General Description

The SN74HC/HCT259 is an 8-bit addressable latch. The device features four modes of operation. In the addressable latch mode, data on the D input is written into the latch addressed by the inputs A0 to A3. The addressed latch will follow the data input, non-addressed latches will retain their previous states. In memory mode, all latches retain their previous states and are unaffected by the data or address inputs. In the 3-to-8 decoding or demultiplexing mode, the addressed output follows the D input and all other outputs are LOW. In the reset mode, all outputs are forced LOW and unaffected by the data or address inputs. 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 SN74HC259: CMOS level
  For SN74HCT259: TTL level
- Combined demultiplexer and 8-bit latch
- Serial-to-parallel capability
- Output from each storage bit available
- Random (addressable) data entry
- Easily expandable
- Common reset input
- Useful as a 3-to-8 active HIGH decoder
- Specified from -40C to +125C
- Packaging information: DIP16/SOP16/TSSOP16

Ordering Information

DEVICE	Package Type	MARKING	Packing	Packing QTY
SN74HC259N	DIP-16	74HC259N	Tube	1000/Box
SN74HC259DTR	SOP-16	74HC259	Tape	2500/Reel
SN74HCT259DTR	SOP-16	74HCT259	Tape	2500/Reel
SN74HCT259TDTR	TSSOP-16	74HCT259	Tape	3000/Reel

2 、Block Diagram And Pin Description

2.1、Block Diagram

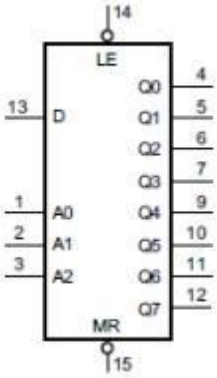


Figure 1. Logic symbol

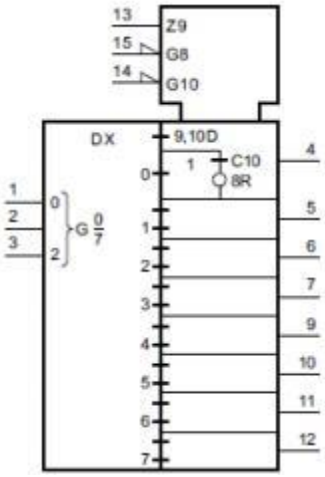


Figure 2. Functional diagram

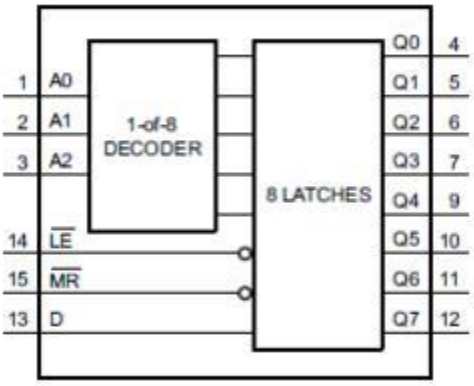
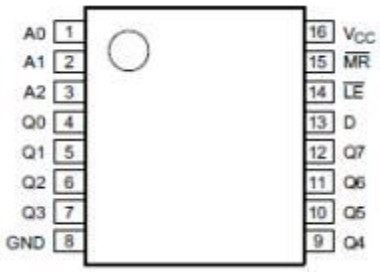


Figure 3. Functional diagram

2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	A0	address input
2	A1	address input
3	A2	address input
4	Q0	latch output
5	Q1	latch output
6	Q2	latch output
7	Q3	latch output
8	GND	ground (0V)
9	Q4	latch output
10	Q5	latch output
11	Q6	latch output
12	Q7	latch output
13	D	data input
14	$\overline{LE}$	latch enable input (active LOW)
15	$\overline{MR}$	conditional reset input (active LOW)
16	V_{CC}	supply voltage

2.4、Function Table

Operating mode	Input						Output							
	$\overline{MR}$	$\overline{LE}$	D	A0	A1	A2	Q0	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Reset (clear)	L	H	X	X	X	X	L	L	L	L	L	L	L	L
Demultiplexer (active HIGH 8-channel) decoder (when D=H)	L	L	d	L	L	L	Q=d	L	L	L	L	L	L	L
	L	L	d	H	L	L	L	Q=d	L	L	L	L	L	L
	L	L	d	L	H	L	L	L	Q=d	L	L	L	L	L
	L	L	d	H	H	L	L	L	L	Q=d	L	L	L	L
	L	L	d	L	L	H	L	L	L	L	Q=d	L	L	L
	L	L	d	H	L	H	L	L	L	L	L	Q=d	L	L
	L	L	d	L	H	H	L	L	L	L	L	L	Q=d	L
	L	L	d	H	H	H	L	L	L	L	L	L	L	Q=d
Memory	H	H	X	X	X	X	q_0	q_1	q_2	q_3	q_4	q_5	q_6	q_7

(no action)															
Addressable latch	H	L	d	L	L	L	Q=d	q_1	q_2	q_3	q_4	q_5	q_6	q_7
	H	L	d	H	L	L	q_0	Q=d	q_2	q_3	q_4	q_5	q_6	q_7
	H	L	d	L	H	L	q_0	q_1	Q=d	q_3	q_4	q_5	q_6	q_7
	H	L	d	H	H	L	q_0	q_1	q_2	Q=d	q_4	q_5	q_6	q_7
	H	L	d	L	L	H	q_0	q_1	q_2	q_3	Q=d	q_5	q_6	q_7
	H	L	d	H	L	H	q_0	q_1	q_2	q_3	q_4	Q=d	q_6	q_7
	H	L	d	L	H	H	q_0	q_1	q_2	q_3	q_4	q_5	Q=d	q_7
	H	L	d	H	H	H	q_0	q_1	q_2	q_3	q_4	q_5	q_6	Q=d

Note [1] H=HIGH voltage level; L=LOW voltage level; X=don't care.

[2] d=HIGH or LOW data one set-up time prior to the LOW-to-HIGH $\overline{LE}$ transition.

[3] q=lower case letter indicates the state of the referenced input one set-up time prior to the LOW-to-HIGH transition.

2.5、Operating Mode Select Table

$\overline{LE}$	$\overline{MR}$	Mode
L	H	Addressable latch mode
H	H	Memory mode
L	L	Demultiplexer mode
H	L	Reset mode

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

3 、Electrical Parameter

(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}	-		-	+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		C

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
SN74H259						
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	Δt/ΔV	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
SN74HCT259						
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	Δt/ΔV	V_{CC}=2.0V	-	-	-	ns/V
		V_{CC}=4.5V	-	1.67	139	ns/V
		V_{CC}=6.0V	-	-	-	ns/V
ambient temperature	T_{amb}	-	-40	-	+125	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
SN74HC259							
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=-20uA; V_{CC}=2.0V	1.9	2.0	-	V
			I_O=-20uA; V_{CC}=4.5V	4.4	4.5	-	V
			I_O=-20uA; 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=20uA; V_{CC}=2.0V	-	0	0.1	V
			I_O=20uA; V_{CC}=4.5V	-	0	0.1	V
			I_O=20uA; 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		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	8.0	uA
input capacitance	C_I	-		-	3.5	-	pF
SN74HCT259							
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=-20uA	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}	I_O=20uA; V_{CC}=4.5V	-	0	0.1	V
			I_O=5.2mA; V_{CC}=6.0V	-	0.15	0.26	V
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	8.0	uA
		V_I=V_{CC}-2.1V;	pin An, $\overline{LE}$	-	150	540	uA

supply current	ΔI_{CC}	other inputs at V_{CC} or GND; I_O=0A; V_{CC}=4.5V to 5.5V	pin D	-	120	432	uA
			pin $\overline{MR}$	-	75	270	uA
input capacitance	C_I	-		-	3.5	-	pF

3.3.2、DC Characteristics 2

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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
SN74HC259							
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=-20uA; V_{CC}=2.0V	1.9	-	-	V
			I_O=-20uA; V_{CC}=4.5V	4.4	-	-	V
			I_O=-20uA; 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=20uA; V_{CC}=2.0V	-	-	0.1	V
			I_O=20uA; V_{CC}=4.5V	-	-	0.1	V
			I_O=20uA; 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		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	80	uA
input capacitance	C_I	-		-	-	-	pF
SN74HCT259							
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	
HIGH-level output voltage	V_{OH}	V_I = V_{IH} or V_{IL} ; V_{CC}=4.5V	I_O=-20uA	4.4	-	-	
			I_O=-4.0mA	3.84	-	-	
LOW-level output voltage	V_{OL}	V_I = V_{IH} or V_{IL}	I_O=20uA; V_{CC}=4.5V	-	-	0.1	
			I_O=5.2mA; V_{CC}=6.0V	-	-	0.33	
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±1.0	
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	80	
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	pin An, $\overline{LE}$	-	-	675	
			pin D	-	-	540	
			pin $\overline{MR}$	-	-	338	

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
SN74HC259							
		D to Qn; see Figure 5	V_{CC}=2.0V	-	58	185	ns
			V_{CC}=4.5V	-	21	37	ns
			V_{CC}=5.0V; C_L=15pF	-	18	-	ns
input capacitance	C_I	-		-	-	-	

3.3.3、DC Characteristics 3

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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
SN74HC259							
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=-20uA; V_{CC}=2.0V	1.9	-	-	V
			I_O=-20uA; V_{CC}=4.5V	4.4	-	-	V
			I_O=-20uA; 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=20uA; V_{CC}=2.0V	-	-	0.1	V
			I_O=20uA; V_{CC}=4.5V	-	-	0.1	V
			I_O=20uA; 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		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	160	uA
input capacitance	C_I	-		-	-	-	pF
SN74HCT259							
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=-20uA	4.4	-	-	V
			I_O=-4.0mA	3.7	-	-	V
LOW-level output voltage	V_{OL}	V_I = V_{IH} or V_{IL}	I_O=20uA; V_{CC}=4.5V	-	-	0.1	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}=5.5V		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	160	uA
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	pin An, $\overline{LE}$	-	-	735	uA
			pin D	-	-	588	uA
			pin $\overline{MR}$	-	-	368	uA
input capacitance	C_I	-		-	-	-	pF

3.3.4、AC Characteristics 1

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

propagation delay	t_{pd}		V_{CC}=6.0V	-	17	31	ns
		An to Qn; see Figure 6	V_{CC}=2.0V	-	58	185	ns
			V_{CC}=4.5V	-	21	37	ns
			V_{CC}=5.0V; C_L=15pF	-	17	-	ns
			V_{CC}=6.0V	-	17	31	ns
		$\overline{LE}$ to Qn; see Figure 7	V_{CC}=2.0V	-	55	170	ns
			V_{CC}=4.5V	-	20	34	ns
			V_{CC}=5.0V; C_L=15pF	-	17	-	ns
			V_{CC}=6.0V	-	16	29	ns
HIGH to LOW propagation delay	PHL	$\overline{MR}$ to Qn; see Figure 8	V_{CC}=2.0V	-	50	155	ns
			V_{CC}=4.5V	-	18	31	ns
			V_{CC}=5.0V; C_L=15pF	-	15	-	ns
			V_{CC}=6.0V	-	14	26	ns
transition time	t_t	see Figure 7	V_{CC}=2.0V	-	19	75	ns
			V_{CC}=4.5V	-	7	15	ns
			V_{CC}=6.0V	-	6	13	ns
pulse width	W	$\overline{LE}$ HIGH or LOW; see Figure 7	V_{CC}=2.0V	70	17	-	ns
			V_{CC}=4.5V	14	6	-	ns
			V_{CC}=6.0V	12	5	-	ns
		$\overline{MR}$ LOW; see Figure 8	V_{CC}=2.0V	70	17	-	ns
			V_{CC}=4.5V	14	6	-	ns
			V_{CC}=6.0V	12	5	-	ns
set-up time	t_{su}	D, An to $\overline{LE}$; see Figure 9 and Figure 10	V_{CC}=2.0V	80	19	-	ns
			V_{CC}=4.5V	16	7	-	ns
			V_{CC}=6.0V	14	6	-	ns
hold time	t_h	D to $\overline{LE}$; see Figure 9	V_{CC}=2.0V	0	-19	-	ns
			V_{CC}=4.5V	0	-6	-	ns

		and Figure 10	V_{CC}=6.0V	0	-5	-	ns
		An to $\overline{LE}$; see Figure 9 and Figure 10	V_{CC}=2.0V	2	-11	-	ns
			V_{CC}=4.5V	2	-4	-	ns
			V_{CC}=6.0V	2	-3	-	ns
power dissipation capacitance	C_{PD}	f_i=1MHz; V_I=GND to V_{CC}		-	19	-	pF
SN74HCT259							
propagation delay	t_{pd}	D to Qn; see Figure 5	V_{CC}=4.5V	-	23	39	ns
			V_{CC}=5.0V; C_L=15pF	-	20	-	ns
		An to Qn; see Figure 6	V_{CC}=4.5V	-	25	41	ns
			V_{CC}=5.0V; C_L=15pF	-	20	-	ns
		$\overline{LE}$ to Qn; see Figure 7	V_{CC}=4.5V	-	22	38	ns
			V_{CC}=5.0V; C_L=15pF	-	20	-	ns
HIGH to LOW propagation delay	t_{PHL}	$\overline{MR}$ to Qn; see Figure 8	V_{CC}=4.5V	-	23	39	ns
			V_{CC}=5.0V; C_L=15pF	-	20	-	ns
transition time	t_t	V_{CC}=4.5V; see Figure 7		-	7	15	ns
pulse width	t_W	$\overline{LE}$ HIGH or LOW; V_{CC}=4.5V; see Figure 7		19	11	-	ns
		$\overline{MR}$ LOW; V_{CC}=4.5V; see Figure 8		18	10	-	ns
set-up time	t_{su}	D, An to $\overline{LE}$; V_{CC}=4.5V; see Figure 9 and Figure 10		17	10	-	ns

hold time	t_h	D to $\overline{LE}$; V_{CC}=4.5V; see Figure 9 and Figure 10	0	-8	-	ns
		An to $\overline{LE}$; V_{CC}=4.5V; see Figure 9 and Figure 10	0	-4	-	ns
power dissipation capacitance	C_{PD}	f_i=1MHz; V_I=GND to V_{CC}- 1.5V	-	19	-	pF

Note:

[1] Typical values are measured at nominal supply voltage (V_{CC}=3.3V and V_{CC}=5.0V). [2] t_{pd} is the same as t_{PLH} and t_{PHL}.

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

[4] 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 ofoutputs.

3.3.5、AC Characteristics 2

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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
SN74HC259							
propagation delay	t_{pd}	D to Qn; see Figure 5	V_{CC}=2.0V	-	-	230	ns
			V_{CC}=4.5V	-	-	46	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
			V_{CC}=6.0V	-	-	39	ns
		An to Qn; see Figure 6	V_{CC}=2.0V	-	-	230	ns
			V_{CC}=4.5V	-	-	46	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
			V_{CC}=6.0V	-	-	39	ns
		$\overline{LE}$ to Qn; see Figure 7	V_{CC}=2.0V	-	-	215	ns
			V_{CC}=4.5V	-	-	43	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
			V_{CC}=6.0V	-	-	37	ns
HIGH to LOW propagation delay	t_{PHL}	$\overline{MR}$ to Qn; see Figure 8	V_{CC}=2.0V	-	-	195	ns
			V_{CC}=4.5V	-	-	39	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
			V_{CC}=6.0V	-	-	33	ns
transition time	t_t	see Figure 7	V_{CC}=2.0V	-	-	95	ns
			V_{CC}=4.5V	-	-	19	ns
			V_{CC}=6.0V	-	-	16	ns
pulse width	t_W	$\overline{LE}$ HIGH or LOW; see Figure 7	V_{CC}=2.0V	90	-	-	ns
			V_{CC}=4.5V	18	-	-	ns
			V_{CC}=6.0V	15	-	-	ns
		$\overline{MR}$ LOW; see Figure 8	V_{CC}=2.0V	90	-	-	ns
			V_{CC}=4.5V	18	-	-	ns
			V_{CC}=6.0V	15	-	-	ns

set-up time	t_{su}	D, An to $\overline{LE}$; see Figure 9 and Figure 10	V_{CC}=2.0V	100	-	-	ns
			V_{CC}=4.5V	20	-	-	ns
			V_{CC}=6.0V	17	-	-	ns
hold time	t_h	D to $\overline{LE}$; see Figure 9 and Figure 10	V_{CC}=2.0V	0	-	-	ns
			V_{CC}=4.5V	0	-	-	ns
			V_{CC}=6.0V	0	-	-	ns
		An to $\overline{LE}$; see Figure 9 and Figure 10	V_{CC}=2.0V	2	-	-	ns
			V_{CC}=4.5V	2	-	-	ns
			V_{CC}=6.0V	2	-	-	ns
power dissipation capacitance	C_{PD}	f_i=1MHz; V_I=GND to V_{CC}		-	-	-	pF
SN74HCT259							
propagation delay	t_{pd}	D to Qn; see Figure 5	V_{CC}=4.5V	-	-	49	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
		An to Qn;	V_{CC}=4.5V	-	-	51	ns
		see Figure 6	V_{CC}=5.0V; C_L=15pF	-	-	-	ns
		$\overline{LE}$ to Qn; see Figure 7	V_{CC}=4.5V	-	-	48	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
HIGH to LOW propagation delay	t_{PHL}	$\overline{MR}$ to Qn; see Figure 8	V_{CC}=4.5V	-	-	49	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
transition time	t_t	V_{CC}=4.5V; see Figure 7		-	-	19	ns
pulse width	t_W	$\overline{LE}$ HIGH or LOW; V_{CC}=4.5V; see Figure 7		24	-	-	ns
		$\overline{MR}$ LOW; V_{CC}=4.5V; see Figure 8		23	-	-	ns
set-up time	t_{su}	D, An to $\overline{LE}$; V_{CC}=4.5V; see Figure 9 and Figure 10		21	-	-	ns
hold time	t_h	D to $\overline{LE}$; V_{CC}=4.5V; see Figure 9 and Figure 10		0	-	-	ns
		An to $\overline{LE}$; V_{CC}=4.5V; see Figure 9 and Figure 10		0	-	-	ns
power dissipation capacitance	C_{PD}	f_i=1MHz; V_I=GND to V_{CC}- 1.5V		-	-	-	pF

Note:

[1] Typical values are measured at nominal supply voltage (V_{CC}=3.3V and V_{CC}=5.0V). [2] t_{pd} is the same as t_{PLH} and t_{PHL}.

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

[4] 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 ofoutputs.

3.3.6、AC Characteristics 3

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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
SN74HC259							
propagation delay	t_{pd}	D to Qn; see Figure 5	V_{CC}=2.0V	-	-	280	ns
			V_{CC}=4.5V	-	-	56	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
			V_{CC}=6.0V	-	-	48	ns
		An to Qn; see Figure 6	V_{CC}=2.0V	-	-	280	ns
			V_{CC}=4.5V	-	-	56	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
			V_{CC}=6.0V	-	-	48	ns
		$\overline{LE}$ to Qn; see Figure 7	V_{CC}=2.0V	-	-	255	ns
			V_{CC}=4.5V	-	-	51	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
			V_{CC}=6.0V	-	-	43	ns
HIGH to LOW propagation delay	t_{PHL}	$\overline{MR}$ to Qn; see Figure 8	V_{CC}=2.0V	-	-	235	ns
			V_{CC}=4.5V	-	-	47	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
			V_{CC}=6.0V	-	-	40	ns
transition time	t_t	see Figure 7	V_{CC}=2.0V	-	-	119	ns
			V_{CC}=4.5V	-	-	22	ns
			V_{CC}=6.0V	-	-	19	ns
pulse width	t_W	$\overline{LE}$ HIGH or LOW; see Figure 7	V_{CC}=2.0V	105	-	-	ns
			V_{CC}=4.5V	21	-	-	ns
			V_{CC}=6.0V	18	-	-	ns
		$\overline{MR}$ LOW; see Figure 8	V_{CC}=2.0V	105	-	-	ns
			V_{CC}=4.5V	21	-	-	ns
			V_{CC}=6.0V	18	-	-	ns
set-up time	t_{su}	D, An to $\overline{LE}$; see Figure 9 and Figure 10	V_{CC}=2.0V	120	-	-	ns
			V_{CC}=4.5V	24	-	-	ns
			V_{CC}=6.0V	20	-	-	ns
hold time	t_h	D to $\overline{LE}$; see Figure 9 and Figure 10	V_{CC}=2.0V	0	-	-	ns
			V_{CC}=4.5V	0	-	-	ns
			V_{CC}=6.0V	0	-	-	ns
		An to $\overline{LE}$; see Figure 9 and Figure 10	V_{CC}=2.0V	2	-	-	ns
			V_{CC}=4.5V	2	-	-	ns
			V_{CC}=6.0V	2	-	-	ns
power dissipation capacitance	C_{PD}	f_i=1MHz; V_I=GND to V_{CC}		-	-	-	pF
SN74HCT259							
propagation delay	t_{pd}	D to Qn; see Figure 5	V_{CC}=4.5V	-	-	59	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
		An to Qn;	V_{CC}=4.5V	-	-	62	ns

		see Figure 6	V_{CC}=5.0V; C_L=15pF	-	-	-	ns
		$\overline{LE}$ to Qn; see Figure 7	V_{CC}=4.5V	-	-	57	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
HIGH to LOW propagation delay	t_{PHL}	$\overline{MR}$ to Qn; see Figure 8	V_{CC}=4.5V	-	-	59	ns
			V_{CC}=5.0V; C_L=15pF	-	-	-	ns
transition time	t_t	V_{CC}=4.5V; see Figure 7		-	-	22	ns
pulse width	t_W	$\overline{LE}$ HIGH or LOW; V_{CC}=4.5V; see Figure 7		29	-	-	ns
		$\overline{MR}$ LOW; V_{CC}=4.5V; see Figure 8		27	-	-	ns
set-up time	t_{su}	D, An to $\overline{LE}$; V_{CC}=4.5V; see Figure 9 and Figure 10		26	-	-	ns
hold time	t_h	D to $\overline{LE}$; V_{CC}=4.5V; see Figure 9 and Figure 10		0	-	-	ns
		An to $\overline{LE}$; V_{CC}=4.5V; see Figure 9 and Figure 10		0	-	-	ns
power dissipation capacitance	C_{PD}	f_i=1MHz; V_I=GND to V_{CC}- 1.5V		-	-	-	pF

Note:

[1] Typical values are measured at nominal supply voltage (V_{CC}=3.3V and V_{CC}=5.0V). [2] t_{pd} is the same as t_{PLH} and t_{PHL}.

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

[4] 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 ofoutputs.

4 、Testing Circuit

4.1、AC Testing Circuit

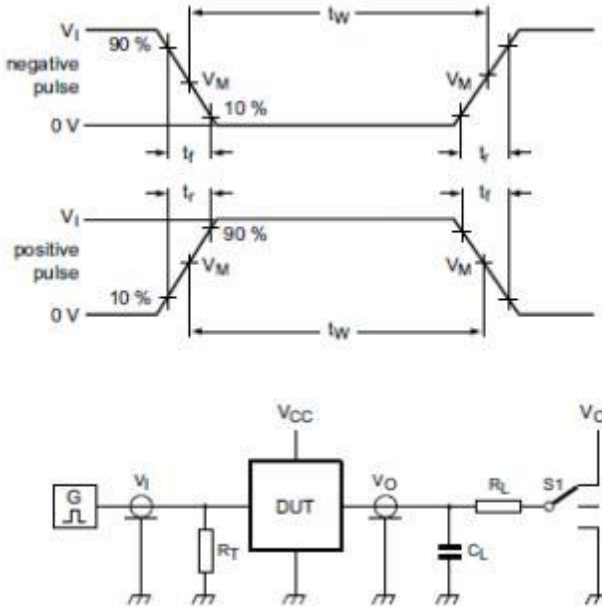


Figure 4. Test circuit for measuring switching times

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

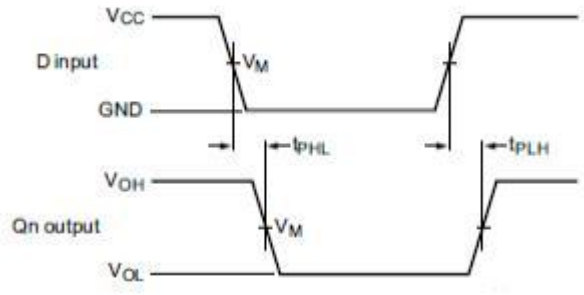


Figure 5. Data input to output propagation delays

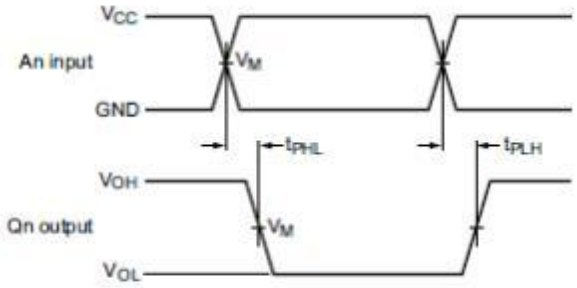


Figure 6. Address input to output propagation delays

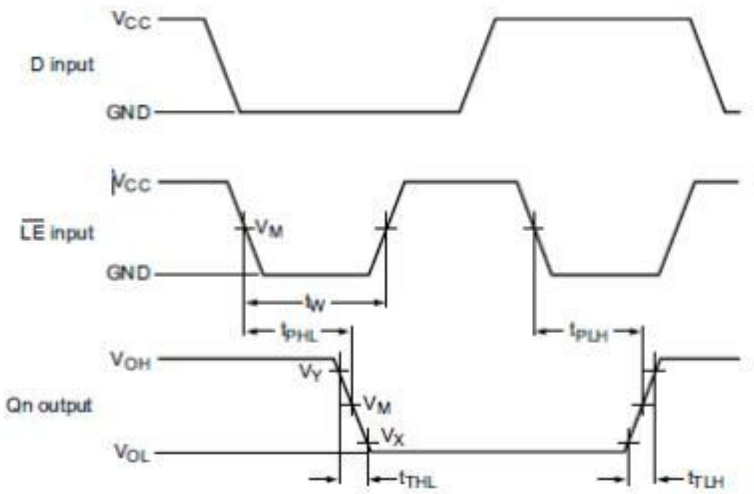


Figure 7. Enable input to output propagation delays and pulse width

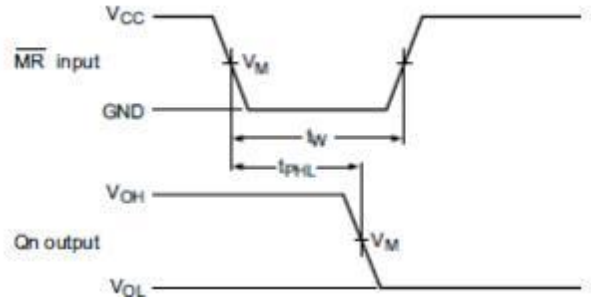


Figure 8. Master reset input to output propagation delay

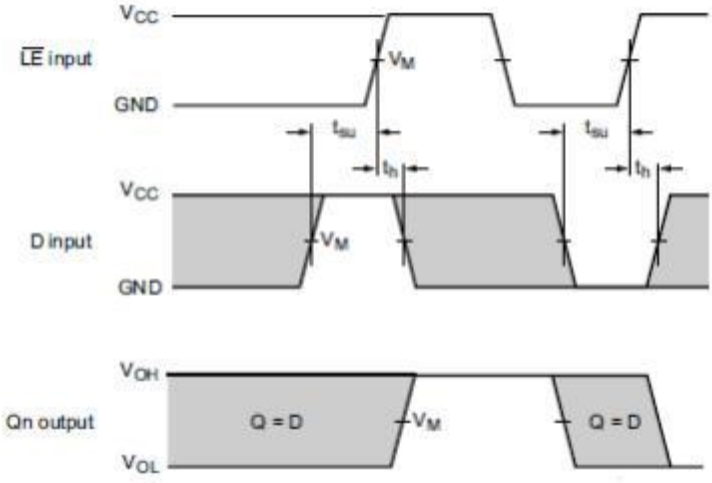


Figure 9. Data input to latch enable input set-up and hold times

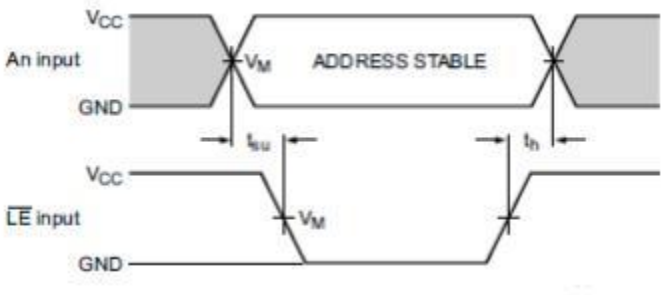


Figure 10. Address input to latch enable input set-up and hold times

4.3、Measurement Points

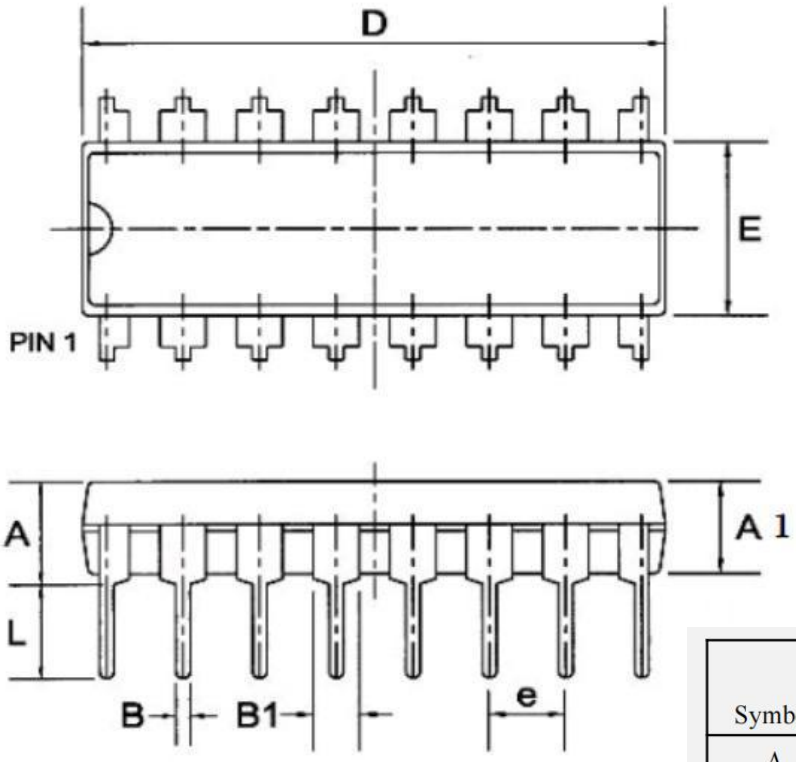
Type	Input	Output		
	V_M	V_M	V_X	V_Y
SN74HC259	$0.5\times V_{CC}$	$0.5\times V_{CC}$	$0.1\times V_{CC}$	$0.9\times V_{CC}$
SN74HCT259	1.3V	1.3V	$0.1\times V_{CC}$	$0.9\times V_{CC}$

4.4、Test Data

Type	Input		Load		S1 position
	V_I	t_r , t_f	C_L	R_L	t_{PHL}, t_{PLH}
SN74HC259	V_{CC}	6ns	15pF, 50pF	1kΩ	open
SN74HCT259	3V	6ns	15pF, 50pF	1kΩ	open

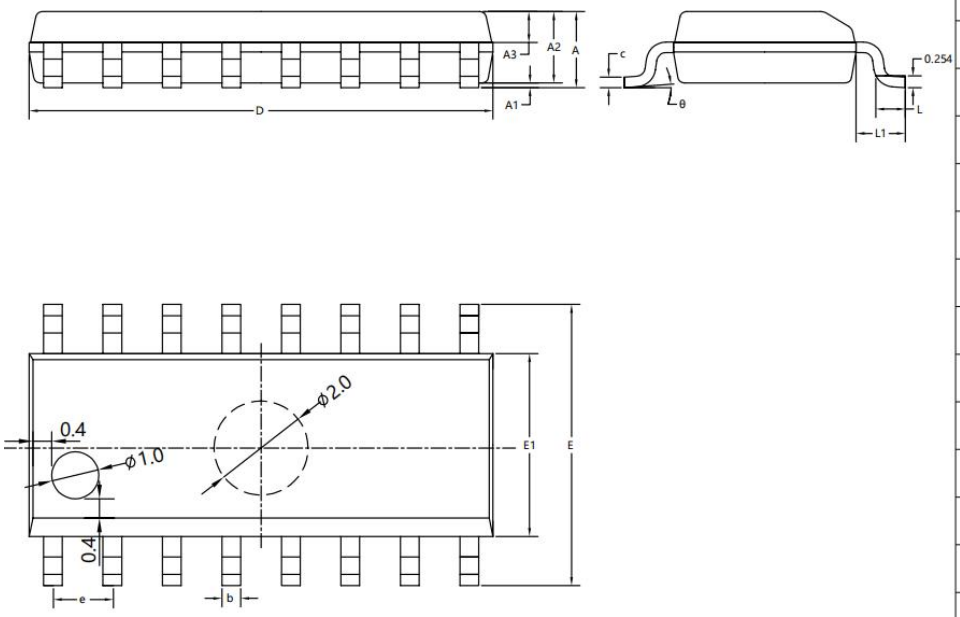
5 、Package Information

5.1、DIP16



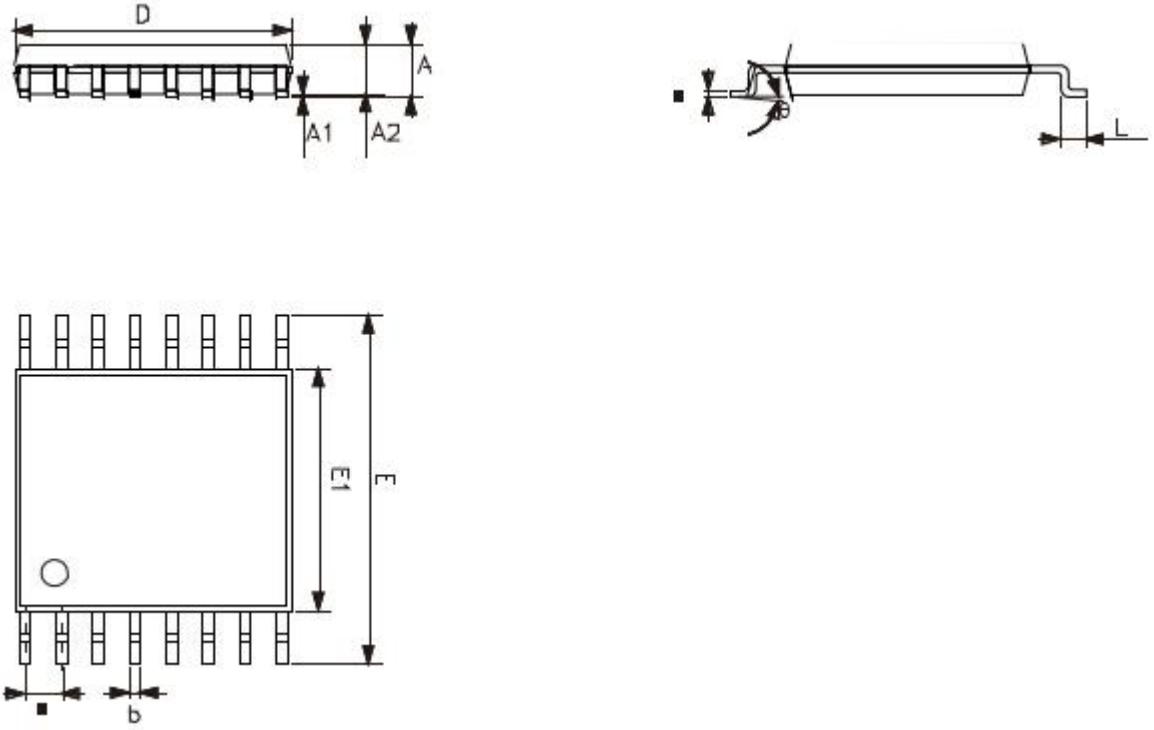
Symbol	Dimensions in Millimeters		
	Min	Nom	Max
A	--	--	4.31
A1	3.15	3.30	3.65
B	--	0.50	--
B1	--	1.6	--
C	--	0.27	--
D	19.00	19.20	19.60
E	6.20	6.50	6.60
E1	--	8.0	--
e	--	2.3	--
L	3.00	3.20	3.60

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	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
9	0。	8。

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✧ Product performance is never ending, Shenzhen xinbole electronics co., ltd will be dedicated to provide customers with better performance, better quality of integrated circuit products.

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