

To all our customers

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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Keep safety first in your circuit designs!

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Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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HD74LS259 ● 8-bit Addressable Latches

This 8-bit addressable latch is designed for general purpose storage applications in digital systems. Specific uses include working registers, serial-holding registers, and active-high decoders or demultiplexers. This is multifunctional device capable of storing single-line data in eight addressable latches, and being a 1-of-8 decoder or demultiplexer with active-high outputs.

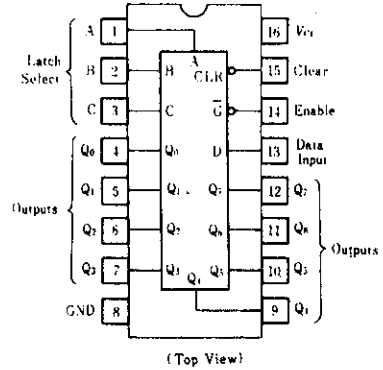
Four distinct modes of operation are selectable by controlling the clear and enable inputs as enumerated in the function table. In the addressable-latch mode, data at the data-in terminal is written into the addressed latch.

The addressed latch will follow the data input with all unaddressed latches remaining in their previous states. In the memory mode, latch remains in their previous states and is unaffected by the data or address inputs.

To eliminate the possibility of entering erroneous data in the latch, the enable should be held high (inactive) while the address lines are changing.

In the clear mode, all outputs are low and unaffected by the address and data inputs.

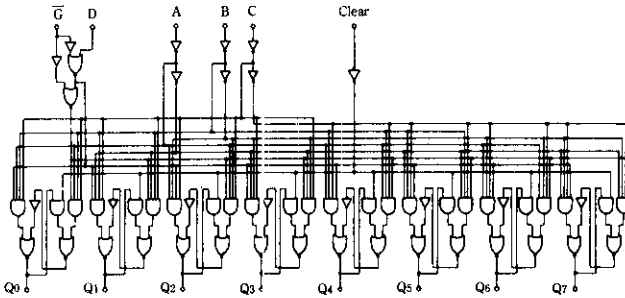
■ PIN ARRANGEMENT



■ FUNCTION TABLE

Input		Output of addressed latch	Each other output	Function
CLR	\bar{G}			
H	L	D	Q_{i0}	Addressable latch
H	H	Q_{i0}	Q_{i0}	Memory
L	L	D	L	8-line demultiplexer
L	H	L	L	Clear

■ BLOCK DIAGRAM



Select inputs			Latch addressed
C	B	A	
L	L	L	0
L	L	H	1
L	H	L	2
L	H	H	3
H	L	L	4
H	L	H	5
H	H	L	6
H	H	H	7

- Notes) 1. H; high level, L; low level
 2. D; the level at the data input
 3. Q_{i0} ; the level of Q_i ($i=0, 1, \dots, 7$, as appropriate) before the indicated steady-state input conditions were established.

■ RECOMMENDED OPERATING CONDITIONS

Item	Symbol	min	typ	max	Unit
Pulse width	t_w	15	—	—	ns
Setup time	Data	20 †	—	—	ns
	Address	20 †	—	—	
Hold time	Data	0 †	—	—	ns
	Address	0 †	—	—	

†; The arrow indicates that the rising edge of the enable pulse is used for reference.

HD74LS259

■ ELECTRICAL CHARACTERISTICS ($T_a = -20 \sim +75^\circ\text{C}$)

Item	Symbol	Test Conditions	min	typ*	max	Unit
Input voltage	V_{IH}		2	--	--	V
	V_{IL}		--	--	0.8	V
Output voltage	V_{OH}	$V_{CC} = 4.75\text{V}$, $V_{IH} = 2\text{V}$, $V_{IL} = 0.8\text{V}$, $I_{OH} = -400\mu\text{A}$	2.7	--	--	V
	V_{OL}	$V_{CC} = 4.75\text{V}$, $V_{IH} = 2\text{V}$, $V_{IL} = 0.8\text{V}$				
					0.4	V
					0.5	V
Input current	I_{IH}	$V_{CC} = 5.25\text{V}$, $V_I = 2.7\text{V}$	--	--	20	μA
	I_{IL}	$V_{CC} = 5.25\text{V}$, $V_I = 0.4\text{V}$	--	--	-0.4	mA
	I_I	$V_{CC} = 5.25\text{V}$, $V_I = 7\text{V}$	--	--	0.1	mA
Short-circuit output current	I_{OS}	$V_{CC} = 5.25\text{V}$	-20	--	-100	mA
Supply current**	I_{CC}	$V_{CC} = 5.25\text{V}$	--	22	36	mA
Input clamp voltage	V_{IK}	$V_{CC} = 4.75\text{V}$, $I_{IK} = -18\text{mA}$	--	--	-1.5	V

* $V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$

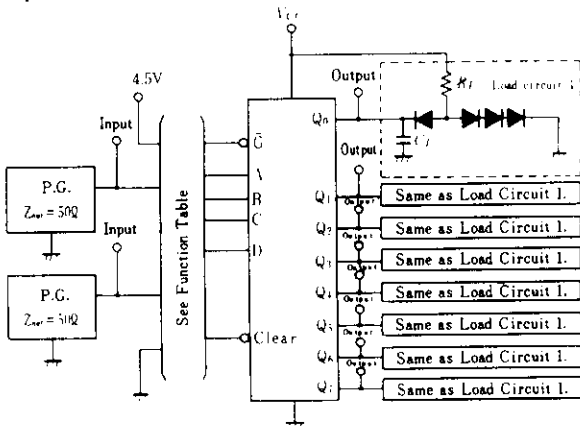
** I_{CC} is measured with all outputs open and all inputs grounded.

■ SWITCHING CHARACTERISTICS ($V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$)

Item	Symbol	Inputs	Output	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PHL}	Clear	$Q_0 \sim Q_7$	$C_L = 15\text{pF}$ $R_I = 2\text{k}\Omega$	--	17	27	ns
	t_{PLH}	Data	$Q_0 \sim Q_7$		--	20	32	ns
	t_{PHL}				--	13	21	
	t_{PLH}	Address	$Q_0 \sim Q_7$		--	24	38	ns
	t_{PHL}				--	18	29	
	t_{PLH}	Enable	$Q_0 \sim Q_7$		--	22	35	ns
	t_{PHL}				--	15	24	

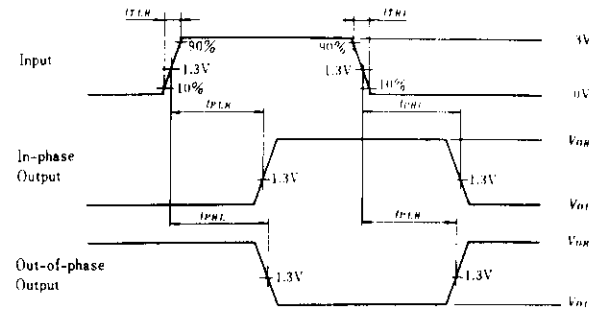
■ TESTING METHOD

1) Test Circuit



- Notes) 1. C_L includes probe and jig capacitance.
2. All diodes are 1S2074 (Ⓢ).

Waveform



Input pulse: $t_{TLH} \leq 15\text{ns}$, $t_{THL} \leq 6\text{ns}$, $PRR = 1\text{MHz}$
duty cycle 50%.



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

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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 North America : <http://semiconductor.hitachi.com/>
 Europe : <http://www.hitachi-eu.com/hel/ecg>
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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 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

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