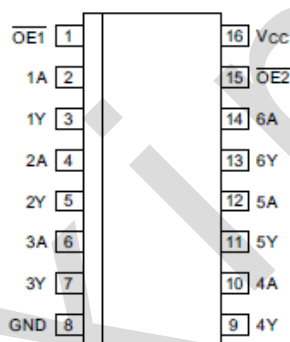


Figure 4. Logic diagram

## 2.2、Pin Configurations



## 2.3、Pin Description

| Pin No. | Pin Name        | Description                        |
|---------|-----------------|------------------------------------|
| 1       | OE1             | output enable input 1 (active LOW) |
| 2       | 1A              | data input 1                       |
| 3       | 1Y              | data output 1                      |
| 4       | 2A              | data input 2                       |
| 5       | 2Y              | data output 2                      |
| 6       | 3A              | data input 3                       |
| 7       | 3Y              | data output 3                      |
| 8       | GND             | ground (0V)                        |
| 9       | 4Y              | data output 4                      |
| 10      | 4A              | data input 4                       |
| 11      | 5Y              | data output 5                      |
| 12      | 5A              | data input 5                       |
| 13      | 6Y              | data output 6                      |
| 14      | 6A              | data input 6                       |
| 15      | OE2             | output enable input 2 (active LOW) |
| 16      | V <sub>CC</sub> | supply voltage                     |



## 2.4、Function Table

| Input |     |    | Output |
|-------|-----|----|--------|
| OE1   | OE2 | nA | nY     |
| L     | L   | L  | L      |
| L     | L   | H  | H      |
| X     | H   | X  | Z      |
| H     | X   | X  | Z      |

Note: H=HIGH voltage level; L=LOW voltage level; X=don't care; Z=high-impedance OFF-state.

## 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          | $I_O$     | $-0.5V < V_O < V_{CC}+0.5V$          | -         | $\pm 35$ | mA   |
| supply current          | $I_{CC}$  | -                                    | -         | 70       | mA   |
| ground current          | $I_{GND}$ | -                                    | -70       | -        | mA   |
| storage temperature     | $T_{stg}$ | -                                    | -65       | +150     | °C   |
| total power dissipation | $P_{tot}$ | -                                    | -         | 500      | mW   |
| Soldering temperature   | $T_L$     | 10s                                  | DIP       | 245      | °C   |
|                         |           |                                      | SOP/TSSOP | 260      |      |



### 3.2、Recommended Operating Conditions

| Parameter                              | Symbol              | Conditions    | Min. | Typ. | Max.     | Unit |
|----------------------------------------|---------------------|---------------|------|------|----------|------|
| SN74HC365                              |                     |               |      |      |          |      |
| 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<br>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<br>temperature                 | $T_{amb}$           | -             | -40  | -    | +125     | °C   |
| SN74HCT365                             |                     |               |      |      |          |      |
| 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<br>rise and fall rate | $\Delta t/\Delta V$ | $V_{CC}=4.5V$ | -    | 1.67 | 139      | ns/V |
| ambient<br>temperature                 | $T_{amb}$           | -             | -40  | -    | +125     | °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 |
|------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------|------|------|------|
| SN74HC365                    |                 |                                                                                                                       |                                               |      |      |      |      |
| HIGH-level<br>input voltage  | V <sub>IH</sub> | V <sub>CC</sub> =2.0V                                                                                                 |                                               | 1.5  | 1.2  | -    | V    |
|                              |                 | V <sub>CC</sub> =4.5V                                                                                                 |                                               | 3.15 | 2.4  | -    | V    |
|                              |                 | V <sub>CC</sub> =6.0V                                                                                                 |                                               | 4.2  | 3.2  | -    | V    |
| LOW-level<br>input voltage   | V <sub>IL</sub> | V <sub>CC</sub> =2.0V                                                                                                 |                                               | -    | 0.8  | 0.5  | V    |
|                              |                 | V <sub>CC</sub> =4.5V                                                                                                 |                                               | -    | 2.1  | 1.35 | V    |
|                              |                 | V <sub>CC</sub> =6.0V                                                                                                 |                                               | -    | 2.8  | 1.8  | V    |
| HIGH-level<br>output voltage | V <sub>OH</sub> | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>                                                                   | I <sub>O</sub> =-20uA; V <sub>CC</sub> =2.0V  | 1.9  | 2.0  | -    | V    |
|                              |                 |                                                                                                                       | I <sub>O</sub> =-20uA; V <sub>CC</sub> =4.5V  | 4.4  | 4.5  | -    | V    |
|                              |                 |                                                                                                                       | I <sub>O</sub> =-20uA; V <sub>CC</sub> =6.0V  | 5.9  | 6.0  | -    | V    |
|                              |                 |                                                                                                                       | I <sub>O</sub> =-6.0mA; V <sub>CC</sub> =4.5V | 3.98 | 4.32 | -    | V    |
|                              |                 |                                                                                                                       | I <sub>O</sub> =-7.8mA; V <sub>CC</sub> =6.0V | 5.48 | 5.81 | -    | V    |
| LOW-level<br>output voltage  | V <sub>OL</sub> | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>                                                                   | I <sub>O</sub> =20uA; V <sub>CC</sub> =2.0V   | -    | 0    | 0.1  | V    |
|                              |                 |                                                                                                                       | I <sub>O</sub> =20uA; V <sub>CC</sub> =4.5V   | -    | 0    | 0.1  | V    |
|                              |                 |                                                                                                                       | I <sub>O</sub> =20uA; V <sub>CC</sub> =6.0V   | -    | 0    | 0.1  | V    |
|                              |                 |                                                                                                                       | I <sub>O</sub> =6.0mA; V <sub>CC</sub> =4.5V  | -    | 0.15 | 0.26 | V    |
|                              |                 |                                                                                                                       | I <sub>O</sub> =7.8mA; V <sub>CC</sub> =6.0V  | -    | 0.16 | 0.26 | V    |
| input leakage<br>current     | I <sub>I</sub>  | V <sub>I</sub> =V <sub>CC</sub> or GND;<br>V <sub>CC</sub> =6.0V                                                      |                                               | -    | -    | ±1.0 | uA   |
| OFF-state<br>output current  | I <sub>OZ</sub> | V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>CC</sub> =6.0V;<br>V <sub>O</sub> =V <sub>CC</sub> or GND |                                               | -    | -    | ±1.0 | uA   |
| supply current               | I <sub>CC</sub> | V <sub>I</sub> =V <sub>CC</sub> or GND; I <sub>O</sub> =0A; V <sub>CC</sub> =6.0V                                     |                                               | -    | -    | 8.0  | uA   |





|                           |                  |                                                                                                                       |                        |      |      |      |    |
|---------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------|------|------|------|----|
| input capacitance         | C <sub>I</sub>   | -                                                                                                                     |                        | -    | 3.5  | -    | pF |
| SN74HCT365                |                  |                                                                                                                       |                        |      |      |      |    |
| HIGH-level input voltage  | V <sub>IH</sub>  | V <sub>CC</sub> =4.5V to 5.5V                                                                                         |                        | 2.0  | 1.6  | -    | V  |
| LOW-level input voltage   | V <sub>IL</sub>  | V <sub>CC</sub> =4.5V to 5.5V                                                                                         |                        | -    | 1.2  | 0.8  | V  |
| HIGH-level output voltage | V <sub>OH</sub>  | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> ;<br>V <sub>CC</sub> =4.5V                                        | I <sub>O</sub> =-20uA  | 4.4  | 4.5  | -    | V  |
|                           |                  |                                                                                                                       | I <sub>O</sub> =-6.0mA | 3.98 | 4.32 | -    | V  |
| LOW-level output voltage  | V <sub>OL</sub>  | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> ;<br>V <sub>CC</sub> =4.5V                                        | I <sub>O</sub> =20uA   | -    | 0    | 0.1  | V  |
|                           |                  |                                                                                                                       | I <sub>O</sub> =6.0mA  | -    | 0.16 | 0.26 | V  |
| input leakage current     | I <sub>I</sub>   | V <sub>I</sub> =V <sub>CC</sub> or GND;<br>V <sub>CC</sub> =5.5V                                                      |                        | -    | -    | ±1.0 | uA |
| OFF-state output current  | I <sub>OZ</sub>  | V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>CC</sub> =5.5V;<br>V <sub>O</sub> =V <sub>CC</sub> or GND |                        | -    | -    | ±1.0 | uA |
| supply current            | I <sub>CC</sub>  | V <sub>I</sub> =V <sub>CC</sub> or GND; I <sub>O</sub> =0A; V <sub>CC</sub> =5.5V                                     |                        | -    | -    | 8.0  | uA |
| additional supply current | ΔI <sub>CC</sub> | V <sub>I</sub> =V <sub>CC</sub> -2.1V;<br>other inputs at V <sub>CC</sub><br>or GND; I <sub>O</sub> =0A               | pins nA                | -    | -    | 360  | uA |
|                           |                  |                                                                                                                       | pin $\overline{OE}1$   | -    | -    | 360  | uA |
|                           |                  |                                                                                                                       | pin $\overline{OE}2$   | -    | -    | 324  | uA |
| input capacitance         | C <sub>I</sub>   | -                                                                                                                     |                        | -    | 3.5  | -    | pF |

### 3.3.2、DC Characteristics 2

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

| Parameter                 | Symbol          | Conditions                                                                                                            |                                               | Min. | Typ. | Max. | Unit |
|---------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------|------|------|------|
| SN74HC365                 |                 |                                                                                                                       |                                               |      |      |      |      |
| HIGH-level input voltage  | V <sub>IH</sub> | V <sub>CC</sub> =2.0V                                                                                                 |                                               | 1.5  | -    | -    | V    |
|                           |                 | V <sub>CC</sub> =4.5V                                                                                                 |                                               | 3.15 | -    | -    | V    |
|                           |                 | V <sub>CC</sub> =6.0V                                                                                                 |                                               | 4.2  | -    | -    | V    |
| LOW-level input voltage   | V <sub>IL</sub> | V <sub>CC</sub> =2.0V                                                                                                 |                                               | -    | -    | 0.5  | V    |
|                           |                 | V <sub>CC</sub> =4.5V                                                                                                 |                                               | -    | -    | 1.35 | V    |
|                           |                 | V <sub>CC</sub> =6.0V                                                                                                 |                                               | -    | -    | 1.8  | V    |
| HIGH-level output voltage | V <sub>OH</sub> | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>                                                                   | I <sub>O</sub> =-20uA; V <sub>CC</sub> =2.0V  | 1.9  | -    | -    | V    |
|                           |                 |                                                                                                                       | I <sub>O</sub> =-20uA; V <sub>CC</sub> =4.5V  | 4.4  | -    | -    | V    |
|                           |                 |                                                                                                                       | I <sub>O</sub> =-20uA; V <sub>CC</sub> =6.0V  | 5.9  | -    | -    | V    |
|                           |                 |                                                                                                                       | I <sub>O</sub> =-6.0mA; V <sub>CC</sub> =4.5V | 3.84 | -    | -    | V    |
|                           |                 |                                                                                                                       | I <sub>O</sub> =-7.8mA; V <sub>CC</sub> =6.0V | 5.34 | -    | -    | V    |
| LOW-level output voltage  | V <sub>OL</sub> | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>                                                                   | I <sub>O</sub> =20uA; V <sub>CC</sub> =2.0V   | -    | -    | 0.1  | V    |
|                           |                 |                                                                                                                       | I <sub>O</sub> =20uA; V <sub>CC</sub> =4.5V   | -    | -    | 0.1  | V    |
|                           |                 |                                                                                                                       | I <sub>O</sub> =20uA; V <sub>CC</sub> =6.0V   | -    | -    | 0.1  | V    |
|                           |                 |                                                                                                                       | I <sub>O</sub> =6.0mA; V <sub>CC</sub> =4.5V  | -    | -    | 0.33 | V    |
|                           |                 |                                                                                                                       | I <sub>O</sub> =7.8mA; V <sub>CC</sub> =6.0V  | -    | -    | 0.33 | V    |
| input leakage current     | I <sub>I</sub>  | V <sub>I</sub> =V <sub>CC</sub> or GND;<br>V <sub>CC</sub> =6.0V                                                      |                                               | -    | -    | ±1.0 | uA   |
| OFF-state output current  | I <sub>OZ</sub> | V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>CC</sub> =6.0V;<br>V <sub>O</sub> =V <sub>CC</sub> or GND |                                               | -    | -    | ±5.0 | uA   |
| supply current            | I <sub>CC</sub> | V <sub>I</sub> =V <sub>CC</sub> or GND; I <sub>O</sub> =0A; V <sub>CC</sub> =6.0V                                     |                                               | -    | -    | 80   | uA   |



| SN74HCT365                |                 |                                                                     |                |      |           |         |
|---------------------------|-----------------|---------------------------------------------------------------------|----------------|------|-----------|---------|
| 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 $V_{IL}$ ;<br>$V_{CC}=4.5V$                       | $I_O=-20\mu A$ | 4.4  | -         | V       |
|                           |                 |                                                                     | $I_O=-6.0mA$   | 3.84 | -         | V       |
| LOW-level output voltage  | $V_{OL}$        | $V_I = V_{IH}$ or $V_{IL}$ ;<br>$V_{CC}=4.5V$                       | $I_O=20\mu A$  | -    | -         | 0.1     |
|                           |                 |                                                                     | $I_O=6.0mA$    | -    | -         | 0.33    |
| input leakage current     | $I_I$           | $V_I=V_{CC}$ or GND;<br>$V_{CC}=5.5V$                               | -              | -    | $\pm 1.0$ | $\mu A$ |
| OFF-state output current  | $I_{OZ}$        | $V_I=V_{IH}$ or $V_{IL}$ ; $V_{CC}=5.5V$ ;<br>$V_O=V_{CC}$ or GND   | -              | -    | $\pm 5.0$ | $\mu A$ |
| supply current            | $I_{CC}$        | $V_I=V_{CC}$ or GND; $I_O=0A$ ; $V_{CC}=5.5V$                       | -              | -    | 80        | $\mu A$ |
| additional supply current | $\Delta I_{CC}$ | $V_I=V_{CC}-2.1V$ ;<br>other inputs at $V_{CC}$<br>or GND; $I_O=0A$ | pins nA        | -    | -         | 450     |
|                           |                 |                                                                     | pin OE1        | -    | -         | 450     |
|                           |                 |                                                                     | pin OE2        | -    | -         | 405     |

### 3.3.3、DC Characteristics 3

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

| Parameter                 | Symbol   | Conditions                                                        | Min.                           | Typ. | Max.      | Unit    |
|---------------------------|----------|-------------------------------------------------------------------|--------------------------------|------|-----------|---------|
| SN74HC365                 |          |                                                                   |                                |      |           |         |
| 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       |
|                           |          |                                                                   | $I_O=-6.0mA$ ; $V_{CC}=4.5V$   | 3.7  | -         | V       |
|                           |          |                                                                   | $I_O=-7.8mA$ ; $V_{CC}=6.0V$   | 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     |
|                           |          |                                                                   | $I_O=20\mu A$ ; $V_{CC}=4.5V$  | -    | -         | 0.1     |
|                           |          |                                                                   | $I_O=20\mu A$ ; $V_{CC}=6.0V$  | -    | -         | 0.1     |
|                           |          |                                                                   | $I_O=6.0mA$ ; $V_{CC}=4.5V$    | -    | -         | 0.4     |
|                           |          |                                                                   | $I_O=7.8mA$ ; $V_{CC}=6.0V$    | -    | -         | 0.4     |
| input leakage current     | $I_I$    | $V_I=V_{CC}$ or GND;<br>$V_{CC}=6.0V$                             | -                              | -    | $\pm 1.0$ | $\mu A$ |
| OFF-state output current  | $I_{OZ}$ | $V_I=V_{IH}$ or $V_{IL}$ ; $V_{CC}=6.0V$ ;<br>$V_O=V_{CC}$ or GND | -                              | -    | $\pm 10$  | $\mu A$ |
| supply current            | $I_{CC}$ | $V_I=V_{CC}$ or GND; $I_O=0A$ ; $V_{CC}=6.0V$                     | -                              | -    | 160       | $\mu A$ |
| SN74HCT365                |          |                                                                   |                                |      |           |         |
| 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       |



|                           |                 |                                                                            |                      |     |   |           |         |
|---------------------------|-----------------|----------------------------------------------------------------------------|----------------------|-----|---|-----------|---------|
| input voltage             |                 |                                                                            |                      |     |   |           |         |
| HIGH-level output voltage | $V_{OH}$        | $V_I = V_{IH} \text{ or } V_{IL}; V_{CC}=4.5V$                             | $I_O=-20\mu A$       | 4.4 | - | -         | V       |
|                           |                 |                                                                            | $I_O=-6.0mA$         | 3.7 | - | -         | V       |
| LOW-level output voltage  | $V_{OL}$        | $V_I = V_{IH} \text{ or } V_{IL}; V_{CC}=4.5V$                             | $I_O=20\mu A$        | -   | - | 0.1       | V       |
|                           |                 |                                                                            | $I_O=6.0mA$          | -   | - | 0.4       | V       |
| input leakage current     | $I_I$           | $V_I=V_{CC} \text{ or } GND; V_{CC}=5.5V$                                  |                      | -   | - | $\pm 1.0$ | $\mu A$ |
| OFF-state output current  | $I_{OZ}$        | $V_I=V_{IH} \text{ or } V_{IL}; V_{CC}=5.5V; V_O=V_{CC} \text{ or } GND$   |                      | -   | - | $\pm 10$  | $\mu A$ |
| supply current            | $I_{CC}$        | $V_I=V_{CC} \text{ or } GND; I_O=0A; V_{CC}=5.5V$                          |                      | -   | - | 160       | $\mu A$ |
| additional supply current | $\Delta I_{CC}$ | $V_I=V_{CC}-2.1V; \text{ other inputs at } V_{CC} \text{ or } GND; I_O=0A$ | pins nA              | -   | - | 490       | $\mu A$ |
|                           |                 |                                                                            | pin $\overline{OE}1$ | -   | - | 490       | $\mu A$ |
|                           |                 |                                                                            | pin $\overline{OE}2$ | -   | - | 441       | $\mu A$ |

### 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>SN74HC365</b>                    |           |                                        |                         |      |      |        |
| nA to nY propagation delay          | $t_{pd}$  | see Figure 6                           | $V_{CC}=2.0V$           | -    | 30   | 95 ns  |
|                                     |           |                                        | $V_{CC}=4.5V$           | -    | 11   | 19 ns  |
|                                     |           |                                        | $V_{CC}=5.0V; C_L=15pF$ | -    | 9    | - ns   |
|                                     |           |                                        | $V_{CC}=6.0V$           | -    | 9    | 16 ns  |
| $\overline{OEn}$ to nY enable time  | $t_{en}$  | see Figure 7                           | $V_{CC}=2.0V$           | -    | 47   | 150 ns |
|                                     |           |                                        | $V_{CC}=4.5V$           | -    | 17   | 30 ns  |
|                                     |           |                                        | $V_{CC}=6.0V$           | -    | 14   | 26 ns  |
| $\overline{OEn}$ to nY disable time | $t_{dis}$ | see Figure 7                           | $V_{CC}=2.0V$           | -    | 61   | 150 ns |
|                                     |           |                                        | $V_{CC}=4.5V$           | -    | 22   | 30 ns  |
|                                     |           |                                        | $V_{CC}=6.0V$           | -    | 18   | 26 ns  |
| transition time                     | $t_t$     | see Figure 6                           | $V_{CC}=2.0V$           | -    | 14   | 60 ns  |
|                                     |           |                                        | $V_{CC}=4.5V$           | -    | 5    | 12 ns  |
|                                     |           |                                        | $V_{CC}=6.0V$           | -    | 4    | 10 ns  |
| power dissipation capacitance       | $C_{PD}$  | per buffer; $V_I=GND$ to $V_{CC}$      | -                       | 40   | -    | pF     |
| <b>SN74HCT365</b>                   |           |                                        |                         |      |      |        |
| nA to nY propagation delay          | $t_{pd}$  | see Figure 6                           | $V_{CC}=4.5V$           | -    | 14   | 25 ns  |
|                                     |           |                                        | $V_{CC}=5.0V; C_L=15pF$ | -    | 11   | - ns   |
| $\overline{OEn}$ to nY enable time  | $t_{en}$  | $V_{CC}=4.5V$ ; see Figure 7           | -                       | 18   | 35   | ns     |
| $\overline{OEn}$ to nY disable time | $t_{dis}$ | $V_{CC}=4.5V$ ; see Figure 7           | -                       | 23   | 35   | ns     |
| transition time                     | $t_t$     | $V_{CC}=4.5V$ ; see Figure 6           | -                       | 5    | 12   | ns     |
| power dissipation capacitance       | $C_{PD}$  | per buffer; $V_I=GND$ to $V_{CC}-1.5V$ | -                       | 40   | -    | pF     |

Note:



- [1]  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .  
 [2]  $t_{en}$  is the same as  $t_{PZL}$  and  $t_{PZH}$ .  
 [3]  $t_{dis}$  is the same as  $t_{PLZ}$  and  $t_{PHZ}$ .  
 [4]  $t_t$  is the same as  $t_{THL}$  and  $t_{TLH}$ .  
 [5]  $C_{PD}$  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

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

| Parameter                          | Symbol           | Conditions                          |                       | Min. | Typ. | Max. | Unit |
|------------------------------------|------------------|-------------------------------------|-----------------------|------|------|------|------|
| SN74HC365                          |                  |                                     |                       |      |      |      |      |
| nA to nY propagation delay         | t <sub>pd</sub>  | see Figure 6                        | V <sub>CC</sub> =2.0V | -    | -    | 120  | ns   |
|                                    |                  |                                     | V <sub>CC</sub> =4.5V | -    | -    | 24   | ns   |
|                                    |                  |                                     | V <sub>CC</sub> =6.0V | -    | -    | 20   | ns   |
| O <sub>En</sub> to nY enable time  | t <sub>en</sub>  | see Figure 7                        | V <sub>CC</sub> =2.0V | -    | -    | 190  | ns   |
|                                    |                  |                                     | V <sub>CC</sub> =4.5V | -    | -    | 38   | ns   |
|                                    |                  |                                     | V <sub>CC</sub> =6.0V | -    | -    | 33   | ns   |
| O <sub>En</sub> to nY disable time | t <sub>dis</sub> | see Figure 7                        | V <sub>CC</sub> =2.0V | -    | -    | 190  | ns   |
|                                    |                  |                                     | V <sub>CC</sub> =4.5V | -    | -    | 38   | ns   |
|                                    |                  |                                     | V <sub>CC</sub> =6.0V | -    | -    | 33   | ns   |
| transition time                    | t <sub>t</sub>   | see Figure 6                        | V <sub>CC</sub> =2.0V | -    | -    | 75   | ns   |
|                                    |                  |                                     | V <sub>CC</sub> =4.5V | -    | -    | 15   | ns   |
|                                    |                  |                                     | V <sub>CC</sub> =6.0V | -    | -    | 13   | ns   |
| SN74HCT365                         |                  |                                     |                       |      |      |      |      |
| nA to nY propagation delay         | t <sub>pd</sub>  | see Figure 6                        | V <sub>CC</sub> =4.5V | -    | -    | 31   | ns   |
| O <sub>En</sub> to nY enable time  | t <sub>en</sub>  | V <sub>CC</sub> =4.5V; see Figure 7 |                       | -    | -    | 44   | ns   |
| O <sub>En</sub> to nY disable time | t <sub>dis</sub> | V <sub>CC</sub> =4.5V; see Figure 7 |                       | -    | -    | 44   | ns   |
| transition time                    | t <sub>t</sub>   | V <sub>CC</sub> =4.5V; see Figure 6 |                       | -    | -    | 15   | ns   |

Note:

- [1]  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .  
 [2]  $t_{en}$  is the same as  $t_{PZL}$  and  $t_{PZH}$ .  
 [3]  $t_{dis}$  is the same as  $t_{PLZ}$  and  $t_{PHZ}$ .  
 [4]  $t_t$  is the same as  $t_{THL}$  and  $t_{TLH}$ .



### 3.3.6、AC Characteristics 3

( $T_{amb} = -40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ ,  $GND = 0V$ ,  $C_L = 50pF$ , unless otherwise specified.)

| Parameter                           | Symbol    | Conditions                   |               | Min. | Typ. | Max. | Unit |
|-------------------------------------|-----------|------------------------------|---------------|------|------|------|------|
| SN74HC365                           |           |                              |               |      |      |      |      |
| nA to nY propagation delay          | $t_{pd}$  | see Figure 6                 | $V_{CC}=2.0V$ | -    | -    | 145  | ns   |
|                                     |           |                              | $V_{CC}=4.5V$ | -    | -    | 29   | ns   |
|                                     |           |                              | $V_{CC}=6.0V$ | -    | -    | 25   | ns   |
| $\overline{O}En$ to nY enable time  | $t_{en}$  | see Figure 7                 | $V_{CC}=2.0V$ | -    | -    | 225  | ns   |
|                                     |           |                              | $V_{CC}=4.5V$ | -    | -    | 45   | ns   |
|                                     |           |                              | $V_{CC}=6.0V$ | -    | -    | 38   | ns   |
| $\overline{O}En$ to nY disable time | $t_{dis}$ | see Figure 7                 | $V_{CC}=2.0V$ | -    | -    | 225  | ns   |
|                                     |           |                              | $V_{CC}=4.5V$ | -    | -    | 45   | ns   |
|                                     |           |                              | $V_{CC}=6.0V$ | -    | -    | 38   | ns   |
| transition time                     | $t_t$     | see Figure 6                 | $V_{CC}=2.0V$ | -    | -    | 90   | ns   |
|                                     |           |                              | $V_{CC}=4.5V$ | -    | -    | 18   | ns   |
|                                     |           |                              | $V_{CC}=6.0V$ | -    | -    | 15   | ns   |
| SN74HCT365                          |           |                              |               |      |      |      |      |
| nA to nY propagation delay          | $t_{pd}$  | see Figure 6                 | $V_{CC}=4.5V$ | -    | -    | 38   | ns   |
| $\overline{O}En$ to nY enable time  | $t_{en}$  | $V_{CC}=4.5V$ ; see Figure 7 |               | -    | -    | 53   | ns   |
| $\overline{O}En$ to nY disable time | $t_{dis}$ | $V_{CC}=4.5V$ ; see Figure 7 |               | -    | -    | 53   | ns   |
| transition time                     | $t_t$     | $V_{CC}=4.5V$ ; see Figure 6 |               | -    | -    | 18   | ns   |

Note:

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

[2]  $t_{en}$  is the same as  $t_{PZL}$  and  $t_{PZH}$ .

[3]  $t_{dis}$  is the same as  $t_{PLZ}$  and  $t_{PHZ}$ .

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

## 4、Testing Circuit

### 4.1、AC Testing Circuit

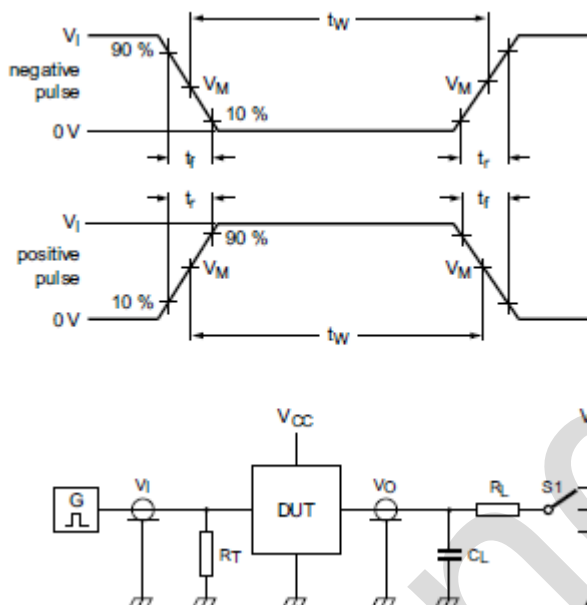


Figure 5. Test circuit for measuring switching times

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.

S1=Test selection switch.

### 4.2、AC Testing Waveforms

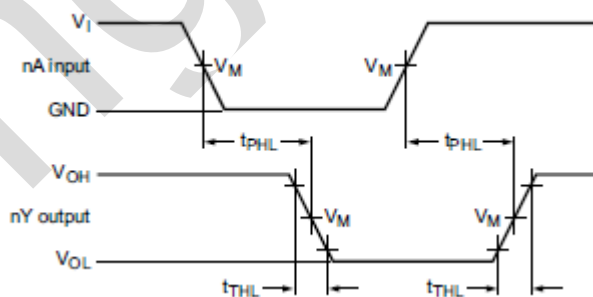


Figure 6. Input (nA) to output (nY) propagation delays and output transition times

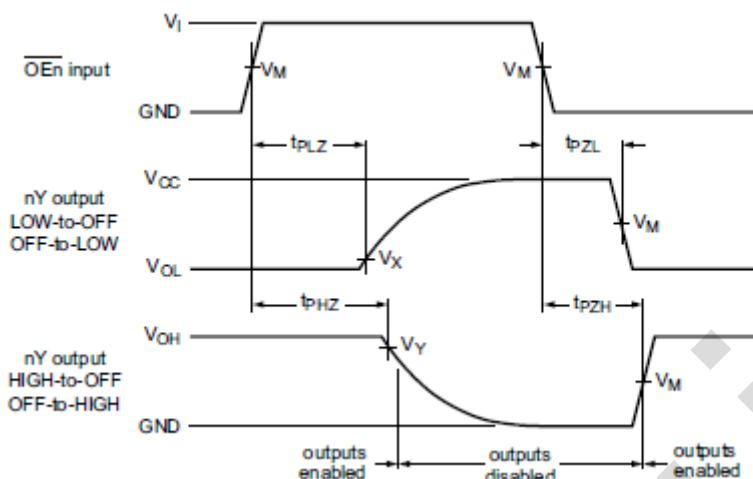


Figure 7. 3-state enable and disable times

#### 4.3、Measurement Points

| Type       | Input               | Output              |                     |                     |
|------------|---------------------|---------------------|---------------------|---------------------|
|            | $V_M$               | $V_M$               | $V_X$               | $V_Y$               |
| SN74HC365  | $0.5 \times V_{CC}$ | $0.5 \times V_{CC}$ | $0.1 \times V_{CC}$ | $0.9 \times V_{CC}$ |
| SN74HCT365 | 1.3V                | 1.3V                | $0.1 \times V_{CC}$ | $0.9 \times V_{CC}$ |

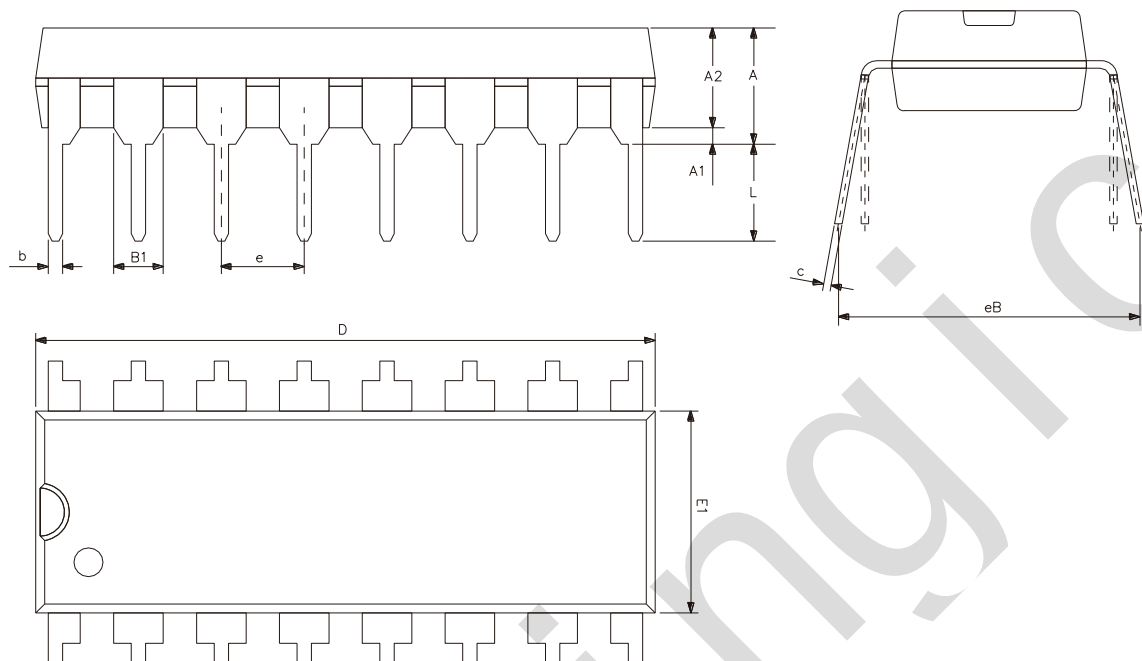
#### 4.4、Test Data

| Type       | Input    |            | Load       |             | S1 position        |                    |                    |
|------------|----------|------------|------------|-------------|--------------------|--------------------|--------------------|
|            | $V_I$    | $t_r, t_f$ | $C_L$      | $R_L$       | $t_{PHL}, t_{PLH}$ | $t_{PZH}, t_{PHZ}$ | $t_{PZL}, t_{PLZ}$ |
| SN74HC365  | $V_{CC}$ | 6ns        | 15pF, 50pF | 1k $\Omega$ | open               | GND                | $V_{CC}$           |
| SN74HCT365 | 3V       | 6ns        | 15pF, 50pF | 1k $\Omega$ | open               | GND                | $V_{CC}$           |



## 5、Package Information

### 5.1、DIP16

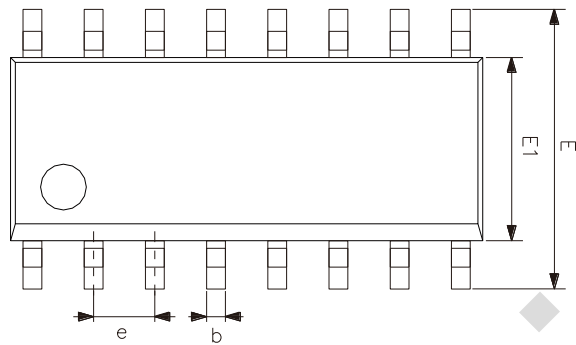
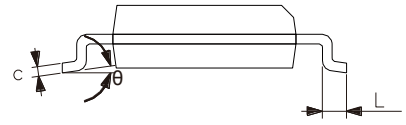
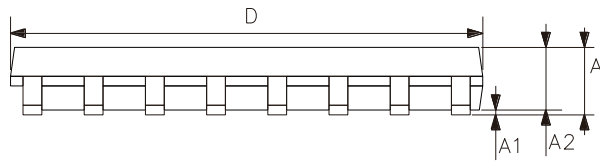


| Symbol | Dimensions (mm) |       |
|--------|-----------------|-------|
|        | Min.            | Max.  |
| A2     | 3.20            | 3.60  |
| A1     | 0.51            | -     |
| A      | 3.60            | 5.33  |
| L      | 3.00            | 3.60  |
| b      | 0.36            | 0.56  |
| B1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





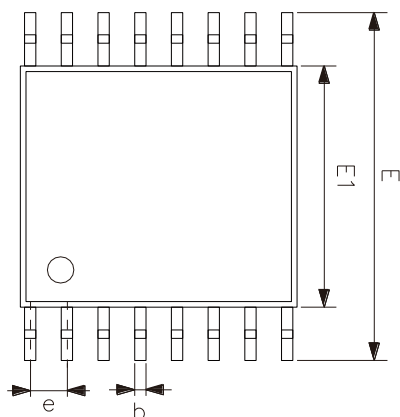
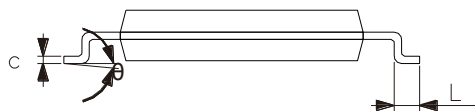
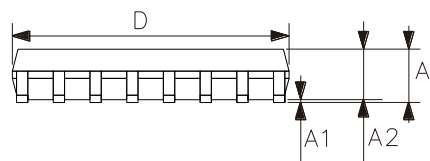
## 5.2、SOP16



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



### 5.3、TSSOP16



| Symbol   | Dimensions (mm) |      |
|----------|-----------------|------|
|          | Min.            | Max. |
| A        | -               | 1.20 |
| A1       | 0.05            | 0.15 |
| A2       | 0.80            | 1.05 |
| b        | 0.19            | 0.30 |
| c        | 0.09            | 0.20 |
| D        | 4.90            | 5.10 |
| E1       | 4.30            | 4.50 |
| E        | 6.20            | 6.60 |
| e        | 0.65            |      |
| L        | 0.45            | 0.75 |
| $\theta$ | 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             | <p>○: Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard.</p> <p>×: Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements.</p> |                               |                               |                               |                          |                                |                   |                       |                           |                      |

### 6.2、Notes

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