



# AiP74HC/HCT266

## Quad 2-Input Exclusive-Nor Gate with Open-Drain Output

### Product Specification

**Specification Revision History:**

Version	Date	Description
2023-10-A0	2023-10	New
2024-02-A1	2024-02	Modify the parameters



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## 1、General Description

The AiP74HC/HCT266 contains four independent 2-input XNOR Gates with open-drain outputs.

### Features:

- Supply voltage range:  
AiP74HC266: 2V to 6V  
AiP74HCT266: 4.5V to 5.5V
- Input levels:  
AiP74HC266: CMOS level  
AiP74HCT266: TTL level
- Temperature range: -40°C to +125°C
- Packaging information: DIP14/SOP14/TSSOP14

### Ordering Information:

#### Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP74HC266DA14.TB	DIP14	74HC266	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm
AiP74HCT266DA14.TB	DIP14	74HCT266	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm
AiP74HC266SA14.TB	SOP14	74HC266	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 8.7mm×3.9mm Pin spacing: 1.27mm
AiP74HCT266SA14.TB	SOP14	74HCT266	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 8.7mm×3.9mm Pin spacing: 1.27mm
AiP74HC266TA14.TB	TSSOP14	74HC266	96 PCS/tube	200 tube/box	19200 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm
AiP74HCT266TA14.TB	TSSOP14	74HCT266	96 PCS/tube	200 tube/box	19200 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm



## Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74HC266SA14.TR	SOP14	74HC266	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 8.7mm×3.9mm Pin spacing: 1.27mm
AiP74HCT266SA14.TR	SOP14	74HCT266	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 8.7mm×3.9mm Pin spacing: 1.27mm
AiP74HC266TA14.TR	TSSOP14	74HC266	5000 PCS/reel	10000 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm
AiP74HCT266TA14.TR	TSSOP14	74HCT266	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.



## 2、Block Diagram And Pin Description

### 2.1、Block Diagram

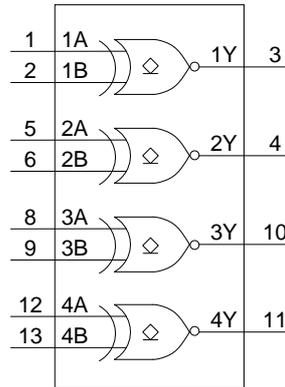


Figure 1. Logic symbol

### 2.2、Pin Configurations

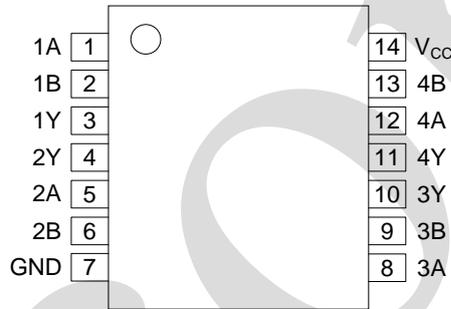


Figure 2. Pin Configurations

### 2.3、Pin Description

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



## 2.4、Function Table

Input		Output
A	B	Y
L	L	Z
L	H	L
H	L	L
H	H	Z

Note: H= HIGH voltage level; L=LOW voltage level; 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	V
supply current	$I_{CC}$	-	-	50	mA
ground current	$I_{GND}$	-	-50	-	mA
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
storage temperature	$T_{stg}$	-	-65	+150	$^{\circ}C$
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>AiP74HC266</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
ambient temperature	$T_{amb}$	-	-40	-	+125	$^{\circ}C$
<b>AiP74HCT266</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
ambient temperature	$T_{amb}$	-	-40	-	+125	$^{\circ}C$



## 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	V <sub>CC</sub>	Conditions	Min.	Typ.	Max.	Unit
<b>AiP74HC266</b>							
HIGH-level input voltage	V <sub>IH</sub>	2.0V	-	1.5	1.2	-	V
		4.5V	-	3.15	2.4	-	V
		6.0V	-	4.2	3.2	-	V
LOW-level input voltage	V <sub>IL</sub>	2.0V	-	-	0.8	0.5	V
		4.5V	-	-	2.1	1.35	V
		6.0V	-	-	2.8	1.8	V
LOW-level output voltage	V <sub>OL</sub>	2.0V	I <sub>O</sub> =20uA	-	0.002	0.1	V
		4.5V	I <sub>O</sub> =20uA	-	0.001	0.1	V
		6.0V	I <sub>O</sub> =20uA	-	0.001	0.1	V
		4.5V	I <sub>O</sub> =4.0mA	-	0.17	0.33	V
		6.0V	I <sub>O</sub> =5.2mA	-	0.15	0.33	V
input leakage current	I <sub>I</sub>	6.0V	V <sub>I</sub> =V <sub>CC</sub> or GND	-	-	±1	uA
OFF-state output current	I <sub>OZ</sub>	6.0V	V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>O</sub> =V <sub>CC</sub> or GND	-	-	±5	uA
supply current	I <sub>CC</sub>	6.0V	V <sub>I</sub> =V <sub>CC</sub> or GND; I <sub>O</sub> =0A	-	-	10	uA
<b>AiP74HCT266</b>							
HIGH-level input voltage	V <sub>IH</sub>	4.5~5.5V	-	2.0	1.6	-	V
LOW-level input voltage	V <sub>IL</sub>	4.5~5.5V	-	-	1.2	0.8	V
LOW-level output voltage	V <sub>OL</sub>	4.5V	I <sub>O</sub> =20uA	-	0	0.1	V
			I <sub>O</sub> =4.0mA	-	0.15	0.33	V
input leakage current	I <sub>I</sub>	5.5V	V <sub>I</sub> =V <sub>CC</sub> or GND	-	-	±1	uA
OFF-state output current	I <sub>OZ</sub>	5.5V	V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>O</sub> =V <sub>CC</sub> or GND	-	-	±5	uA
supply current	I <sub>CC</sub>	5.5V	V <sub>I</sub> =V <sub>CC</sub> or GND; I <sub>O</sub> =0A	-	-	80	uA
additional supply current	ΔI <sub>CC</sub>	4.5~5.5V	One input at V <sub>I</sub> =V <sub>CC</sub> -2.1V; Other inputs at V <sub>CC</sub> or GND; I <sub>O</sub> =0A	-	-	135	uA



## 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	V <sub>CC</sub>	Conditions	Min.	Typ.	Max.	Unit
<b>AiP74HC266</b>							
HIGH-level input voltage	V <sub>IH</sub>	2.0V	-	1.5	-	-	V
		4.5V	-	3.15	-	-	V
		6.0V	-	4.2	-	-	V
LOW-level input voltage	V <sub>IL</sub>	2.0V	-	-	-	0.5	V
		4.5V	-	-	-	1.35	V
		6.0V	-	-	-	1.8	V
LOW-level output voltage	V <sub>OL</sub>	2.0V	I <sub>O</sub> =20uA	-	-	0.1	V
		4.5V	I <sub>O</sub> =20uA	-	-	0.1	V
		6.0V	I <sub>O</sub> =20uA	-	-	0.1	V
		4.5V	I <sub>O</sub> =4.0mA	-	-	0.4	V
		6.0V	I <sub>O</sub> =5.2mA	-	-	0.4	V
input leakage current	I <sub>I</sub>	6.0V	V <sub>I</sub> =V <sub>CC</sub> or GND	-	-	±1	uA
OFF-state output current	I <sub>OZ</sub>	6.0V	V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>O</sub> =V <sub>CC</sub> or GND	-	-	±10	uA
supply current	I <sub>CC</sub>	6.0V	V <sub>I</sub> =V <sub>CC</sub> or GND; I <sub>O</sub> =0A	-	-	20	uA
<b>AiP74HCT266</b>							
HIGH-level input voltage	V <sub>IH</sub>	4.5~5.5V	-	2.0	-	-	V
LOW-level input voltage	V <sub>IL</sub>	4.5~5.5V	-	-	-	0.8	V
LOW-level output voltage	V <sub>OL</sub>	4.5V	I <sub>O</sub> =20uA	-	-	0.1	V
			I <sub>O</sub> =4.0mA	-	-	0.4	V
input leakage current	I <sub>I</sub>	5.5V	V <sub>I</sub> =V <sub>CC</sub> or GND	-	-	±1	uA
OFF-state output current	I <sub>OZ</sub>	5.5V	V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub> ; V <sub>O</sub> =V <sub>CC</sub> or GND	-	-	±10	uA
supply current	I <sub>CC</sub>	5.5V	V <sub>I</sub> =V <sub>CC</sub> or GND; I <sub>O</sub> =0A	-	-	160	uA
additional supply current	ΔI <sub>CC</sub>	4.5~5.5V	One input at V <sub>I</sub> =V <sub>CC</sub> -2.1V; Other inputs at V <sub>CC</sub> or GND; I <sub>O</sub> =0A	-	-	147	uA



### 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	Symbol	V <sub>CC</sub>	Conditions	Min.	Typ.	Max.	Unit	
<b>AiP74HC266</b>								
propagation delay	t <sub>PLZ</sub> , t <sub>PZL</sub>	2.0V	C <sub>L</sub> =50pF	see Figure 4	-	60	155	ns
		4.5V	C <sub>L</sub> =50pF		-	13	31	ns
		6.0V	C <sub>L</sub> =50pF		-	10	26	ns
transition time	t <sub>THL</sub>	2.0V	C <sub>L</sub> =50pF	see Figure 4	-	28	95	ns
		4.5V	C <sub>L</sub> =50pF		-	8	19	ns
		6.0V	C <sub>L</sub> =50pF		-	6	16	ns
<b>AiP74HCT266</b>								
propagation delay	t <sub>PLZ</sub> , t <sub>PZL</sub>	4.5V	C <sub>L</sub> =50pF	see Figure 4	-	20	43	ns
		5.0V	C <sub>L</sub> =15pF		-	17	-	ns
transition time	t <sub>THL</sub>	4.5V	C <sub>L</sub> =50pF	see Figure 4	-	7	19	ns

### 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	Symbol	V <sub>CC</sub>	Conditions	Min.	Typ.	Max.	Unit	
<b>AiP74HC266</b>								
propagation delay	t <sub>PLZ</sub> , t <sub>PZL</sub>	2.0V	C <sub>L</sub> =50pF	see Figure 4	-	-	135	ns
		4.5V	C <sub>L</sub> =50pF		-	-	27	ns
		6.0V	C <sub>L</sub> =50pF		-	-	23	ns
transition time	t <sub>THL</sub>	2.0V	C <sub>L</sub> =50pF	see Figure 4	-	-	110	ns
		4.5V	C <sub>L</sub> =50pF		-	-	22	ns
		6.0V	C <sub>L</sub> =50pF		-	-	19	ns
<b>AiP74HCT266</b>								
propagation delay	t <sub>PLZ</sub> , t <sub>PZL</sub>	4.5V	C <sub>L</sub> =50pF	see Figure 4	-	-	51	ns
transition time	t <sub>THL</sub>	4.5V	C <sub>L</sub> =50pF	see Figure 4	-	-	22	ns



## 4、Testing Circuit

### 4.1、AC Testing Circuit

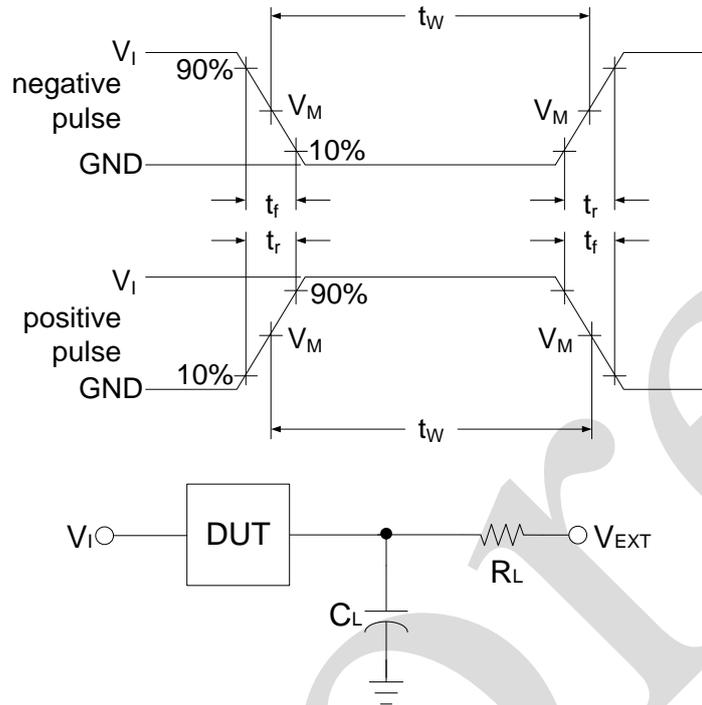


Figure 3. Test circuit for measuring switching times

$C_L$  includes probe and jig capacitance.

### 4.2、Test Data

Type	Input		Load		$V_{EXT}$		
	$V_I$	$t_r = t_f$	$C_L$	$R_L$	$t_{PLH}/t_{PHL}$	$t_{PLZ}/t_{PZL}$	$t_{PHZ}/t_{PZH}$
AiP74HC266	$V_{CC}$	3.0ns	15pF, 50pF	1K $\Omega$	Open	$V_{CC}$	GND
AiP74HCT266	3.0V	3.0ns	15pF, 50pF	1K $\Omega$	Open	$V_{CC}$	GND



## 4.3、AC Testing Waveforms

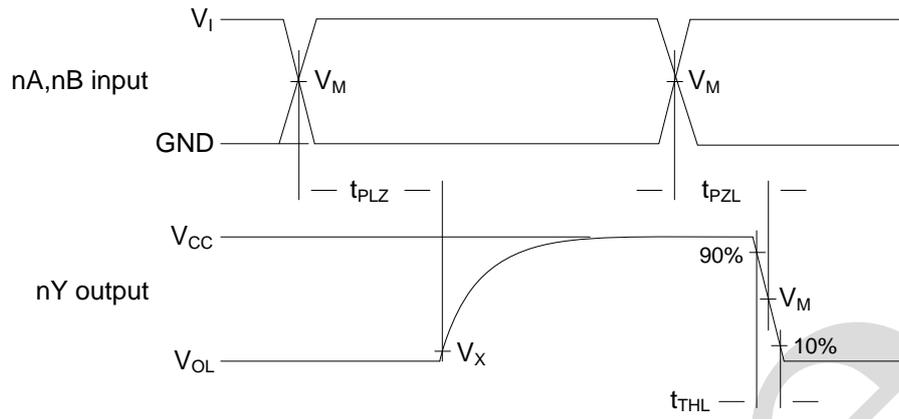


Figure 4. Input to output propagation delays

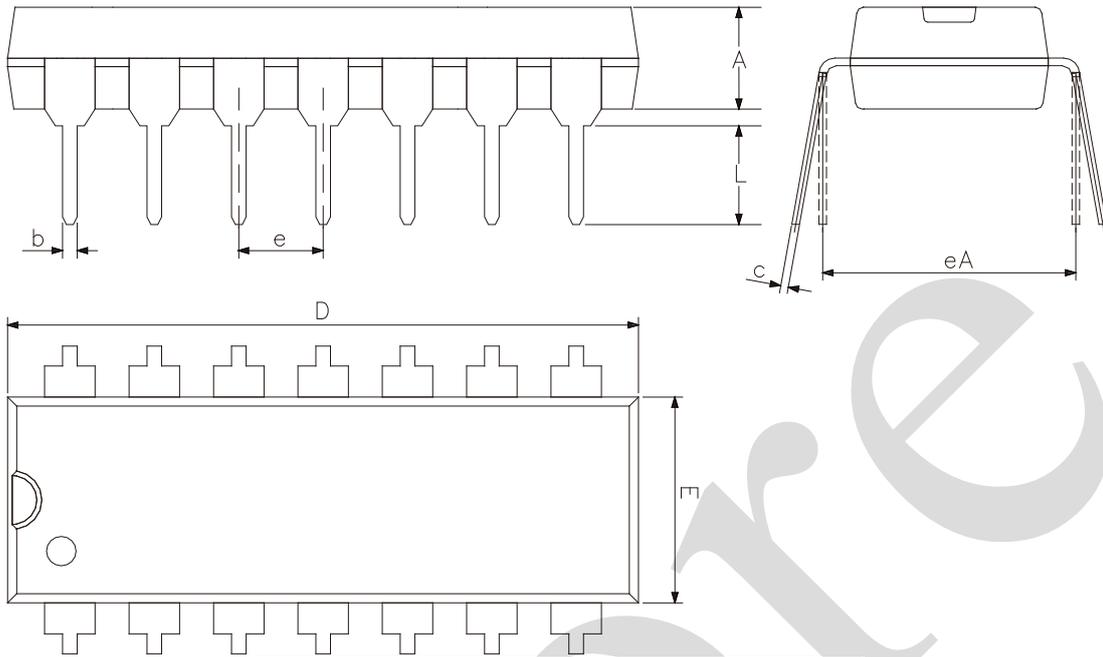
## 4.4、Measurement Points

Type	Input	Output		
	$V_M$	$V_M$	$V_X$	$V_Y$
AiP74HC266	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$0.1 \times V_{CC}$	$0.9 \times V_{CC}$
AiP74HCT266	1.3V	1.3V	$0.1 \times V_{CC}$	$0.9 \times V_{CC}$



## 5、Package Information

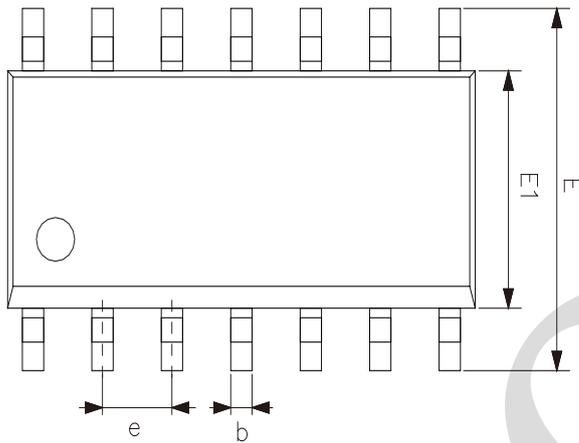
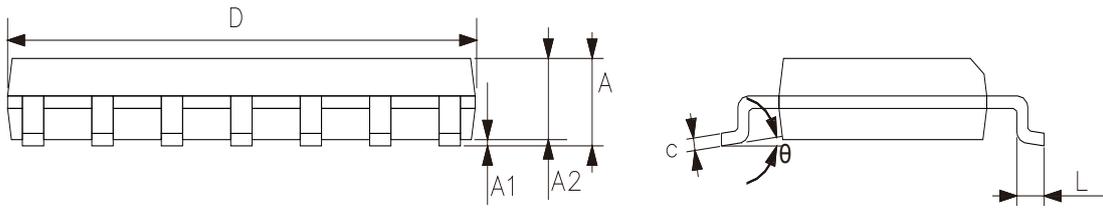
### 5.1、DIP14



2023/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	3.05	3.60
b	0.33	0.56
c	0.20	0.36
D	18.80	19.40
E	6.20	6.60
e	2.54	
eA	7.62	10.90
L	2.92	—



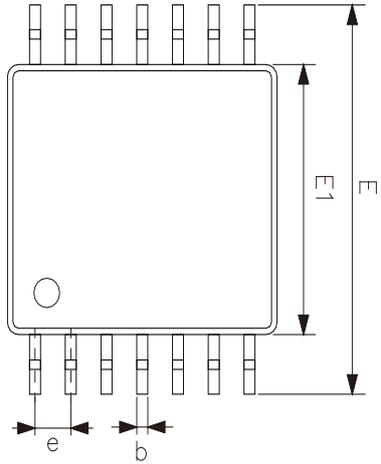
## 5.2、SOP14



2023/12/A	Dimensions In Millimeters	
Symbol	Min.	Max.
A	1.50	1.75
A1	0.05	0.25
A2	1.30	—
b	0.33	0.50
c	0.19	0.25
D	8.43	8.76
E	5.80	6.25
E1	3.75	4.00
e	1.27	
L	0.40	0.89
$\theta$	0°	8°



## 5.3、TSSOP14



2023/12/A	Dimensions In Millimeters	
Symbol	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
L1	1.00	
$\theta$	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

We recommend you to read this chapter carefully before using this product.

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