

# DM74LS573

## Octal D Latch with TRI-STATE® Outputs

### General Description

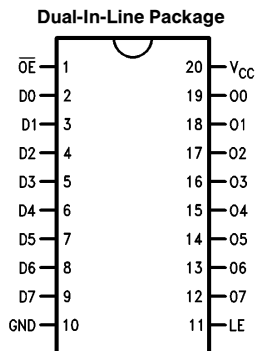
The 'LS573 is a high speed octal latch with buffered common Latch Enable (LE) and buffered common Output Enable ( $\overline{OE}$ ) inputs.

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

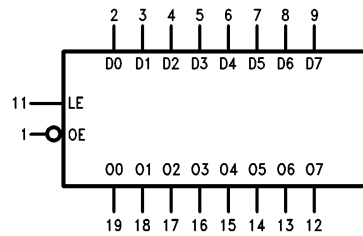
- Inputs and outputs on opposite sides of package allowing easy interface with microprocessors
- Useful as input or output port for microprocessors
- Functionally identical to 'LS373
- Input clamp diodes limit high speed termination effects
- Fully TTL and CMOS compatible

### Connection Diagram



TL/F/9814-1

### Logic Symbol



TL/F/9814-2

V<sub>CC</sub> = Pin 20  
GND = Pin 10

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 <sub>O</sub>
H	X	X	Z

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

Z = High Impedance State

Q<sub>O</sub> = Previous Condition of O

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## 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 <sub>CC</sub>	Supply Voltage	4.75	5	5.25	V
V <sub>IH</sub>	High Level Input Voltage	2			V
V <sub>IL</sub>	Low Level Input Voltage			0.8	V
I <sub>OH</sub>	High Level Output Current			-2.6	mA
I <sub>OL</sub>	Low Level Output Current			24	mA
T <sub>A</sub>	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 <sub>I</sub>	Input Clamp Voltage	V <sub>CC</sub> = Min, I <sub>I</sub> = -18 mA			-1.5	V
V <sub>OH</sub>	High Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OH</sub> = Max, V <sub>IL</sub> = Max	2.7	3.4		V
V <sub>OL</sub>	Low Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OL</sub> = Max, V <sub>IH</sub> = Min		0.35	0.5	V
		I <sub>OL</sub> = 4 mA, V <sub>CC</sub> = Min		0.25	0.4	
I <sub>I</sub>	Input Current @ Max Input Voltage	V <sub>CC</sub> = Max, V <sub>I</sub> = 7V			1	mA
I <sub>IH</sub>	High Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 2.7V			20	μA
I <sub>IL</sub>	Low Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 0.4V			-0.4	mA
I <sub>OS</sub>	Short Circuit Output Current	V <sub>CC</sub> = Max (Note 2)	-30		-130	mA
I <sub>CC</sub>	Supply Current	V <sub>CC</sub> = Max			50	mA
I <sub>OZH</sub>	TRI-STATE Output off Current High	V <sub>CC</sub> = V <sub>CCH</sub> V <sub>OZH</sub> = 2.7V			20	μA
I <sub>OZL</sub>	TRI-STATE Output off Current Low	V <sub>CC</sub> = V <sub>CCH</sub> V <sub>OZL</sub> = 0.4V			-20	μA

Note 1: All typicals are at V<sub>CC</sub> = 5V, T<sub>A</sub> = 25°C.

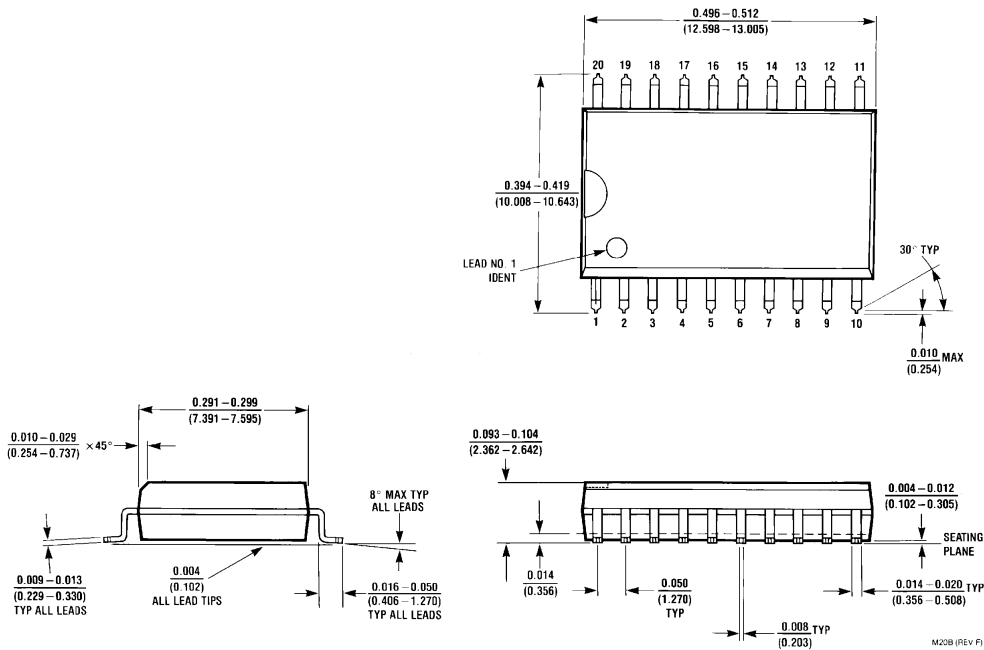
Note 2: Not more than one output should be shorted at a time, and the duration should not exceed one second.

## Switching Characteristics

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

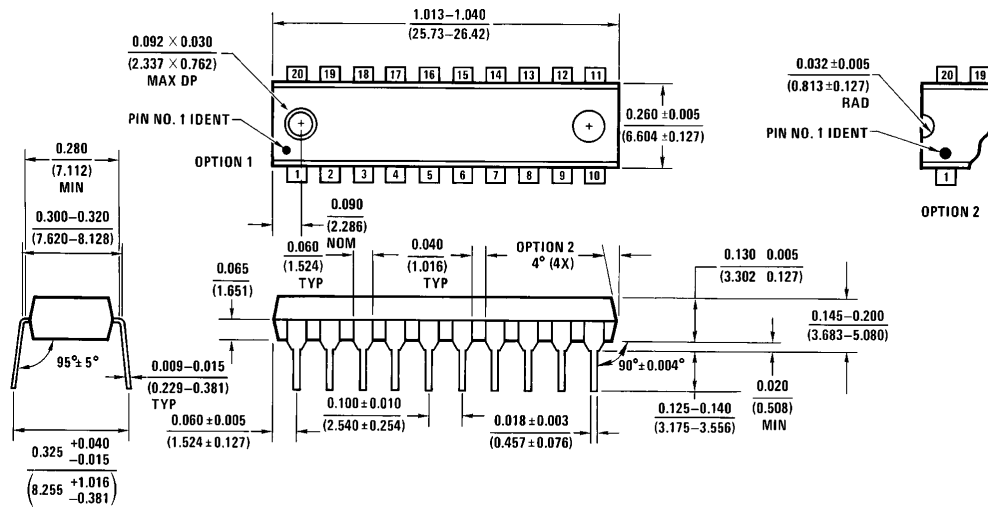
Symbol	Parameter	$R_L = 2\text{ k}\Omega$ , $C_L = 50\text{ pF}$		Units
		Min	Max	
$t_{PLH}$	Propagation Delay Data to Q		27	ns
$t_{PHL}$	Propagation Delay LE to Q		18	
$t_{PLH}$	Propagation Delay LE to Q		36	ns
$t_{PHL}$	Propagation Delay LE to Q		25	
$t_{PZH}$	TRI-STATE Enable Time $\overline{OE}$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

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