
HD74AC259

8-bit Addressable Latch

HITACHI

Description

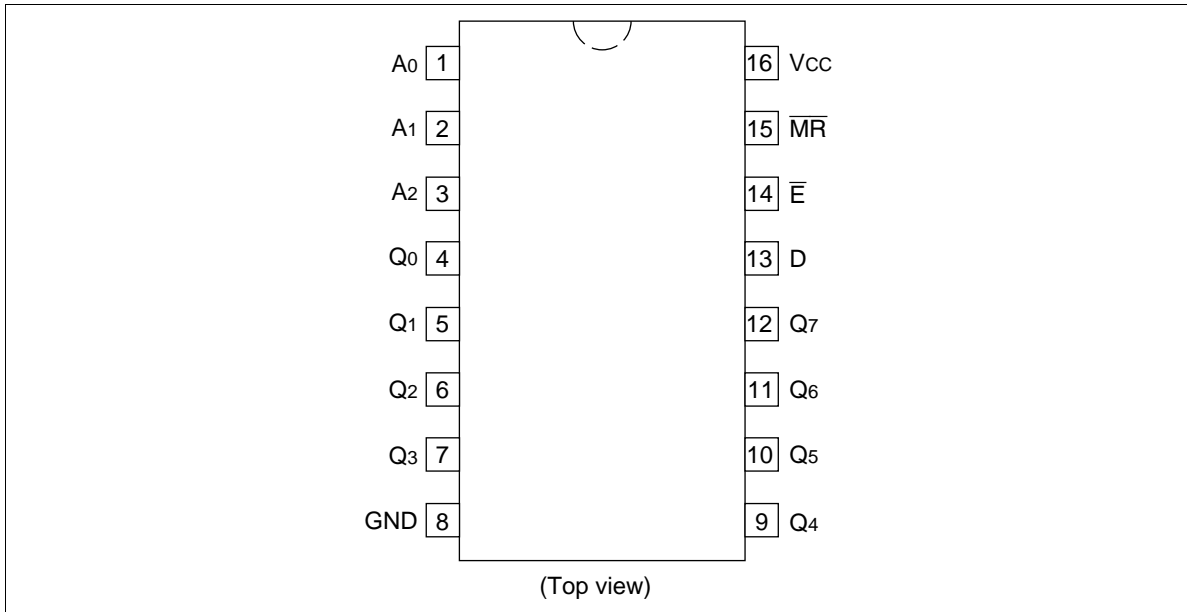
The HD74AC259 is a high-speed 8-bit addressable latch designed for general purpose storage applications in digital systems. It is a multifunctional device capable of storing single line data in eight addressable latches, and also a 1-of-8 decoder and demultiplexer with active HIGH outputs. The device also incorporates an active LOW Common Clear for resetting all latches, as well as an active LOW Enable.

Features

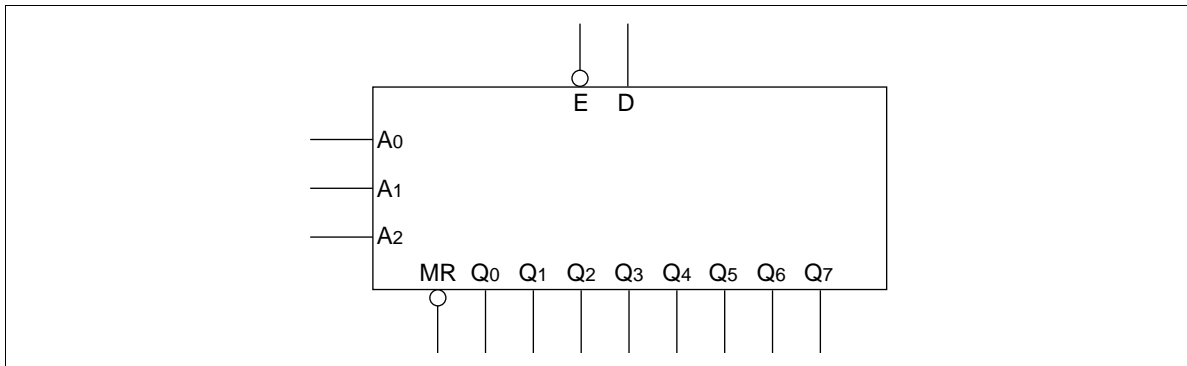
- Serial-to-Parallel Conversion
- Eight Bits of Storage with Output of Each Bit Available
- Random (Addressable) Data Entry
- Active High Demultiplexing or Decoding Capability
- Easily Expandable
- Common Clear
- Outputs Source/Sink 24 mA

HD74AC259

Pin Arrangement



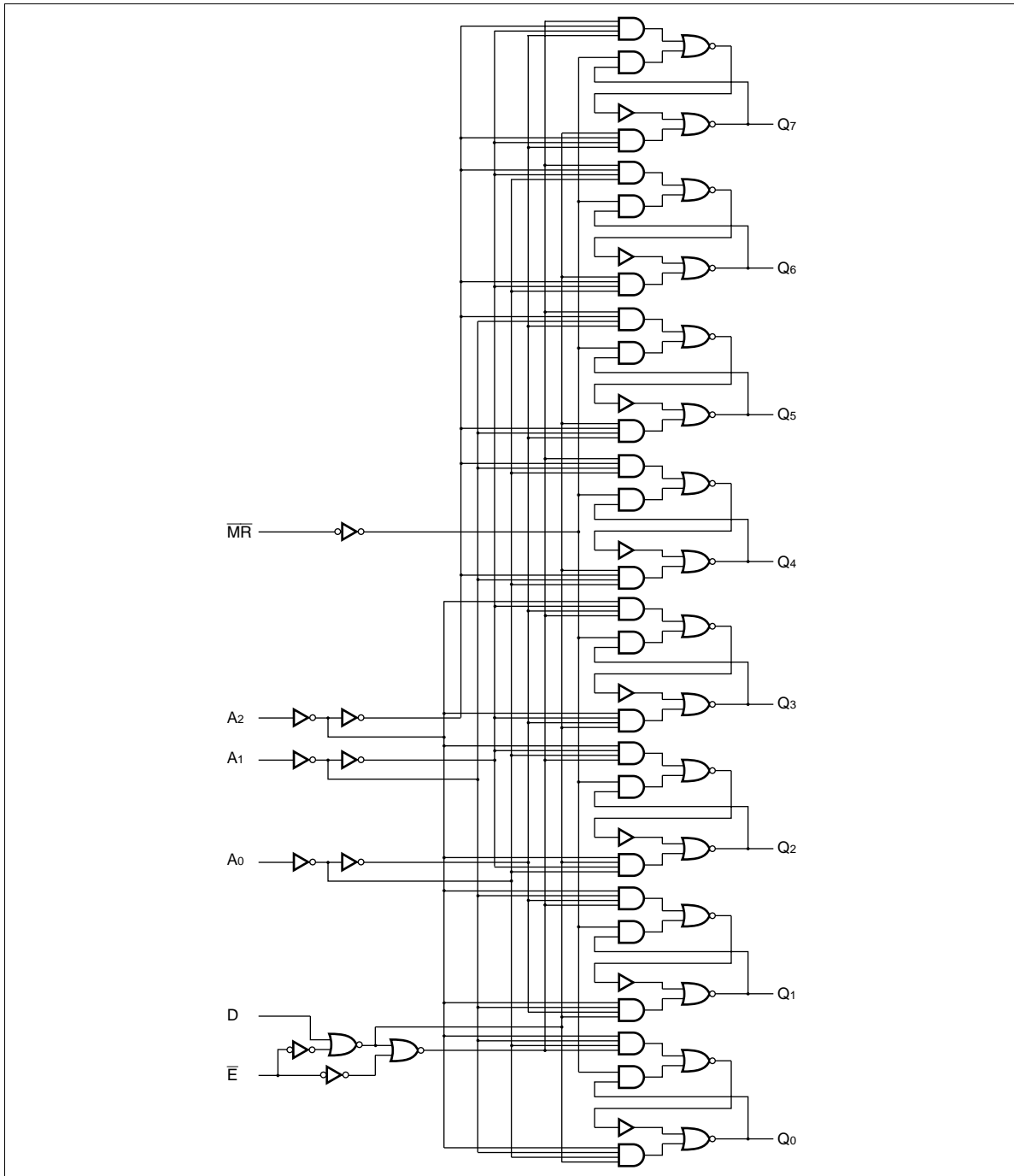
Logic Symbol



Pin Names

- A₀ – A₂ Address Inputs
- D Data Inputs
- \bar{E} Enable Input (Active LOW)
- \overline{MR} Master Reset (Active LOW)
- Q₀ – Q₇ Latch Outputs

Logic Diagram



HD74AC259

Function Table

Operating Mode	Inputs						Outputs							
	MR	E	D	A ₀	A ₁	A ₂	Q ₀	Q ₁	Q ₂	Q ₃	Q ₄	Q ₅	Q ₆	Q ₇
Master reset	L	H	X	X	X	X	L	L	L	L	L	L	L	L
Demultiplex	L	L	d	L	L	L	Q = d	L	L	L	L	L	L	L
(Active HIGH	L	L	d	H	L	L	L	Q = d	L	L	L	L	L	L
Decoder when	L	L	d	L	H	L	L	L	Q = d	L	L	L	L	L
D = H)	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	Q = d	L	L	L
	L	L	d	L	H	H	L	L	L	L	L	Q = d	L	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	q ₀	q ₁	q ₂	q ₃	q ₄	q ₅	q ₆	q ₇
Addressable latch	H	L	d	L	L	L	Q = d	q ₁	q ₂	q ₃	q ₄	q ₅	q ₆	q ₇
	H	L	d	H	L	L	q ₀	Q = d	q ₂	q ₃	q ₄	q ₅	q ₆	q ₇
	H	L	d	L	H	L	q ₀	q ₁	Q = d	q ₃	q ₄	q ₅	q ₆	q ₇
	H	L	d	H	H	L	q ₀	q ₁	q ₂	Q = d	q ₄	q ₅	q ₆	q ₇
	H	L	d	L	L	H	q ₀	q ₁	q ₂	q ₃	Q = d	q ₅	q ₆	q ₇
	H	L	d	H	L	H	q ₀	q ₁	q ₂	q ₃	q ₄	Q = d	q ₆	q ₇
	H	L	d	L	H	H	q ₀	q ₁	q ₂	q ₃	q ₄	q ₅	Q = d	q ₇
	H	L	d	H	H	H	q ₀	q ₁	q ₂	q ₃	q ₄	q ₅	q ₆	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.

DC Characteristics (unless otherwise specified)

Item	Symbol	Max	Unit	Condition
Maximum quiescent supply current	I _{CC}	80	μA	V _{IN} = V _{CC} or ground, V _{CC} = 5.5 V, Ta = Worst case
Maximum quiescent supply current	I _{CC}	8.0	μA	V _{IN} = V _{CC} or ground, V _{CC} = 5.5 V, Ta = 25°C

AC Characteristics: HD74AC259

Item	Symbol	V _{CC} (V)*1	Ta = +25°C C _L = 50 pF			Ta = -40°C to +85°C C _L = 50 pF		Unit
			Min	Typ	Max	Min	Max	
Maximum clock frequency	f _{max}	3.3	65	—	—	60	—	MHz
		5.0	110	—	—	95	—	
Propagation delay M \bar{R} to Q _n	t _{PHL}	3.3	1.0	8.5	14.5	1.0	16.5	ns
		5.0	1.0	6.5	9.0	1.0	10.5	
Propagation delay D _n to Q _n	t _{PLH}	3.3	1.0	7.0	10.5	1.0	12.0	ns
		5.0	1.0	5.5	7.5	1.0	8.5	
Propagation delay D _n to Q _n	t _{PHL}	3.3	1.0	7.0	10.5	1.0	12.0	ns
		5.0	1.0	5.5	7.5	1.0	8.5	
Propagaion delay A _n to Q _n	t _{PLH}	3.3	1.0	11.5	18.5	1.0	21.5	ns
		5.0	1.0	8.0	11.5	1.0	14.0	
Propagation delay A _n to Q _n	t _{PHL}	3.3	1.0	11.5	18.5	1.0	21.0	ns
		5.0	1.0	8.0	11.5	1.0	13.5	
Propagation delay E $\bar{}$ to Q	t _{PLH}	3.3	1.0	9.0	15.0	1.0	17.0	ns
		5.0	1.0	6.5	9.0	1.0	10.5	
Propagation delay E $\bar{}$ to Q _n	t _{PHL}	3.3	1.0	9.0	14.0	1.0	16.0	ns
		5.0	1.0	6.5	8.5	1.0	10.0	

Note: 1. Voltage Range 3.3 is 3.3 V ± 0.3 V
Voltage Range 5.0 is 5.0 V ± 0.5 V

HD74AC259

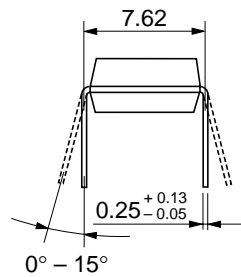
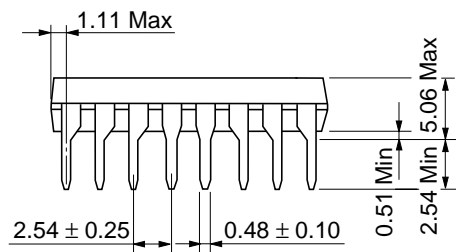
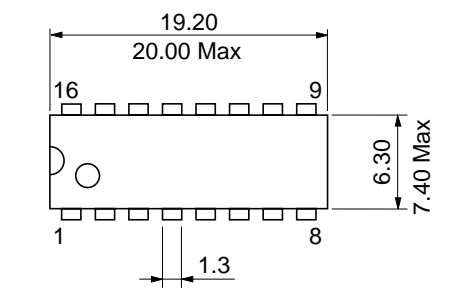
AC Operating Requirements: HD74AC259

Item	Symbol	V_{CC} (V)*1	Ta = +25°C	Ta = -40°C		Unit
			Typ	to +85°C		
			$C_L = 50$ pF	$C_L = 50$ pF		
			Typ	Guaranteed Minimum		
Setup time, HIGH or LOW D to \bar{E}	t_{su}	3.3	1.0	3.5	3.5	ns
		5.0	0.0	3.0	3.0	
Hold time, HIGH or LOW D to \bar{E}	t_h	3.3	0.5	2.0	2.0	ns
		5.0	0.5	2.0	2.0	
Setup time, HIGH or LOW A_n to \bar{E}	t_{su}	3.3	1.0	6.0	7.0	ns
		5.0	0.0	4.5	5.0	
Hold time, HIGH or LOW A_n to \bar{E}	t_h	3.3	-3.0	0.0	0.0	ns
		5.0	-1.0	0.0	0.0	
Pulse width	t_w	3.3	3.0	5.5	7.0	ns
		5.0	3.0	4.5	5.0	

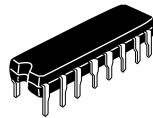
Note: 1. Voltage Range 3.3 is $3.3\text{ V} \pm 0.3\text{ V}$
Voltage Range 5.0 is $5.0\text{ V} \pm 0.5\text{ V}$

Capacitance

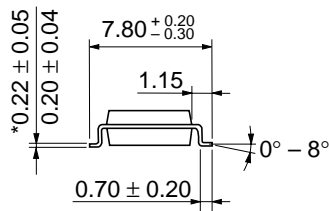
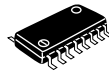
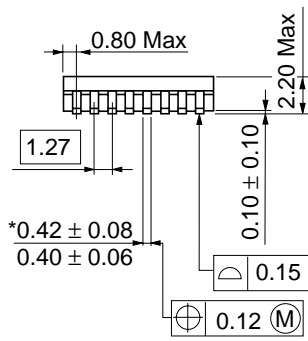
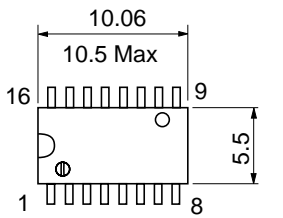
Item	Symbol	Typ	Unit	Condition
Input capacitance	C_{IN}	4.5	pF	$V_{CC} = 5.5\text{ V}$
Power dissipation capacitance	C_{PD}	3.5	pF	$V_{CC} = 5.0\text{ V}$



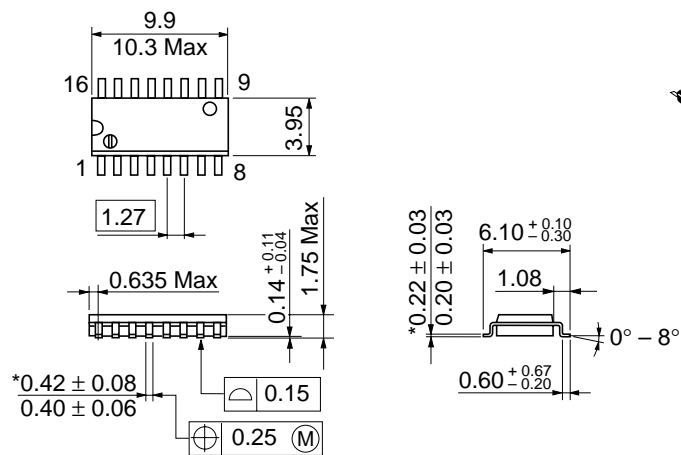
Unit: mm



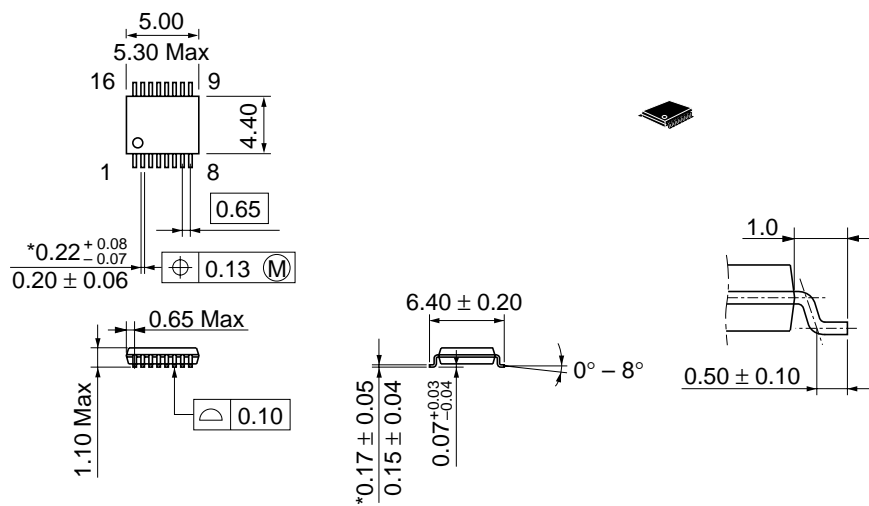
Unit: mm



Unit: mm



Unit: mm



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HITACHI

Hitachi, Ltd.

Semiconductor & Integrated Circuits.
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL NorthAmerica : <http://semiconductor.hitachi.com/>
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For further information write to:

Hitachi Semiconductor
(America) Inc.
179 East Tasman Drive,
San Jose, CA 95134
Tel: <1> (408) 433-1990
Fax: <1> (408) 433-0223

Hitachi Europe GmbH
Electronic components Group
Dornacher StraÙe 3
D-85622 Feldkirchen, Munich
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.
Electronic Components Group.
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
Fax: <44> (1628) 778322

Hitachi Asia Pte. Ltd.
16 Collyer Quay #20-00
Hitachi Tower
Singapore 049318
Tel: 535-2100
Fax: 535-1533

Hitachi Asia Ltd.
Taipei Branch Office
3F, Hung Kuo Building, No.167,
Tun-Hwa North Road, Taipei (105)
Tel: <886> (2) 2718-3666
Fax: <886> (2) 2718-8180

Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7/F., North Tower, World Finance Centre,
Harbour City, Canton Road, Tsim Sha Tsui,
Kowloon, Hong Kong
Tel: <852> (2) 735 9218
Fax: <852> (2) 730 0281
Telex: 40815 HITEC HX