

HD74AC259/HD74ACT259 ● 8-Bit Addressable Latch

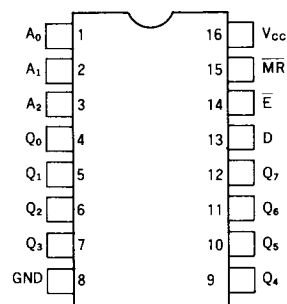
Description

The 'AC259 is a high-speed 8-bit addressable latch designed for general purpose storage applications in digital systems. It is a multifunctional device capable of storing single line data in eight addressable latches, and also a 1-of-8 decoder and demultiplexer with active HIGH outputs. The device also incorporates an active LOW Common Clear for resetting all latches, as well as an active LOW Enable.

Features

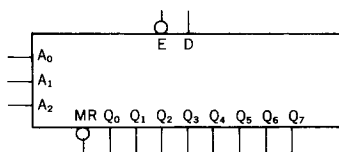
- Serial-to-Parallel Conversion
- Eight Bits of Storage with Output of Each Bit Available
- Random(Addressable)Data Entry
- Active High Demultiplexing or Decoding Capability
- Easily Expandable
- Common Clear
- Output Source/Sink 24mA
- HD74ACT259 has TTL Compatible Inputs

Pin Assignment



(Top View)

Logic Symbol

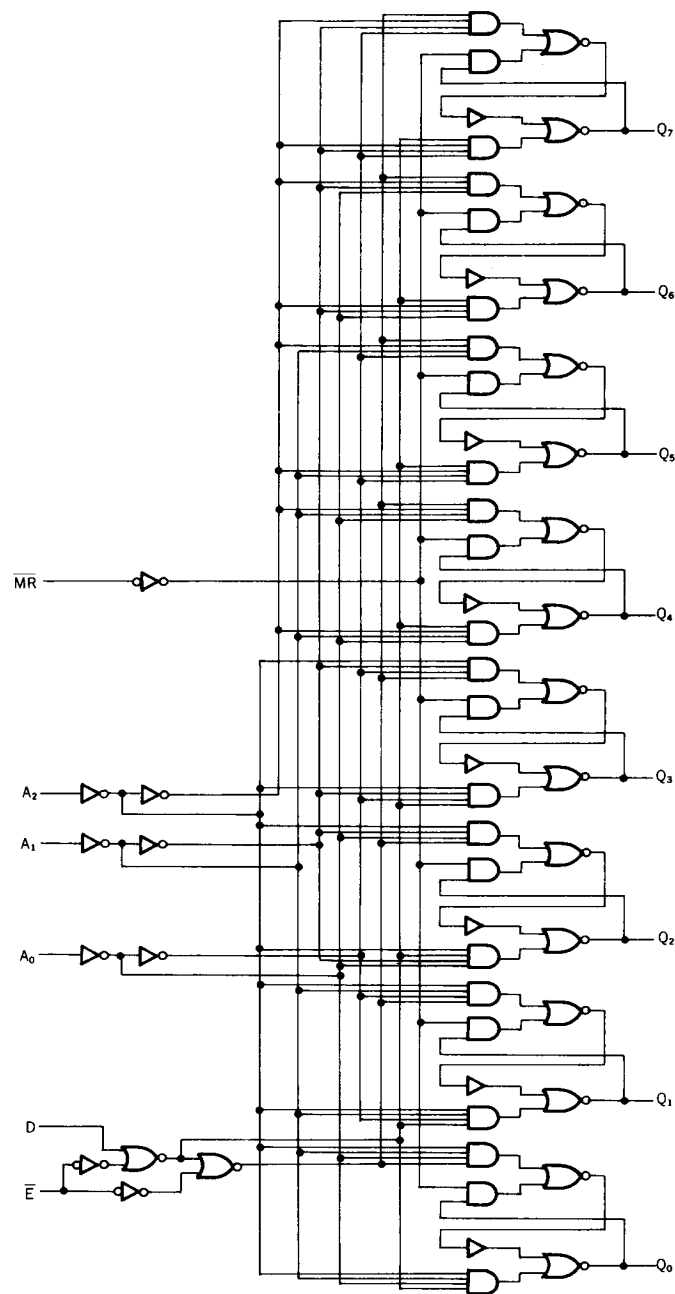


Pin Names

- | | |
|--------------------------------|--------------------------|
| A ₀ —A ₂ | Address Inputs |
| D | Data Inputs |
| $\overline{E}$ | Enable Input(Active LOW) |
| $\overline{MR}$ | Master Reset(Active LOW) |
| Q ₀ —Q ₇ | Latch Outputs |

HD74AC259/HD74ACT259

Logic Diagram



Function Table

Operating Mode	Inputs						Outputs							
	$\overline{\text{MR}}$	$\overline{\text{E}}$	D	A0	A1	A2	Q0	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Master Reset	L	H	X	X	X	X	L	L	L	L	L	L	L	L
Demultiplex (Active HIGH Decoder when D=H)	L	L	d	L	L	L	Q=d	L	L	L	L	L	L	L
	L	L	d	H	L	L	L	Q=d	L	L	L	L	L	L
	L	L	d	L	H	L	L	L	Q=d	L	L	L	L	L
	L	L	d	H	H	L	L	L	L	Q=d	L	L	L	L
	L	L	d	L	L	H	L	L	L	L	Q=d	L	L	L
	L	L	d	H	L	H	L	L	L	L	L	Q=d	L	L
	L	L	d	L	H	H	L	L	L	L	L	L	Q=d	L
	L	L	d	H	H	H	L	L	L	L	L	L	L	Q=d
Store (Do Nothing)	H	H	X	X	X	X	q0	q1	q2	q3	q4	q5	q6	q7
Addressable Latch	H	L	d	L	L	L	Q=d	q1	q2	q3	q4	q5	q6	q7
	H	L	d	H	L	L	q0	Q=d	q2	q3	q4	q5	q6	q7
	H	L	d	L	H	L	q0	q1	Q=d	q3	q4	q5	q6	q7
	H	L	d	H	H	L	q0	q1	q2	Q=d	q4	q5	q6	q7
	H	L	d	L	L	H	q0	q1	q2	q3	Q=d	q5	q6	q7
	H	L	d	H	L	H	q0	q1	q2	q3	q4	Q=d	q6	q7
	H	L	d	L	H	H	q0	q1	q2	q3	q4	q5	Q=d	q7
	H	L	d	H	H	H	q0	q1	q2	q3	q4	q5	q6	Q=d

H : High Voltage Level

L : Low Voltage Level

X : Immaterial

d : High or Low data one setup time prior to the Low-to-High Enable transition.

q : Lower case letters indicate the state of the referenced output established during the last cycle in which it was addressed or cleared.

HD74AC259/HD74ACT259

DC Characteristics(unless oterwise specified)

Symbol	Parameter	Max	Unit	Condition
I _{CC}	Maximum Quiescent Supply Current	80	μA	V _{IN} = V _{CC} or Ground, V _{CC} = 5.5V, Ta = Worst Case
I _{CC}	Maximum Quiescent Supply Current	8.0	μA	V _{IN} = V _{CC} or Ground, V _{CC} = 5.5V, Ta = 25°C
I _{CCT}	Maximum I _{CC} /Input (HD74ACT259)	1.5	mA	V _{IN} = V _{CC} - 2.1V, V _{CC} = 5.5V, Ta = Worst Case

AC Characteristics:HD74AC259

Symbol	Paramater	V _{CC} * (V)	Ta = 25°C C _L = 50pF			Ta = - 40°C to + 85°C C _L = 50pF		Unit
			Min	Typ	Max	Min	Max	
f _{max}	Maximum Clock Frequency	3.3 5.0	65 110			60 95		MHz
t _{PHL}	Propagation Delay MR to Qn	3.3 5.0	1.0 1.0	8.5 6.5	14.5 9.0	1.0 1.0	16.5 10.5	ns
t _{PLH}	Propagation Delay Dn to Qn	3.3 5.0	1.0 1.0	7.0 5.5	10.5 7.5	1.0 1.0	12.0 8.5	ns
t _{PHL}	Propagation Delay Dn to Qn	3.3 5.0	1.0 1.0	7.0 5.5	10.5 7.5	1.0 1.0	12.0 8.5	ns
t _{PLH}	Propagation Delay An to Qn	3.3 5.0	1.0 1.0	11.5 8.0	18.5 11.5	1.0 1.0	21.5 14.0	ns
t _{PHL}	Propagation Delay An to Qn	3.3 5.0	1.0 1.0	11.5 8.0	18.5 11.5	1.0 1.0	21.0 13.5	ns
t _{PLH}	Propagation Delay E to Q	3.3 5.0	1.0 1.0	9.0 6.5	15.0 9.0	1.0 1.0	17.0 10.5	ns
t _{PHL}	Propagation Delay E to Qn	3.3 5.0	1.0 1.0	9.0 6.5	14.0 8.5	1.0 1.0	16.0 10.0	ns

* Voltage Range 3.3 is 3.0V ± 0.3V
 Voltage Range 5.0 is 5.0V ± 0.5V

AC Operating Requirements:HD74AC259

Symol	Parameter	V _{CC} * (V)	Ta = +25°C C _L = 50pF		Ta = - 40°C to + 85°C C _L = 50pF	Unit
			Typ	Guaranteed Minimum		
t _{su}	Setup Time HIGH or LOW D to E	3.3 5.0	1.0 0.0	3.5 3.0	3.5 3.0	ns
t _h	Hold Time, HIGH or LOW D to E	3.3 5.0	0.5 0.5	2.0 2.0	2.0 2.0	ns
t _{su}	Setup Time, HIGH or LOW An to E	3.3 5.0	1.0 0.0	6.0 4.5	7.0 5.0	ns
t _h	Hold Time, HIGH or LOW An to E	3.3 5.0	-3.0 -1.0	0.0 0.0	0.0 0.0	ns
t _w	Pulse width	3.3 5.0	3.0 3.0	5.5 4.5	7.0 5.0	ns

* Voltage Range 3.3 is 3.3V ± 0.3V
 Voltage Range 5.0 is 5.0V ± 0.5V

AC Characteristics:HD74ACT259 Preliminary

Symbol	Parameter	Vcc* (V)	Ta = +25°C CL = 50pF			Ta = -40°C to +85°C CL = 50pF		Unit
			Min	Typ	Max	Min	Max	
f _{max}	Maximum clock Frequency	5.0	70			60		MHz
t _{PHL}	Propagation Delay MR to Qn	5.0	1.0		10.0	1.0	11.5	ns
t _{PLH}	Propagation Delay Dn to Qn	5.0	1.0		9.5	1.0	10.5	ns
t _{PHL}	Propagation Delay Dn to Qn	5.0	1.0		9.5	1.0	10.5	ns
t _{PLH}	Propagation Delay An to Qn	5.0	1.0		12.5	1.0	15.0	ns
t _{PHL}	Propagation Delay An to Qn	5.0	1.0		12.5	1.0	15.0	ns
t _{PLH}	Propagation Delay E to Q	5.0	1.0		11.0	1.0	12.5	ns
t _{PHL}	Propagation Delay E to Q	5.0	1.0		10.5	1.0	12.0	ns

* Voltage Range 5.0 is 5.0V ± 0.5V

AC Operating Requirements:HD74ACT259 Preliminary

Symbol	Parameter	V _{CC} * (V)	T _a = +25°C C _L = 50pF		T _a = -40°C to +85°C C _L = 50pF	Unit
			Typ	Guaranteed Minimum		
t _{su}	Setup Time, HIGH or LOW D to $\overline{E}$	5.0		4.0	4.0	ns
t _h	Hold Time, HIGH or LOW D to $\overline{E}$	5.0		2.5	2.5	ns
t _{su}	Setup Time,HIGH or LOW An $\overline{E}$	5.0		4.5	5.0	ns
t _h	Hold Time, HIGH or LOW An to $\overline{E}$	5.0		1.5	1.5	ns
t _w	Pulse width HIGH or LOW	5.0		7.0	8.0	ns

* Voltage Range 5.0 is 5.0V ± 0.5V

Capacitance

Symbol	Parameter	Typ	Unit	Condition
C _{IN}	Input Capacitance	4.5	pF	V _{CC} = 5.5 V
C _{PD}	Power Dissipation Capacitance	3.5	pF	V _{CC} = 5.0 V