



AiP74HC/HCT253

Dual 4-input Multiplexer; 3-state

Product Specification

Specification Revision History:

Version	Date	Description
2012-06-A1	2012-06	New
2021-12-A2	2021-12	Modify ordering information
2022-01-A3	2022-01	Modify ambient temperature to $-40^{\circ}\text{C}\sim+105^{\circ}\text{C}$ and add electrical characteristics of $-40^{\circ}\text{C}\sim+105^{\circ}\text{C}$



1、 General Description

The AiP74HC/HCT253 is a dual 4-bit multiplexer, each with four binary inputs ($nI0$ to $nI3$), an output enable input ($n\overline{OE}$) and shared select inputs ($S0$ and $S1$). One of the four binary inputs is selected by the select inputs and routed to the output nY . A HIGH on $n\overline{OE}$ causes the outputs to assume a high-impedance OFF-state. 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 AiP74HC253: CMOS level
 - For AiP74HCT253: TTL level
- Non-inverting data path
- 3-state outputs interface directly with system bus
- Common select inputs
- Separate output enable inputs
- Specified from -40°C to $+105^{\circ}\text{C}$
- Packaging information: DIP16/SOP16/TSSOP16

**Ordering Information:****Tube packing specifications:**

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP74HC253DA16.TB	DIP16	74HC253	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm
AiP74HCT253DA16.TB	DIP16	74HCT253	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm
AiP74HC253SA16.TB	SOP16	74HC253	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm
AiP74HCT253SA16.TB	SOP16	74HCT253	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm
AiP74HC253TA16.TB	TSSOP16	74HC253	96 PCS/tube	200 tube/box	19200 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm
AiP74HCT253TA16.TB	TSSOP16	74HCT253	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
AiP74HC253SA16.TR	SOP16	74HC253	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing:1.27mm
AiP74HCT253SA16.TR	SOP16	74HCT253	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing:1.27mm
AiP74HC253TA16.TR	TSSOP16	74HC253	5000 PCS/reel	10000 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing:0.65mm
AiP74HCT253TA16.TR	TSSOP16	74HCT253	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

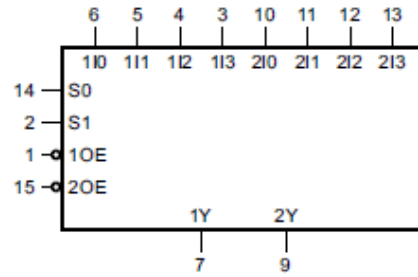


Figure 1. Logic symbol

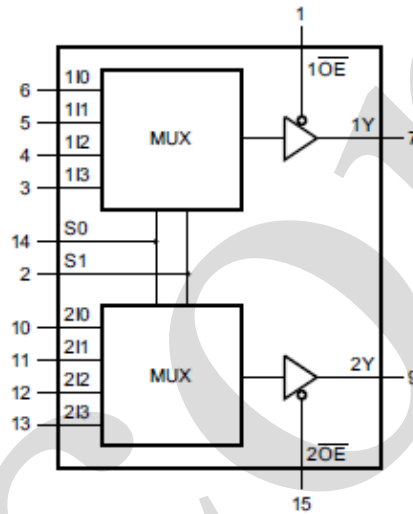


Figure 2. Functional diagram

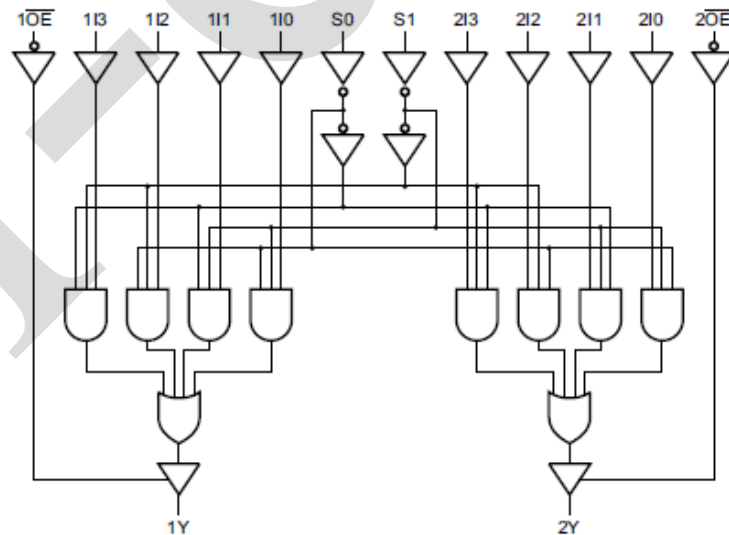
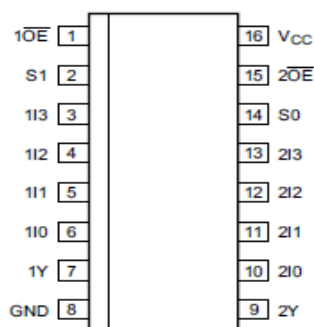


Figure 3. Logic diagram



2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	1OE	output enable input (active LOW)
2	S1	data select input
3	1I3	data input source 1
4	1I2	data input source 1
5	1I1	data input source 1
6	1I0	data input source 1
7	1Y	multiplexer output source 1
8	GND	ground (0V)
9	2Y	multiplexer output source 2
10	2I0	data input source 2
11	2I1	data input source 2
12	2I2	data input source 2
13	2I3	data input source 2
14	S0	data select input
15	2OE	output enable input (active LOW)
16	V _{CC}	supply voltage



2.4、Function Table

Select Input		Input				Output Enable	Output
S0	S1	nI0	nI1	nI2	nI3	nOE	nY
X	X	X	X	X	X	H	Z
L	L	L	X	X	X	L	L
L	L	H	X	X	X	L	H
H	L	X	L	X	X	L	L
H	L	X	H	X	X	L	H
L	H	X	X	L	X	L	L
L	H	X	X	H	X	L	H
H	H	X	X	X	L	L	L
H	H	X	X	X	H	L	H

Note: H=HIGH voltage level; L=LOW voltage level; X=don't care; 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	+7.0	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 $V_O > V_{CC}+0.5V$	-	± 50	mA
output current	I_O	$-0.5V < V_O < V_{CC}+0.5V$	-	± 35	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	250	

Note:

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

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

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



3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
AiP74H253						
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
AiP74HCT253						
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	
AiP74HC253							
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}	$V_I = V_{IH} \text{ or } V_{IL}$	$I_O=-20\mu A; V_{CC}=2.0V$	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
			$I_O=-6.0mA; V_{CC}=4.5V$	3.98	4.32	-	V
			$I_O=-7.8mA; V_{CC}=6.0V$	5.48	5.81	-	V
LOW-level output voltage	V_{OL}	$V_I = V_{IH} \text{ or } V_{IL}$	$I_O=20\mu A; V_{CC}=2.0V$	-	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
			$I_O=6.0mA; V_{CC}=4.5V$	-	0.15	0.26	V
			$I_O=7.8mA; V_{CC}=6.0V$	-	0.16	0.26	V
input leakage current	I_I	$V_I=V_{CC} \text{ or } GND; V_{CC}=6.0V$	-	-	± 0.1	μA	
OFF-state output current	I_{OZ}	$V_I=V_{IH} \text{ or } V_{IL}; V_O=V_{CC} \text{ or } GND; V_{CC}=6.0V$	-	-	± 0.5	μA	
supply current	I_{CC}	$V_I=V_{CC} \text{ or } GND; I_O=0A; V_{CC}=6.0V$	-	-	8.0	μA	



input capacitance	C_I	-	-	3.5	-	pF	
AiP74HCT253							
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
			$I_O=-6.0mA$	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
			$I_O=6.0mA$	-	0.15	0.26	V
input leakage current	I_I	$V_I=V_{CC}$ or GND; $V_{CC}=5.5V$	-	-	± 0.1	μA	
OFF-state output current	I_{OZ}	$V_I=V_{IH}$ or V_{IL} ; $V_O=V_{CC}$ or GND; $V_{CC}=5.5V$	-	-	± 0.5	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; 1In, 2In inputs	-	40	144	μA
			per input pin; nOE input	-	110	396	μA
			per input pin; Sn input	-	110	396	μA
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	
AiP74HC253							
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
			$I_O=-6.0mA$; $V_{CC}=4.5V$	3.84	-	-	V
			$I_O=-7.8mA$; $V_{CC}=6.0V$	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
			$I_O=6.0mA$; $V_{CC}=4.5V$	-	-	0.33	V
			$I_O=7.8mA$; $V_{CC}=6.0V$	-	-	0.33	V
input leakage current	I_I	$V_I=V_{CC}$ or GND; $V_{CC}=6.0V$	-	-	± 1.0	μA	
OFF-state	I_{OZ}	$V_I=V_{IH}$ or V_{IL} ; $V_O=V_{CC}$ or GND; $V_{CC}=6.0V$	-	-	± 5.0	μA	



output current							
supply current	I_{CC}	$V_I=V_{CC}$ or GND; $I_O=0A$; $V_{CC}=6.0V$	-	-	80	uA	
AiP74HC253							
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
			$I_O=-6.0mA$	3.84	-	-	V
LOW-level output voltage	V_{OL}	$V_I = V_{IH}$ or V_{IL} ; $V_{CC}=4.5V$	$I_O=20uA$	-	-	0.1	V
			$I_O=6.0mA$	-	-	0.33	V
input leakage current	I_I	$V_I=V_{CC}$ or GND; $V_{CC}=5.5V$	-	-	± 1.0	uA	
OFF-state output current	I_{OZ}	$V_I=V_{IH}$ or V_{IL} ; $V_O=V_{CC}$ or GND; $V_{CC}=5.5V$	-	-	± 5.0	uA	
supply current	I_{CC}	$V_I=V_{CC}$ or GND; $I_O=0A$; $V_{CC}=5.5V$	-	-	80	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	per input pin; 1In, 2In inputs	-	-	180	uA
			per input pin; nOE input	-	-	495	uA
			per input pin; Sn input	-	-	495	uA

3.3.3、DC Characteristics 3

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
AiP74HC253							
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
			$I_O=-6.0mA$; $V_{CC}=4.5V$	3.7	-	-	V
			$I_O=-7.8mA$; $V_{CC}=6.0V$	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
			$I_O=6.0mA$; $V_{CC}=4.5V$	-	-	0.4	V
			$I_O=7.8mA$; $V_{CC}=6.0V$	-	-	0.4	V
input leakage current	I_I	$V_I=V_{CC}$ or GND; $V_{CC}=6.0V$	-	-	± 1.0	uA	
OFF-state output current	I_{OZ}	$V_I=V_{IH}$ or V_{IL} ; $V_O=V_{CC}$ or GND; $V_{CC}=6.0V$	-	-	± 10	uA	
supply current	I_{CC}	$V_I=V_{CC}$ or GND; $I_O=0A$; $V_{CC}=6.0V$	-	-	160	uA	



AiP74HCT253							
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
			$I_O=-6.0mA$	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
			$I_O=6.0mA$	-	-	0.4	V
input leakage current	I_I	$V_I=V_{CC}$ or GND; $V_{CC}=5.5V$		-	-	± 1.0	μA
OFF-state output current	I_{OZ}	$V_I=V_{IH}$ or V_{IL} ; $V_O=V_{CC}$ or GND; $V_{CC}=5.5V$		-	-	± 10	μA
supply current	I_{CC}	$V_I=V_{CC}$ or GND; $I_O=0A$; $V_{CC}=5.5V$		-	-	160	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; 1In, 2In inputs	-	-	196	μA
			per input pin; nOE input	-	-	539	μA
			per input pin; Sn input	-	-	539	μA

3.3.4、AC Characteristics 1

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
AiP74HC253							
propagation delay	t_{pd}	1In to 1Y or 2In to 2Y; see Figure 5	$V_{CC}=2.0V$	-	55	175	ns
			$V_{CC}=4.5V$	-	20	35	ns
			$V_{CC}=5.0V$; $C_L=15pF$	-	17	-	ns
		Sn to nY; see Figure 5	$V_{CC}=6.0V$	-	16	30	ns
			$V_{CC}=2.0V$	-	58	175	ns
			$V_{CC}=4.5V$	-	21	35	ns
nOE to nY enable time	t_{en}	see Figure 6	$V_{CC}=5.0V$; $C_L=15pF$	-	18	-	ns
			$V_{CC}=6.0V$	-	17	30	ns
			$V_{CC}=2.0V$	-	30	100	ns
nOE to nY disable time	t_{dis}	see Figure 6	$V_{CC}=4.5V$	-	11	20	ns
			$V_{CC}=6.0V$	-	9	17	ns
			$V_{CC}=2.0V$	-	41	150	ns
transition time	t_t	see Figure 5	$V_{CC}=4.5V$	-	15	30	ns
			$V_{CC}=6.0V$	-	12	26	ns
			$V_{CC}=2.0V$	-	14	60	ns
power dissipation capacitance	C_{PD}	per multiplexer; $V_I=GND$ to V_{CC}	$V_{CC}=4.5V$	-	5	12	ns
			$V_{CC}=6.0V$	-	4	10	ns
			$V_{CC}=2.0V$	-	55	-	pF
AiP74HCT253							
propagation delay	t_{pd}	1In to 1Y or 2In to 2Y;	$V_{CC}=4.5V$	-	20	38	ns
			$V_{CC}=5.0V$; $C_L=15pF$	-	17	-	ns



		see Figure 5					
		Sn to nY; see Figure 5	V _{CC} =4.5V	-	22	40	ns
			V _{CC} =5.0V; C _L =15pF	-	19	-	ns
n $\overline{\text{OE}}$ to nY enable time	t _{en}	V _{CC} =4.5V; see Figure 6		-	14	30	ns
n $\overline{\text{OE}}$ to nY disable time	t _{dis}	V _{CC} =4.5V; see Figure 6		-	13	30	ns
transition time	t _t	V _{CC} =4.5V; see Figure 5		-	5	12	ns
power dissipation capacitance	C _{PD}	per multiplexer; V _I =GND to V _{CC} -1.5V		-	55	-	pF

Note:

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

[2] t_{en} is the same as t_{PZH} and t_{PZL}.

[3] t_{dis} is the same as t_{PLZ} and t_{PHZ}.

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

[5] 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°C to +85°C, voltages are referenced to GND (ground=0V), unless otherwise specified.)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
AiP74HC253							
propagation delay	t _{pd}	1In to 1Y or 2In to 2Y; see Figure 5	V _{CC} =2.0V	-	-	220	ns
			V _{CC} =4.5V	-	-	44	ns
			V _{CC} =6.0V	-	-	37	ns
		Sn to nY; see Figure 5	V _{CC} =2.0V	-	-	220	ns
			V _{CC} =4.5V	-	-	44	ns
			V _{CC} =6.0V	-	-	37	ns
n $\overline{\text{OE}}$ to nY enable time	t _{en}	see Figure 6	V _{CC} =2.0V	-	-	125	ns
			V _{CC} =4.5V	-	-	25	ns
			V _{CC} =6.0V	-	-	21	ns
n $\overline{\text{OE}}$ to nY disable time	t _{dis}	see Figure 6	V _{CC} =2.0V	-	-	190	ns
			V _{CC} =4.5V	-	-	38	ns
			V _{CC} =6.0V	-	-	33	ns
transition time	t _t	see Figure 5	V _{CC} =2.0V	-	-	75	ns
			V _{CC} =4.5V	-	-	15	ns
			V _{CC} =6.0V	-	-	13	ns
AiP74HCT253							



propagation delay	t_{pd}	1In to 1Y or 2In to 2Y; see Figure 5	$V_{CC}=4.5V$	-	-	48	ns
		Sn to nY; see Figure 5	$V_{CC}=4.5V$	-	-	50	ns
nOE to nY enable time	t_{en}	$V_{CC}=4.5V$; see Figure 6		-	-	38	ns
nOE to nY disable time	t_{dis}	$V_{CC}=4.5V$; see Figure 6		-	-	38	ns
transition time	t_t	$V_{CC}=4.5V$; see Figure 5		-	-	15	ns

Note:

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

[2] t_{en} is the same as t_{PZH} and t_{PZL} .

[3] t_{dis} is the same as t_{PLZ} and t_{PHZ} .

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

3.3.6、AC Characteristics 3

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
AiP74HC253							
propagation delay	t_{pd}	1In to 1Y or 2In to 2Y; see Figure 5	$V_{CC}=2.0V$	-	-	265	ns
			$V_{CC}=4.5V$	-	-	53	ns
			$V_{CC}=6.0V$	-	-	45	ns
		Sn to nY; see Figure 5	$V_{CC}=2.0V$	-	-	265	ns
			$V_{CC}=4.5V$	-	-	53	ns
			$V_{CC}=6.0V$	-	-	45	ns
nOE to nY enable time	t_{en}	see Figure 6	$V_{CC}=2.0V$	-	-	150	ns
			$V_{CC}=4.5V$	-	-	30	ns
			$V_{CC}=6.0V$	-	-	26	ns
nOE to nY disable time	t_{dis}	see Figure 6	$V_{CC}=2.0V$	-	-	225	ns
			$V_{CC}=4.5V$	-	-	45	ns
			$V_{CC}=6.0V$	-	-	38	ns
transition time	t_t	see Figure 5	$V_{CC}=2.0V$	-	-	90	ns
			$V_{CC}=4.5V$	-	-	18	ns
			$V_{CC}=6.0V$	-	-	15	ns
AiP74HCT253							
propagation delay	t_{pd}	1In to 1Y or 2In to 2Y; see Figure 5	$V_{CC}=4.5V$	-	-	57	ns
		Sn to nY; see Figure 5	$V_{CC}=4.5V$	-	-	60	ns
nOE to nY enable time	t_{en}	$V_{CC}=4.5V$; see Figure 6		-	-	45	ns
nOE to nY disable time	t_{dis}	$V_{CC}=4.5V$; see Figure 6		-	-	45	ns
transition time	t_t	$V_{CC}=4.5V$; see Figure 5		-	-	18	ns



Note:

- [1] t_{pd} is the same as t_{PLH} and t_{PHL} .
- [2] t_{en} is the same as t_{PZH} and t_{PZL} .
- [3] t_{dis} is the same as t_{PLZ} and t_{PHZ} .
- [4] t_t is the same as t_{THL} and t_{TLH} .

4、 Testing Circuit

4.1、 AC Testing Circuit

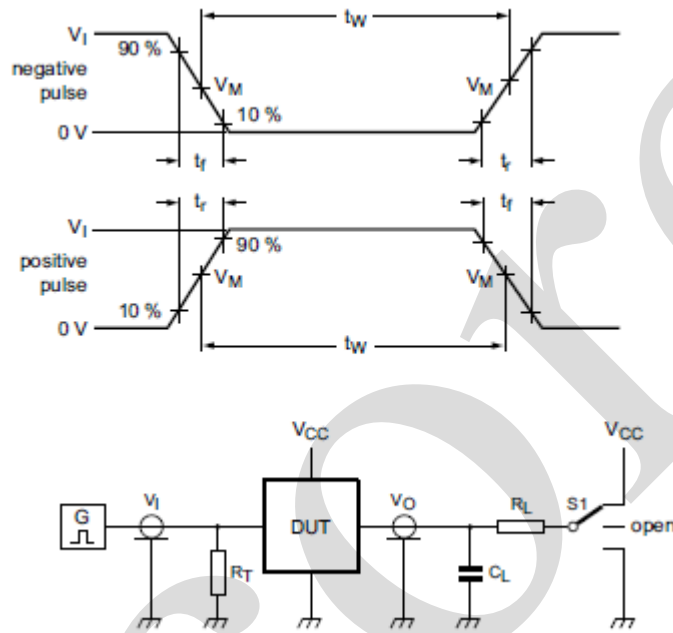


Figure 4. Test circuit for measuring switching times

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

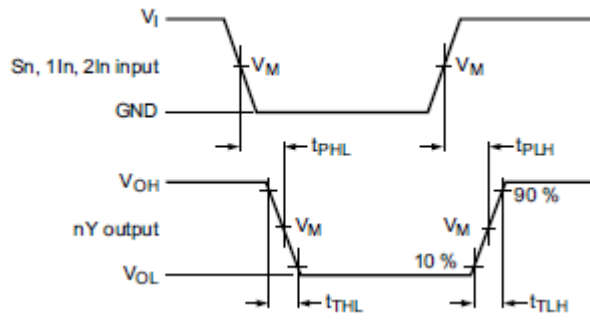


Figure 5. Propagation delays input (Sn, 1In, 2In) to output (nY) and output (nY) transition times

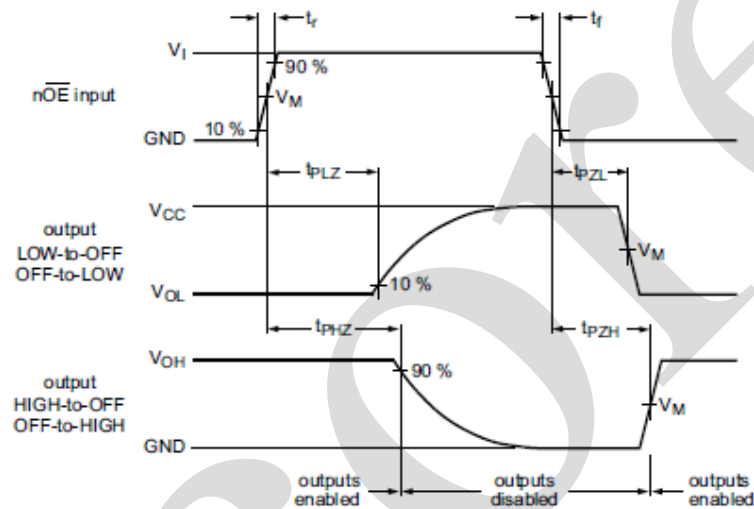


Figure 6. 3-state output enable and disable times

4.3、 Measurement Points

Type	Input	Output
	V_M	V_M
AiP74HC253	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$
AiP74HCT253	1.3V	1.3V

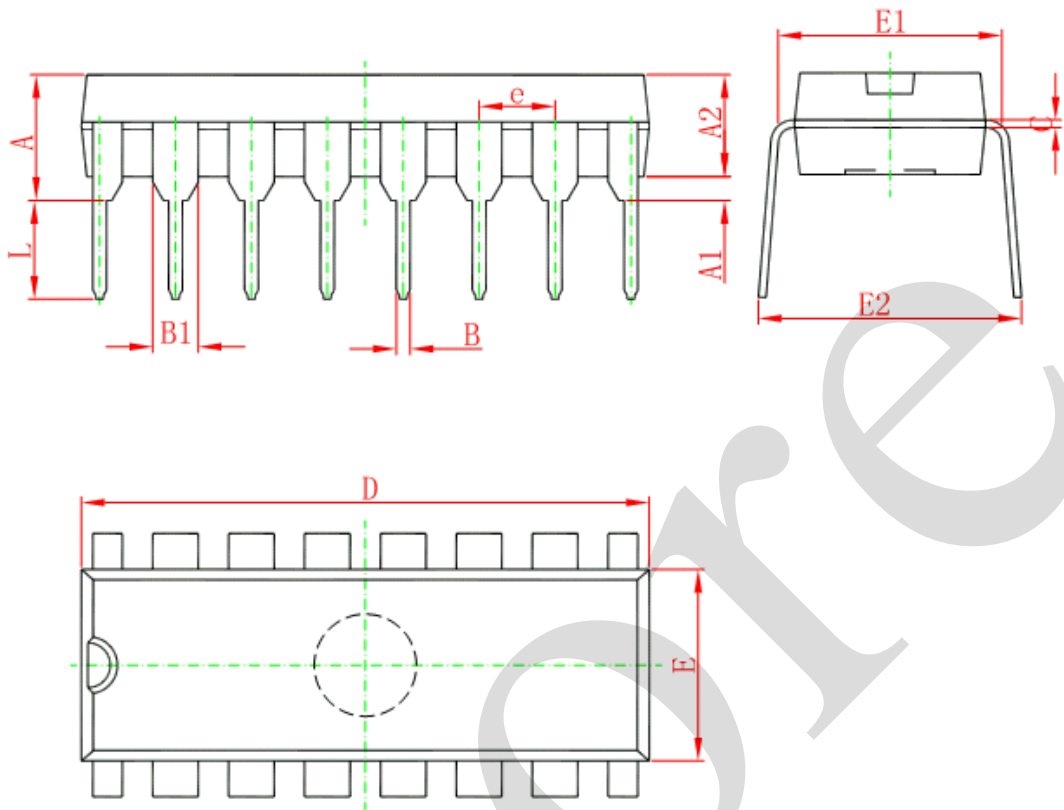
4.4、 Test Data

Type	Input		Load		S1 position		
	V_I	t_r, t_f	C_L	R_L	t_{PHL}, t_{PLH}	t_{PZH}, t_{PHZ}	t_{PZL}, t_{PLZ}
AiP74HC253	V_{CC}	6ns	50pF	1k Ω	open	GND	V_{CC}
AiP74HCT253	3V	6ns	50pF	1k Ω	open	GND	V_{CC}



5、Package Information

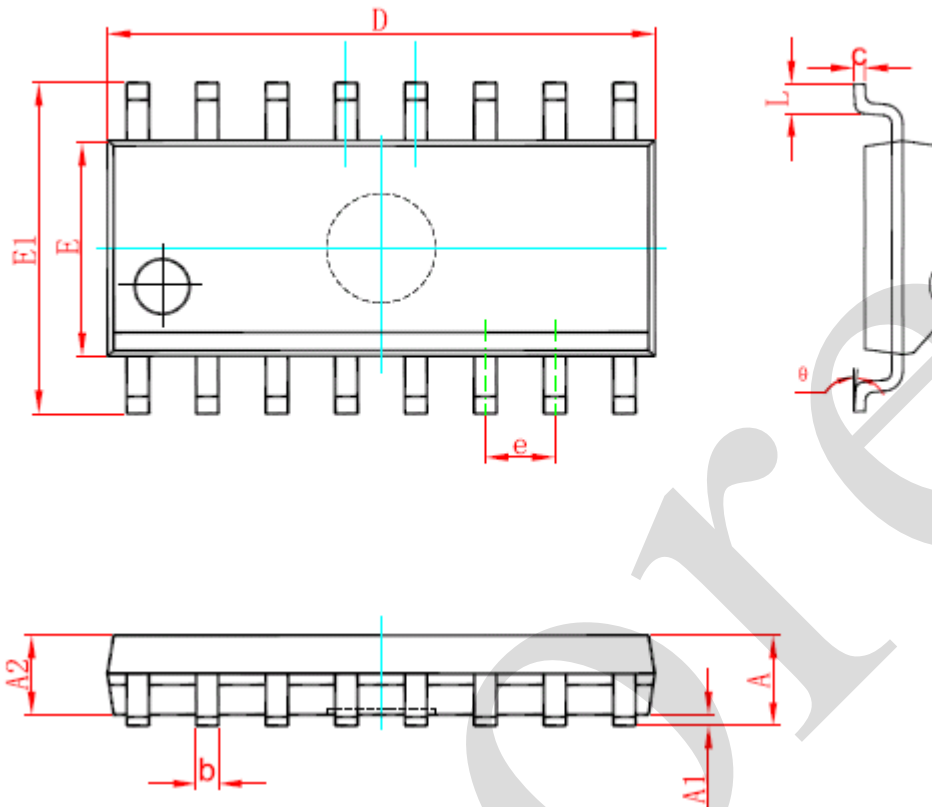
5.1、DIP16



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.710	4.310	0.146	0.170
A1	0.510		0.020	
A2	3.200	3.600	0.126	0.142
B	0.380	0.570	0.015	0.022
B1	1.524 (BSC)		0.060 (BSC)	
C	0.204	0.360	0.008	0.014
D	18.800	19.200	0.740	0.756
E	6.200	6.600	0.244	0.260
E1	7.320	7.920	0.288	0.312
e	2.540 (BSC)		0.100 (BSC)	
L	3.000	3.600	0.118	0.142
E2	8.400	9.000	0.331	0.354



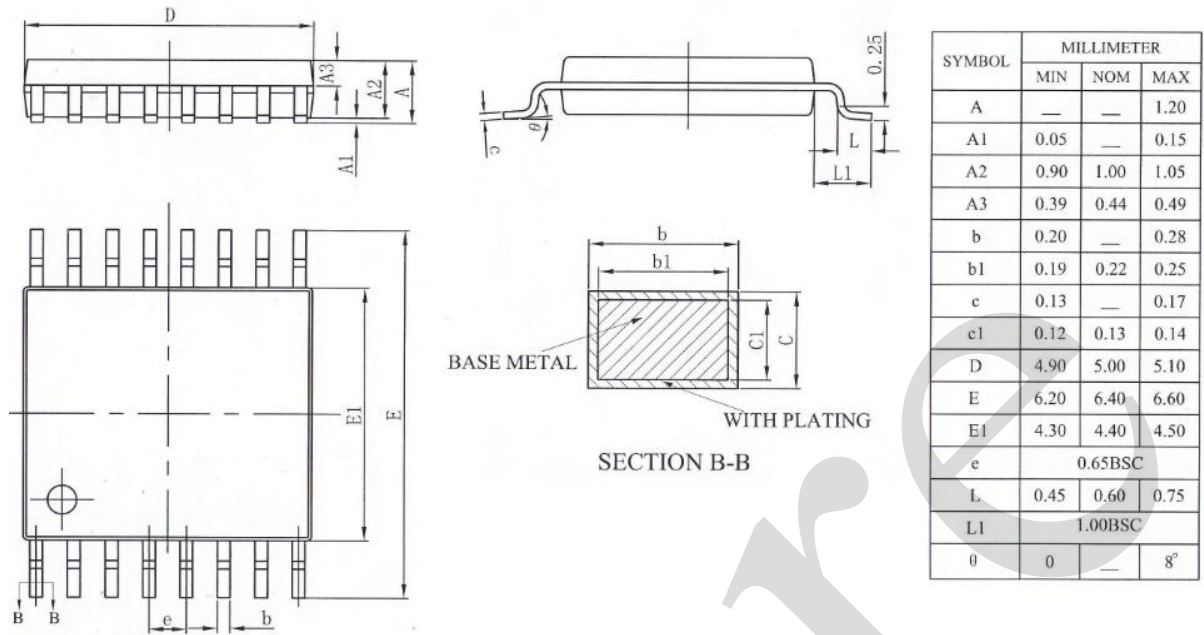
5.2、SOP16



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	9.800	10.200	0.386	0.402
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



5.3、TSSOP16





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、 Notion

Recommended carefully reading this information before the use of this product;

The information in this document are subject to change without notice;

This information is using to the reference only, the company is not responsible for any loss;

The company is not responsible for the any infringement of the third party patents or other rights of the responsibility.