

IN74HC574A

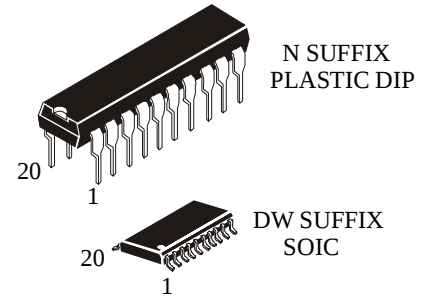
Octal 3-State Noninverting D Flip-Flop

High-Performance Silicon-Gate CMOS

The IN74HC574A is identical in pinout to the LS/ALS574. The device inputs are compatible with standard CMOS outputs; with pullup resistors, they are compatible with LS/ALSTTL outputs.

Data meeting the setup time is clocked to the outputs with the rising edge of the Clock. The OE input does not affect the states of the flip-flops, but when OE is high, all device outputs are forced to the high-impedance state; thus, data may be stored even when the outputs are not enabled.

- Outputs Directly Interface to CMOS, NMOS, and TTL
- Operating Voltage Range: 2.0 to 6.0 V
- Low Input Current: 1.0 μ A
- High Noise Immunity Characteristic of CMOS Devices

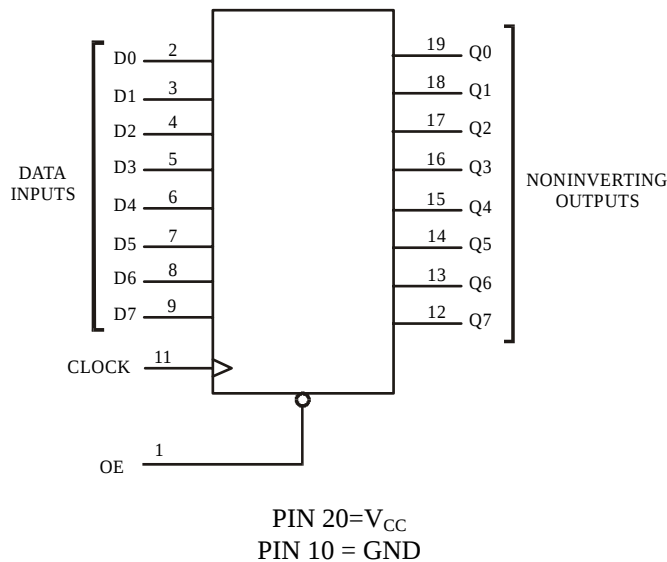


ORDERING INFORMATION

IN74HC574AN Plastic DIP
IN74HC574ADW SOIC
IN74HC574ATDS SOIC

$T_A = -55^\circ$ to 125° C for all packages

LOGIC DIAGRAM



PIN ASSIGNMENT

OE	1	20	V_{CC}
D0	2	19	Q0
D1	3	18	Q1
D2	4	17	Q2
D3	5	16	Q3
D4	6	15	Q4
D5	7	14	Q5
D6	8	13	Q6
D7	9	12	Q7
GND	10	11	CLOCK

FUNCTION TABLE

Inputs			Output
OE	Clock	D	Q
L		H	H
L		L	L
L	L,H,	X	no change
H	X	X	Z

H= high level
 L = low level
 X = don't care
 Z = high impedance

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V_{CC}	DC Supply Voltage (Referenced to GND)	-0.5 to +7.0	V
V_{IN}	DC Input Voltage (Referenced to GND)	-1.5 to $V_{CC} + 1.5$	V
V_{OUT}	DC Output Voltage (Referenced to GND)	-0.5 to $V_{CC} + 0.5$	V
I_{IN}	DC Input Current, per Pin	± 20	mA
I_{OUT}	DC Output Current, per Pin	± 35	mA
I_{CC}	DC Supply Current, V_{CC} and GND Pins	± 75	mA
P_D	Power Dissipation in Still Air, Plastic DIP+ SOIC Package+	750 500	mW
Tstg	Storage Temperature	-65 to +150	°C
T_L	Lead Temperature, 1.5 mm from Case for 4 Seconds (Plastic DIP or SOIC Package)	260	°C

*Maximum Ratings are those values beyond which damage to the device may occur.
Functional operation should be restricted to the Recommended Operating Conditions.

+Derating - Plastic DIP: - 10 mW/°C from 65° to 125°C
SOIC Package: - 7 mW/°C from 65° to 125°C

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V_{CC}	DC Supply Voltage (Referenced to GND)	2.0	6.0	V
V_{IN}, V_{OUT}	DC Input Voltage, Output Voltage (Referenced to GND)	0	V_{CC}	V
T_A	Operating Temperature, All Package Types	-55	+125	°C
t_r, t_f	Input Rise and Fall Time (Figure 1)			
	$V_{CC} = 2.0\text{ V}$	0	1000	ns
	$V_{CC} = 4.5\text{ V}$	0	500	
	$V_{CC} = 6.0\text{ V}$	0	400	

This device contains protection circuitry to guard against damage due to high static voltages or electric fields. However, precautions must be taken to avoid applications of any voltage higher than maximum rated voltages to this high-impedance circuit. For proper operation, V_{IN} and V_{OUT} should be constrained to the range $GND \leq (V_{IN} \text{ or } V_{OUT}) \leq V_{CC}$.

Unused inputs must always be tied to an appropriate logic voltage level (e.g., either GND or V_{CC}). Unused outputs must be left open.

DC ELECTRICAL CHARACTERISTICS(Voltages Referenced to GND)

Symbol	Parameter	Test Conditions	V _c V	Guaranteed Limit			Unit
				25 °C to -55°C	≤85 °C	≤125 °C	
V _{IH}	Minimum High-Level Input Voltage	V _{OUT} ≥ V _{CC} -0.1 V I _{OUT} ≤ 20 μA	2.0 4.5 6.0	1.5 3.15 4.2	1.5 3.15 4.2	1.5 3.15 4.2	V
V _{IL}	Maximum Low -Level Input Voltage	V _{OUT} ≤ 0.1 V I _{OUT} ≤ 20 μA	2.0 4.5 6.0	0.5 1.35 1.8	0.5 1.35 1.8	0.5 1.35 1.8	V
V _{OH}	Minimum High-Level Output Voltage	V _{IN} =V _{IH} I _{OUT} ≤ 20 μA	2.0 4.5 6.0	1.9 4.4 5.9	1.9 4.4 5.9	1.9 4.4 5.9	V
		V _{IN} =V _{IH} I _{OUT} ≤ 6.0 mA I _{OUT} ≤ 7.8 mA	4.5 6.0	3.98 5.48	3.84 5.34	3.7 5.2	
V _{OL}	Maximum Low-Level Output Voltage	V _{IN} = V _{IL} I _{OUT} ≤ 20 μA	2.0 4.5 6.0	0.1 0.1 0.1	0.1 0.1 0.1	0.1 0.1 0.1	V
		V _{IN} = V _{IL} I _{OUT} ≤ 6.0 mA I _{OUT} ≤ 7.8 mA	4.5 6.0	0.26 0.26	0.33 0.33	0.4 0.4	
I _{IN}	Maximum Input Leakage Current	V _{IN} =V _{CC} or GND	6.0	±0.1	±1.0	±1.0	μA
I _{OZ}	Maximum Three State Leakage Current	Output in High-Impedance State V _{IN} =V _{IH} V _{OUT} = V _{CC} or GND	6.0	±0.5	±5.0	±10	μA
I _{CC}	Maximum Quiescent Supply Current (per Package)	V _{IN} =V _{CC} or GND I _{OUT} =0μA	6.0	4.0	40	160	μA

AC ELECTRICAL CHARACTERISTICS ($C_L=50\text{pF}$, Input $t_r=t_f=6.0\text{ ns}$)

Symbol	Parameter	V _{CC}	Guaranteed Limit			Unit
		V	25 °C to -55°C	≤85°C	≤125° C	
f _{max}	Maximum Clock Frequency (50% Duty Cycle) (Figures 1 and 4)	2.0 4.5 6.0	6.0 30 35	4.8 24 28	4.0 20 24	MHz
t _{PLH} , t _{PHL}	Maximum Propagation Delay, Clock to Q (Figures 1 and 4)	2.0 4.5 6.0	160 32 27	200 40 34	240 48 41	ns
t _{PLZ} , t _{PHZ}	Maximum Propagation Delay, Output Enable to Q (Figures 2 and 5)	2.0 4.5 6.0	150 30 26	190 38 33	225 45 38	ns
t _{PZH} , t _{PZL}	Maximum Propagation Delay, Output Enable to Q (Figures 2 and 5)	2.0 4.5 6.0	140 28 24	175 35 30	210 42 36	ns
t _{TLH} , t _{THL}	Maximum Output Transition Time, Any Output (Figures 1 and 4)	2.0 4.5 6.0	60 12 10	75 15 13	90 18 15	ns
C _{IN}	Maximum Input Capacitance	-	10	10	10	pF
C _{OUT}	Maximum Three-State Output Capacitance (Output in High-Impedance State)	-	15	15	15	pF
C _{PD}	Power Dissipation Capacitance (Per Enabled Output)	Typical @25°C,V _{CC} =5.0 V				pF
	Used to determine the no-load dynamic power consumption: P _D =C _{PD} V _{CC} ² f+I _{CC} V _{CC}	24				

TIMING REQUIREMENTS ($C_L=50\text{pF}$, Input $t_r=t_f=6.0\text{ ns}$)

Symbol	Parameter	V _{CC} V	Guaranteed Limit			Unit
			25 °C to -55°C	≤85°C	≤125°C	
t _{SU}	Minimum Setup Time, Data to Clock (Figure 3)	2.0 4.5 6.0	50 10 9	65 13 11	75 15 13	ns
t _H	Minimum Hold Time, Clock to Data (Figure 3)	2.0 4.5 6.0	5 5 5	5 5 5	5 5 5	ns
t _w	Minimum Pulse Width, Clock (Figure 1)	2.0 4.5 6.0	75 15 13	95 19 16	110 22 19	ns
t _r , t _f	Maximum Input Rise and Fall Times (Figure 1)	2.0 4.5 6.0	1000 500 400	1000 500 400	1000 500 400	ns

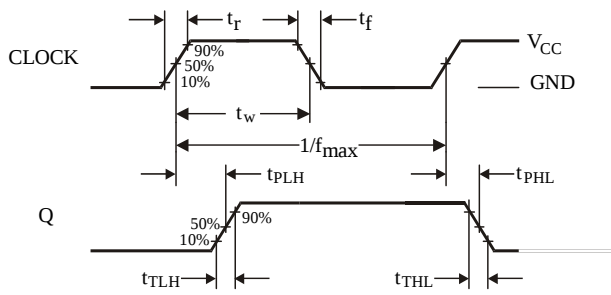


Figure 1. Switching Waveforms

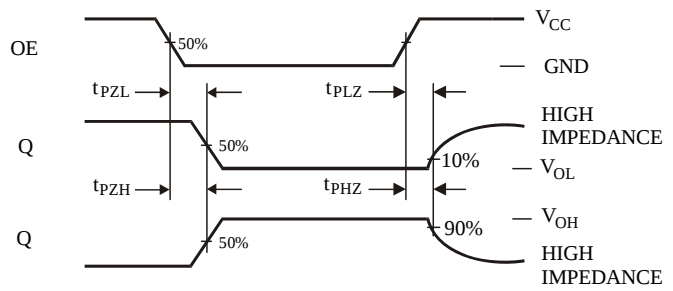


Figure 2. Switching Waveforms

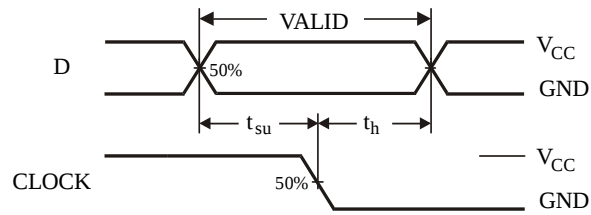
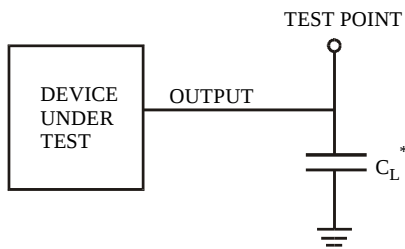
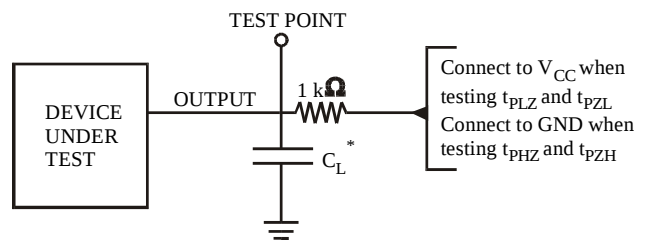


Figure 3. Switching Waveforms



* Includes all probe and jig capacitance

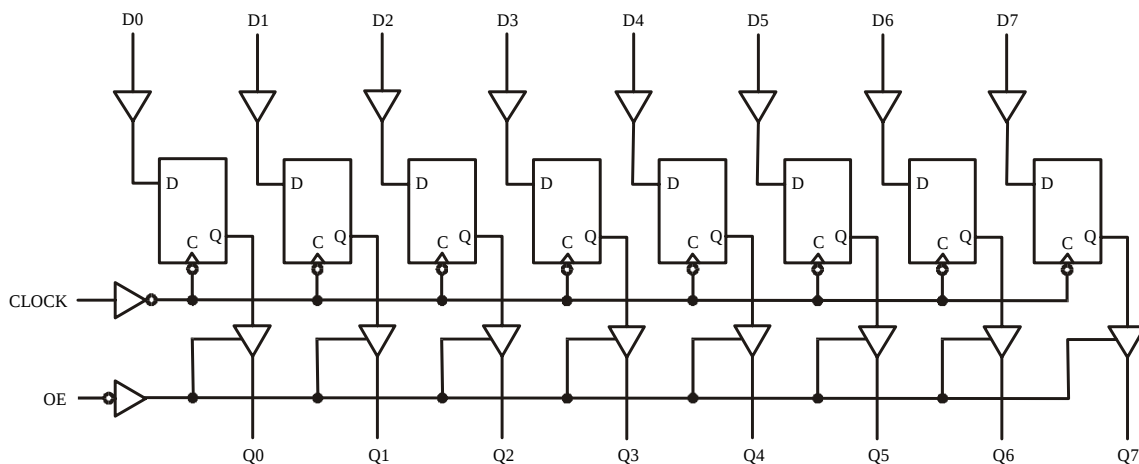
Figure 4. Test Circuit



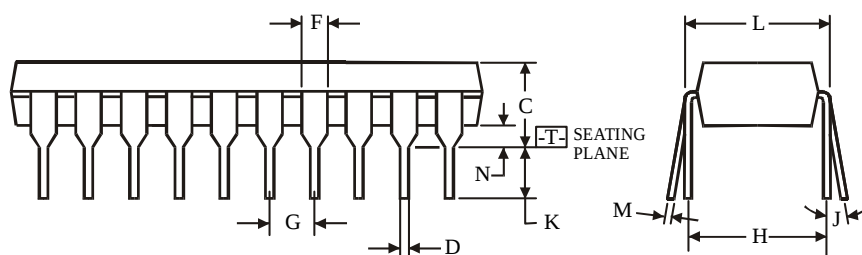
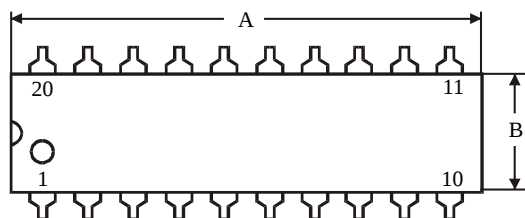
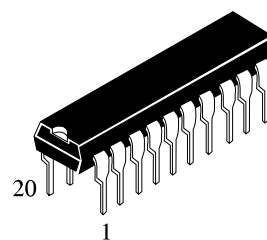
* Includes all probe and jig capacitance

Figure 5. Test Circuit

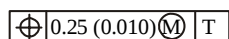
EXPANDED LOGIC DIAGRAM



N SUFFIX PLASTIC DIP
(MS - 001AD)



NOTES:

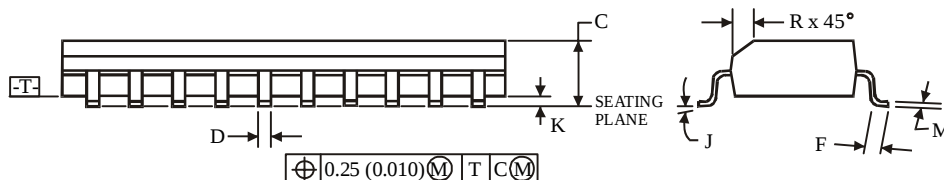
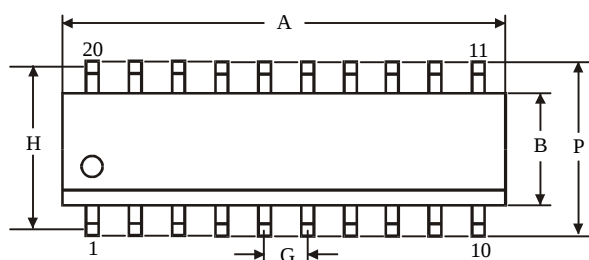
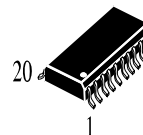


1. Dimensions "A", "B" do not include mold flash or protrusions.

Maximum mold flash or protrusions 0.25 mm (0.010) per side.

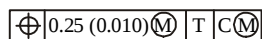
Dimension, mm		
Symbol	MIN	MAX
A	24.89	26.92
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

D SUFFIX SOIC
(MS - 013AC)



NOTES:

1. Dimensions A and B do not include mold flash or protrusion.
2. Maximum mold flash or protrusion 0.15 mm (0.006) per side
for A; for B - 0.25 mm (0.010) per side.



Dimension, mm		
Symbol	MIN	MAX
A	12.6	13
B	7.4	7.6
C	2.35	2.65
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	9.53	
J	0°	8°
K	0.1	0.3
M	0.23	0.32
P	10	10.65
R	0.25	0.75



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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