



# AiP74LVC1G123B

## Single Retriggerable Monostable Multivibrator; Schmitt Trigger Inputs

### Product Specification

**Specification Revision History:**

Version	Date	Description
2023-10-A1	2023-10	New
2024-05-A2	2024-05	Modify the content



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## 1、General Description

The AiP74LVC1G123B is a single retriggerable monostable multivibrator with Schmitt trigger inputs. Output pulse width is controlled by three methods:

1. The basic pulse is programmed by selection of an external resistor (REXT) and capacitor (CEXT).
2. Once triggered, the basic output pulse width may be extended by retriggering the gated active LOW-going edge input ( $\overline{A}$ ) or the active HIGH-going edge input (B). By repeating this process, the output pulse period (Q = HIGH) can be made as long as desired.
3. An internal connection from  $\overline{CLR}$  to the input gates makes it possible to trigger the circuit by a HIGH-going signal at input  $\overline{CLR}$ .

### Features:

- Wide supply voltage range from 1.65V to 5.5V
- $\pm 24\text{mA}$  output drive ( $V_{CC}=3.0\text{V}$ )
- CMOS low power consumption
- Retriggerable for very long pulses up to 100 % duty factor
- High-impedance when  $V_{CC}=0\text{V}$
- Direct reset terminates output pulse
- Schmitt trigger on all inputs
- Power-on-reset on outputs
- Inputs accept voltages up to 5.5V
- Specified from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Packaging information: TSSOP8/VSSOP8/XSON8



## Ordering Information:

### Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP74LVC1G123BTA8.TB	TSSOP8	DLXX	100 PCS/tube	200 tube/box	20000 PCS/box	Dimensions of plastic enclosure: 3.0mm×3.0mm Pin spacing: 0.65mm

### Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74LVC1G123B TA8.TR	TSSOP8	DLXX	3000PCS/reel	3000PCS/box	Dimensions of plastic enclosure: 3.0mm×3.0mm Pin spacing: 0.65mm
AiP74LVC1G123B YA8.TR	VSSOP8	DLXX	3000PCS/reel	3000PCS/box	Dimensions of plastic enclosure: 2.0mm×2.3mm Pin spacing: 0.50mm
AiP74LVC1G123B EC8.TR	XSON8	DLXX	5000PCS/reel	25000PCS/box	Dimensions of plastic enclosure: 1.0mm×1.95mm Pin spacing: 0.50mm

Note 1: "XX" refers to variable content, meaning year and package batch serial number.

Note 2: 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

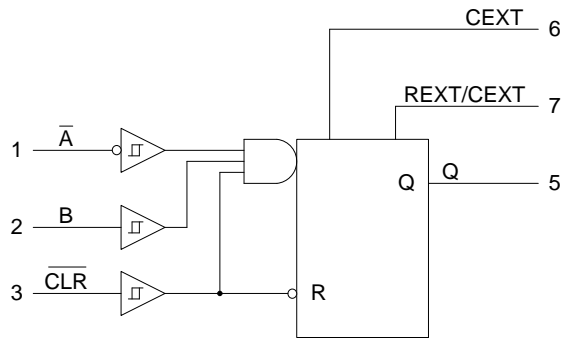


Figure 1. Logic symbol

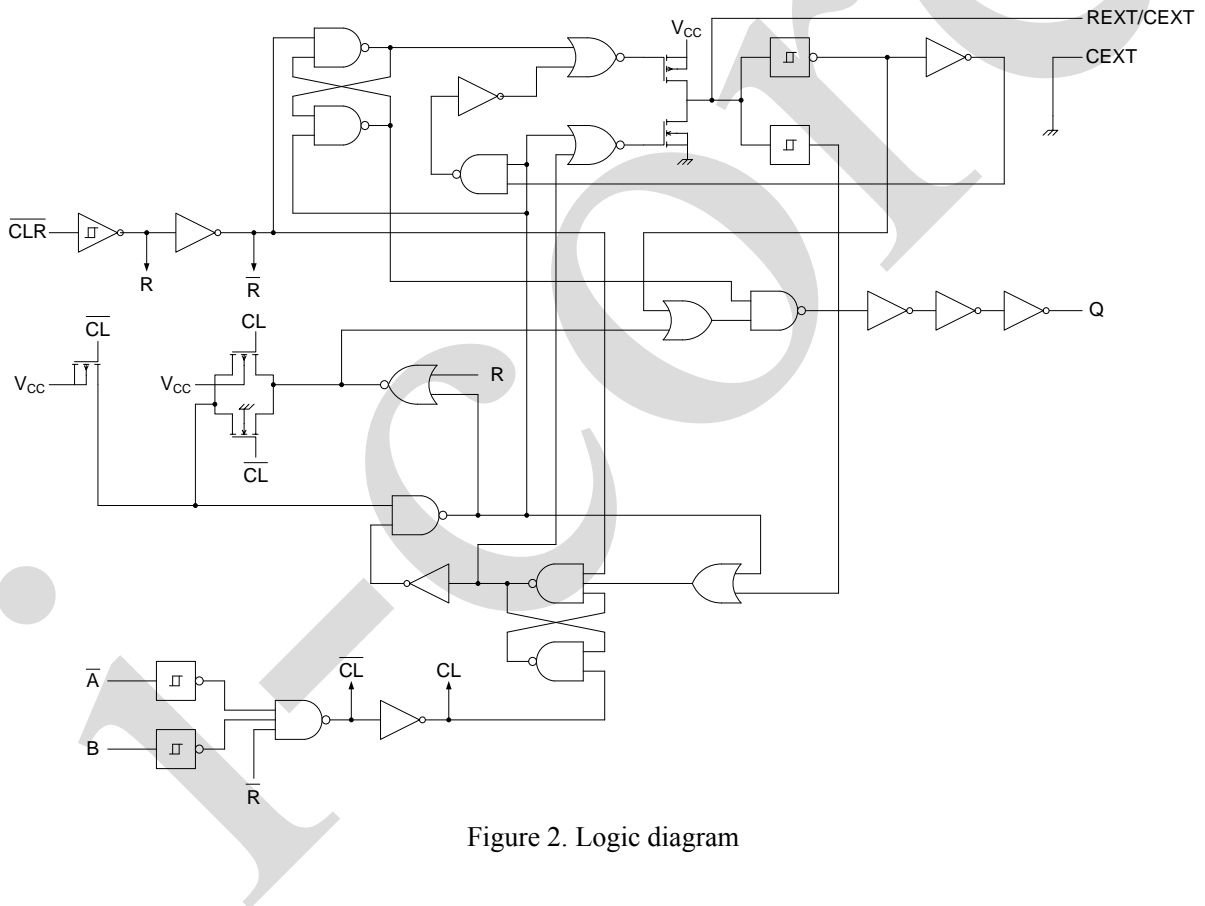
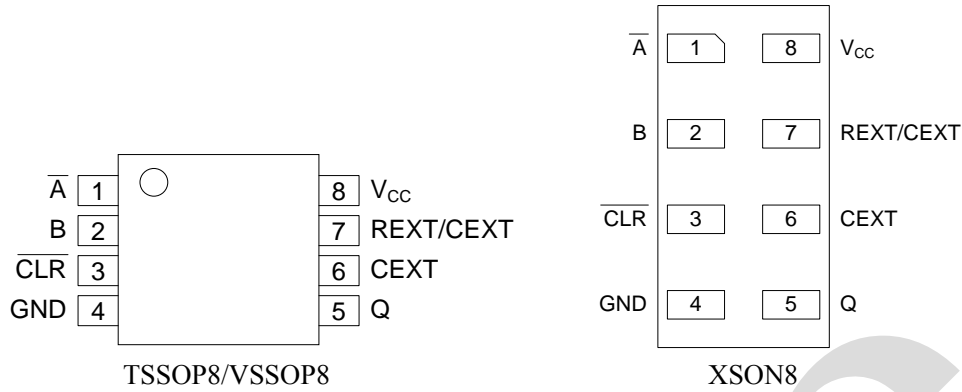


Figure 2. Logic diagram



## 2.2、Pin Configurations



## 2.3、Pin Description

Pin No.	Pin Name	Description
1	$\overline{A}$	negative-edge triggered input
2	B	positive-edge triggered input
3	$\overline{CLR}$	direct reset LOW and positive-edge triggered input
4	GND	ground (0V)
5	Q	active HIGH output
6	CEXT	external capacitor connection
7	REXT/CEXT	external resistor and capacitor connection
8	V <sub>CC</sub>	supply voltage

## 2.4、Function Table

Input			Output
$\overline{CLR}$	$\overline{A}$	B	Q
L	X	X	L
X	H	X	L <sup>[1]</sup>
X	X	L	L <sup>[1]</sup>
H	L	↑	
H	↓	H	
↑	L	H	

Note:

H=HIGH voltage level;

L=LOW voltage level;

X=don't care;

↑=LOW-to-HIGH transition;

↓=HIGH-to-LOW transition;

=one HIGH level output pulse.

[1] If the monostable was triggered before this condition was established, the pulse continues as programmed.



## 3、Electrical Parameter

### 3.1、Absolute Maximum Ratings

(All voltage referenced to GND (ground=0V), unless otherwise specified)

Characteristic	Symbol	Conditions	Min.	Max.	Unit
supply voltage	$V_{CC}$	-	-0.5	+6.5	V
input voltage	$V_I$	-	-0.5	+6.5	V
output voltage	$V_O$	active mode	-0.5	$V_{CC}+0.5$	V
		power-down mode	-0.5	+6.5	V
input clamping current	$I_{IK}$	$V_I < 0V$	-50	-	mA
output clamping current	$I_{OK}$	$V_O < 0V$ or $V_O > V_{CC}$	-	$\pm 50$	mA
output current	$I_O$	$V_O = 0V$ to $V_{CC}$	-	$\pm 50$	mA
supply current	$I_{CC}$	-	-	100	mA
ground current	$I_{GND}$	-	-100	-	mA
storage temperature	$T_{stg}$	-	-65	+150	°C
total power dissipation	$P_{tot}$	-	-	300	mW
soldering temperature	$T_L$	10s		260	°C

### 3.2、Recommended Operating Conditions

Characteristic	Symbol	Conditions	Min.	Max.	Unit
supply voltage	$V_{CC}$	-	1.65	5.5	V
input voltage	$V_I$	-	0	5.5	V
output voltage	$V_O$	active mode	0	$V_{CC}$	V
		power-down mode	0	5.5	V
operating temperature	$T_{amb}$	-	-40	+125	°C



## 3.3、Electrical Characteristics

### 3.3.1、DC Characteristics 1

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
positive-going threshold voltage	$V_{T+}$	$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	0.72	0.85	1.22	V	
		$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	0.97	1.17	1.52	V	
		$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	1.20	1.53	1.90	V	
		$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	1.74	2.33	2.75	V	
negative-going threshold voltage	$V_{T-}$	$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	0.56	0.81	1.04	V	
		$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	0.83	1.13	1.33	V	
		$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	1.08	1.50	1.70	V	
		$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	1.61	2.30	2.53	V	
hysteresis voltage	$V_H$	$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	20	40	100	mV	
		$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	20	40	100	mV	
		$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	10	30	100	mV	
		$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	10	30	100	mV	
HIGH-level output voltage	$V_{OH}$	$V_I = V_{T+}$ or $V_{T-}$	$I_O = -100\mu\text{A}$ ; $V_{CC} = 1.65\text{V}$ to $5.5\text{V}$	$V_{CC} - 0.1$	-	-	V
			$I_O = -4\text{mA}$ ; $V_{CC} = 1.65\text{V}$	1.2	-	-	V
			$I_O = -8\text{mA}$ ; $V_{CC} = 2.3\text{V}$	1.9	-	-	V
			$I_O = -12\text{mA}$ ; $V_{CC} = 2.7\text{V}$	2.2	-	-	V
			$I_O = -24\text{mA}$ ; $V_{CC} = 3.0\text{V}$	2.4	-	-	V
			$I_O = -32\text{mA}$ ; $V_{CC} = 4.5\text{V}$	3.8	-	-	V
LOW-level output voltage	$V_{OL}$	$V_I = V_{T+}$ or $V_{T-}$	$I_O = 100\mu\text{A}$ ; $V_{CC} = 1.65\text{V}$ to $5.5\text{V}$	-	-	0.1	V
			$I_O = 4\text{mA}$ ; $V_{CC} = 1.65\text{V}$	-	-	0.45	V
			$I_O = 8\text{mA}$ ; $V_{CC} = 2.3\text{V}$	-	-	0.3	V
			$I_O = 12\text{mA}$ ; $V_{CC} = 2.7\text{V}$	-	-	0.4	V
			$I_O = 24\text{mA}$ ; $V_{CC} = 3.0\text{V}$	-	-	0.55	V
$I_O = 32\text{mA}$ ; $V_{CC} = 4.5\text{V}$	-	-	0.55	V			
input leakage current	$I_I$	$V_I = 5.5\text{V}$ or GND; $V_{CC} = 0\text{V}$ to $5.5\text{V}$	-	-	$\pm 2$	$\mu\text{A}$	
power-off leakage current	$I_{OFF}$	$V_I$ or $V_O = 5.5\text{V}$ ; $V_{CC} = 0\text{V}$	-	-	$\pm 2$	$\mu\text{A}$	
supply current	$I_{CC}$	$V_I = 5.5\text{V}$ or GND	Quiescent; $V_{CC} = 1.65\text{V}$ to $5.5\text{V}$ ; $I_O = 0\text{A}$	-	-	10	$\mu\text{A}$
		Active state; REXT/CEXT $= 0.5V_{CC}$	$V_{CC} = 1.65\text{V}$	-	-	80	$\mu\text{A}$
			$V_{CC} = 2.3\text{V}$	-	-	130	$\mu\text{A}$
			$V_{CC} = 3\text{V}$	-	-	240	$\mu\text{A}$
			$V_{CC} = 4.5\text{V}$	-	-	400	$\mu\text{A}$
$V_{CC} = 5.5\text{V}$	-	-	650	$\mu\text{A}$			



### 3.3.2、DC Characteristics 2

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
positive-going threshold voltage	$V_{T+}$	$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	0.72	-	1.22	V	
		$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	0.97	-	1.52	V	
		$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	1.20	-	1.90	V	
		$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	1.74	-	2.75	V	
negative-going threshold voltage	$V_{T-}$	$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	0.56	-	1.04	V	
		$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	0.83	-	1.33	V	
		$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	1.08	-	1.70	V	
		$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	1.61	-	2.53	V	
hysteresis voltage	$V_H$	$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	20	-	100	mV	
		$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	20	-	100	mV	
		$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	10	-	100	mV	
		$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	10	-	100	mV	
HIGH-level output voltage	$V_{OH}$	$V_I=V_{T+}$ or $V_{T-}$	$I_O=-100\mu\text{A}$ ; $V_{CC}=1.65\text{V}$ to $5.5\text{V}$	$V_{CC}-0.1$	-	-	V
			$I_O=-4\text{mA}$ ; $V_{CC}=1.65\text{V}$	1.2	-	-	V
			$I_O=-8\text{mA}$ ; $V_{CC}=2.3\text{V}$	1.9	-	-	V
			$I_O=-12\text{mA}$ ; $V_{CC}=2.7\text{V}$	2.2	-	-	V
			$I_O=-24\text{mA}$ ; $V_{CC}=3.0\text{V}$	2.4	-	-	V
			$I_O=-32\text{mA}$ ; $V_{CC}=4.5\text{V}$	3.8	-	-	V
LOW-level output voltage	$V_{OL}$	$V_I=V_{T+}$ or $V_{T-}$	$I_O=100\mu\text{A}$ ; $V_{CC}=1.65\text{V}$ to $5.5\text{V}$	-	-	0.1	V
			$I_O=4\text{mA}$ ; $V_{CC}=1.65\text{V}$	-	-	0.45	V
			$I_O=8\text{mA}$ ; $V_{CC}=2.3\text{V}$	-	-	0.3	V
			$I_O=12\text{mA}$ ; $V_{CC}=2.7\text{V}$	-	-	0.4	V
			$I_O=24\text{mA}$ ; $V_{CC}=3.0\text{V}$	-	-	0.55	V
			$I_O=32\text{mA}$ ; $V_{CC}=4.5\text{V}$	-	-	0.55	V
input leakage current	$I_I$	$V_I=5.5\text{V}$ or GND; $V_{CC}=0\text{V}$ to $5.5\text{V}$	-	-	$\pm 10$	$\mu\text{A}$	
power-off leakage current	$I_{OFF}$	$V_I$ or $V_O=5.5\text{V}$ ; $V_{CC}=0\text{V}$	-	-	$\pm 10$	$\mu\text{A}$	
supply current	$I_{CC}$	$V_I=5.5\text{V}$ or GND	Quiescent; $V_{CC}=1.65\text{V}$ to $5.5\text{V}$ ; $I_O=0\text{A}$	-	-	20	$\mu\text{A}$
		Active state; REXT/CEXT $=0.5V_{CC}$	$V_{CC}=1.65\text{V}$	-	-	80	$\mu\text{A}$
			$V_{CC}=2.3\text{V}$	-	-	130	$\mu\text{A}$
			$V_{CC}=3\text{V}$	-	-	240	$\mu\text{A}$
			$V_{CC}=4.5\text{V}$	-	-	400	$\mu\text{A}$
	$V_{CC}=5.5\text{V}$	-	-	650	$\mu\text{A}$		



### 3.3.3、AC Characteristics 1

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

Parameter	Symbo	Conditions	Min.	Typ. <sup>[1]</sup>	Max.	Unit	
propagation delay	$t_{PHL}$ , $t_{PLH}$	$\overline{A}$ , B to Q; see Figure 4	$C_L=15\text{pF}$				
			$V_{CC}=1.65\text{V to }1.95\text{V}$	2.5	7.1	16.3	ns
			$V_{CC}=2.3\text{V to }2.7\text{V}$	1.9	-	10.3	ns
			$V_{CC}=2.7\text{V}$	1.9	-	8.5	ns
			$V_{CC}=3.0\text{V to }3.6\text{V}$	1.5	-	7.6	ns
			$V_{CC}=4.5\text{V to }5.5\text{V}$	1.2	-	5.3	ns
			$C_L=30\text{pF or }C_L=50\text{pF}$				
			$V_{CC}=1.65\text{V to }1.95\text{V}$	2.9	7.8	17.6	ns
			$V_{CC}=2.3\text{V to }2.7\text{V}$	2.2	-	11.3	ns
			$V_{CC}=2.7\text{V}$	2.7	-	10.5	ns
		$V_{CC}=3.0\text{V to }3.6\text{V}$	2.0	-	9.5	ns	
		$V_{CC}=4.5\text{V to }5.5\text{V}$	1.5	-	6.7	ns	
		$\overline{\text{CLR}}$ to Q; see Figure 4	$C_L=15\text{pF}$				
			$V_{CC}=1.65\text{V to }1.95\text{V}$	3.0	6.9	16.2	ns
			$V_{CC}=2.3\text{V to }2.7\text{V}$	2.2	-	9.6	ns
			$V_{CC}=2.7\text{V}$	2.2	-	8.2	ns
			$V_{CC}=3.0\text{V to }3.6\text{V}$	2.0	-	7.3	ns
			$V_{CC}=4.5\text{V to }5.5\text{V}$	1.5	-	5.1	ns
			$C_L=30\text{pF or }C_L=50\text{pF}$				
			$V_{CC}=1.65\text{V to }1.95\text{V}$	3.3	7.5	17.2	ns
$V_{CC}=2.3\text{V to }2.7\text{V}$	2.5		-	10.3	ns		
$V_{CC}=2.7\text{V}$	2.8		-	9.3	ns		
propagation delay	$t_{PHL}$ , $t_{PLH}$	$\overline{\text{CLR}}$ to Q(trigger); see Figure 4	$C_L=15\text{pF}$				
			$V_{CC}=1.65\text{V to }1.95\text{V}$	2.7	7.6	17.4	ns
			$V_{CC}=2.3\text{V to }2.7\text{V}$	2.1	-	11.0	ns
			$V_{CC}=2.7\text{V}$	2.1	-	9.2	ns
			$V_{CC}=3.0\text{V to }3.6\text{V}$	1.7	-	8.2	ns
			$V_{CC}=4.5\text{V to }5.5\text{V}$	1.4	-	5.9	ns
			$C_L=30\text{pF or }C_L=50\text{pF}$				
			$V_{CC}=1.65\text{V to }1.95\text{V}$	3.1	8.3	18.8	ns
			$V_{CC}=2.3\text{V to }2.7\text{V}$	2.5	-	12.0	ns
			$V_{CC}=2.7\text{V}$	2.8	-	11.1	ns
		$V_{CC}=3.0\text{V to }3.6\text{V}$	2.0	-	10.1	ns	
		$V_{CC}=4.5\text{V to }5.5\text{V}$	1.5	-	7.1	ns	



pulse width	$t_w$	input $\overline{A}$ LOW ; B HIGH; see Figure 4 and Figure 5	$V_{CC}=1.65V$ to 1.95V	8.0	-	-	ns
			$V_{CC}=2.3V$ to 2.7V	4.0	-	-	ns
			$V_{CC}=2.7V$	3.0	-	-	ns
			$V_{CC}=3.0V$ to 3.6V	3.0	-	-	ns
			$V_{CC}=4.5V$ to 5.5V	2.5	-	-	ns
		input $\overline{CLR}$ LOW; see Figure 4 and Figure 6	$V_{CC}=1.65V$ to 1.95V	8.0	-	-	ns
			$V_{CC}=2.3V$ to 2.7V	4.0	-	-	ns
			$V_{CC}=2.7V$	3.0	-	-	ns
			$V_{CC}=3.0V$ to 3.6V	3.0	-	-	ns
			$V_{CC}=4.5V$ to 5.5V	2.5	-	-	ns
pulse width	$t_w$	output Q HIGH; see Figure 4, Figure 5 and Figure 6; $R_{EXT}=10k\Omega$	$C_{EXT}=100pF$				
			$V_{CC}=1.65V$ to 1.95V	-	1.4	2.2	us
			$V_{CC}=2.3V$ to 2.7V	-	1.3	1.8	us
			$V_{CC}=2.7V$	-	1.2	1.8	us
			$V_{CC}=3.0V$ to 3.6V	-	1.2	1.8	us
			$V_{CC}=4.5V$ to 5.5V	-	1.2	1.8	us
			$C_{EXT}=0.01\mu F$				
			$V_{CC}=1.65V$ to 1.95V	-	100	110	us
			$V_{CC}=2.3V$ to 2.7V	-	100	110	us
			$V_{CC}=2.7V$	-	100	110	us
			$V_{CC}=3.0V$ to 3.6V	-	100	110	us
			$V_{CC}=4.5V$ to 5.5V	-	100	110	us
			$C_{EXT}=0.1\mu F$				
			$V_{CC}=1.65V$ to 1.95V	-	1.0	1.05	ms
			$V_{CC}=2.3V$ to 2.7V	-	1.0	1.05	ms
			$V_{CC}=2.7V$	-	1.0	1.05	ms
			$V_{CC}=3.0V$ to 3.6V	-	1.0	1.05	ms
			$V_{CC}=4.5V$ to 5.5V	-	1.0	1.05	ms
retrigger time	$t_{trig}$	$\overline{A}$ , B; see Figure 5	$C_{EXT}=100pF; R_{EXT}=5k\Omega$				
			$V_{CC}=1.65V$ to 1.95V	-	174	-	ns
			$V_{CC}=2.3V$ to 2.7V	-	59	-	ns
			$C_{EXT}=100pF; R_{EXT}=1k\Omega$				
			$V_{CC}=3.0V$ to 3.6V	-	32	-	ns
			$V_{CC}=4.5V$ to 5.5V	-	20	-	ns
			$C_{EXT}=100\mu F; R_{EXT}=5k\Omega$				
			$V_{CC}=1.65V$ to 1.95V	-	14	-	ms
			$V_{CC}=2.3V$ to 2.7V	-	10	-	ms
			$C_{EXT}=100\mu F; R_{EXT}=1k\Omega$				
			$V_{CC}=3.0V$ to 3.6V	-	10	-	ms
			$V_{CC}=4.5V$ to 5.5V	-	8	-	ms

Note:

[1] Typical values are measured at  $T_{amb}=25^{\circ}C$  and  $V_{CC}=1.8V, 2.5V, 3.3V$  and  $5.0V$  respectively.



## 3.3.4、AC Characteristics 2

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

Parameter	Symbo	Conditions	Min.	Typ.	Max.	Unit	
propagation delay	$t_{PHL}$ , $t_{PLH}$	$\overline{\text{A}}$ , B to Q; see Figure 4	$C_L=15\text{pF}$				
			$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	2.5	-	17.6	ns
			$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	1.9	-	11.2	ns
			$V_{CC}=2.7\text{V}$	1.9	-	9.3	ns
			$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	1.5	-	8.3	ns
			$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	1.2	-	5.8	ns
			$C_L=30\text{pF}$ or $C_L=50\text{pF}$				
			$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	2.9	-	19.0	ns
			$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	2.2	-	12.3	ns
			$V_{CC}=2.7\text{V}$	2.7	-	11.4	ns
			$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	2.0	-	10.3	ns
			$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	1.5	-	7.2	ns
		$\overline{\text{CLR}}$ to Q; see Figure 4	$C_L=15\text{pF}$				
			$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	3.0	-	17.4	ns
			$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	2.2	-	10.5	ns
			$V_{CC}=2.7\text{V}$	2.2	-	8.9	ns
			$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	2.0	-	8.0	ns
			$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	1.5	-	5.5	ns
			$C_L=30\text{pF}$ or $C_L=50\text{pF}$				
			$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	3.3	-	18.6	ns
$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	2.0		-	11.2	ns		
$V_{CC}=2.7\text{V}$	2.8		-	10.2	ns		
$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	1.5		-	9.2	ns		
$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	1.5		-	6.6	ns		
propagation delay	$t_{PHL}$ , $t_{PLH}$	$\overline{\text{CLR}}$ to Q(trigger); see Figure 4	$C_L=15\text{pF}$				
			$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	2.7	-	18.9	ns
			$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	2.1	-	12.0	ns
			$V_{CC}=2.7\text{V}$	2.1	-	10.0	ns
			$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	1.7	-	8.9	ns
			$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	1.4	-	6.4	ns
			$C_L=30\text{pF}$ or $C_L=50\text{pF}$				
			$V_{CC}=1.65\text{V}$ to $1.95\text{V}$	3.3	-	20.3	ns
			$V_{CC}=2.3\text{V}$ to $2.7\text{V}$	2.5	-	13.1	ns
			$V_{CC}=2.7\text{V}$	2.8	-	12.1	ns
			$V_{CC}=3.0\text{V}$ to $3.6\text{V}$	2.0	-	11.0	ns
			$V_{CC}=4.5\text{V}$ to $5.5\text{V}$	1.5	-	7.7	ns

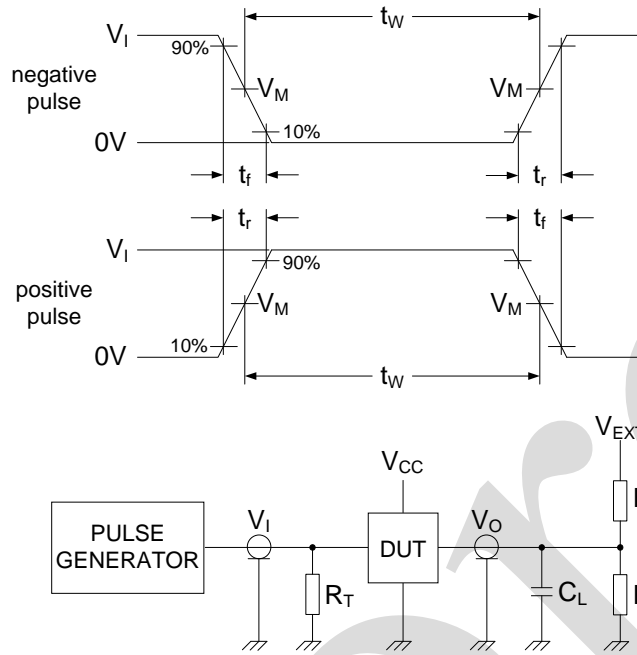


pulse width	tw	input $\overline{A}$ LOW ; B HIGH; see Figure 4 and Figure 5	V <sub>CC</sub> =1.65V to 1.95V	8.0	-	-	ns
			V <sub>CC</sub> =2.3V to 2.7V	4.0	-	-	ns
			V <sub>CC</sub> =2.7V	3.0	-	-	ns
			V <sub>CC</sub> =3.0V to 3.6V	3.0	-	-	ns
			V <sub>CC</sub> =4.5V to 5.5V	2.5	-	-	ns
		input $\overline{CLR}$ LOW; see Figure 4 and Figure 6	V <sub>CC</sub> =1.65V to 1.95V	8.0	-	-	ns
			V <sub>CC</sub> =2.3V to 2.7V	4.0	-	-	ns
			V <sub>CC</sub> =2.7V	3.0	-	-	ns
			V <sub>CC</sub> =3.0V to 3.6V	3.0	-	-	ns
			V <sub>CC</sub> =4.5V to 5.5V	2.5	-	-	ns
pulse width	tw	output Q HIGH; see Figure 4, Figure 5 and Figure 6; R <sub>EXT</sub> =10kΩ	C <sub>EXT</sub> =100pF				
			V <sub>CC</sub> =1.65V to 1.95V	-	-	2.2	us
			V <sub>CC</sub> =2.3V to 2.7V	-	-	1.8	us
			V <sub>CC</sub> =2.7V	-	-	1.8	us
			V <sub>CC</sub> =3.0V to 3.6V	-	-	1.8	us
			V <sub>CC</sub> =4.5V to 5.5V	-	-	1.8	us
			C <sub>EXT</sub> =0.01uF				
			V <sub>CC</sub> =1.65V to 1.95V	-	-	110	us
			V <sub>CC</sub> =2.3V to 2.7V	-	-	110	us
			V <sub>CC</sub> =2.7V	-	-	110	us
			V <sub>CC</sub> =3.0V to 3.6V	-	-	110	us
			V <sub>CC</sub> =4.5V to 5.5V	-	-	110	us
			C <sub>EXT</sub> =0.1uF				
			V <sub>CC</sub> =1.65V to 1.95V	-	-	1.05	ms
			V <sub>CC</sub> =2.3V to 2.7V	-	-	1.05	ms
			V <sub>CC</sub> =2.7V	-	-	1.05	ms
			V <sub>CC</sub> =3.0V to 3.6V	-	-	1.05	ms
			V <sub>CC</sub> =4.5V to 5.5V	-	-	1.05	ms



## 4、Testing Circuit

### 4.1、AC Testing Circuit



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 output impedance  $Z_o$  of the pulse generator.

$V_{EXT}$ =Test voltage for switching times.

Figure 3. Test circuit for measuring switching times



4.2、AC Testing Waveforms

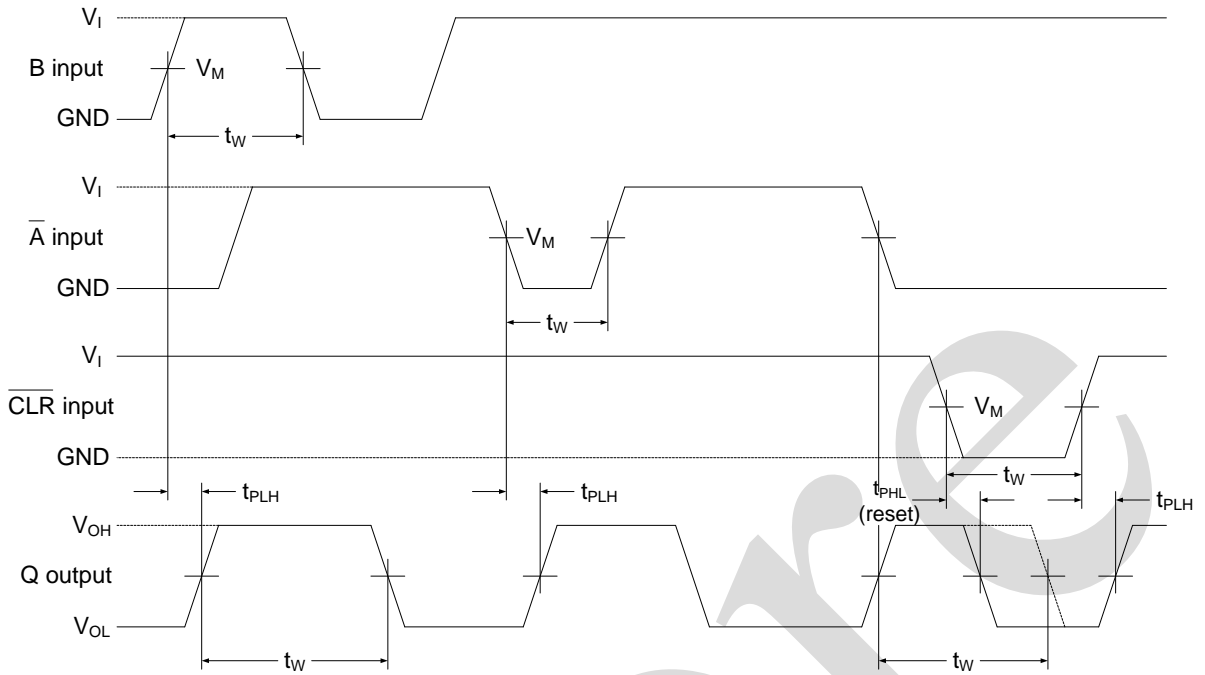


Figure 4. Propagation delays from inputs ( $\bar{A}$ , B,  $\bar{CLR}$ ) to output (Q)

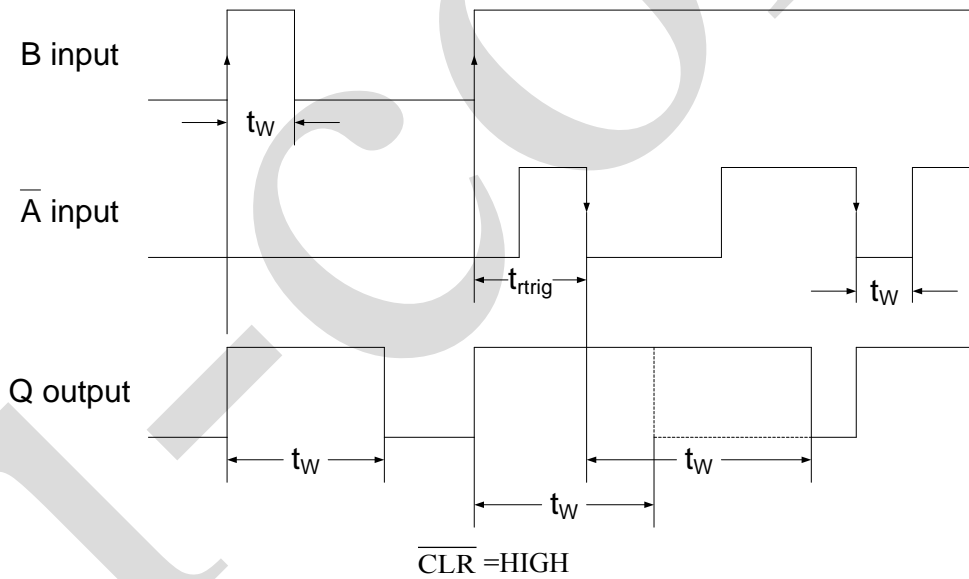


Figure 5. Output pulse control using retrigger pulse

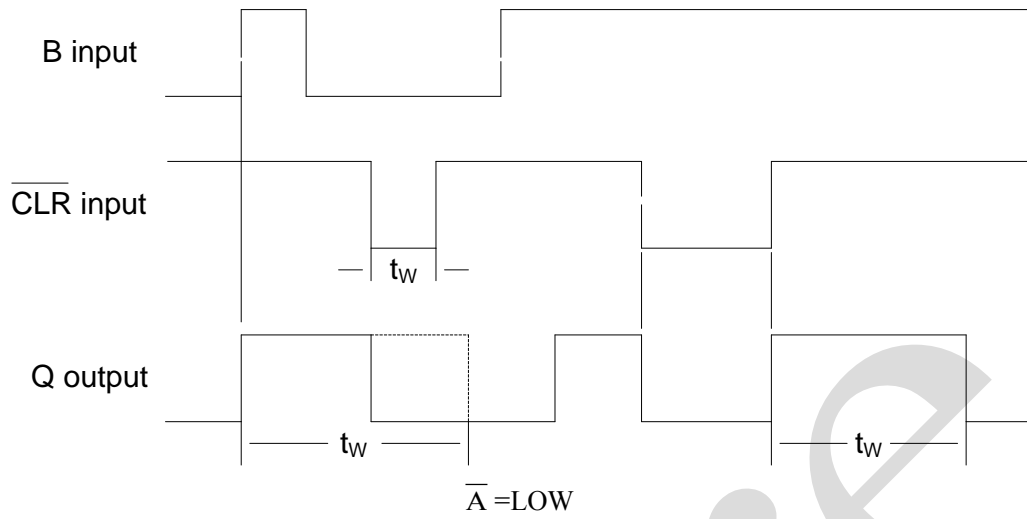


Figure 6. Output pulse control using reset input  $\overline{\text{CLR}}$

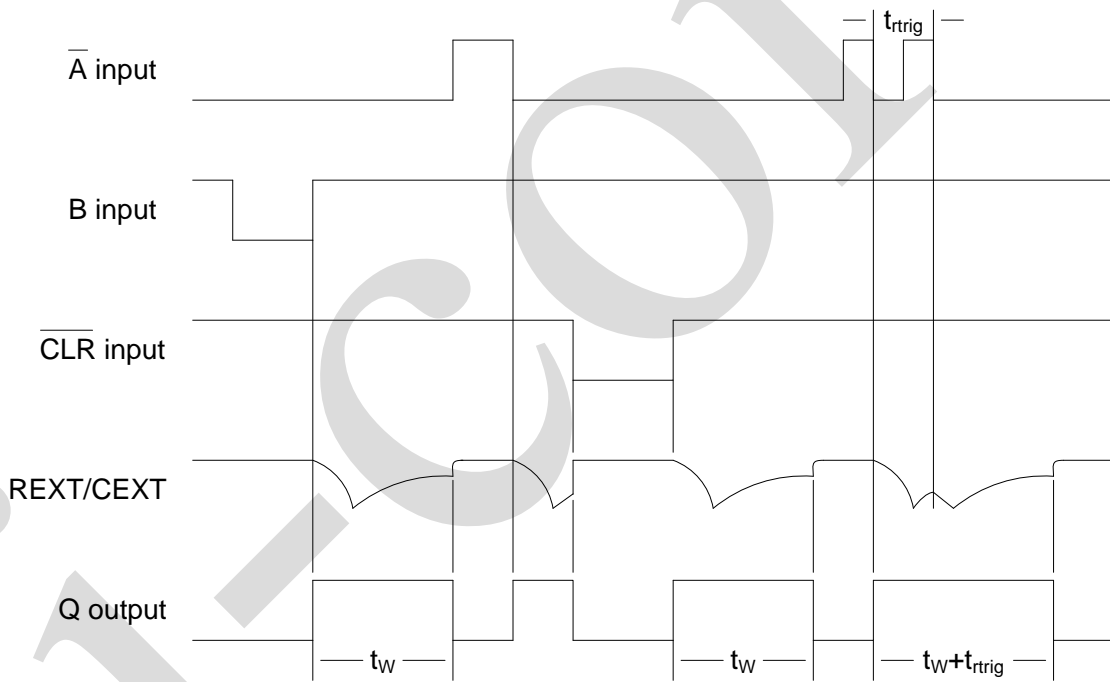


Figure 7. Input and output timing

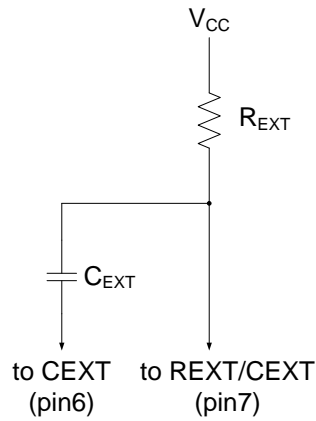


Figure 8. Timing component connections

### 4.3、 Measurement Points

Supply voltage	Input	Output
$V_{CC}$	$V_M$	$V_M$
1.65V to 1.95V	$0.5V_{CC}$	$0.5V_{CC}$
2.3V to 2.7V	$0.5V_{CC}$	$0.5V_{CC}$
2.7V	1.5V	1.5V
3.0V to 3.6V	1.5V	1.5V
4.5V to 5.5V	$0.5V_{CC}$	$0.5V_{CC}$

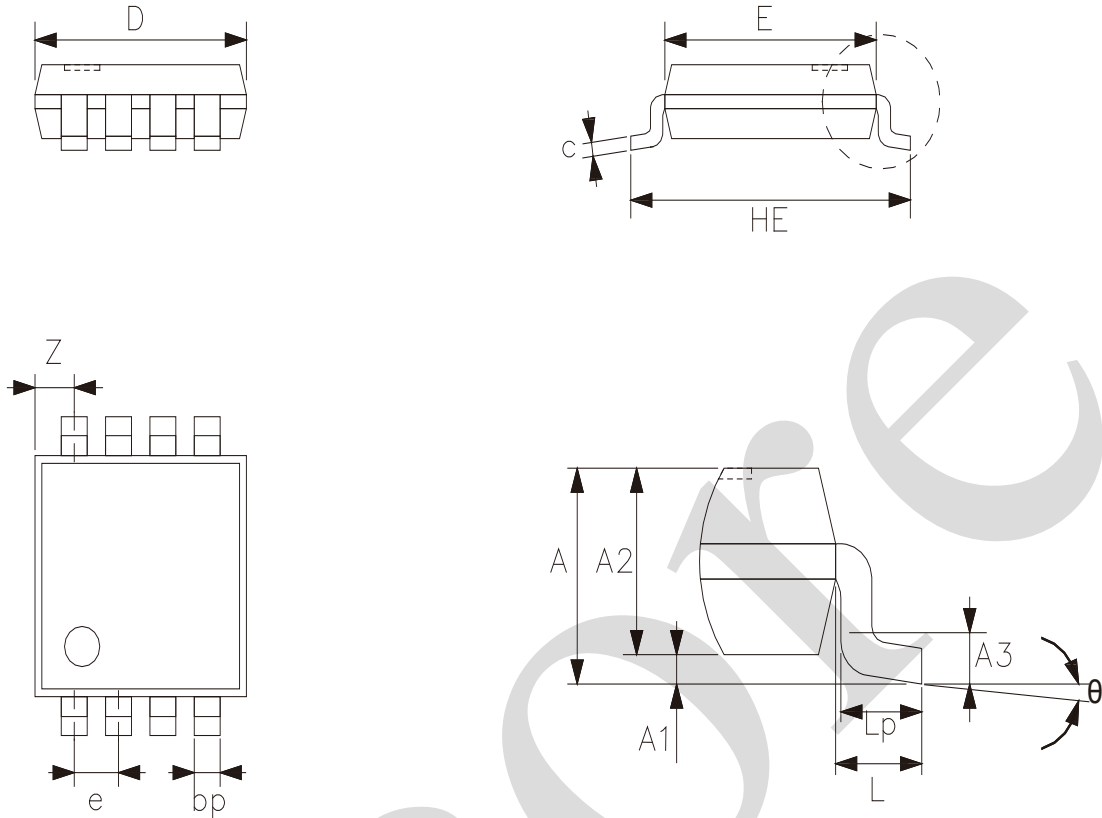
### 4.4、 Test Data

Supply voltage	Input		Load		$V_{EXT}$
	$V_I$	$t_r, t_f$	$C_L$	$R_L$	$t_{PLH}, t_{PHL}$
1.65V to 1.95V	$V_{CC}$	$\leq 3.0ns$	15pF	1M $\Omega$	open
2.3V to 2.7V	$V_{CC}$	$\leq 3.0ns$	15pF	1M $\Omega$	open
2.7V	2.7V	$\leq 3.0ns$	15pF	1M $\Omega$	open
3.0V to 3.6V	2.7V	$\leq 3.0ns$	15pF	1M $\Omega$	open
4.5V to 5.5V	$V_{CC}$	$\leq 3.0ns$	15pF	1M $\Omega$	open
1.65V to 1.95V	$V_{CC}$	$\leq 3.0ns$	30pF	1k $\Omega$	open
2.3V to 2.7V	$V_{CC}$	$\leq 3.0ns$	30pF	500 $\Omega$	open
2.7V	2.7V	$\leq 3.0ns$	50pF	500 $\Omega$	open
3.0V to 3.6V	2.7V	$\leq 3.0ns$	50pF	500 $\Omega$	open
4.5V to 5.5V	$V_{CC}$	$\leq 3.0ns$	50pF	500 $\Omega$	open



## 5、Package Information

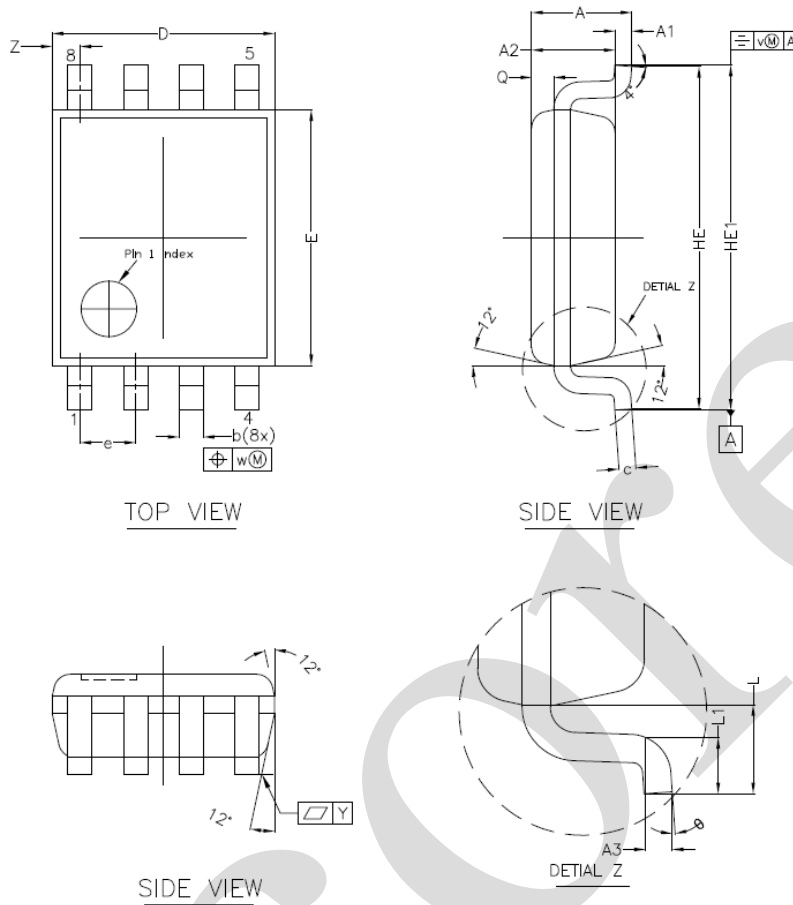
### 5.1、TSSOP8



2023/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	—	1.10
A1	0	0.15
A2	0.75	0.95
A3	0.25	
bp	0.22	0.38
c	0.08	0.18
D	2.90	3.10
E	2.90	3.10
HE	3.90	4.10
L	0.50	
Lp	0.33	0.47
e	0.65	
Z	0.35	0.70
$\theta$	0°	8°



5.2、VSSOP8

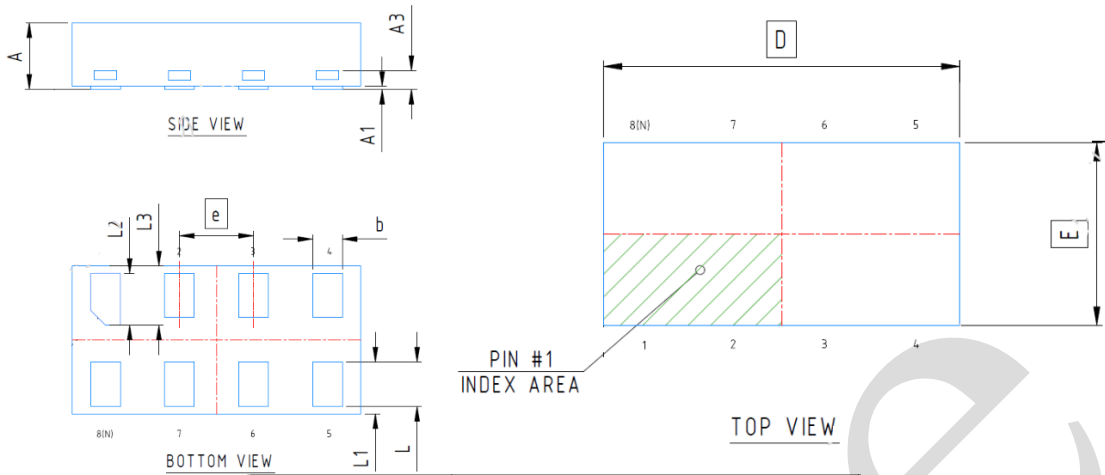


NOTES  
1.0 COP  
DIE ATTA  
2.0 D E

2023/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	—	1.00
A1	0.00	0.15
A2	0.60	0.85
A3	0.12	
Q	0.19	0.21
b	0.17	0.27
c	0.08	0.23
D	1.90	2.10
E	2.20	2.40
HE	3.00	3.20
HE1	3.00	3.40
e	0.50	
L	0.40	
L1	0.15	0.40
Y	0.10	
Z	0.10	0.40
$\theta$	0°	8°



## 5.3、XSON8



2023/12/A Symbol	Dimensions In Millimeters	
	Min	Max
A	0.45	0.55
A1	0	0.05
A3	0.127	
b	0.15	0.25
D	1.95	
E	1.00	
e	0.50	
L	0.25	0.35
L1	0.25	0.45
L2	0.30	0.40
L3	0.30	0.50



## 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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