AiP74HC/HCT574
Octal D-type flip-flop; positive edge-trigger; 3-state

Product Specification

Specification Revision History:

Version	Date	Description
2012-06-A1	2012-06	New
2023-04-B1	2023-04	Update the template

Contents

1、General Description

The AiP74HC/HCT574 is an octal positive-edge triggered D-type flip-flop with 3-state outputs. The device features a clock (CP) and output enable ($\overline{OE}$) inputs. A HIGH on $\overline{OE}$ causes the outputs to assume a high-impedance OFF-state. Operation of the $\overline{OE}$ input does not affect the state of the flip-flops.

Features:

- Input levels:
  For AiP74HC574: CMOS level
  For AiP74HCT574: TTL level
- 3-state non-inverting outputs for bus oriented applications
- 8-bit positive, edge-triggered register
- Specified from -40℃ to +125℃
- Packaging information: DIP20/SOP20/TSSOP20

Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP74HC574DA20.TB	DIP20	74HC574	18 PCS/tube	40 tube/box	720 PCS/box	Dimensions of plastic enclosure: 26.3mm×6.4mm Pin spacing: 2.54mm
AiP74HCT574DA20.TB	DIP20	74HCT574	18 PCS/tube	40 tube/box	720 PCS/box	Dimensions of plastic enclosure: 26.3mm×6.4mm Pin spacing: 2.54mm
AiP74HC574SA20.TB	SOP20	74HC574	35 PCS/tube	80 tube/box	2800 PCS/box	Dimensions of plastic enclosure: 12.8mm×7.5mm Pin spacing: 1.27mm
AiP74HCT574SA20.TB	SOP20	74HCT574	35 PCS/tube	80 tube/box	2800 PCS/box	Dimensions of plastic enclosure: 12.8mm×7.5mm Pin spacing: 1.27mm
AiP74HC574TA20.TB	TSSOP20	74HC574	70 PCS/tube	200 tube/box	14000 PCS/box	Dimensions of plastic enclosure: 6.5mm×4.4mm Pin spacing: 0.65mm
AiP74HCT574TA20.TB	TSSOP20	74HCT574	70 PCS/tube	200 tube/box	14000 PCS/box	Dimensions of plastic enclosure: 6.5mm×4.4mm Pin spacing: 0.65mm

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74HC574SA20.TR	SOP20	74HC574	2000PCS/reel	2000PCS/box	Dimensions of plastic enclosure: 12.8mm×7.5mm Pin spacing:1.27mm
AiP74HCT574SA20.TR	SOP20	74HCT574	2000PCS/reel	2000PCS/box	Dimensions of plastic enclosure: 12.8mm×7.5mm Pin spacing:1.27mm
AiP74HC574TA20.TR	TSSOP20	74HC574	4000PCS/reel	8000PCS/box	Dimensions of plastic enclosure: 6.5mm×4.4mm Pin spacing:0.65mm
AiP74HCT574TA20.TR	TSSOP20	74HCT574	4000PCS/reel	8000PCS/box	Dimensions of plastic enclosure: 6.5mm×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

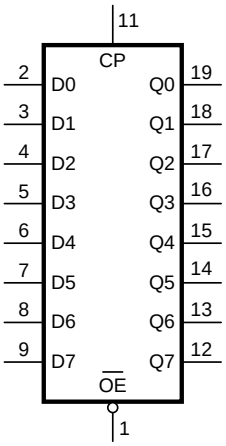


Figure 1. Logic symbol

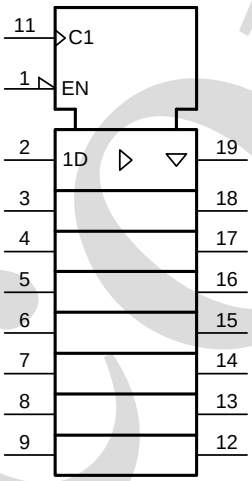


Figure 2. IEC logic symbol

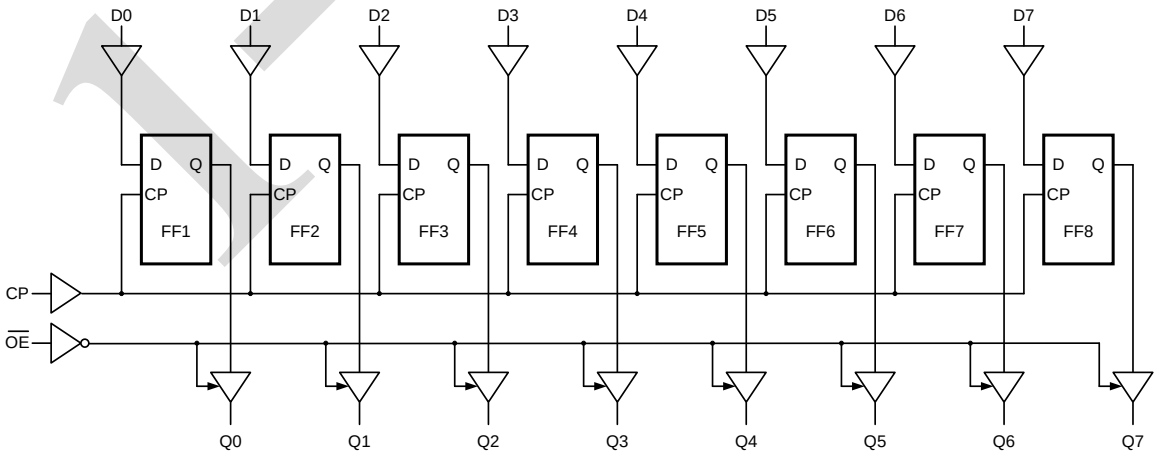


Figure 3. Logic diagram

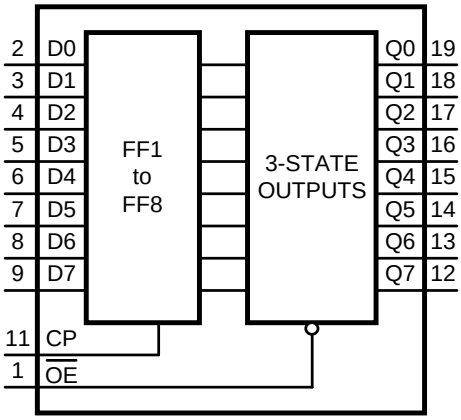
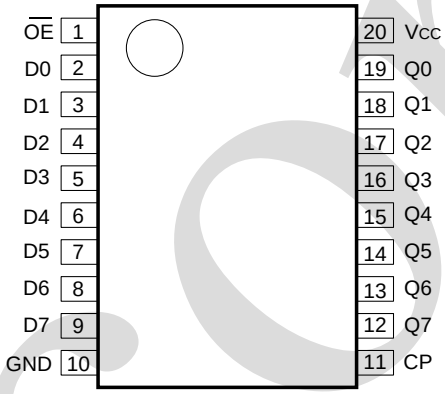


Figure 4. Functional diagram

2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	$\overline{OE}$	3-state output enable input (active LOW)
2	D0	data input
3	D1	data input
4	D2	data input
5	D3	data input
6	D4	data input
7	D5	data input
8	D6	data input
9	D7	data input
10	GND	ground (0V)
11	CP	clock input (LOW-to-HIGH, edge-triggered)
12	Q7	flip-flop output
13	Q6	flip-flop output
14	Q5	flip-flop output
15	Q4	flip-flop output
16	Q3	flip-flop output
17	Q2	flip-flop output

18	Q1	flip-flop output
19	Q0	flip-flop output
20	V_{CC}	supply voltage

2.4、Function Table

Operating modes	Input			Internal flip-flop	Output
	$\overline{OE}$	CP	Dn		Qn
Load and read register	L	↑	l	L	L
	L	↑	h	H	H
Load register and disable output	H	↑	l	L	Z
	H	↑	h	H	Z

Note:

H=HIGH voltage level; L=LOW voltage level; Z=high-impedance OFF-state;

h=HIGH voltage level one set-up time prior to the LOW-to-HIGH clock transition;

l=LOW voltage level one set-up time prior to the LOW-to-HIGH clock transition;

↑=LOW-to-HIGH clock transition.

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	-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	℃
total power dissipation	P_{tot}	-		-	500	mW
soldering temperature	T_L	10s	DIP	245		℃
			SOP/TSSOP	260		℃

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
AiP74HC574						
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	℃
AiP74HCT574						
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	℃

3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC574							
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=-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} 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=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} or GND; V_{CC}=6.0V		-	-	±1.0	uA
OFF-state output current	I_{OZ}	V_I=V_{IH} or V_{IL}; V_{CC}=6.0V; V_O=V_{CC} or GND		-	-	±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
AiP74HCT574							
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=-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=20uA	-	0	0.1	V
			I_O=6.0mA	-	0.16	0.26	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_{CC}=5.5V; V_O=V_{CC} or GND		-	-	±1.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	8.0	uA
additional supply current	ΔI_{CC}	per input pin; 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; Dn inputs	-	50	180	uA
			per input pin; $\overline{OE}$ input	-	125	450	uA
			per input pin; CP input	-	150	540	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
AiP74HC574							
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	3.84	-	-	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=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	-	-	0.33	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		-	-	±2.0	uA
OFF-state output current	I_{OZ}	V_I=V_{IH} or V_{IL}; V_{CC}=6.0V; V_O=V_{CC} or GND		-	-	±2.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	80	uA
AiP74HCT574							
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		-	-	±2.0	uA
OFF-state output current	I_{OZ}	V_I=V_{IH} or V_{IL}; V_{CC}=5.5V; V_O=V_{CC} or GND		-	-	±2.0	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}	per input pin; 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; Dn inputs	-	-	225	uA
			per input pin; $\overline{OE}$ input	-	-	563	uA
			per input pin; CP input	-	-	675	uA

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
AiP74HC574							
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		-	-	±4.0	uA
OFF-state output current	I_{OZ}	V_I=V_{IH} or V_{IL}; V_{CC}=6.0V; V_O=V_{CC} or GND		-	-	±4.0	uA
supply current	I_{CC}	V_I=V_{CC} or GND; I_O=0A; V_{CC}=6.0V		-	-	160	uA
AiP74HCT574							
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	3.7	-	-	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	-	-	0.4	V
input leakage current	I_I	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	±4.0	uA
OFF-state output current	I_{OZ}	V_I=V_{IH} or V_{IL}; V_{CC}=5.5V; V_O=V_{CC} or GND		-	-	±4.0	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}	per input pin; 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; Dn inputs	-	-	245	uA
			per input pin; $\overline{OE}$ input	-	-	613	uA
			per input pin; CP input	-	-	735	uA

3.3.4、AC Characteristics 1

(T_{amb}=25℃, GND =0V, C_L=50pF, unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC574							
CP to Qn propagation delay	t_{PLH}, t_{PHL}	see Figure 6	V_{CC}=2.0V	-	47	150	ns
			V_{CC}=4.5V	-	17	30	ns
			V_{CC}=5.0V; C_L=15pF	-	14	-	ns
			V_{CC}=6.0V	-	14	26	ns
$\overline{OE}$ to Qn enable time	t_{PZH}, t_{PZL}	see Figure 8	V_{CC}=2.0V	-	44	140	ns
			V_{CC}=4.5V	-	16	28	ns
			V_{CC}=6.0V	-	13	24	ns
$\overline{OE}$ to Qn disable time	t_{PLZ}, t_{PHZ}	see Figure 8	V_{CC}=2.0V	-	39	125	ns
			V_{CC}=4.5V	-	14	25	ns
			V_{CC}=6.0V	-	11	21	ns
transition time	t_{THL}, t_{TLH}	Qn output; see Figure 6	V_{CC}=2.0V	-	14	60	ns
			V_{CC}=4.5V	-	5	12	ns
			V_{CC}=6.0V	-	4	10	ns
pulse width	t_W	CP; HIGH or LOW; see Figure 7	V_{CC}=2.0V	80	14	-	ns
			V_{CC}=4.5V	16	5	-	ns
			V_{CC}=6.0V	14	4	-	ns
Dn to CP set-up time	t_{su}	see Figure 7	V_{CC}=2.0V	60	6	-	ns
			V_{CC}=4.5V	12	2	-	ns
			V_{CC}=6.0V	10	2	-	ns
Dn to CP hold time	t_h	see Figure 7	V_{CC}=2.0V	5	0	-	ns
			V_{CC}=4.5V	5	0	-	ns
			V_{CC}=6.0V	5	0	-	ns
maximum frequency	f_{max}	CP input; see Figure 6	V_{CC}=2.0V	6.0	-	-	MHz
			V_{CC}=4.5V	30	-	-	MHz
			V_{CC}=5.0V; C_L=15pF	32	-	-	MHz
			V_{CC}=6.0V	35	-	-	MHz

AiP74HCT574							
CP to Qn propagation delay	t_{PLH}, t_{PHL}	see Figure 6	V_{CC}=4.5V	-	18	33	ns
			V_{CC}=5.0V; C_L=15pF	-	15	-	ns
$\overline{OE}$ to Qn enable time	t_{PZH}, t_{PZL}	V_{CC}=4.5V; see Figure 8		-	19	33	ns
$\overline{OE}$ to Qn disable time	t_{PLZ}, t_{PHZ}	V_{CC}=4.5V; see Figure 8		-	16	28	ns
transition time	t_{THL}, t_{TLH}	Qn; V_{CC}=4.5V; see Figure 6		-	5	12	ns
pulse width	t_W	CP; HIGH or LOW; V_{CC}=4.5V; see Figure 7		16	7	-	ns
Dn to CP set-up time	t_{su}	V_{CC}=4.5V; see Figure 7		12	3	-	ns
Dn to CP hold time	t_h	V_{CC}=4.5V; see Figure 7		5	-1	-	ns
maximum frequency	f_{max}	CP input; see Figure 6	V_{CC}=4.5V	30	-	-	MHz
			V_{CC}=5.0V; C_L=15pF	32	-	-	MHz

3.3.5、AC Characteristics 2

(T_{amb}=-40℃ to +85℃, GND =0V, C_L=50pF, unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC574							
CP to Qn propagation delay	t_{PLH}, t_{PHL}	see Figure 6	V_{CC}=2.0V	-	-	190	ns
			V_{CC}=4.5V	-	-	35	ns
			V_{CC}=6.0V	-	-	33	ns
$\overline{OE}$ to Qn enable time	t_{PZH}, t_{PZL}	see Figure 8	V_{CC}=2.0V	-	-	175	ns
			V_{CC}=4.5V	-	-	35	ns
			V_{CC}=6.0V	-	-	30	ns
$\overline{OE}$ to Qn disable time	t_{PLZ}, t_{PHZ}	see Figure 8	V_{CC}=2.0V	-	-	155	ns
			V_{CC}=4.5V	-	-	31	ns
			V_{CC}=6.0V	-	-	26	ns
transition time	t_{THL}, t_{TLH}	Qn output; see Figure 6	V_{CC}=2.0V	-	-	75	ns
			V_{CC}=4.5V	-	-	15	ns
			V_{CC}=6.0V	-	-	13	ns
pulse width	t_W	CP; HIGH or LOW; see Figure 7	V_{CC}=2.0V	100	-	-	ns
			V_{CC}=4.5V	20	-	-	ns
			V_{CC}=6.0V	17	-	-	ns
Dn to CP set-up time	t_{su}	see Figure 7	V_{CC}=2.0V	75	-	-	ns
			V_{CC}=4.5V	15	-	-	ns
			V_{CC}=6.0V	13	-	-	ns
Dn to CP hold time	t_h	see Figure 7	V_{CC}=2.0V	5	-	-	ns
			V_{CC}=4.5V	5	-	-	ns
			V_{CC}=6.0V	5	-	-	ns
maximum frequency	f_{max}	CP input; see Figure 6	V_{CC}=2.0V	4.8	-	-	MHz
			V_{CC}=4.5V	24	-	-	MHz
			V_{CC}=6.0V	28	-	-	MHz

AiP74HCT574							
CP to Qn propagation delay	t_{PLH}, t_{PHL}	see Figure 6	V_{CC}=4.5V	-	-	41	ns
$\overline{OE}$ to Qn enable time	t_{PZH}, t_{PZL}	V_{CC}=4.5V; see Figure 8		-	-	41	ns
$\overline{OE}$ to Qn disable time	t_{PLZ}, t_{PHZ}	V_{CC}=4.5V; see Figure 8		-	-	35	ns
transition time	t_{THL}, t_{TLH}	Qn; V_{CC}=4.5V; see Figure 6		-	-	15	ns
pulse width	t_W	CP; HIGH or LOW; V_{CC}=4.5V; see Figure 7		20	-	-	ns
Dn to CP set-up time	t_{su}	V_{CC}=4.5V; see Figure 7		15	-	-	ns
Dn to CP hold time	t_h	V_{CC}=4.5V; see Figure 7		5	-	-	ns
maximum frequency	f_{max}	CP input; see Figure 6	V_{CC}=4.5V	24	-	-	MHz

3.3.6、AC Characteristics 3

(T_{amb}=-40℃ to +125℃, GND =0V, C_L=50pF, unless otherwise specified.)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
AiP74HC574							
CP to Qn propagation delay	t_{PLH}, t_{PHL}	see Figure 6	V_{CC}=2.0V	-	-	225	ns
			V_{CC}=4.5V	-	-	45	ns
			V_{CC}=6.0V	-	-	38	ns
$\overline{OE}$ to Qn enable time	t_{PZH}, t_{PZL}	see Figure 8	V_{CC}=2.0V	-	-	210	ns
			V_{CC}=4.5V	-	-	42	ns
			V_{CC}=6.0V	-	-	36	ns
$\overline{OE}$ to Qn disable time	t_{PLZ}, t_{PHZ}	see Figure 8	V_{CC}=2.0V	-	-	190	ns
			V_{CC}=4.5V	-	-	38	ns
			V_{CC}=6.0V	-	-	32	ns
transition time	t_{THL}, t_{TLH}	Qn output; see Figure 6	V_{CC}=2.0V	-	-	90	ns
			V_{CC}=4.5V	-	-	18	ns
			V_{CC}=6.0V	-	-	15	ns
pulse width	t_W	CP; HIGH or LOW; see Figure 7	V_{CC}=2.0V	120	-	-	ns
			V_{CC}=4.5V	24	-	-	ns
			V_{CC}=6.0V	20	-	-	ns
Dn to CP set-up time	t_{su}	see Figure 7	V_{CC}=2.0V	90	-	-	ns
			V_{CC}=4.5V	18	-	-	ns
			V_{CC}=6.0V	15	-	-	ns
Dn to CP hold time	t_h	see Figure 7	V_{CC}=2.0V	5	-	-	ns
			V_{CC}=4.5V	5	-	-	ns
			V_{CC}=6.0V	5	-	-	ns
maximum frequency	f_{max}	CP input; see Figure 6	V_{CC}=2.0V	4.0	-	-	MHz
			V_{CC}=4.5V	20	-	-	MHz
			V_{CC}=6.0V	24	-	-	MHz
AiP74HCT574							

CP to Qn propagation delay	t_{PLH}, t_{PHL}	see Figure 6	V_{CC}=4.5V	-	-	50	ns
$\overline{OE}$ to Qn enable time	t_{PZH}, t_{PZL}	V_{CC}=4.5V; see Figure 8		-	-	50	ns
$\overline{OE}$ to Qn disable time	t_{PLZ}, t_{PHZ}	V_{CC}=4.5V; see Figure 8		-	-	42	ns
transition time	t_{THL}, t_{TLH}	Qn; V_{CC}=4.5V; see Figure 6		-	-	18	ns
pulse width	t_W	CP; HIGH or LOW; V_{CC}=4.5V; see Figure 7		24	-	-	ns
Dn to CP set-up time	t_{su}	V_{CC}=4.5V; see Figure 7		18	-	-	ns
Dn to CP hold time	t_h	V_{CC}=4.5V; see Figure 7		5	-	-	ns
maximum frequency	f_{max}	CP input; see Figure 6	V_{CC}=4.5V	20	-	-	MHz

4、Testing Circuit

4.1、AC Testing Circuit

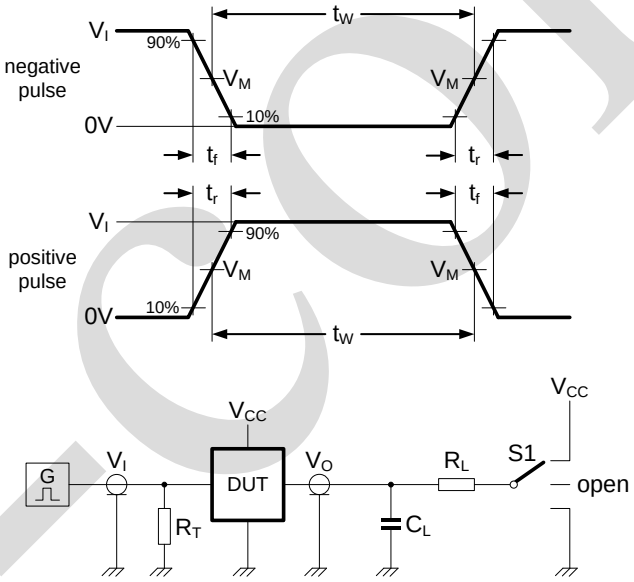


Figure 5. Test circuit for measuring switching times

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 the output impedance Z_o of the pulse generator.

S1=Test selection switch.

4.2、AC Testing Waveforms

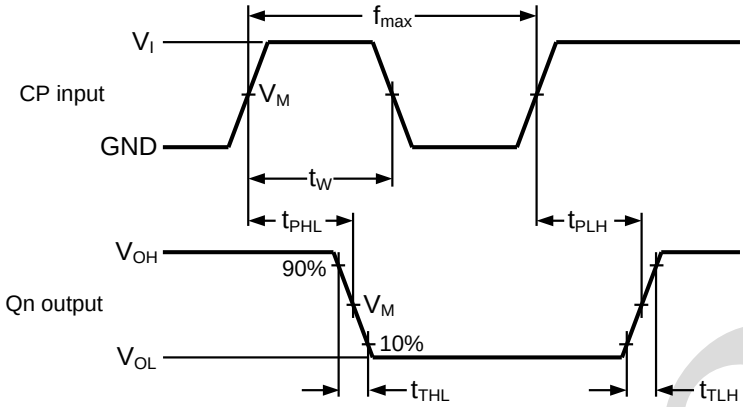


Figure 6. Propagation delay input (CP) to output (Qn), output transition time, clock input (CP) pulse width and the maximum frequency (CP)

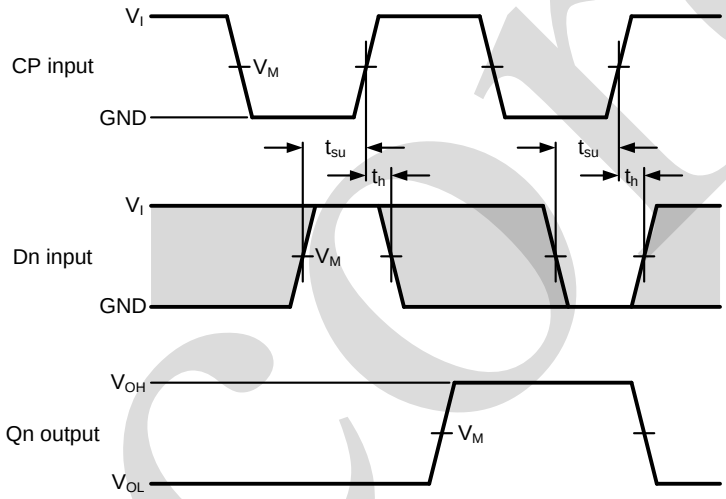


Figure 7. The data input (D) to clock input (CP) set-up times and clock input (CP) to data input (D) hold times

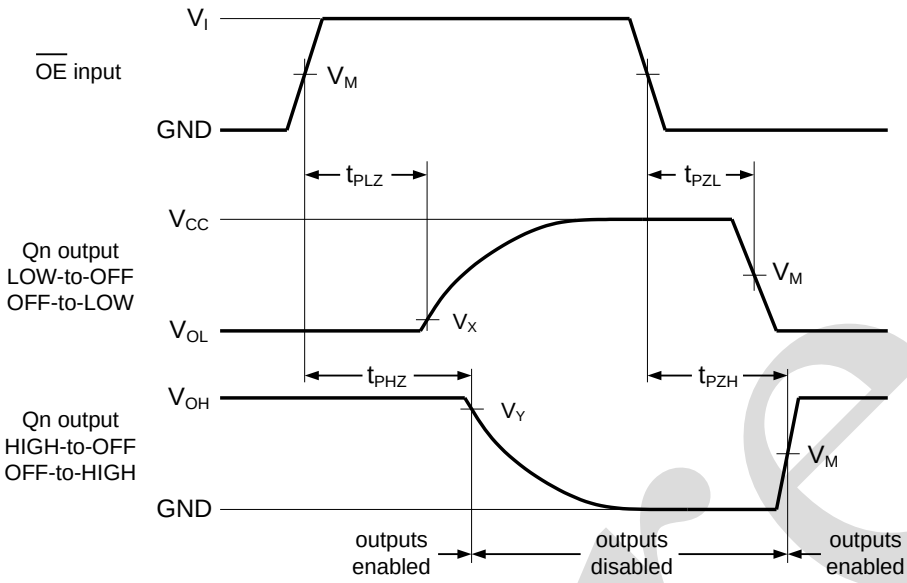


Figure 8. Enable and disable times

4.3、Measurement Points

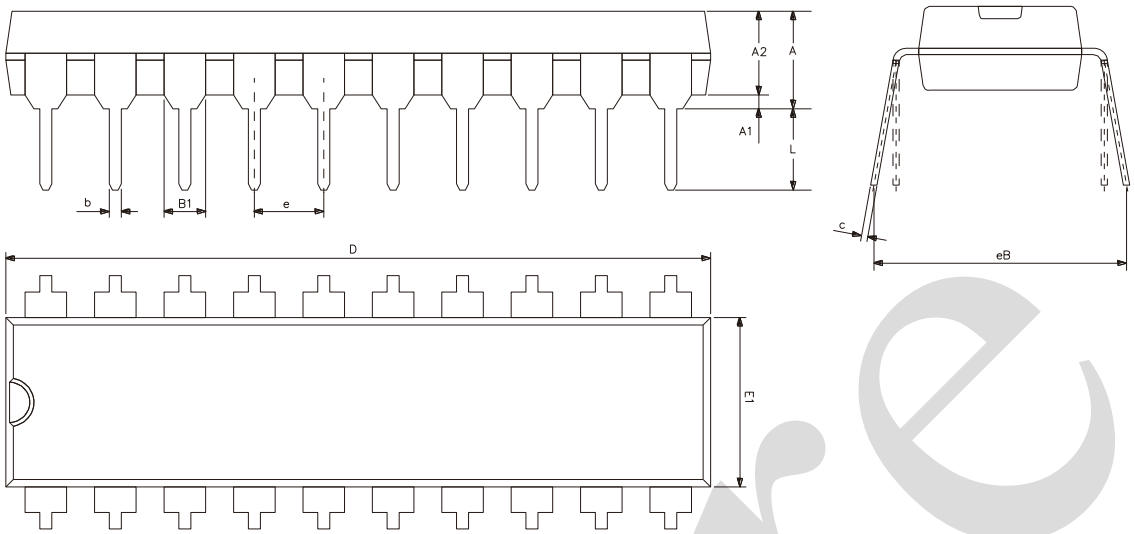
Type	Input	Output		
	V_M	V_M	V_X	V_Y
AiP74HC574	$0.5\times V_{CC}$	$0.5\times V_{CC}$	$0.1\times V_{CC}$	$0.9\times V_{CC}$
AiP74HCT574	1.3V	1.3V	$0.1\times V_{CC}$	$0.9\times V_{CC}$

4.4、Test Data

Type	Input		Load		S1 position		
	V_I	t_r , t_f	C_L	R_L	t_{PHL}, t_{PLH}	t_{PZH}, t_{PHZ}	t_{PZL}, t_{PLZ}
AiP74HC574	V_{CC}	6ns	15pF, 50pF	1kΩ	open	GND	V_{CC}
AiP74HCT574	3V	6ns	15pF, 50pF	1kΩ	open	GND	V_{CC}

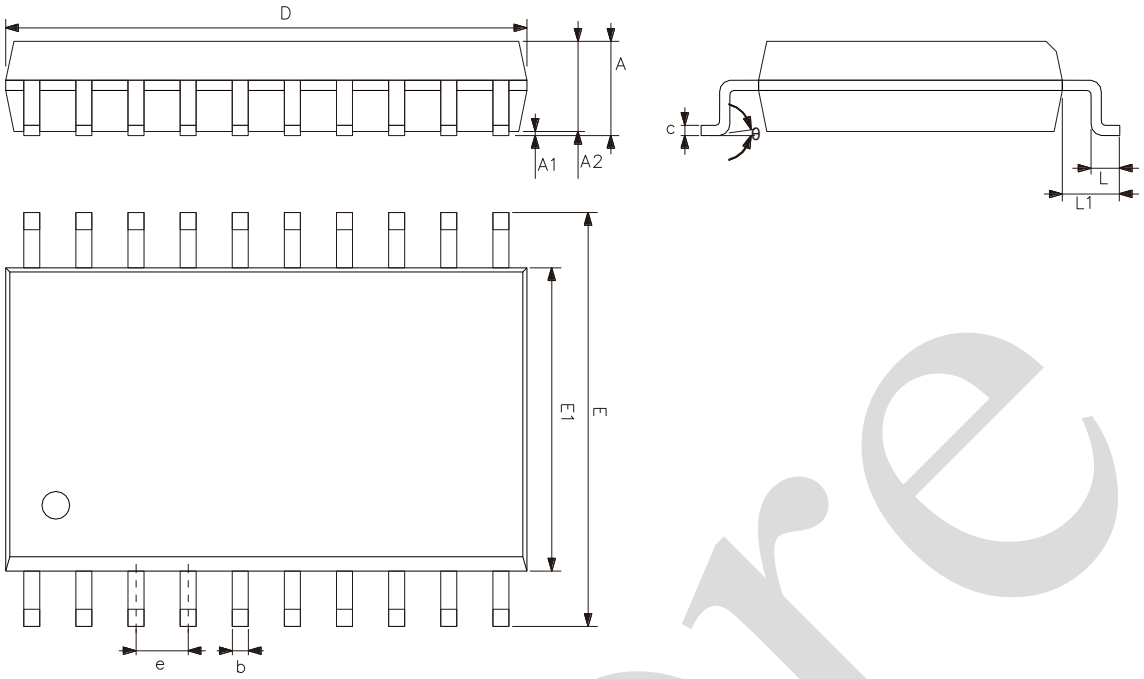
5、Package Information

5.1、DIP20



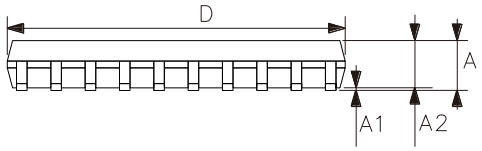
Symbol	Dimensions (mm)	
	Min.	Max.
A	3.60	5.33
A1	0.51	-
A2	3.20	3.60
b	0.36	0.53
B1	1.52	
c	0.204	0.36
D	25.70	26.54
E1	6.20	6.75
e	2.54	
eB	7.62	9.30
L	3.00	3.60

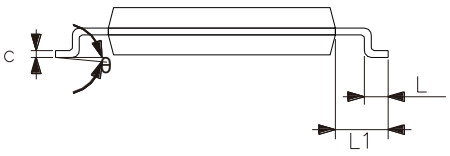
5.2、SOP20

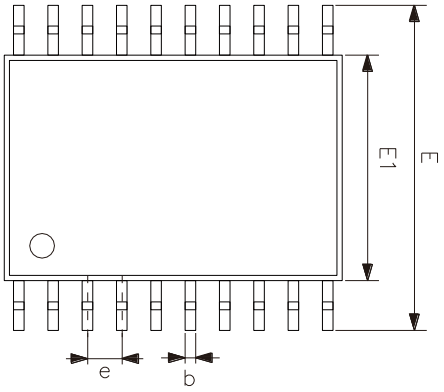


Symbol	Dimensions (mm)	
	Min.	Max.
A	2.47	2.65
A1	0.05	0.30
A2	2.20	2.44
b	0.35	0.50
c	0.15	0.30
D	12.54	12.94
E	10.00	10.60
E1	7.30	7.70
e	1.27	
L	0.40	1.05
L1	1.30	1.50
θ	0°	8°

5.3、TSSOP20







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	6.40	6.60
E1	4.30	4.50
E	6.20	6.60
e	0.65	
L	0.45	0.75
L1	1.00	
θ	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

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