

General Description

The SN74HC/HCT157 are quad 2-input multiplexers which select 4 bits of data from two sources under the control of a common data select input (S). The enable input (\bar{E}) is active LOW. When \bar{E} is HIGH, all of the outputs (1Y to 4Y) are forced LOW regardless of all other input conditions.

Moving the data from two groups of registers to four common output buses is a common use of the SN74HC/HCT157. The state of the common data select input (S) determines the particular register from which the data comes. It can also be used as function generator. The device is useful for implementing highly irregular logic by generating any four of the 16 different functions of two variables with one variable common. The SN74HC/HCT157 is logic implementation of a 4-pole, 2-position switch, where the position of the switch is determined by the logic levels applied to S.

The logic equations are:

$$1Y = \bar{E} \times (1I1 \times S + 1I0 \times \bar{S})$$

$$2Y = \bar{E} \times (2I1 \times S + 2I0 \times \bar{S})$$

$$3Y = \bar{E} \times (3I1 \times S + 3I0 \times \bar{S})$$

$$4Y = \bar{E} \times (4I1 \times S + 4I0 \times \bar{S})$$

The SN74HC/HCT157 is identical to the SN74HC/HCT158 but has non-inverting (true) outputs.

Features

- Input levels:
 - For SN74HC157: CMOS level
 - For SN74HCT157: TTL level
- Low-power dissipation
- Non-inverting data path
- Specified from -40C to +105C
- Packaging information: DIP16/SOP16/TSSOP16

Ordering Information

DEVICE	Package Type	MARKING	Packing	Packing QTY
SN74HC157N	DIP-16	74HC157N	Tube	1000/Box
SN74HC157DTR	SOP-16	74HC157	Tape	2500/Reel
SN74HCT157DTR	SOP-16	74HCT157	Tape	2500/Reel
SN74HCT157TDTR	TSSOP-16	74HCT157	Tape	3000/Reel

2、Block Diagram And Pin Description

2.1、Block Diagram

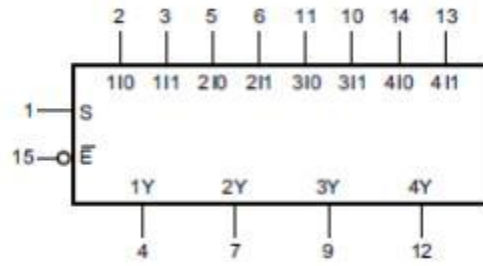


Figure 1. Logic symbol



Figure 2. IEC logic symbol

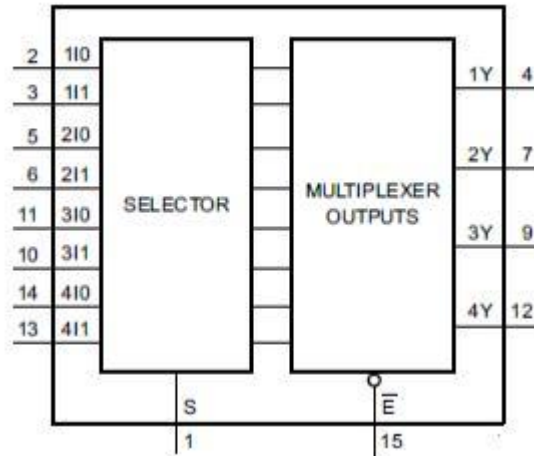


Figure 3. Functional diagram

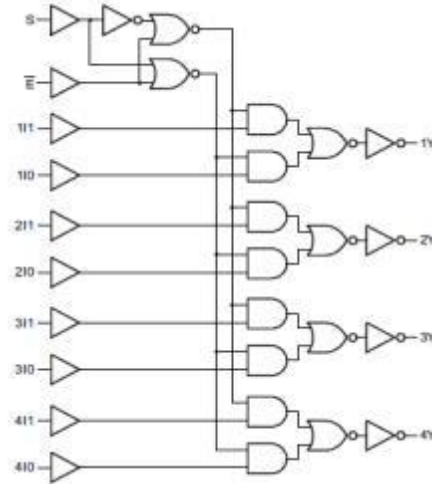
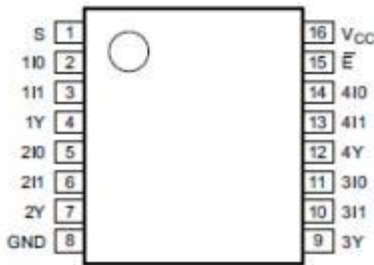


Figure 4. Logic diagram

2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	S	common data select input
2	1I0	data input from source 0
3	1I1	data input from source 1
4	1Y	multiplexer output
5	2I0	data input from source 0
6	2I1	data input from source 1
7	2Y	multiplexer output
8	GND	ground (0V)
9	3Y	multiplexer output
10	3I1	data input from source 1
11	3I0	data input from source 0
12	4Y	multiplexer output
13	4I1	data input from source 1
14	4I0	data input from source 0
15	\bar{E}	enable input (active LOW)
16	V _{CC}	supply voltage

2.4、Function Table

Input				Output
\bar{E}	S	nI0	nI1	nY
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

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

3、Electrical Parameter

3.1、Absolute Maximum Ratings

(Voltages are referenced to GND (ground=0V), unless otherwise specified.)

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

Note:

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

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

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

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
SN74HC157						
supply voltage	V_{CC}	-	2.0	5.0	6.0	V
input voltage	V_I	-	0	-	V_{CC}	V
output voltage	V_O	-	0	-	V_{CC}	V
input transition rise and fall rate	$\Delta t/\Delta V$	$V_{CC}=2.0V$	-	-	625	ns/V
		$V_{CC}=4.5V$	-	1.67	139	ns/V
		$V_{CC}=6.0V$	-	-	83	ns/V
ambient temperature	T_{amb}	-	-40	-	+105	C
SN74HCT157						
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	-	+105	C

3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
SN74HC157							
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; $V_{CC}=6.0V$	-	-	± 0.1	μA	
supply current	I_{CC}	$V_I=V_{CC}$ or GND; $I_O=0A; V_{CC}=6.0V$	-	-	8.0	μA	
input capacitance	C_I	-	-	3.5	-	pF	
SN74HCT157							

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
SN74HC157						
supply voltage	V_{CC}	-	2.0	5.0	6.0	V
input voltage	V_I	-	0	-	V_{CC}	V
output voltage	V_O	-	0	-	V_{CC}	V
input transition rise and fall rate	$\Delta t/\Delta V$	$V_{CC}=2.0V$	-	-	625	ns/V
		$V_{CC}=4.5V$	-	1.67	139	ns/V
		$V_{CC}=6.0V$	-	-	83	ns/V
ambient temperature	T_{amb}	-	-40	-	+105	C
SN74HCT157						
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	-	+105	C

3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
SN74HC157							
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; $V_{CC}=6.0V$	-	-	± 0.1	μA	
supply current	I_{CC}	$V_I=V_{CC}$ or GND; $I_O=0A; V_{CC}=6.0V$	-	-	8.0	μA	
input capacitance	C_I	-	-	3.5	-	pF	
SN74HCT157							

HIGH-level input voltage	V_{IH}	$V_{CC}=4.5V$ to $5.5V$	2.0	1.6	-	V	
LOW-level input voltage	V_{IL}	$V_{CC}=4.5V$ to $5.5V$	-	1.2	0.8	V	
HIGH-level output voltage	V_{OH}	$V_I=V_{IH}$ or $V_{IL}; V_{CC}=4.5V$	$I_O=-20\mu A$	4.4	4.5	-	V
			$I_O=-4.0mA$	3.98	4.32	-	V
LOW-level output voltage	V_{OL}	$V_I=V_{IH}$ or $V_{IL}; V_{CC}=4.5V$	$I_O=20\mu A$	-	0	0.1	V
			$I_O=4.0mA$	-	0.15	0.26	V
input leakage current	I_I	$V_I=V_{CC}$ or GND; $V_{CC}=5.5V$	-	-	± 0.1	μA	
supply current	I_{CC}	$V_I=V_{CC}$ or GND; $I_O=0A; V_{CC}=5.5V$	-	-	8.0	μA	
additional supply current	ΔI_{CC}	$V_I=V_{CC}-2.1V;$ other inputs at V_{CC} or GND; $I_O=0A;$ $V_{CC}=4.5V$ to $5.5V$	per input pin; nI0, nI1 inputs	-	100	360	μA
			per input pin; \bar{E} input	-	60	216	μA
			per input pin; S input	-	100	360	μA
input capacitance	C_I	-	-	3.5	-	pF	

3.3.2、DC Characteristics 2

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
SN74HC157							
HIGH-level input voltage	V_{IH}	$V_{CC}=2.0\text{V}$	1.5	-	-	V	
		$V_{CC}=4.5\text{V}$	3.15	-	-	V	
		$V_{CC}=6.0\text{V}$	4.2	-	-	V	
LOW-level input voltage	V_{IL}	$V_{CC}=2.0\text{V}$	-	-	0.5	V	
		$V_{CC}=4.5\text{V}$	-	-	1.35	V	
		$V_{CC}=6.0\text{V}$	-	-	1.8	V	
HIGH-level output voltage	V_{OH}	$V_I=V_{IH}$ or V_{IL}	$I_O=-20\mu\text{A}; V_{CC}=2.0\text{V}$	1.9	-	-	V
			$I_O=-20\mu\text{A}; V_{CC}=4.5\text{V}$	4.4	-	-	V
			$I_O=-20\mu\text{A}; V_{CC}=6.0\text{V}$	5.9	-	-	V
			$I_O=-4.0\text{mA}; V_{CC}=4.5\text{V}$	3.84	-	-	V
			$I_O=-5.2\text{mA}; V_{CC}=6.0\text{V}$	5.34	-	-	V
LOW-level output voltage	V_{OL}	$V_I=V_{IH}$ or V_{IL}	$I_O=20\mu\text{A}; V_{CC}=2.0\text{V}$	-	-	0.1	V
			$I_O=20\mu\text{A}; V_{CC}=4.5\text{V}$	-	-	0.1	V
			$I_O=20\mu\text{A}; V_{CC}=6.0\text{V}$	-	-	0.1	V
			$I_O=4.0\text{mA}; V_{CC}=4.5\text{V}$	-	-	0.33	V
			$I_O=5.2\text{mA}; V_{CC}=6.0\text{V}$	-	-	0.33	V
input leakage current	I_I	$V_I=V_{CC}$ or GND; $V_{CC}=6.0\text{V}$	-	-	± 1.0	μA	
supply current	I_{CC}	$V_I=V_{CC}$ or GND; $I_O=0\text{A}; V_{CC}=6.0\text{V}$	-	-	80	μA	
SN74HCT157							
HIGH-level input voltage	V_{IH}	$V_{CC}=4.5\text{V}$ to 5.5V	2.0	-	-	V	
LOW-level input voltage	V_{IL}	$V_{CC}=4.5\text{V}$ to 5.5V	-	-	0.8	V	

HIGH-level output voltage	V_{OH}	$V_I=V_{IH}$ or $V_{IL}; V_{CC}=4.5\text{V}$	$I_O=-20\mu\text{A}$	4.4	-	-	V
			$I_O=-4.0\text{mA}$	3.84	-	-	V
LOW-level output voltage	V_{OL}	$V_I=V_{IH}$ or $V_{IL}; V_{CC}=4.5\text{V}$	$I_O=20\mu\text{A}$	-	-	0.1	V
			$I_O=4.0\text{mA}$	-	-	0.33	V
input leakage current	I_I	$V_I=V_{CC}$ or GND; $V_{CC}=5.5\text{V}$	-	-	± 1.0	μA	
supply current	I_{CC}	$V_I=V_{CC}$ or GND; $I_O=0\text{A}; V_{CC}=5.5\text{V}$	-	-	80	μA	
additional supply current	ΔI_{CC}	$V_I=V_{CC}-2.1\text{V};$ other inputs at V_{CC} or GND; $I_O=0\text{A};$ $V_{CC}=4.5\text{V}$ to 5.5V	per input pin; n10, n11 inputs	-	-	450	μA
			per input pin; \bar{E} input	-	-	270	μA
			per input pin; S input	-	-	450	μA

3.3.3、DC Characteristics 3

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
SN74HC157							
HIGH-level input voltage	V_{IH}	$V_{CC}=2.0\text{V}$	1.5	-	-	V	
		$V_{CC}=4.5\text{V}$	3.15	-	-	V	
		$V_{CC}=6.0\text{V}$	4.2	-	-	V	
LOW-level input voltage	V_{IL}	$V_{CC}=2.0\text{V}$	-	-	0.5	V	
		$V_{CC}=4.5\text{V}$	-	-	1.35	V	
		$V_{CC}=6.0\text{V}$	-	-	1.8	V	
HIGH-level output voltage	V_{OH}	$V_I = V_{IH}$ or V_{IL}	$I_O = -20\mu\text{A}; V_{CC} = 2.0\text{V}$	1.9	-	-	V
			$I_O = -20\mu\text{A}; V_{CC} = 4.5\text{V}$	4.4	-	-	V
			$I_O = -20\mu\text{A}; V_{CC} = 6.0\text{V}$	5.9	-	-	V
			$I_O = -4.0\text{mA}; V_{CC} = 4.5\text{V}$	3.7	-	-	V
			$I_O = -5.2\text{mA}; V_{CC} = 6.0\text{V}$	5.2	-	-	V
LOW-level output voltage	V_{OL}	$V_I = V_{IH}$ or V_{IL}	$I_O = 20\mu\text{A}; V_{CC} = 2.0\text{V}$	-	-	0.1	V
			$I_O = 20\mu\text{A}; V_{CC} = 4.5\text{V}$	-	-	0.1	V
			$I_O = 20\mu\text{A}; V_{CC} = 6.0\text{V}$	-	-	0.1	V
			$I_O = 4.0\text{mA}; V_{CC} = 4.5\text{V}$	-	-	0.4	V
			$I_O = 5.2\text{mA}; V_{CC} = 6.0\text{V}$	-	-	0.4	V
input leakage current	I_I	$V_I = V_{CC}$ or GND; $V_{CC} = 6.0\text{V}$	-	-	± 1.0	μA	
supply current	I_{CC}	$V_I = V_{CC}$ or GND; $I_O = 0\text{A}; V_{CC} = 6.0\text{V}$	-	-	160	μA	
SN74HCT157							
HIGH-level input voltage	V_{IH}	$V_{CC} = 4.5\text{V}$ to 5.5V	2.0	-	-	V	
LOW-level input voltage	V_{IL}	$V_{CC} = 4.5\text{V}$ to 5.5V	-	-	0.8	V	
HIGH-level output voltage	V_{OH}	$V_I = V_{IH}$ or $V_{IL}; V_{CC} = 4.5\text{V}$	$I_O = -20\mu\text{A}$	4.4	-	-	V
			$I_O = -4.0\text{mA}$	3.7	-	-	V
LOW-level output voltage	V_{OL}	$V_I = V_{IH}$ or $V_{IL}; V_{CC} = 4.5\text{V}$	$I_O = 20\mu\text{A}$	-	-	0.1	V
			$I_O = 4.0\text{mA}$	-	-	0.4	V
input leakage	I_I	$V_I = V_{CC}$ or GND; $V_{CC} = 5.5\text{V}$	-	-	± 1.0	μA	

current							
supply current	I_{CC}	$V_I = V_{CC}$ or GND; $I_O = 0\text{A}; V_{CC} = 5.5\text{V}$	-	-	160	μA	
additional supply current	ΔI_{CC}	$V_I = V_{CC} - 2.1\text{V};$ other inputs at V_{CC} or GND; $I_O = 0\text{A};$ $V_{CC} = 4.5\text{V}$ to 5.5V	per input pin; nI0, nI1 inputs	-	-	490	μA
			per input pin; \bar{E} input	-	-	294	μA
			per input pin; S input	-	-	490	μA

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	
SN74HC157							
propagation delay	t_{pd}	nI0, nI1 to nY; see Figure 6 ^[1]	$V_{CC}=2.0V$	-	36	125	ns
			$V_{CC}=4.5V$	-	13	25	ns
			$V_{CC}=5.0V$; $C_L=15pF$	-	11	-	ns
			$V_{CC}=6.0V$	-	10	21	ns
		S to nY; see Figure 6 ^[1]	$V_{CC}=2.0V$	-	41	125	ns
			$V_{CC}=4.5V$	-	15	25	ns
			$V_{CC}=5.0V$; $C_L=15pF$	-	12	-	ns
			$V_{CC}=6.0V$	-	12	21	ns
		\bar{E} to nY; see Figure 7 ^[1]	$V_{CC}=2.0V$	-	39	115	ns
			$V_{CC}=4.5V$	-	14	23	ns
			$V_{CC}=5.0V$; $C_L=15pF$	-	11	-	ns
			$V_{CC}=6.0V$	-	11	20	ns
transition time	t_t	nY; see Figure 6 ^[2]	$V_{CC}=2.0V$	-	19	75	ns
			$V_{CC}=4.5V$	-	7	15	ns
			$V_{CC}=6.0V$	-	6	13	ns
power dissipation capacitance	C_{PD}	$C_L=50pF$; $f=1MHz$; $V_I=GND$ to V_{CC} ^[3]	-	70	-	pF	
SN74HCT157							
propagation delay	t_{pd}	nI0, nI1 to nY; see Figure 6 ^[1]	$V_{CC}=4.5V$	-	16	27	ns
			$V_{CC}=5.0V$; $C_L=15pF$	-	13	-	ns
		S to nY; see Figure 6 ^[1]	$V_{CC}=4.5V$	-	22	37	ns
			$V_{CC}=5.0V$; $C_L=15pF$	-	19	-	ns
		\bar{E} to nY; see Figure 7 ^[1]	$V_{CC}=4.5V$	-	15	26	ns
			$V_{CC}=5.0V$; $C_L=15pF$	-	12	-	ns
transition time	t_t	nY; $V_{CC}=4.5V$; see Figure 6 ^[2]	-	7	15	ns	
power dissipation capacitance	C_{PD}	$C_L=50pF$; $f=1MHz$; $V_I=GND$ to $V_{CC}-1.5V$ ^[3]	-	70	-	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).

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

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 $+85^{\circ}\text{C}$, $GND=0\text{V}$, $C_L=50\text{pF}$, unless otherwise specified.)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
SN74HC157							
propagation delay	t_{pd}	nI0, nI1 to nY; see Figure 6 ^[1]	$V_{CC}=2.0\text{V}$	-	-	155	ns
			$V_{CC}=4.5\text{V}$	-	-	31	ns
			$V_{CC}=6.0\text{V}$	-	-	26	ns
		S to nY; see Figure 6 ^[1]	$V_{CC}=2.0\text{V}$	-	-	155	ns
			$V_{CC}=4.5\text{V}$	-	-	31	ns
			$V_{CC}=6.0\text{V}$	-	-	26	ns
		\bar{E} to nY; see Figure 7 ^[1]	$V_{CC}=2.0\text{V}$	-	-	145	ns
			$V_{CC}=4.5\text{V}$	-	-	29	ns
			$V_{CC}=6.0\text{V}$	-	-	25	ns
transition time	t_t	nY; see Figure 6 ^[2]	$V_{CC}=2.0\text{V}$	-	-	95	ns
			$V_{CC}=4.5\text{V}$	-	-	19	ns
			$V_{CC}=6.0\text{V}$	-	-	16	ns
SN74HCT157							
propagation delay	t_{pd}	nI0, nI1 to nY; see Figure 6 ^[1]	$V_{CC}=4.5\text{V}$	-	-	34	ns
		S to nY; see Figure 6 ^[1]	$V_{CC}=4.5\text{V}$	-	-	46	ns
		\bar{E} to nY; see Figure 7 ^[1]	$V_{CC}=4.5\text{V}$	-	-	33	ns
transition time	t_t	nY; $V_{CC}=4.5\text{V}$; see Figure 6 ^[2]	-	-	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 $+105^{\circ}\text{C}$, $GND=0\text{V}$, $C_L=50\text{pF}$, unless otherwise specified.)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
SN74HC157							
propagation delay	t_{pd}	nI0, nI1 to nY; see Figure 6 ^[1]	$V_{CC}=2.0\text{V}$	-	-	190	ns
			$V_{CC}=4.5\text{V}$	-	-	38	ns
			$V_{CC}=6.0\text{V}$	-	-	32	ns
		S to nY; see Figure 6 ^[1]	$V_{CC}=2.0\text{V}$	-	-	190	ns
			$V_{CC}=4.5\text{V}$	-	-	38	ns
			$V_{CC}=6.0\text{V}$	-	-	32	ns
		\bar{E} to nY; see Figure 7 ^[1]	$V_{CC}=2.0\text{V}$	-	-	175	ns
			$V_{CC}=4.5\text{V}$	-	-	35	ns
			$V_{CC}=6.0\text{V}$	-	-	30	ns
transition time	t_t	nY; see Figure 6 ^[2]	$V_{CC}=2.0\text{V}$	-	-	110	ns
			$V_{CC}=4.5\text{V}$	-	-	22	ns
			$V_{CC}=6.0\text{V}$	-	-	19	ns
SN74HCT157							
propagation delay	t_{pd}	nI0, nI1 to nY; see Figure 6 ^[1]	$V_{CC}=4.5\text{V}$	-	-	41	ns
		S to nY; see Figure 6 ^[1]	$V_{CC}=4.5\text{V}$	-	-	56	ns
		\bar{E} to nY; see Figure 7 ^[1]	$V_{CC}=4.5\text{V}$	-	-	39	ns
transition time	t_t	nY; $V_{CC}=4.5\text{V}$; see Figure 6 ^[2]	-	-	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

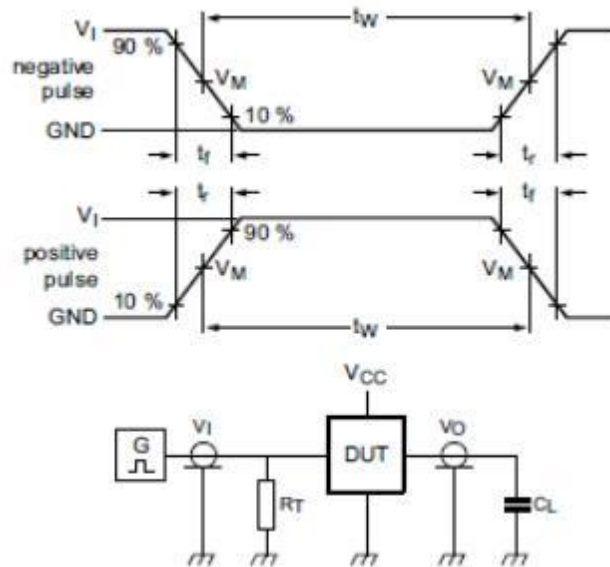


Figure 5. Test circuit for measuring switching times

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.

4.2、AC Testing Waveforms

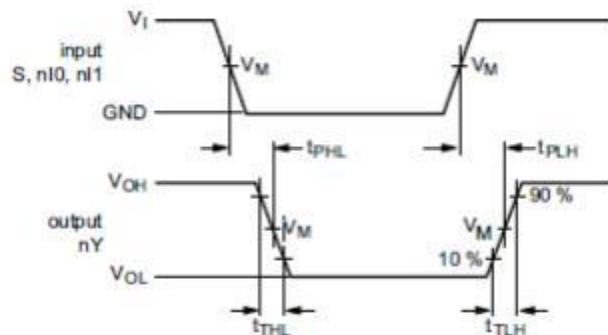


Figure 6. Propagation delay input (nI0, nI1, S) to output (nYn)

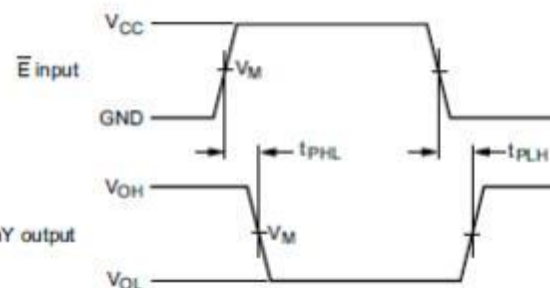
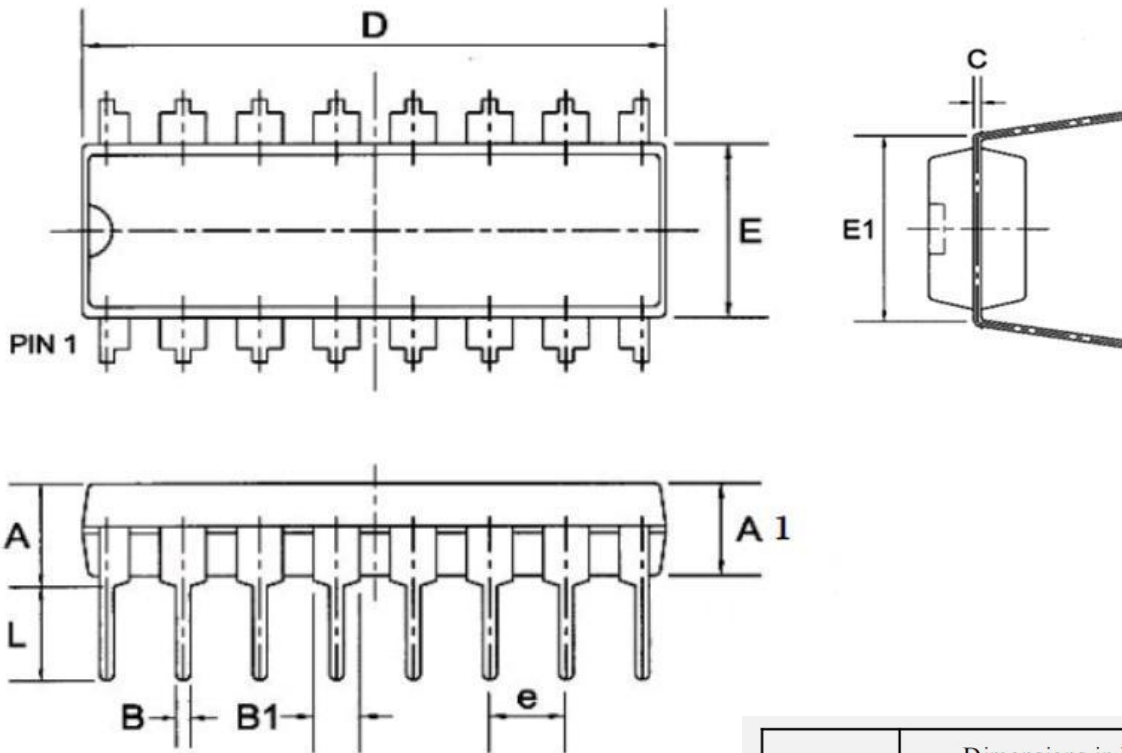


Figure 7. Propagation delay input (\bar{E}) to output (nY)

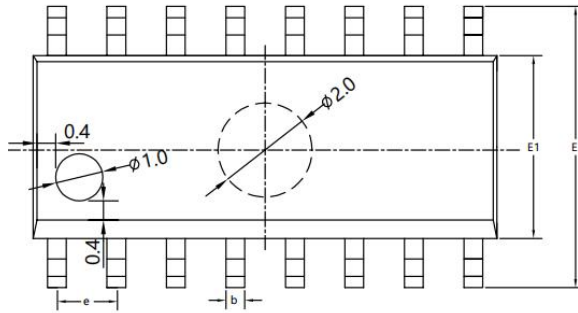
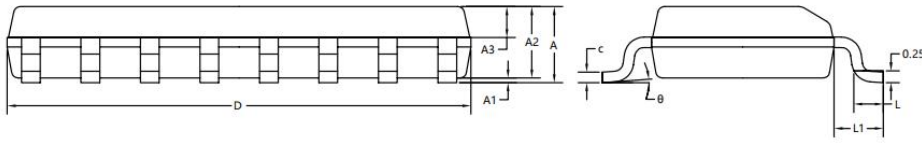
5、Package Information

5.1、DIP16



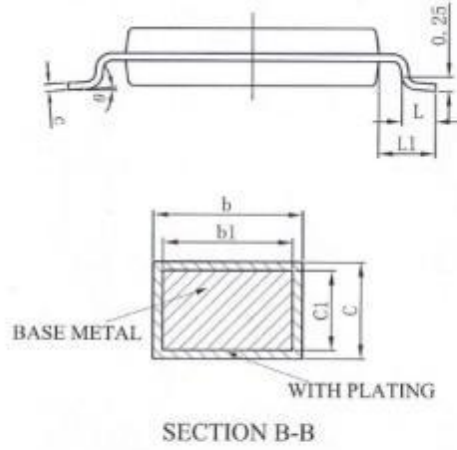
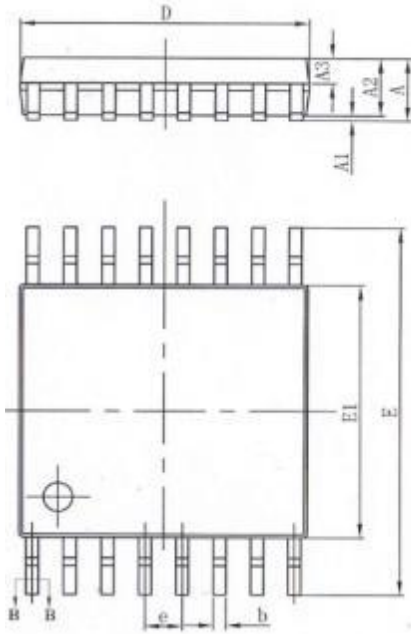
Symbol	Dimensions in Millimeters		
	Min	Nom	Max
A	--	--	4.31
A1	3.15	3.30	3.65
B	--	0.50	--
B1	--	1.6	--
C	--	0.27	--
D	19.00	19.20	19.60
E	6.20	6.50	6.60
E1	--	8.0	--
e	--	2.3	--
L	3.00	3.20	3.60

5.2、SOP16



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

5.3, TSSOP16



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.20
A1	0.05	—	0.15
A2	0.90	1.00	1.05
A3	0.39	0.44	0.49
b	0.20	—	0.28
b1	0.19	0.22	0.25
c	0.13	—	0.17
c1	0.12	0.13	0.14
D	4.90	5.00	5.10
E	6.20	6.40	6.60
E1	4.30	4.40	4.50
e	0.65BSC		
L	0.45	0.60	0.75
L1	1.00BSC		
θ	0	—	8°



Statement:

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