



灵星芯微 芯片经营

深圳市灵星芯微电子科技有限公司

Shenzhen Lingxing Microelectronics Technology Co., Ltd.

Tab: 835-12-B4

Number:SN74HC/HCT42-AX-LJ-A037EN

# SN74HC/HCT42 (LX) BCD to Decimal Decoder (1-of-10)

## Product Specification

### Specification Revision History:

Version	Date	Description
2022-06-A1	2022-06	New
2023-04-B1	2023-04	Update the template



# Contents

<b>1、 General Description.....</b>	<b>3</b>
<b>2、 Block Diagram And Pin Description .....</b>	<b>6</b>
2.1、 Block Diagram .....	6
2.2、 Pin Configurations.....	7
2.3、 Pin Description .....	7
2.4、 Function Table.....	8
<b>3、 Electrical Parameter .....</b>	<b>8</b>
3.1、 Absolute Maximum Ratings.....	8
3.2、 Recommended Operating Conditions .....	9
3.3、 Electrical Characteristics .....	9
3.3.1、 DC Characteristics 1 .....	9
3.3.2、 DC Characteristics 2 .....	10
3.3.3、 DC Characteristics 3 .....	11
3.3.4、 AC Characteristics 1 .....	12
3.3.5、 AC Characteristics 2 .....	13
3.3.6、 AC Characteristics 3 .....	13
<b>4、 Testing Circuit .....</b>	<b>14</b>
4.1、 AC Testing Circuit .....	14
4.2、 AC Testing Waveforms.....	14
4.3、 Measurement Points .....	15
4.4、 Test Data .....	15
<b>5、 Package Information .....</b>	<b>16</b>
5.1、 DIP16 .....	16
5.2、 SOP16 .....	17
5.3、 TSSOP16.....	18
<b>6、 Statements And Notes .....</b>	<b>19</b>
6.1、 The name and content of Hazardous substances or Elements in the product .....	19
6.2、 Notes .....	19



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## 1、General Description

The SN74HC/HCT42 is a one of ten BCD to decimal decoder. It accepts four BCD inputs (0A to 3A) and provides ten mutually exclusive outputs ( $0\bar{Y}$  to  $9\bar{Y}$ ). The logic design ensures that all outputs are HIGH when binary codes greater than nine are applied to the inputs. The most significant input (3A) produces an useful inhibit function when the device is used as a 1-of-8 decoder. The 3A input can also be used as the data input in an 8-output demultiplexer application. 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 SN74HC42: CMOS level
  - For SN74HCT42: TTL level
- Mutually exclusive outputs
- 1-of-8 demultiplexing capability
- Outputs disabled for input codes above nine
- Specified from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Packaging information: DIP16/SOP16/TSSOP16



**Ordering Information:**

**Tube packing specifications:**

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
SN74HC42N (LX)	DIP16	SN74HC42N	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm
SN74HCT42N (LX)	DIP16	SN74HCT42N	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm
SN74HC42D(LX)	SOP16	HC42	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm
SN74HCT42D(LX)	SOP16	HCT42	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm
SN74HC42P(LX)	TSSOP16	74HC42	96 PCS/tube	200 tube/box	19200 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm
SN74HCT42P(LX)	TSSOP16	74HCT42	96 PCS/tube	200 tube/box	19200 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm



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**Reel packing specifications:**

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
SN74HC42DR (LX)	SOP16	HC42	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing:1.27mm
SN74HCT42DR (LX)	SOP16	HCT42	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing:1.27mm
SN74HC42PW (LX)	TSSOP16	74HC42	5000 PCS/reel	10000 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing:0.65mm
SN74HCT42PW(LX)	TSSOP16	74HCT42	5000 PCS/reel	10000 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing:0.65mm

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



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## 2、Block Diagram And Pin Description

### 2.1、Block Diagram

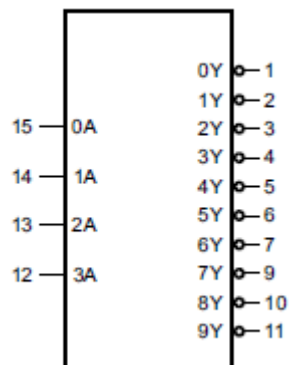


Figure 1. Logic symbol

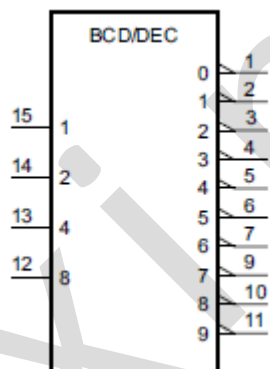


Figure 2. IEC logic symbol

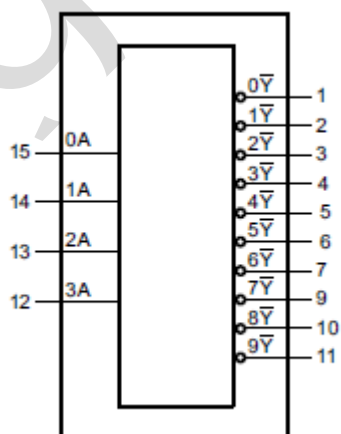


Figure 3. Functional diagram

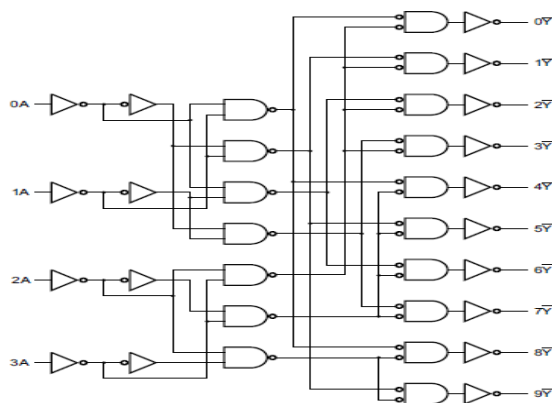
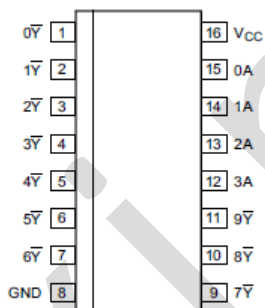


Figure 4. Logic diagram

## 2.2、Pin Configurations



## 2.3、Pin Description

Pin No.	Pin Name	Description
1	$0\bar{Y}$	multiplexer output
2	$1\bar{Y}$	multiplexer output
3	$2\bar{Y}$	multiplexer output
4	$3\bar{Y}$	multiplexer output
5	$4\bar{Y}$	multiplexer output
6	$5\bar{Y}$	multiplexer output
7	$6\bar{Y}$	multiplexer output
8	GND	ground (0V)
9	$7\bar{Y}$	multiplexer output
10	$8\bar{Y}$	multiplexer output
11	$9\bar{Y}$	multiplexer output
12	3A	data input
13	2A	data input
14	1A	data input
15	0A	data input
16	V <sub>CC</sub>	supply voltage



## 2.4、Function Table

Input				Output									
3A	2A	1A	0A	0 $\bar{Y}$	1 $\bar{Y}$	2 $\bar{Y}$	3 $\bar{Y}$	4 $\bar{Y}$	5 $\bar{Y}$	6 $\bar{Y}$	7 $\bar{Y}$	8 $\bar{Y}$	9 $\bar{Y}$
L	L	L	L	L	H	H	H	H	H	H	H	H	H
L	L	L	H	H	L	H	H	H	H	H	H	H	H
L	L	H	L	H	H	L	H	H	H	H	H	H	H
L	L	H	H	H	H	H	L	H	H	H	H	H	H
L	H	L	L	H	H	H	H	L	H	H	H	H	H
L	H	L	H	H	H	H	H	H	L	H	H	H	H
L	H	H	L	H	H	H	H	H	H	L	H	H	H
L	H	H	H	H	H	H	H	H	H	H	L	H	H
H	L	L	L	H	H	H	H	H	H	H	H	L	H
H	L	L	H	H	H	H	H	H	H	H	H	H	L
H	L	H	L	H	H	H	H	H	H	H	H	H	H
H	L	H	H	H	H	H	H	H	H	H	H	H	H
H	H	L	L	H	H	H	H	H	H	H	H	H	H
H	H	L	H	H	H	H	H	H	H	H	H	H	H
H	H	H	L	H	H	H	H	H	H	H	H	H	H
H	H	H	H	H	H	H	H	H	H	H	H	H	H

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

## 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	$I_O$	$-0.5V < V_O < V_{CC}+0.5V$	-	$\pm 25$	mA
supply current	$I_{CC}$	-	-	+50	mA
ground current	$I_{GND}$	-	-50	-	mA
storage temperature	$T_{stg}$	-	-65	+150	$^{\circ}C$
total power dissipation	$P_{tot}$	-	-	500	mW
soldering temperature	$T_L$	10s	DIP	245	$^{\circ}C$
			SOP/TSSOP	260	





### 3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>SN74HC42</b>						
supply voltage	$V_{CC}$	-	2.0	5.0	6.0	V
input voltage	$V_I$	-	0	-	$V_{CC}$	V
output voltage	$V_O$	-	0	-	$V_{CC}$	V
input transition rise and fall rate	$\Delta t/\Delta V$	$V_{CC}=2.0V$	-	-	625	ns/V
		$V_{CC}=4.5V$	-	1.67	139	ns/V
		$V_{CC}=6.0V$	-	-	83	ns/V
ambient temperature	$T_{amb}$	-	-40	-	+125	°C
<b>SN74HCT42</b>						
supply voltage	$V_{CC}$	-	4.5	5.0	5.5	V
input voltage	$V_I$	-	0	-	$V_{CC}$	V
output voltage	$V_O$	-	0	-	$V_{CC}$	V
input transition rise and fall rate	$\Delta t/\Delta V$	$V_{CC}=4.5V$	-	1.67	139	ns/V
ambient temperature	$T_{amb}$	-	-40	-	+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	
<b>SN74HC42</b>							
HIGH-level input voltage	$V_{IH}$	$V_{CC}=2.0V$	1.5	1.2	-	V	
		$V_{CC}=4.5V$	3.15	2.4	-	V	
		$V_{CC}=6.0V$	4.2	3.2	-	V	
LOW-level input voltage	$V_{IL}$	$V_{CC}=2.0V$	-	0.8	0.5	V	
		$V_{CC}=4.5V$	-	2.1	1.35	V	
		$V_{CC}=6.0V$	-	2.8	1.8	V	
HIGH-level output voltage	$V_{OH}$	$V_I=V_{IH}$ or $V_{IL}$	$I_O=-20\mu A; V_{CC}=2.0V$	1.9	2.0	-	V
			$I_O=-20\mu A; V_{CC}=4.5V$	4.4	4.5	-	V
			$I_O=-20\mu A; V_{CC}=6.0V$	5.9	6.0	-	V
			$I_O=-4.0mA; V_{CC}=4.5V$	3.98	4.32	-	V
			$I_O=-5.2mA; V_{CC}=6.0V$	5.48	5.81	-	V
LOW-level output voltage	$V_{OL}$	$V_I=V_{IH}$ or $V_{IL}$	$I_O=20\mu A; V_{CC}=2.0V$	-	0	0.1	V
			$I_O=20\mu A; V_{CC}=4.5V$	-	0	0.1	V
			$I_O=20\mu A; V_{CC}=6.0V$	-	0	0.1	V
			$I_O=4.0mA; V_{CC}=4.5V$	-	0.15	0.26	V
			$I_O=5.2mA; V_{CC}=6.0V$	-	0.16	0.26	V
input leakage current	$I_I$	$V_I=V_{CC}$ or GND; $V_{CC}=6.0V$	-	-	$\pm 1.0$	$\mu A$	
supply current	$I_{CC}$	$V_I=V_{CC}$ or GND; $I_O=0A; V_{CC}=6.0V$	-	-	8.0	$\mu A$	
input capacitance	$C_I$	-	-	3.5	-	pF	
<b>SN74HCT42</b>							



HIGH-level input voltage	$V_{IH}$	$V_{CC}=4.5V$ to $5.5V$	2.0	1.6	-	V	
LOW-level input voltage	$V_{IL}$	$V_{CC}=4.5V$ to $5.5V$	-	1.2	0.8	V	
HIGH-level output voltage	$V_{OH}$	$V_I=V_{IH}$ or $V_{IL}$ ; $V_{CC}=4.5V$	$I_O=-20\mu A$	4.4	4.5	-	V
			$I_O=-4.0mA$	3.98	4.32	-	V
LOW-level output voltage	$V_{OL}$	$V_I=V_{IH}$ or $V_{IL}$ ; $V_{CC}=4.5V$	$I_O=20\mu A$	-	0	0.1	V
			$I_O=4.0mA$	-	0.16	0.26	V
input leakage current	$I_I$	$V_I=V_{CC}$ or GND; $V_{CC}=5.5V$	-	-	$\pm 1.0$	$\mu A$	
supply current	$I_{CC}$	$V_I=V_{CC}$ or GND; $I_O=0A$ ; $V_{CC}=5.5V$	-	-	8.0	$\mu A$	
additional supply current	$\Delta I_{CC}$	$V_I=V_{CC}-2.1V$ ; other inputs at $V_{CC}$ or GND; $I_O=0A$ ; $V_{CC}=4.5V$ to $5.5V$	-	-	360	$\mu A$	
input capacitance	$C_I$	-	-	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	
<b>SN74HC42</b>							
HIGH-level input voltage	$V_{IH}$	$V_{CC}=2.0V$	1.5	-	-	V	
		$V_{CC}=4.5V$	3.15	-	-	V	
		$V_{CC}=6.0V$	4.2	-	-	V	
LOW-level input voltage	$V_{IL}$	$V_{CC}=2.0V$	-	-	0.5	V	
		$V_{CC}=4.5V$	-	-	1.35	V	
		$V_{CC}=6.0V$	-	-	1.8	V	
HIGH-level output voltage	$V_{OH}$	$V_I=V_{IH}$ or $V_{IL}$	$I_O=-20\mu A$ ; $V_{CC}=2.0V$	1.9	-	-	V
			$I_O=-20\mu A$ ; $V_{CC}=4.5V$	4.4	-	-	V
			$I_O=-20\mu A$ ; $V_{CC}=6.0V$	5.9	-	-	V
			$I_O=-4.0mA$ ; $V_{CC}=4.5V$	3.84	-	-	V
			$I_O=-5.2mA$ ; $V_{CC}=6.0V$	5.34	-	-	V
LOW-level output voltage	$V_{OL}$	$V_I=V_{IH}$ or $V_{IL}$	$I_O=20\mu A$ ; $V_{CC}=2.0V$	-	-	0.1	V
			$I_O=20\mu A$ ; $V_{CC}=4.5V$	-	-	0.1	V
			$I_O=20\mu A$ ; $V_{CC}=6.0V$	-	-	0.1	V
			$I_O=4.0mA$ ; $V_{CC}=4.5V$	-	-	0.33	V
			$I_O=5.2mA$ ; $V_{CC}=6.0V$	-	-	0.33	V
input leakage current	$I_I$	$V_I=V_{CC}$ or GND; $V_{CC}=6.0V$	-	-	$\pm 1.0$	$\mu A$	
supply current	$I_{CC}$	$V_I=V_{CC}$ or GND; $I_O=0A$ ; $V_{CC}=6.0V$	-	-	80	$\mu A$	
<b>SN74HCT42</b>							
HIGH-level input voltage	$V_{IH}$	$V_{CC}=4.5V$ to $5.5V$	2.0	-	-	V	
LOW-level input voltage	$V_{IL}$	$V_{CC}=4.5V$ to $5.5V$	-	-	0.8	V	
HIGH-level output voltage	$V_{OH}$	$V_I=V_{IH}$ or $V_{IL}$ ; $V_{CC}=4.5V$	$I_O=-20\mu A$	4.4	-	-	V
			$I_O=-4.0mA$	3.84	-	-	V



LOW-level output voltage	$V_{OL}$	$V_I=V_{IH}$ or $V_{IL}$ ; $V_{CC}=4.5V$	$I_O=20\mu A$	-	-	0.1	V
			$I_O=4.0mA$	-	-	0.33	V
input leakage current	$I_I$	$V_I=V_{CC}$ or GND; $V_{CC}=5.5V$	-	-	$\pm 1.0$	$\mu A$	
supply current	$I_{CC}$	$V_I=V_{CC}$ or GND; $I_O=0A$ ; $V_{CC}=5.5V$	-	-	80	$\mu A$	
additional supply current	$\Delta I_{CC}$	$V_I=V_{CC}-2.1V$ ; other inputs at $V_{CC}$ or GND; $I_O=0A$ ; $V_{CC}=4.5V$ to $5.5V$	-	-	450	$\mu A$	

### 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	
<b>SN74HC42</b>							
HIGH-level input voltage	$V_{IH}$	$V_{CC}=2.0V$	1.5	-	-	V	
		$V_{CC}=4.5V$	3.15	-	-	V	
		$V_{CC}=6.0V$	4.2	-	-	V	
LOW-level input voltage	$V_{IL}$	$V_{CC}=2.0V$	-	-	0.5	V	
		$V_{CC}=4.5V$	-	-	1.35	V	
		$V_{CC}=6.0V$	-	-	1.8	V	
HIGH-level output voltage	$V_{OH}$	$V_I=V_{IH}$ or $V_{IL}$	$I_O=-20\mu A$ ; $V_{CC}=2.0V$	1.9	-	-	V
			$I_O=-20\mu A$ ; $V_{CC}=4.5V$	4.4	-	-	V
			$I_O=-20\mu A$ ; $V_{CC}=6.0V$	5.9	-	-	V
			$I_O=-4.0mA$ ; $V_{CC}=4.5V$	3.7	-	-	V
			$I_O=-5.2mA$ ; $V_{CC}=6.0V$	5.2	-	-	V
LOW-level output voltage	$V_{OL}$	$V_I=V_{IH}$ or $V_{IL}$	$I_O=20\mu A$ ; $V_{CC}=2.0V$	-	-	0.1	V
			$I_O=20\mu A$ ; $V_{CC}=4.5V$	-	-	0.1	V
			$I_O=20\mu A$ ; $V_{CC}=6.0V$	-	-	0.1	V
			$I_O=4.0mA$ ; $V_{CC}=4.5V$	-	-	0.4	V
			$I_O=5.2mA$ ; $V_{CC}=6.0V$	-	-	0.4	V
input leakage current	$I_I$	$V_I=V_{CC}$ or GND; $V_{CC}=6.0V$	-	-	$\pm 1.0$	$\mu A$	
supply current	$I_{CC}$	$V_I=V_{CC}$ or GND; $I_O=0A$ ; $V_{CC}=6.0V$	-	-	160	$\mu A$	
<b>SN74HCT42</b>							
HIGH-level input voltage	$V_{IH}$	$V_{CC}=4.5V$ to $5.5V$	2.0	-	-	V	
LOW-level input voltage	$V_{IL}$	$V_{CC}=4.5V$ to $5.5V$	-	-	0.8	V	
HIGH-level output voltage	$V_{OH}$	$V_I=V_{IH}$ or $V_{IL}$ ; $V_{CC}=4.5V$	$I_O=-20\mu A$	4.4	-	-	V
			$I_O=-4.0mA$	3.7	-	-	V
LOW-level output voltage	$V_{OL}$	$V_I=V_{IH}$ or $V_{IL}$ ; $V_{CC}=4.5V$	$I_O=20\mu A$	-	-	0.1	V
			$I_O=4.0mA$	-	-	0.4	V
input leakage current	$I_I$	$V_I=V_{CC}$ or GND; $V_{CC}=5.5V$	-	-	$\pm 1.0$	$\mu A$	
supply current	$I_{CC}$	$V_I=V_{CC}$ or GND; $I_O=0A$ ; $V_{CC}=5.5V$	-	-	160	$\mu A$	
additional supply current	$\Delta I_{CC}$	$V_I=V_{CC}-2.1V$ ; other inputs at $V_{CC}$ or GND; $I_O=0A$ ; $V_{CC}=4.5V$ to $5.5V$	-	-	490	$\mu A$	



### 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>SN74HC42</b>							
nA to n $\bar{Y}$ propagation delay	$t_{pd}$	see Figure 6 <sup>[1]</sup>	$V_{CC}=2.0V$	-	47	150	ns
			$V_{CC}=4.5V$	-	17	30	ns
			$V_{CC}=5.0V$ ; $C_L=15pF$	-	17	-	ns
			$V_{CC}=6.0V$	-	14	26	ns
transition time	$t_t$	see Figure 6 <sup>[2]</sup>	$V_{CC}=2.0V$	-	19	75	ns
			$V_{CC}=4.5V$	-	7	15	ns
			$V_{CC}=6.0V$	-	6	13	ns
power dissipation capacitance	$C_{PD}$	per package; $V_I=GND$ to $V_{CC}$ <sup>[3]</sup>	-	37	-	pF	
<b>SN74HCT42</b>							
nA to n $\bar{Y}$ propagation delay	$t_{pd}$	see Figure 6 <sup>[1]</sup>	$V_{CC}=4.5V$	-	20	35	ns
			$V_{CC}=5.0V$ ; $C_L=15pF$	-	17	-	ns
transition time	$t_t$	$V_{CC}=4.5V$ ; see Figure 6 <sup>[2]</sup>	-	7	15	ns	
power dissipation capacitance	$C_{PD}$	per package; $V_I=GND$ to $V_{CC}-1.5V$ <sup>[3]</sup>	-	37	-	pF	

Note:

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

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

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

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

$f_i$ =input frequency in MHz;

$f_o$ =output frequency in MHz;

$C_L$ =output load capacitance in pF;

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

$N$ =number of inputs switching;

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



### 3.3.5、AC Characteristics 2

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
<b>SN74HC42</b>							
nA to n $\bar{\text{Y}}$ propagation delay	$t_{pd}$	see Figure 6 <sup>[1]</sup>	$V_{CC}=2.0\text{V}$	-	-	190	ns
			$V_{CC}=4.5\text{V}$	-	-	38	ns
			$V_{CC}=6.0\text{V}$	-	-	33	ns
transition time	$t_t$	see Figure 6 <sup>[2]</sup>	$V_{CC}=2.0\text{V}$	-	-	95	ns
			$V_{CC}=4.5\text{V}$	-	-	19	ns
			$V_{CC}=6.0\text{V}$	-	-	16	ns
<b>SN74HCT42</b>							
nA to n $\bar{\text{Y}}$ propagation delay	$t_{pd}$	see Figure 6 <sup>[1]</sup>	$V_{CC}=4.5\text{V}$	-	-	44	ns
transition time	$t_t$	$V_{CC}=4.5\text{V}$ ; see Figure 6 <sup>[2]</sup>		-	-	19	ns

Note:

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

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

### 3.3.6、AC Characteristics 3

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
<b>SN74HC42</b>							
nA to n $\bar{\text{Y}}$ propagation delay	$t_{pd}$	see Figure 6 <sup>[1]</sup>	$V_{CC}=2.0\text{V}$	-	-	225	ns
			$V_{CC}=4.5\text{V}$	-	-	45	ns
			$V_{CC}=6.0\text{V}$	-	-	38	ns
transition time	$t_t$	see Figure 6 <sup>[2]</sup>	$V_{CC}=2.0\text{V}$	-	-	110	ns
			$V_{CC}=4.5\text{V}$	-	-	22	ns
			$V_{CC}=6.0\text{V}$	-	-	19	ns
<b>SN74HCT42</b>							
nA to n $\bar{\text{Y}}$ propagation delay	$t_{pd}$	see Figure 6 <sup>[1]</sup>	$V_{CC}=4.5\text{V}$	-	-	53	ns
transition time	$t_t$	$V_{CC}=4.5\text{V}$ ; see Figure 6 <sup>[2]</sup>		-	-	22	ns

Note:

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

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

## 4、Testing Circuit

### 4.1、AC Testing Circuit

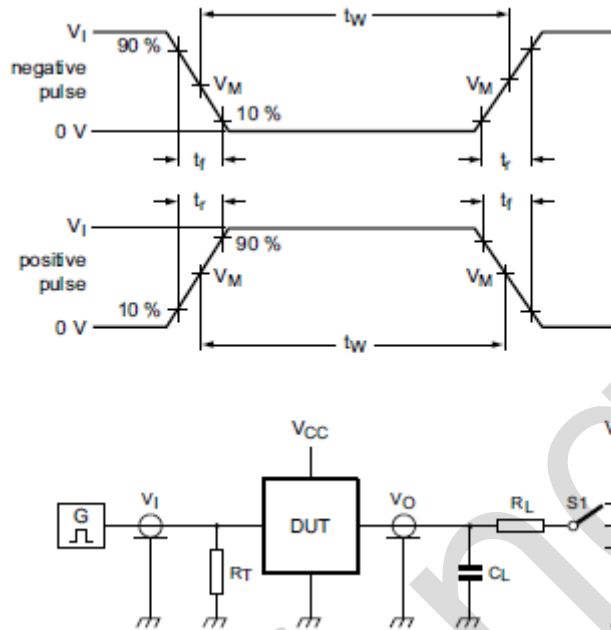


Figure 5. Test circuit for measuring switching times

Definitions for test circuit:

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

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

$R_L$ =Load resistance.

S1=Test selection switch

### 4.2、AC Testing Waveforms

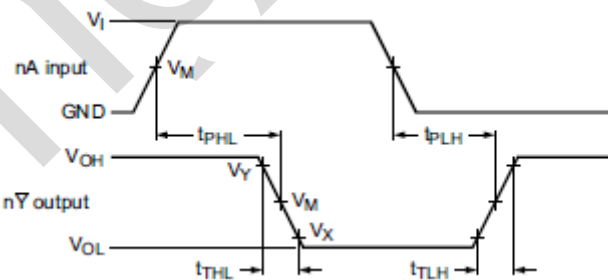


Figure 6. Input (nA) to output (nY) propagation delays and output transition times



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#### 4.3、Measurement Points

Type	Input	Output		
	$V_M$	$V_M$	$V_X$	$V_Y$
SN74HC42	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$0.1 \times V_{CC}$	$0.9 \times V_{CC}$
SN74HCT42	1.3V	1.3V	$0.1 \times V_{CC}$	$0.9 \times V_{CC}$

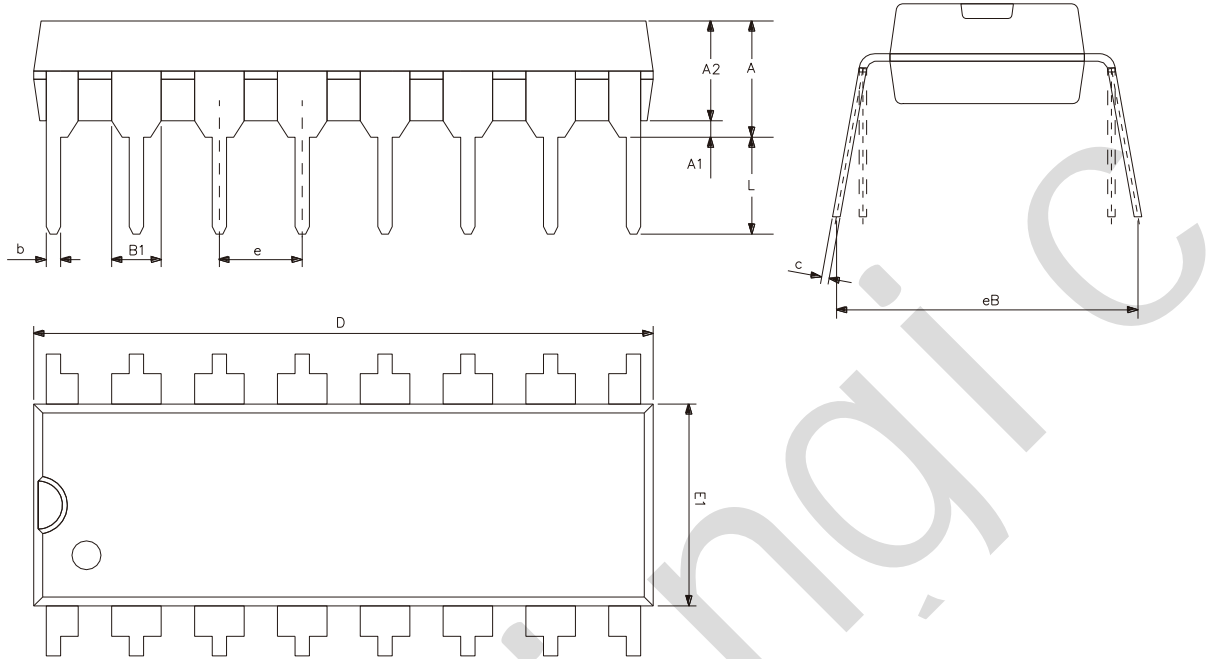
#### 4.4、Test Data

Type	Input		Load		S1 position
	$V_I$	$t_r, t_f$	$C_L$	$R_L$	$t_{PLH}, t_{PHL}$
SN74HC42	$V_{CC}$	6ns	15pF, 50pF	1k $\Omega$	open
SN74HCT42	3V	6ns	15pF, 50pF	1k $\Omega$	open



## 5、Package Information

### 5.1、DIP16



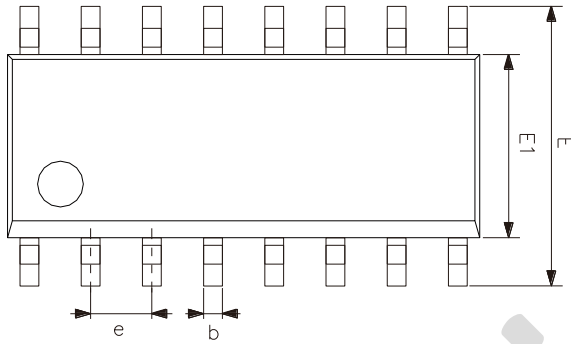
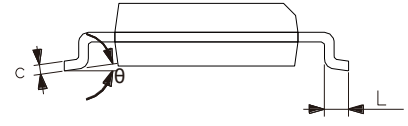
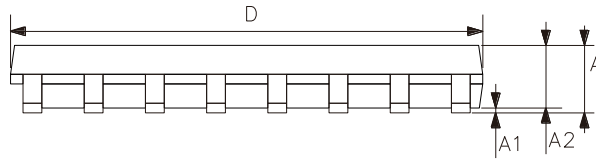
Symbol	Dimensions (mm)	
	Min.	Max.
A2	3.20	3.60
A1	0.51	-
A	3.60	5.33
L	3.00	3.60
b	0.36	0.56
B1	1.52	
D	18.80	19.94
E1	6.20	6.60
e	2.54	
c	0.20	0.36
eB	7.62	9.30





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5.2、SOP16

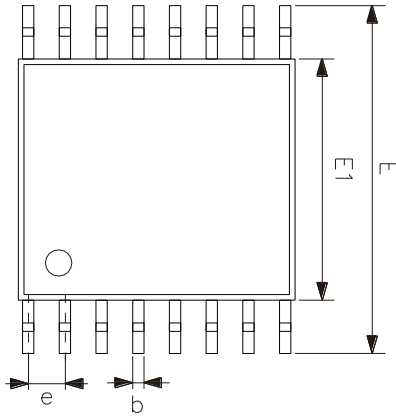
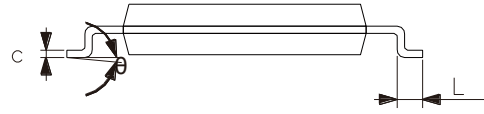
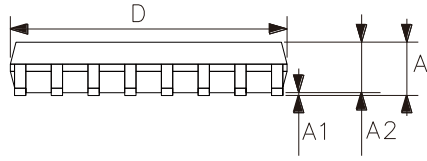


Symbol	Dimensions (mm)	
	Min.	Max.
A	1.35	1.80
A1	0.10	0.25
A2	1.25	1.55
b	0.33	0.51
c	0.19	0.25
D	9.50	10.10
E	5.80	6.30
E1	3.70	4.10
e	1.27	
L	0.35	0.89
θ	0°	8°



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### 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	○: Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard. ×: Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements.									

### 6.2、 Notes

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[XD74C922](#) [SN74LVC1G19DBVR\(UMW\)](#) [RS1G157XC6](#) [74HC151M/TR](#) [AiP74HC237TA16.TB](#) [74HC138DRG](#) [AiP74LVC138TA16.TB](#)  
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