

DM74LS573

Octal D Latch with TRI-STATE® Outputs

General Description

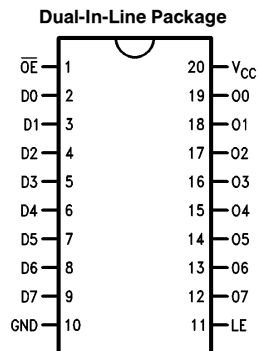
The 'LS573 is a high speed octal latch with buffered common Latch Enable (LE) and buffered common Output Enable (\overline{OE}) inputs.

This device is functionally identical to the 'LS373, but has different pinouts. For truth tables, discussion of operations and AC and DC specifications, please refer to the 'LS373 data sheet.

Features

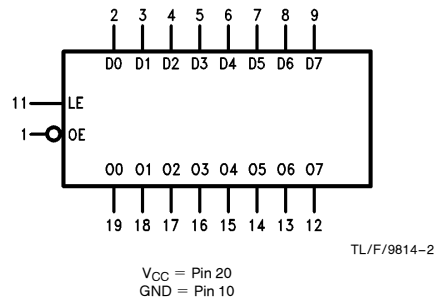
- Inputs and outputs on opposite sides of package allowing easy interface with microprocessors
- Useful as input or output port for microprocessors
- Functionally identical to 'LS373
- Input clamp diodes limit high speed termination effects
- Fully TTL and CMOS compatible

Connection Diagram



TL/F/9814-1

Logic Symbol



Order Number **DM74LS573WM** or **DM74LS573N**
See NS Package Number **M20B** or **N20A**

Pin Names	Description
D0-D7	Data Inputs
LE	Latch Enable Input (Active HIGH)
\overline{OE}	TRI-STATE Output Enable Input (Active LOW)
O0-O7	TRI-STATE Latch Outputs

Function Table

OUTPUT Enable	Latch Enable	D	Output \overline{O}
L	H	H	H
L	H	L	L
L	L	X	Q _O
H	X	X	Z

L = Low State, H = High State, X = Don't Care

Z = High Impedance State

Q_O = Previous Condition of O

TRI-STATE® is a registered trademark of National Semiconductor Corporation.

Absolute Maximum Ratings (Note)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	0°C to +70°C
DM74LS	
Storage Temperature Range	-65°C to +150°C

Note: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the "Electrical Characteristics" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Recommended Operating Conditions

Symbol	Parameter	DM74LS			Units
		Min	Nom	Max	
V _{CC}	Supply Voltage	4.75	5	5.25	V
V _{IH}	High Level Input Voltage	2			V
V _{IL}	Low Level Input Voltage			0.8	V
I _{OH}	High Level Output Current			-2.6	mA
I _{OL}	Low Level Output Current			24	mA
T _A	Free Air Operating Temperature	0		70	°C

Electrical Characteristics

Over recommended operating free air temperature range (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 1)	Max	Units
V _I	Input Clamp Voltage	V _{CC} = Min, I _I = -18 mA			-1.5	V
V _{OH}	High Level Output Voltage	V _{CC} = Min, I _{OH} = Max, V _{IL} = Max	2.7	3.4		V
V _{OL}	Low Level Output Voltage	V _{CC} = Min, I _{OL} = Max, V _{IH} = Min		0.35	0.5	V
		I _{OL} = 4 mA, V _{CC} = Min		0.25	0.4	
I _I	Input Current @ Max Input Voltage	V _{CC} = Max, V _I = 7V			1	mA
I _{IH}	High Level Input Current	V _{CC} = Max, V _I = 2.7V			20	μA
I _{IL}	Low Level Input Current	V _{CC} = Max, V _I = 0.4V			-0.4	mA
I _{OS}	Short Circuit Output Current	V _{CC} = Max (Note 2)	-30		-130	mA
I _{CC}	Supply Current	V _{CC} = Max			50	mA
I _{OZH}	TRI-STATE Output off Current High	V _{CC} = V _{CCH} V _{OZH} = 2.7V			20	μA
I _{OZL}	TRI-STATE Output off Current Low	V _{CC} = V _{CCH} V _{OZL} = 0.4V			-20	μA

Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.

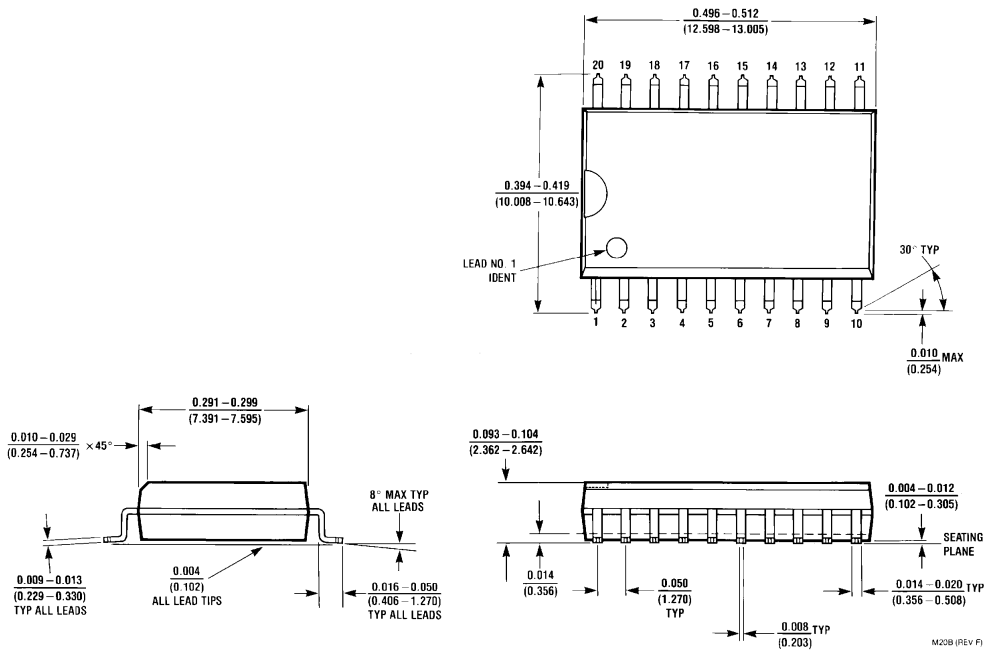
Note 2: Not more than one output should be shorted at a time, and the duration should not exceed one second.

Switching Characteristics

at $V_{CC} = 5V$ and $T_A = 25^\circ C$ (see Section 1 for Test Waveforms and output loading)

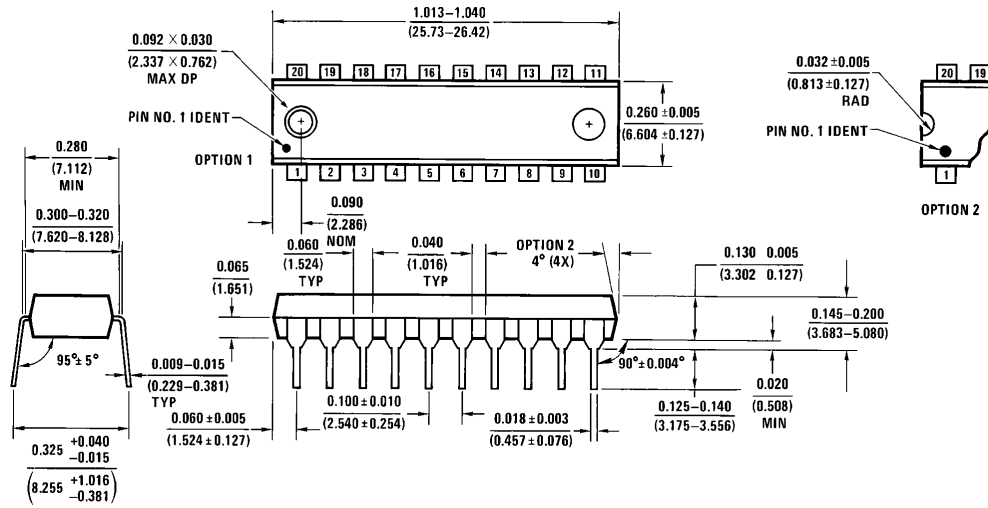
Symbol	Parameter	$R_L = 2\text{ k}\Omega$, $C_L = 50\text{ pF}$		Units
		Min	Max	
t_{PLH}	Propagation Delay Data to Q		27	ns
t_{PHL}	Propagation Delay LE to Q		18	
t_{PLH}	Propagation Delay LE to Q		36	ns
t_{PHL}	Propagation Delay LE to Q		25	
t_{PZH}	TRI-STATE Enable Time \overline{OE} to Q		20	ns
t_{PZL}	TRI-STATE Enable Time \overline{OE} to Q		25	
t_{PHZ}	TRI-STATE Enable Time \overline{OE} to Q		20	ns
t_{PLZ}	TRI-STATE Enable Time \overline{OE} to Q		25	
$t_s(H)$	Setup Time (High/Low)	3		ns
$t_s(L)$	Data to LE	7		
$t_h(H)$	Hold Time (High/Low)	10		ns
$t_h(L)$	Data to LE	10		
$t_w(H)$	Pulse Width (High)	15		ns

Physical Dimensions inches (millimeters)



20-Lead Wide Small Outline Molded Package (M)
Order Number DM74LS573WM
NS Package Number M20B

Physical Dimensions inches (millimeters) (Continued)



20-Lead Molded Dual-In-Line Package (N)
Order Number DM74LS573N
NS Package Number N20A

N20A (REV G)

LIFE SUPPORT POLICY

NATIONAL'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF NATIONAL SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.



National Semiconductor Corporation
 1111 West Bardin Road
 Arlington, TX 76017
 Tel: 1(800) 272-9959
 Fax: 1(800) 737-7018

National Semiconductor Europe
 Fax: (+49) 0-180-530 85 86
 Email: cnjwge@tevm2.nsc.com
 Deutsch Tel: (+49) 0-180-530 85 85
 English Tel: (+49) 0-180-532 78 32
 Français Tel: (+49) 0-180-532 93 58
 Italiano Tel: (+49) 0-180-534 16 80

National Semiconductor Hong Kong Ltd.
 19th Floor, Straight Block,
 Ocean Centre, 5 Canton Rd.
 Tsimshatsui, Kowloon
 Hong Kong
 Tel: (852) 2737-1600
 Fax: (852) 2736-9960

National Semiconductor Japan Ltd.
 Tel: 81-043-299-2309
 Fax: 81-043-299-2408

National does not assume any responsibility for use of any circuitry described, no circuit patent licenses are implied and National reserves the right at any time without notice to change said circuitry and specifications.