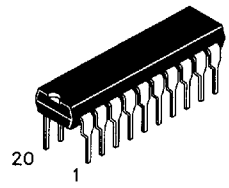
DV74HC573A
DV74HCT573A

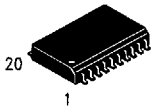
Octal 3-State Noninverting Transparent Latch

Pinouts for the 'HC573A and 'HCT573A are identical to the LS573. Both devices are similar in function to the 'HC373A but have the Data inputs on the opposite side of the package from the outputs to facilitate PC board layout.
The Output Enable input does not affect the state of the latches, but when the Output Enable is high, all device outputs are forced to the high-impedence state. Thus, data may be latched even when the outputs are not enabled.

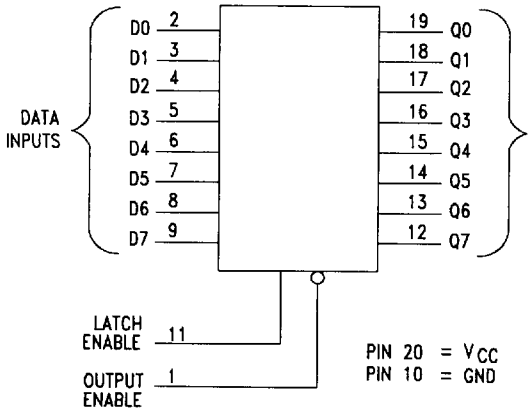
- **Output Drive Capability: 15 LSTTL Loads**
- **Outputs Directly Interface to CMOS, NMOS, and TTL**
- **Operating Voltage Range: 2 to 6 V**
- **Low Input Current: 1 μA**
- **DC, AC parameters guaranteed from -55°C to 125°C**



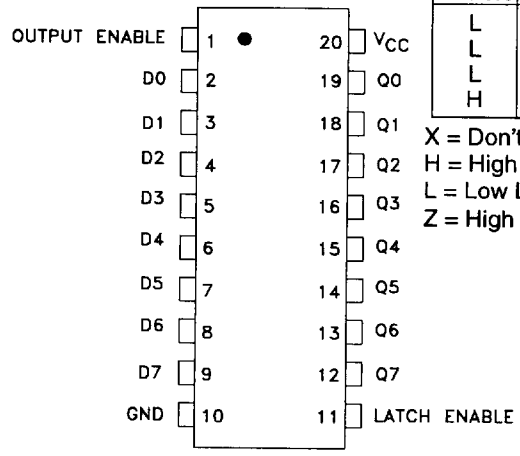
N Suffix
Plastic DIP
AVG-005 Case



D Suffix
Plastic SOP
AVG-006 Case



PIN ASSIGNMENT



TRUTH TABLE
(Each Flip-Flop)

Inputs			Output
Output Enable	Latch Enable	D	Q
L	H	H	H
L	H	L	L
L	L	X	no change
H	X	X	Z

X = Don't Care
H = High Logic Level
L = Low Logic Level
Z = High Impedence

ABSOLUTE MAXIMUM RATINGS

Maximum ratings are those values beyond which damage to the device may occur.

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 Sink/Source Current, per Pin	± 35	mA
I_{CC}	DC VCC or GND Current per Output Pin	± 75	mA
P_D	Power Dissipation in Still Air Plastic DIP SOP Package	750 500	mW
Tstg	Storage Temperature	− 65 to +150	°C
T_L	Lead Temperature, 1 mm from Case for 10 Seconds Plastic DIP or SOP Package	260	°C

GUARANTEED 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	Ambient Temperature	–55	+125	°C
t_r, t_f	Input Rise and Fall Time: HC: V_{CC}=2.0V HCT: V_{CC}=5.5V / HC: V_{CC}=4.5V HC: V_{CC}=6.0V	0 0 0	1000 500 400	ns

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DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V_{CC} (V)	Guaranteed Limits			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	1.50 3.15 4.20	1.50 3.15 4.20	1.50 3.15 4.20	V
V_{IL}	Maximum Low Level Input Voltage	V_{OUT} = 0.1V $\|I_{OUT}\|$ ≤ 20 µA	2.0 4.5 6.0	0.50 1.35 1.80	0.50 1.35 1.80	0.50 1.35 1.80	V
V_{OH}	Minimum High Level Output Voltage	V_{IN} = V_{IH} $\|I_{OUT}\|$ ≤ 20 µA	2.0 4.5 6.0	1.90 4.40 5.90	1.90 4.40 5.90	1.90 4.40 5.90	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	3.70 5.20	V
V_{OL}	Maximum Low Level Output Voltage	VIN = V_{IL} $\|I_{OUT}\|$ ≤ 20 µA	2.0 4.5 6.0	0.10 0.10 0.10	0.10 0.10 0.10	0.10 0.10 0.10	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	0.40 0.40	V
I_{IN}	Maximum Input Leakage Current	V_{IN}=V_{CC} or GND	6.0	±0.1	±1.00	±1.00	µA
I_{OZ}	Maximum 3-State Current (Output in High Impedence State)	V_{IN}=V_{IL} or V_{IH} V_{OUT}=V_{CC} or GND	6.0	–0.5	–5.0	–10.0	mA
I_{CC}	Maximum Quiescent Supply Current	V_{IN} = V_{CC} or GND I_{OUT} = 0 µA	6.0	4	40	160	µA

AC CHARACTERISTICS over full operating conditions (CL = 50 pF, Input t_r = t_f = 6 ns)

Symbol	Parameter	V_{CC} (V)	Guaranteed Limits			Unit
			+25°C to –55°C	≤ 85° C	≤ 125° C	
t_{PLH}, t_{PHL}	Maximum Propogation Delay, Input D to Q	2.0 4.5 6.0	150 30 26	190 38 33	225 45 38	ns
t_{PLH}, t_{PHL}	Maximum Propogation Delay Time, Latch Enable to Q	2.0 4.5 6.0	160 32 27	200 40 34	240 48 41	ns
t_{PLZ}, t_{PHZ}	Maximum Propogation Delay Time, Output Disable to Q	2.0 4.5 6.0	150 30 26	190 38 33	225 45 38	ns
t_{PZL}, t_{PZH}	Maximum Propogation Delay Time, Output Enable to Q	2.0 4.5 6.0	150 30 26	190 38 33	225 45 38	ns

Symbol	Parameter	V_{CC} (V)	Guaranteed Limits			Unit
			+25°C to −55°C	≤ 85° C	≤ 125° C	
t_{TLH}, t_{THL}	Maximum Output Transition Time, any Output	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 Buffer) Used to determine the no-load dynamic power consupmption: $P_D = C_{PD} V_{CC}^2 f + I_{CC} V_{CC}$	Typical @ 25°C, V_{CC} = 5.0 V 23	pF

TIMING REQUIREMENTS (C_L = 50 pF, Input $t_r = t_f$ = 6.0 ns)

Symbol	Parameter	V_{CC} (V)	Guaranteed Limits						Unit
			25°C to −55°C		≤ 85°C		≤ 125°C		
			Min	Max	Min	Max	Min	Max	
t_{su}	Minimum Setup Time, Input D to Latch Enable	2.0 4.5 6.0	50 10 9		65 13 11		75 15 13		ns
t_h	Minimum Hold Time, Latch Enable to Input D	2.0 4.5 6.0	5 5 5		5 5 5		5 5 5		ns
t_w	Minimum Pulse Width, Latch Enable	2.0 4.5 6.0	75 15 13		95 19 16		110 22 19		ns

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DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V_{CC} (V)	Guaranteed Limits			Unit
				+25°C to−55°C	≤ 85°C	≤125°C	
V_{IH}	Minimum High Level Input Voltage	V_{OUT} = 0.1V or V_{CC} − 0.1 $\|I_{OUT}\|$ = ≤20 μA	4.5 5.5	2.0 2.0	2.0 2.0	2.0 2.0	V
V_{IL}	Maximum Low Level Input Voltage	V_{OUT} = 0.1V or V_{CC} − 0.1 V $\|I_{OUT}\|$ = ≤20 μA	4.5 5.5	0.8 0.8	0.8 0.8	0.8 0.8	V
V_{OH}	Minimum High Level Output Voltage	V_{IN} = V_{IL} or V_{IH} $\|I_{OUT}\|$ ≤ 20 μA	4.5 5.5	4.4 5.4	4.4 5.4	4.4 5.4	V
		V_{IN} = V_{IL} or V_{IH} $\|I_{OUT}\|$ ≤ 6 mA	4.5	3.98	3.84	3.7	V
V_{OL}	MaximumLow Level Output Voltage	V_{IN} = V_{IL} or V_{IH} $\|I_{OUT}\|$ ≤ 20 μA	4.5 5.5	0.1 0.1	0.1 0.1	0.1 0.1	V
		V_{IN} = V_{IL} or V_{IH} $\|I_{OUT}\|$ ≤ 6 mA	4.5	0.26	0.33	0.4	V
I_{IN}	Maximum Input Leakage Current	V_{OUT}=V_{CC} or GND	5.5	±0.1	±1.0	±1.0	μA
I_{OZ}	Maximum 3-State Current (Output in High Impedance State)	V_{IN}=V_{IL} or V_{IH} V_{OUT}=V_{CC} or GND	5.5	±0.5	±5.0	±10.0	μA
I_{CC}	Maximum Quiescent Supply Current	V_{IN} = V_{CC} or GND I_{OUT} = 0 μA	5.5	4.0	40.0	160	μA
ΔI_{CC}	Additional Quiescent Supply Current	V_{IN}=2.4V, Any One Input V_{IN}=V_{CC} or GND, Other Inputs I_{OUT}=0μA	5.5	≥ −55°C 2.9		25°C to 125°C 2.4	mA

AC CHARACTERISTICS (C_L = 50pF, Input $t_r = t_f$ = 6.0 ns)

Symbol	Parameter	Guaranteed Limits			Unit
		25°C to −55°C	≤ 85°C	≤ 125° C	
t_{PLH}, t_{PHL}	Maximum Propogation Delay Input D to Output Q	30	38	45	ns
t_{PLH}, t_{PHL}	Maximum Propogation Delay Time, Latch Enable to Q	30	38	45	ns
t_{PLZ}, t_{PHZ}	Maximum Propogation Delay Time, Output Disable to Q	28	35	42	ns
t_{PZL}, t_{PZH}	Maximum Propogation Delay Time, Output Enable to Q	28	35	42	ns
t_{TLH}, t_{THL}	Maximum Output Transition Time, any Output	12	15	18	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

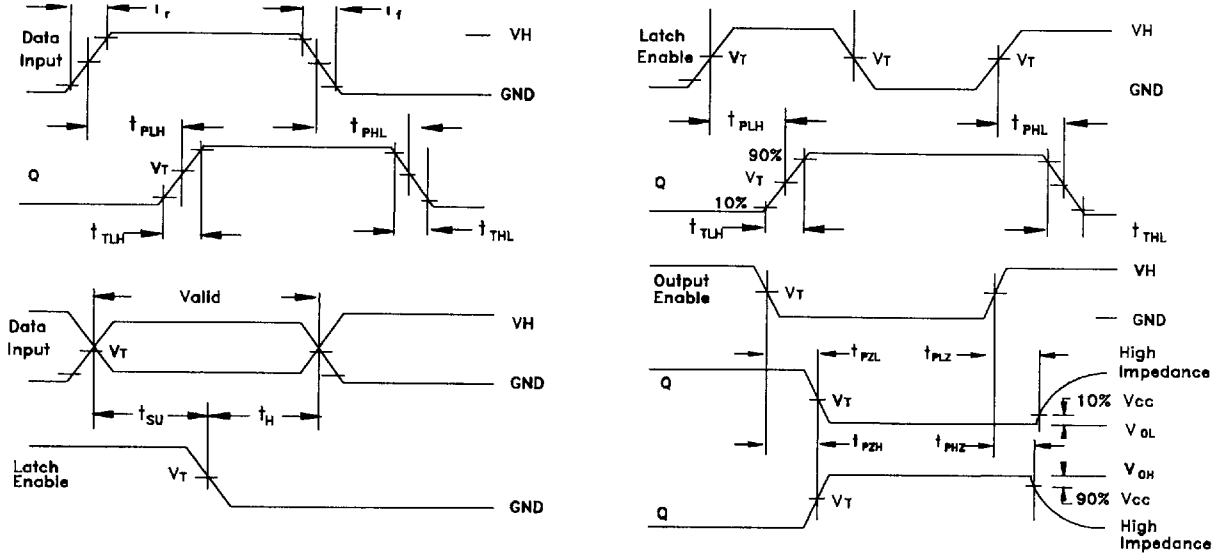
C_{PD}	Power Dissipation Capacitance (Per Enabled Output) Used to determine the no-load dynamic power consupmption: $P_D = C_{PD} V_{CC}^2 f + I_{CC} V_{CC}$	Typical @ 25°C, V_{CC} = 5.0 V: 48	pF

TIMING REQUIREMENTS (V_{CC} = 5.0 V ±10%, Input $t_r = t_f$ = 6.0 ns.

Symbol	Parameter	Guaranteed Limits						Unit
		25°C to −55°C		≤ 85°C		≤ 125°C		
		Min	Max	Min	Max	Min	Max	
t_{su}	Minimum Setup Time, Input D to Latch Enable	10		13.0		15.0		ns
t_h	Minimum Hold Time, Latch Enable to Input D	5.0		5.0		5.0		ns
t_w	Minimum Pulse Width, Latch Enable	15		19.0		22.0		ns

SWITCHING WAVEFORMS

Input and Output Threshold Voltage:
V_T=50% V_{CC} for HC; 1.3V for HCT
V_H=V_{CC} for HC, 3V for HCT



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