

HD74LS259

8-bit Address Latch

REJ03D0471-0200

Rev.2.00

Feb.18.2005

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-to-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.

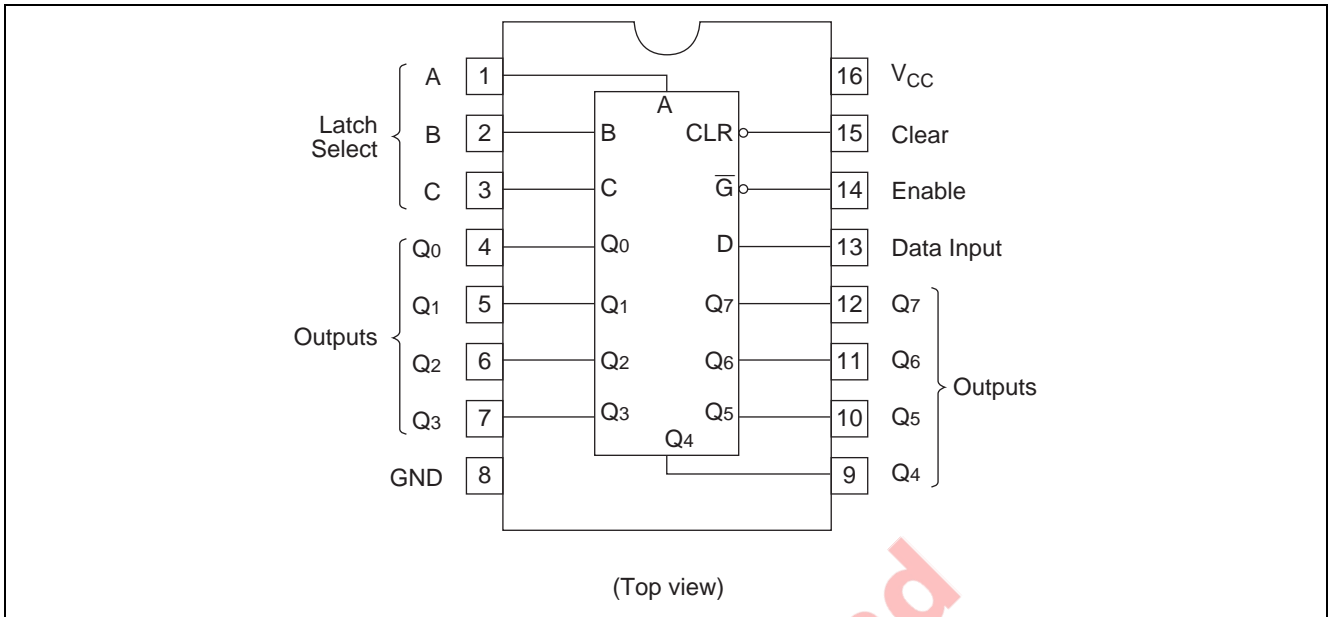
Features

- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS259P	DILP-16 pin	PRDP0016AE-B (DP-16FV)	—	—
HD74LS259FPEL	SOP-16 pin (JEITA)	PRSP0016DH-B (FP-16DAV)	FP	EL (2,000 pcs/reel)
HD74LS259RPEL	SOP-16 pin (JEDEC)	PRSP0016DG-A (FP-16DNV)	RP	EL (2,500 pcs/reel)

Note: Please consult the sales office for the above package availability.

Pin Arrangement



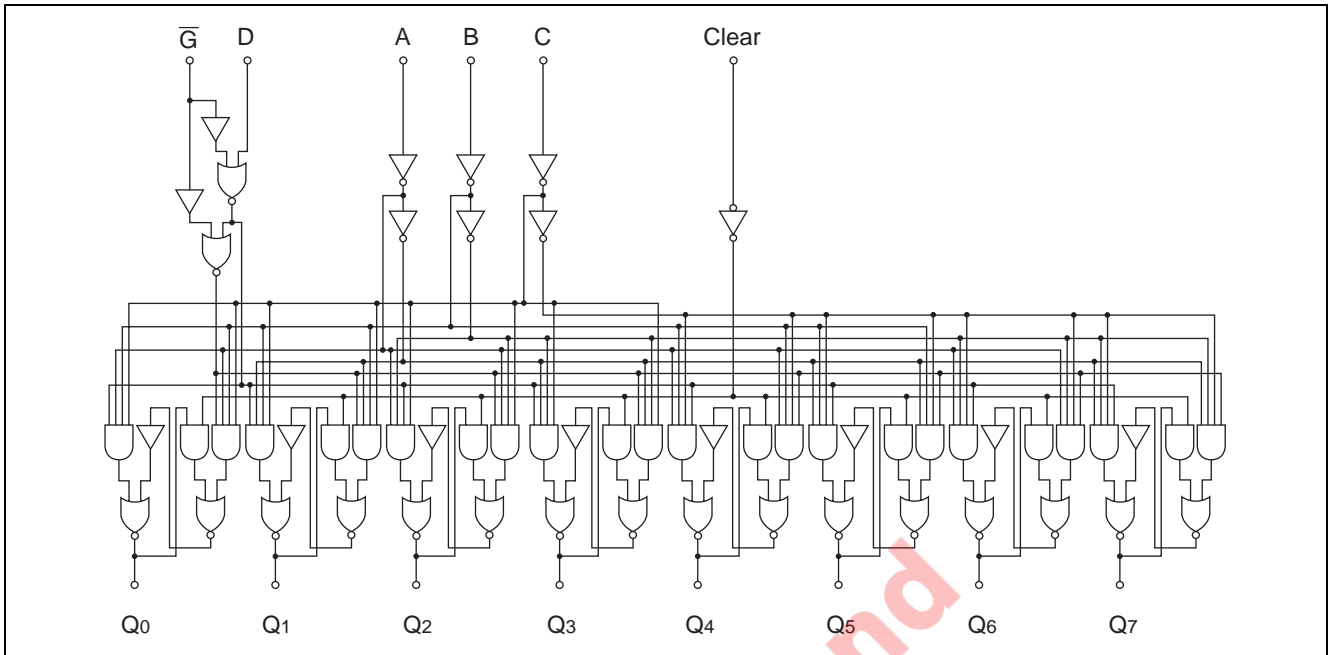
Function Table

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

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. O_{io} ; the level of Q_i ($i = 0, 1, \dots, 7$, as appropriate) before the indicated steady state input conditions were established.

Block Diagram



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}	7	V
Input voltage	V_{IN}	7	V
Power dissipation	P_T	400	mW
Storage temperature	T_{stg}	-65 to +150	°C

Note: Voltage value, unless otherwise noted, are with respect to network ground terminal.

Recommended Operating Conditions

Item	Symbol	Min	Typ	Max	Unit
Supply voltage	V_{CC}	4.75	5.00	5.25	V
Output current	I_{OH}	—	—	-400	μA
	I_{OL}	—	—	8	mA
Operating temperature	T_{opr}	-20	25	75	°C
Pulse width	t_w	15	—	—	ns
Setup time	Data	t_{su}	20 \uparrow	—	ns
	Address	t_{su}	20 \uparrow	—	ns
Hold time	Data	t_h	0 \uparrow	—	ns
	Address	t_h	0 \uparrow	—	ns

Electrical Characteristics

(Ta = -20 to +75 °C)

Item	Symbol	min.	typ.*	max.	Unit	Condition
Input voltage	V _{IH}	2.0	—	—	V	
	V _{IL}	—	—	0.8	V	
Output voltage	V _{OH}	2.7	—	—	V	V _{CC} = 4.75 V, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OH} = -400 μA
	V _{OL}	—	—	0.4	V	V _{CC} = 4.75 V, V _{IH} = 2 V, V _{IL} = 0.8 V
—		—	0.5			
Input current	I _{IH}	—	—	20	μA	V _{CC} = 5.25 V, V _I = 2.7 V
	I _{IL}	—	—	-0.4	mA	V _{CC} = 5.25 V, V _I = 0.4 V
	I _I	—	—	0.1	mA	V _{CC} = 5.25 V, V _I = 7 V
Short-circuit output current	I _{OS}	-20	—	-100	mA	V _{CC} = 5.25 V
Supply current**	I _{CC}	—	22	36	mA	V _{CC} = 5.25 V
Input clamp voltage	V _{IK}	—	—	-1.5	V	V _{CC} = 4.75 V, I _{IN} = -18 mA

Notes: * V_{CC} = 5 V, Ta = 25°C** I_{CC} is measured with all outputs open and all inputs grounded.

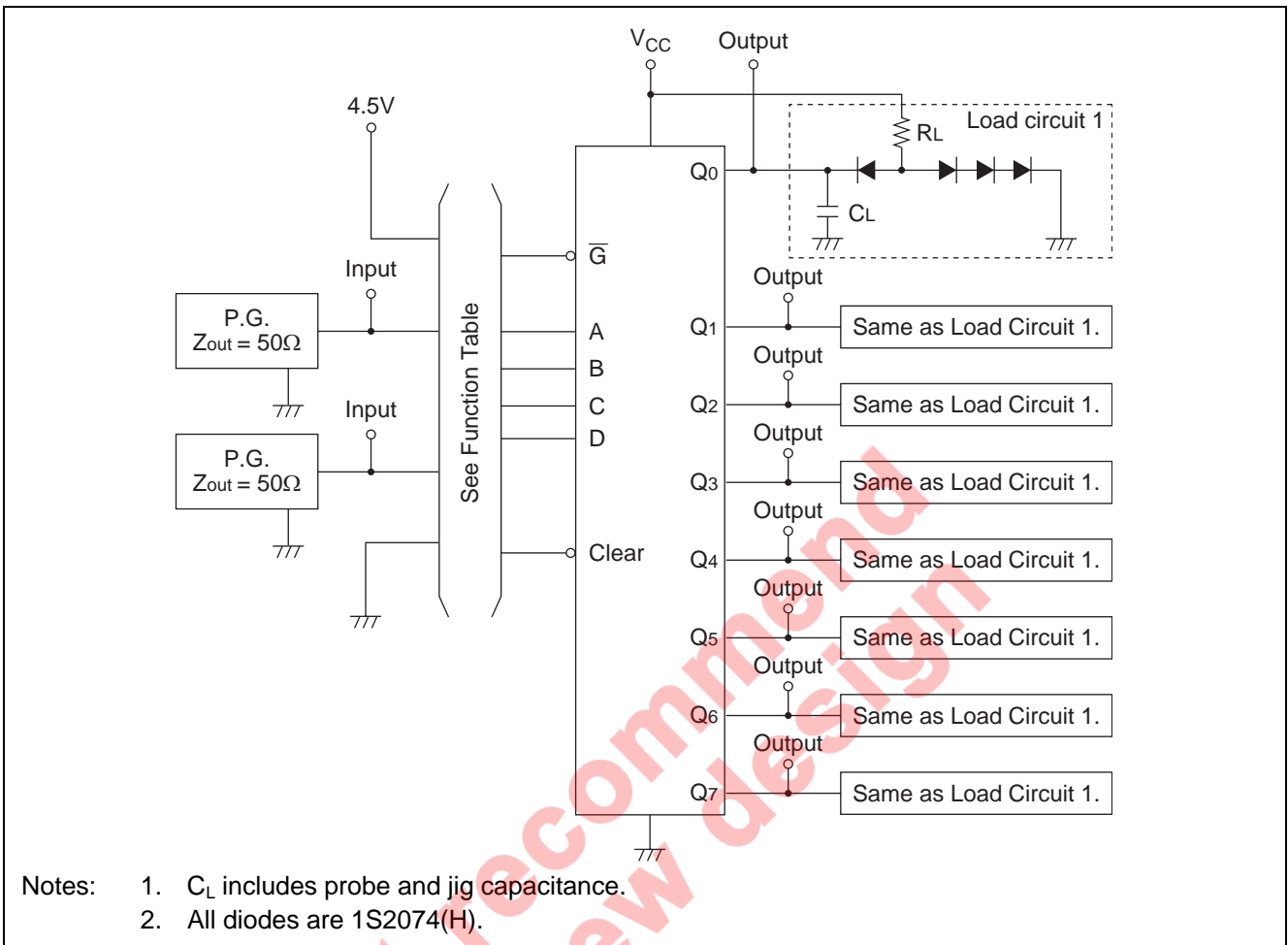
Switching Characteristics

(V_{CC} = 5 V, Ta = 25°C)

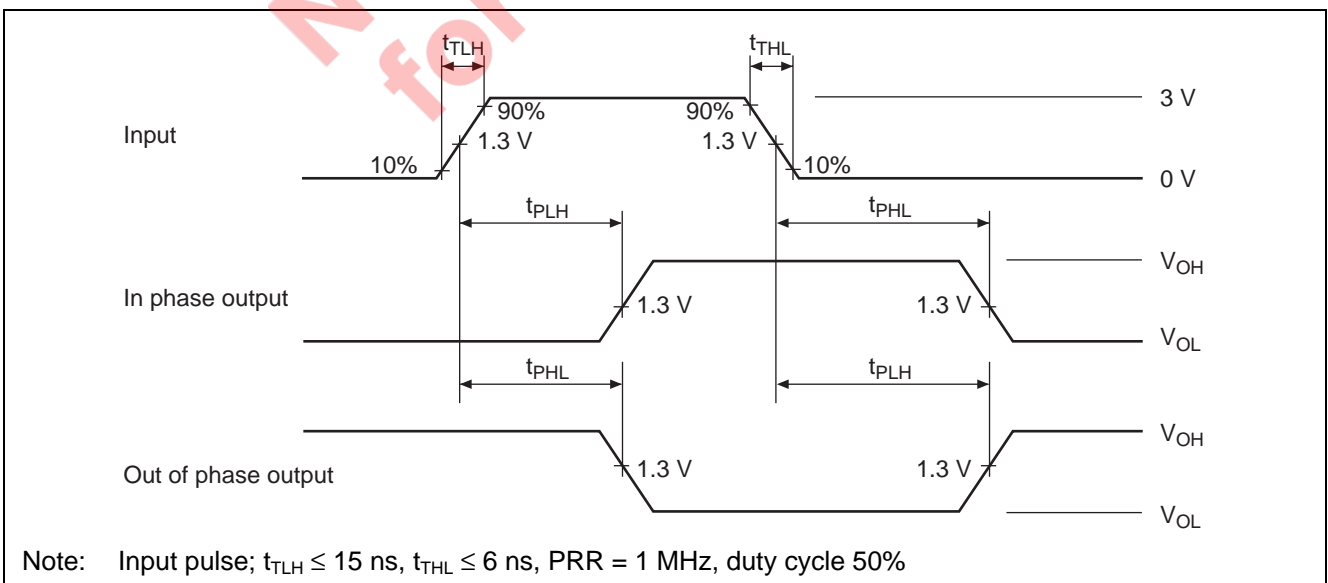
Item	Symbol	Inputs	Output	min.	typ.	max.	Unit	Condition
Propagation delay time	t _{PHL}	Clear	Q ₀ to Q ₇	—	17	27	ns	C _L = 15 pF, R _L = 2 kΩ
	t _{PLH}	Data	Q ₀ to Q ₇	—	20	32	ns	
	t _{PHL}			—	13	21		
	t _{PLH}	Address	Q ₀ to Q ₇	—	24	38	ns	
	t _{PHL}			—	18	29		
	t _{PLH}	Enable	Q ₀ to Q ₇	—	22	35	ns	
	t _{PHL}			—	15	24		

Testing Method

Test Circuit

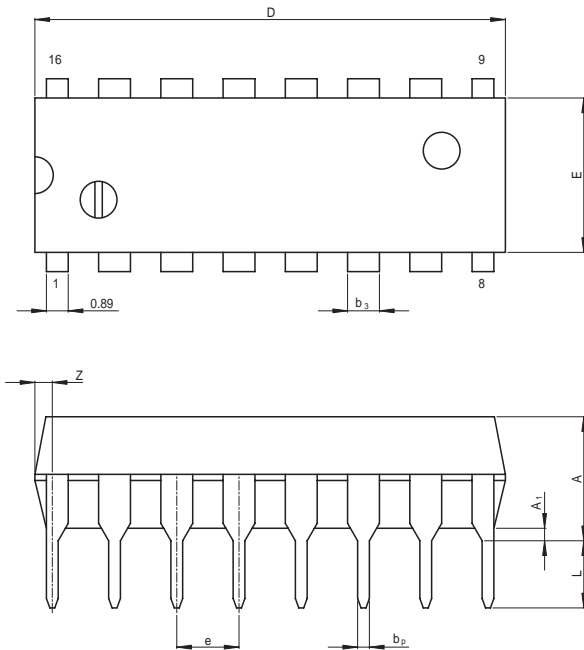


Waveform



Package Dimensions

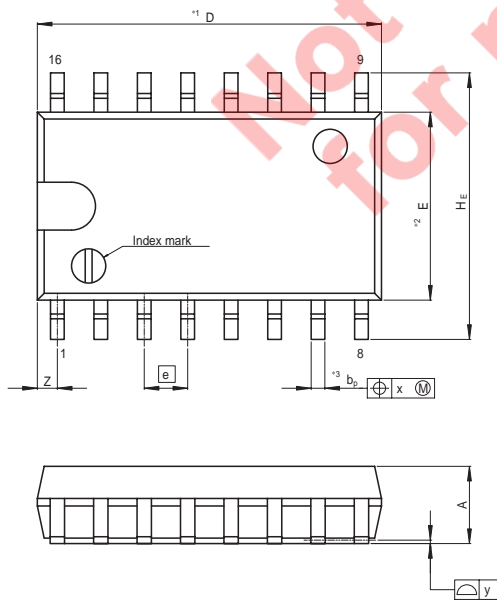
JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-DIP16-6.3x19.2-2.54	PRDP0016AE-B	DP-16FV	1.05g



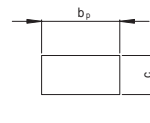
Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
e ₁	—	7.62	—
D	—	19.2	20.32
E	—	6.3	7.4
A	—	—	5.06
A ₁	0.51	—	—
b _P	0.40	0.48	0.56
b ₃	—	1.30	—
c	0.19	0.25	0.31
θ	0°	—	15°
e	2.29	2.54	2.79
Z	—	—	1.12
L	2.54	—	—

(Ni/Pd/Au plating)

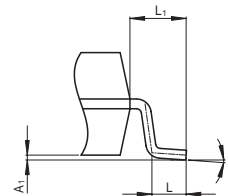
JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP16-5.5x10.06-1.27	PRSP0016DH-B	FP-16DAV	0.24g



NOTE)
 1. DIMENSIONS*1 (Nom)*AND*2
 DO NOT INCLUDE MOLD FLASH.
 2. DIMENSION*3*DOES NOT
 INCLUDE TRIM OFFSET.



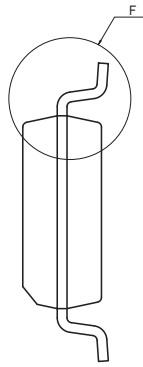
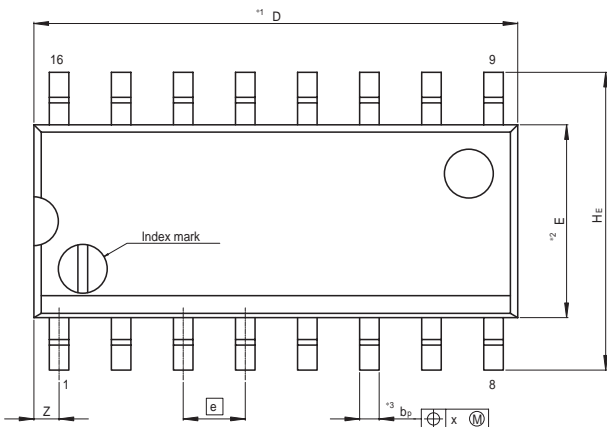
Terminal cross section
(Ni/Pd/Au plating)



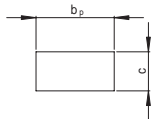
Detail F

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	10.06	10.5
E	—	5.50	—
A ₂	—	—	—
A ₁	0.00	0.10	0.20
A	—	—	2.20
b _P	0.34	0.40	0.46
b ₁	—	—	—
c	0.15	0.20	0.25
c ₁	—	—	—
θ	0°	—	8°
H _E	7.50	7.80	8.00
e	—	1.27	—
x	—	—	0.12
y	—	—	0.15
Z	—	—	0.80
L	0.50	0.70	0.90
L ₁	—	1.15	—

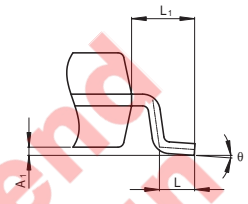
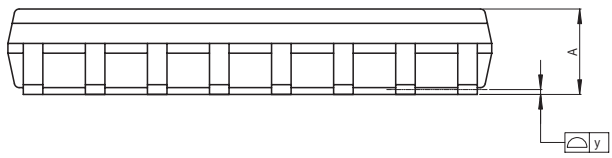
JEITA Package Code P-SOP16-3.95x9.9-1.27	RENESAS Code PRSP0016DG-A	Previous Code FP-16DNV	MASS[Typ.] 0.15g
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NOTE)
1. DIMENSIONS *1 (Nom) *2 AND *3
DO NOT INCLUDE MOLD FLASH.
2. DIMENSION *3 DOES NOT
INCLUDE TRIM OFFSET.



Terminal cross section
(Ni/Pd/Au plating)



Detail F

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	9.90	10.30
E	—	3.95	—
A ₂	—	—	—
A ₁	0.10	0.14	0.25
A	—	—	1.75
b _p	0.34	0.40	0.46
b ₁	—	—	—
c	0.15	0.20	0.25
c ₁	—	—	—
θ	0°	—	8°
H _E	5.80	6.10	6.20
e	—	1.27	—
x	—	—	0.25
y	—	—	0.15
Z	—	—	0.635
L	0.40	0.60	1.27
L ₁	—	1.08	—

Not recommended for new design

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