
HD74AC259

8-bit Addressable Latch

HITACHI

Description

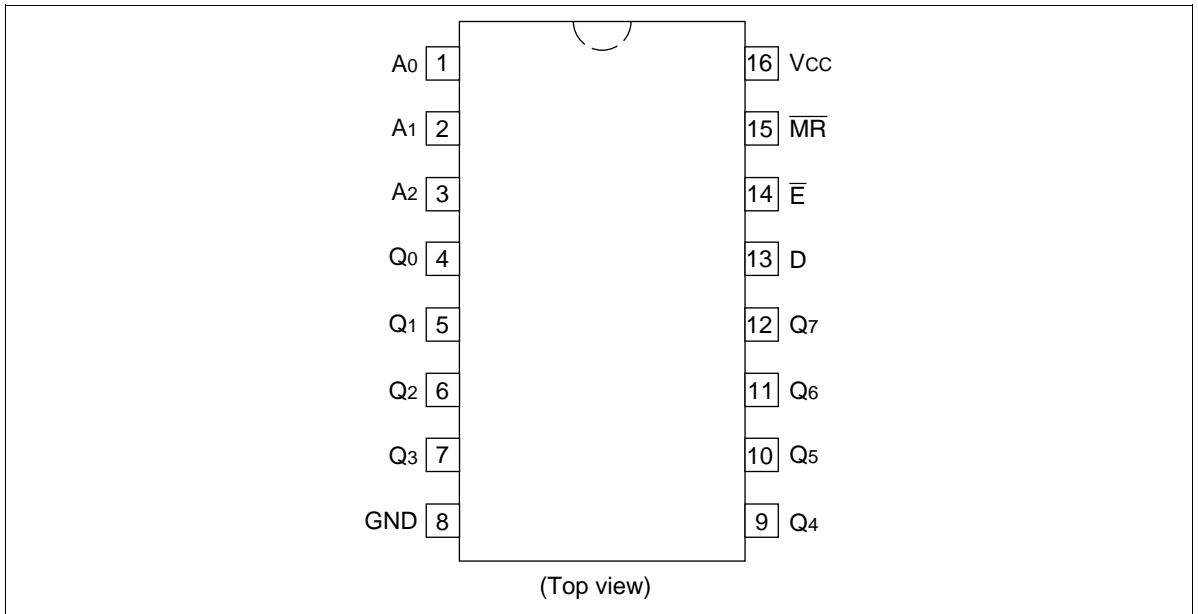
The HD74AC259 is a high-speed 8-bit addressable latch designed for general purpose storage applications in digital systems. It is a multifunctional device capable of storing single line data in eight addressable latches, and also a 1-of-8 decoder and demultiplexer with active HIGH outputs. The device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

Features

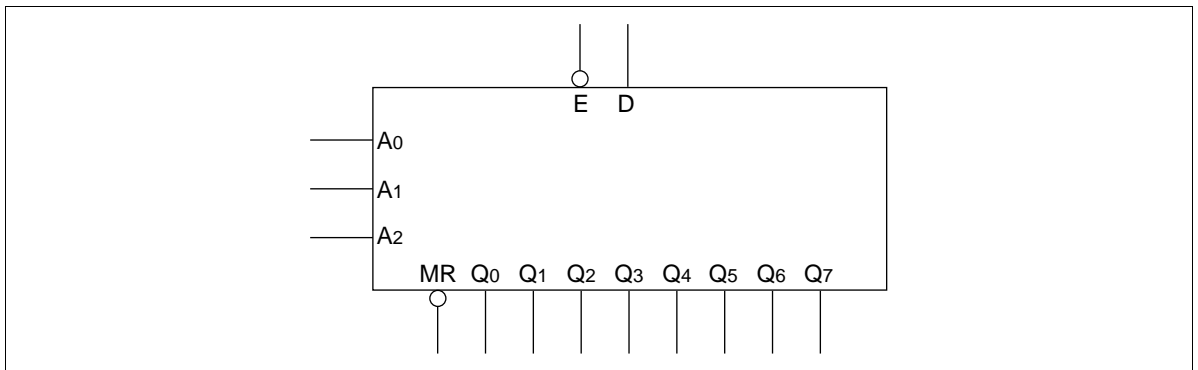
- Serial-to-Parallel Conversion
- Eight Bits of Storage with Output of Each Bit Available
- Random (Addressable) Data Entry
- Active High Demultiplexing or Decoding Capability
- Easily Expandable
- Common Clear
- Outputs Source/Sink 24 mA

HD74AC259

Pin Arrangement



Logic Symbol

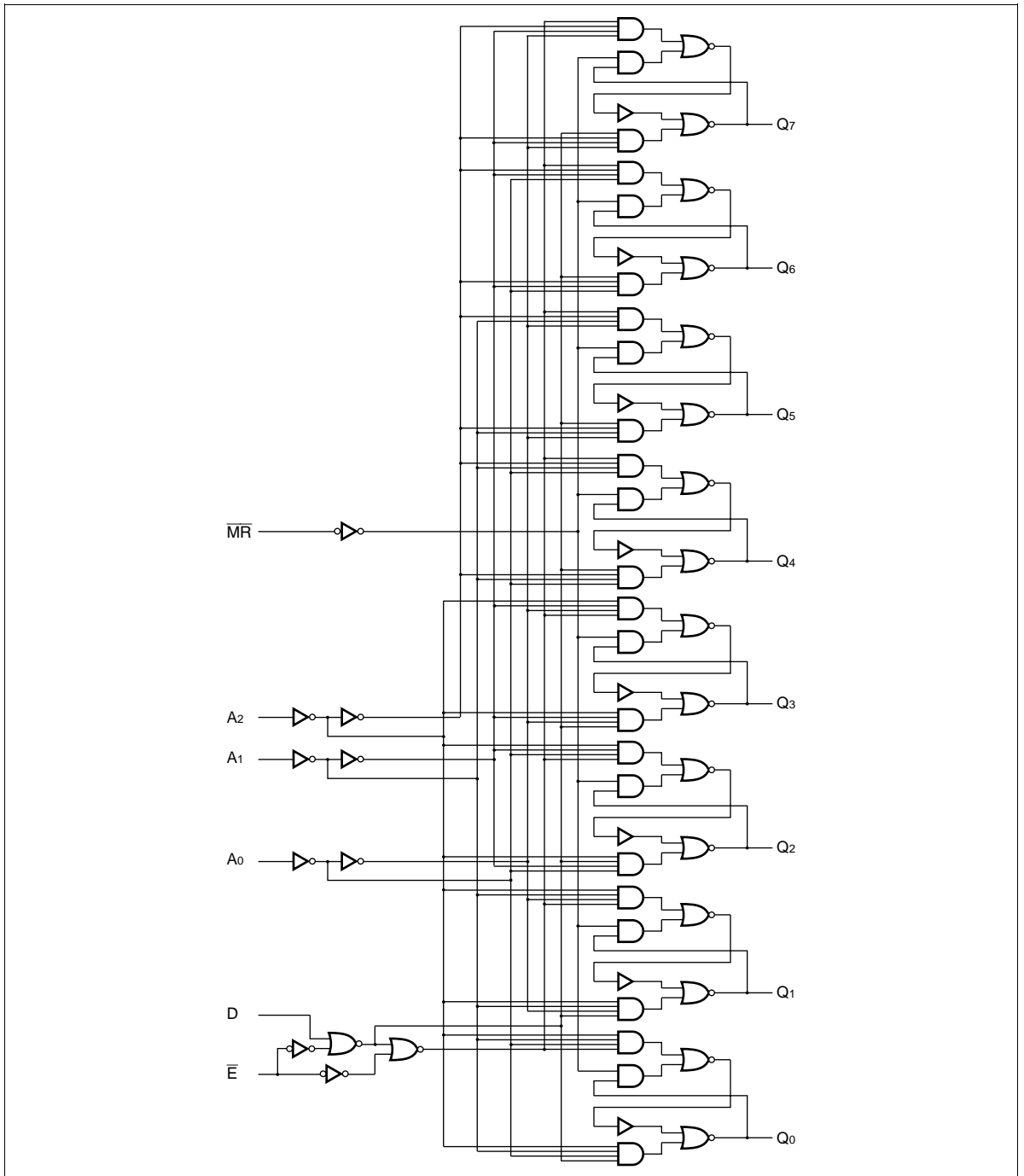


Pin Names

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

HITACHI

Logic Diagram



HD74AC259

Function Table

Operating Mode	Inputs						Outputs							
	\overline{MR}	\overline{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	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	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

HITACHI

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 MR̄ 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 Ē 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 Ē 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

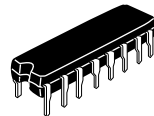
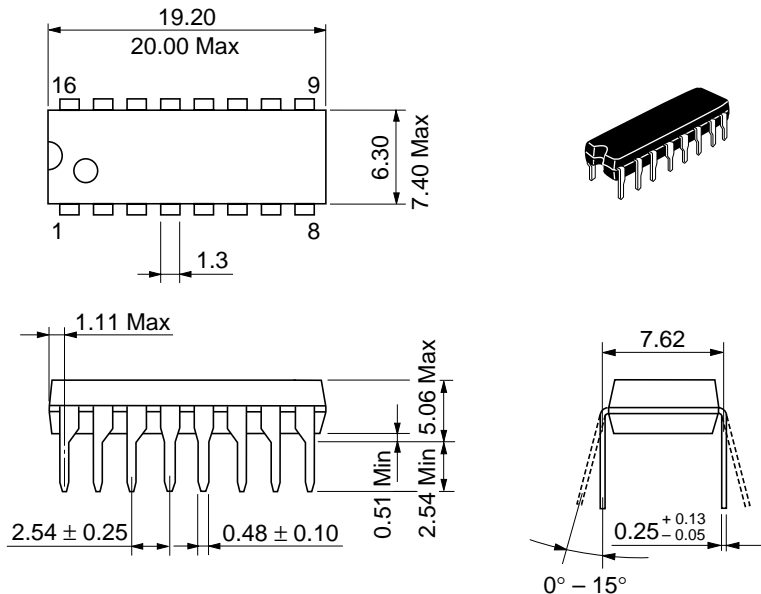
AC Operating Requirements: HD74AC259

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

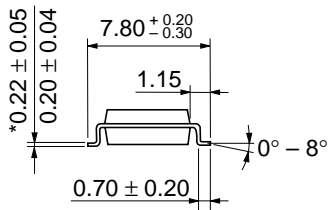
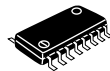
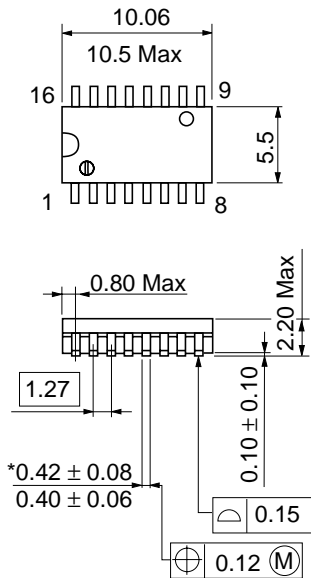
Note: 1. Voltage Range 3.3 is $3.3\text{ V} \pm 0.3\text{ V}$
Voltage Range 5.0 is $5.0\text{ V} \pm 0.5\text{ V}$

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	$V_{CC} = 5.0\text{ V}$

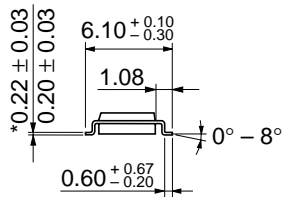
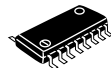
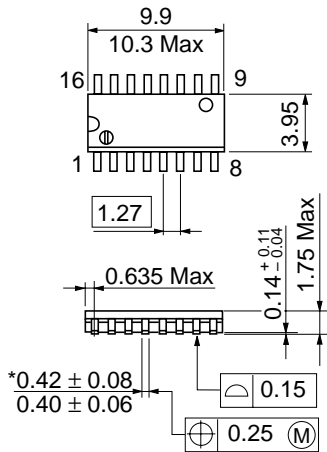


Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g



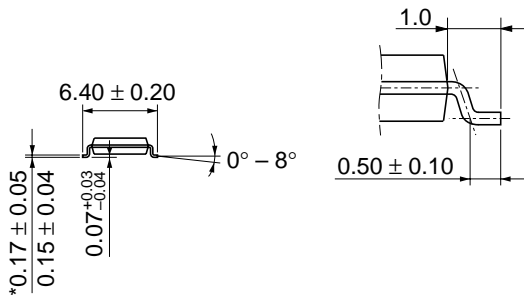
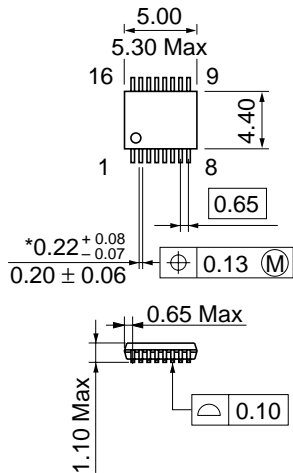
*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.24 g



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DN
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.15 g



*Dimension including the plating thickness
 Base material dimension

Hitachi Code	TTP-16DA
JEDEC	—
EIAJ	—
Weight (reference value)	0.05 g

Cautions

1. Hitachi neither warrants nor grants licenses of any rights of Hitachi's or any third party's patent, copyright, trademark, or other intellectual property rights for information contained in this document. Hitachi bears no responsibility for problems that may arise with third party's rights, including intellectual property rights, in connection with use of the information contained in this document.
2. Products and product specifications may be subject to change without notice. Confirm that you have received the latest product standards or specifications before final design, purchase or use.
3. Hitachi makes every attempt to ensure that its products are of high quality and reliability. However, contact Hitachi's sales office before using the product in an application that demands especially high quality and reliability or where its failure or malfunction may directly threaten human life or cause risk of bodily injury, such as aerospace, aeronautics, nuclear power, combustion control, transportation, traffic, safety equipment or medical equipment for life support.
4. Design your application so that the product is used within the ranges guaranteed by Hitachi particularly for maximum rating, operating supply voltage range, heat radiation characteristics, installation conditions and other characteristics. Hitachi bears no responsibility for failure or damage when used beyond the guaranteed ranges. Even within the guaranteed ranges, consider normally foreseeable failure rates or failure modes in semiconductor devices and employ systemic measures such as fail-safes, so that the equipment incorporating Hitachi product does not cause bodily injury, fire or other consequential damage due to operation of the Hitachi product.
5. This product is not designed to be radiation resistant.
6. No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without written approval from Hitachi.
7. Contact Hitachi's sales office for any questions regarding this document or Hitachi semiconductor products.

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 North America : <http://semiconductor.hitachi.com/>
Europe : <http://www.hitachi-eu.com/hel/ecg>
Asia (Singapore) : <http://www.has.hitachi.com.sg/grp3/sicd/index.htm>
Asia (Taiwan) : http://www.hitachi.com.tw/E/Product/SICD_Frame.htm
Asia (HongKong) : <http://www.hitachi.com.hk/eng/bo/grp3/index.htm>
Japan : <http://www.hitachi.co.jp/Sicd/indx.htm>

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 Straße 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

Copyright ' Hitachi, Ltd., 1999. All rights reserved. Printed in Japan.

HITACHI