

DM74LS573 Octal D Latch with 3-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.

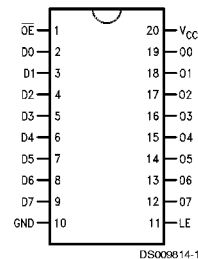
This device is functionally identical to the 'LS373, but has different pinouts. For truth tables, discussion of operations and AC and DC specifications, please refer to the 'LS373 data sheet.

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

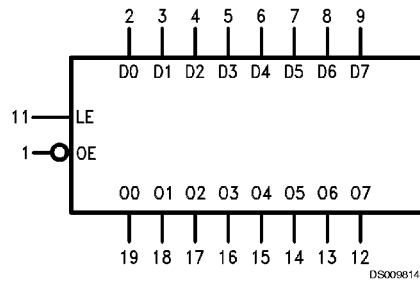
Connection Diagram

Dual-In-Line Package



Order Number DM74LS573WM or DM74LS573N
See Package Number M20B or N20A

Logic Symbol



V_{CC} = Pin 20
GND = Pin 10

Pin Names	Description
D0–D7	Data Inputs
LE	Latch Enable Input (Active HIGH)
\overline{OE}	3-STATE Output Enable Input (Active LOW)
O0–O7	3-STATE Latch Outputs

Function Table

\overline{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

Absolute Maximum Ratings (Note 1)

Supply Voltage
Input Voltage

7V
7V

Operating Free Air Temperature Range

DM74LS
Storage Temperature Range

0°C to +70°C
-65°C to +150°C

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

Note 1: 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.

Electrical Characteristics

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

Symbol	Parameter	Conditions	Min	Typ (Note 2)	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 3)	-30		-130	mA
I _{CC}	Supply Current	V _{CC} = Max			50	mA
I _{OZH}	3-STATE Output off Current High	V _{CC} = V _{CCH} V _{OZH} = 2.7V			20	μA
I _{OZL}	3-STATE Output off Current Low	V _{CC} = V _{CCH} V _{OZL} = 0.4V			-20	μA

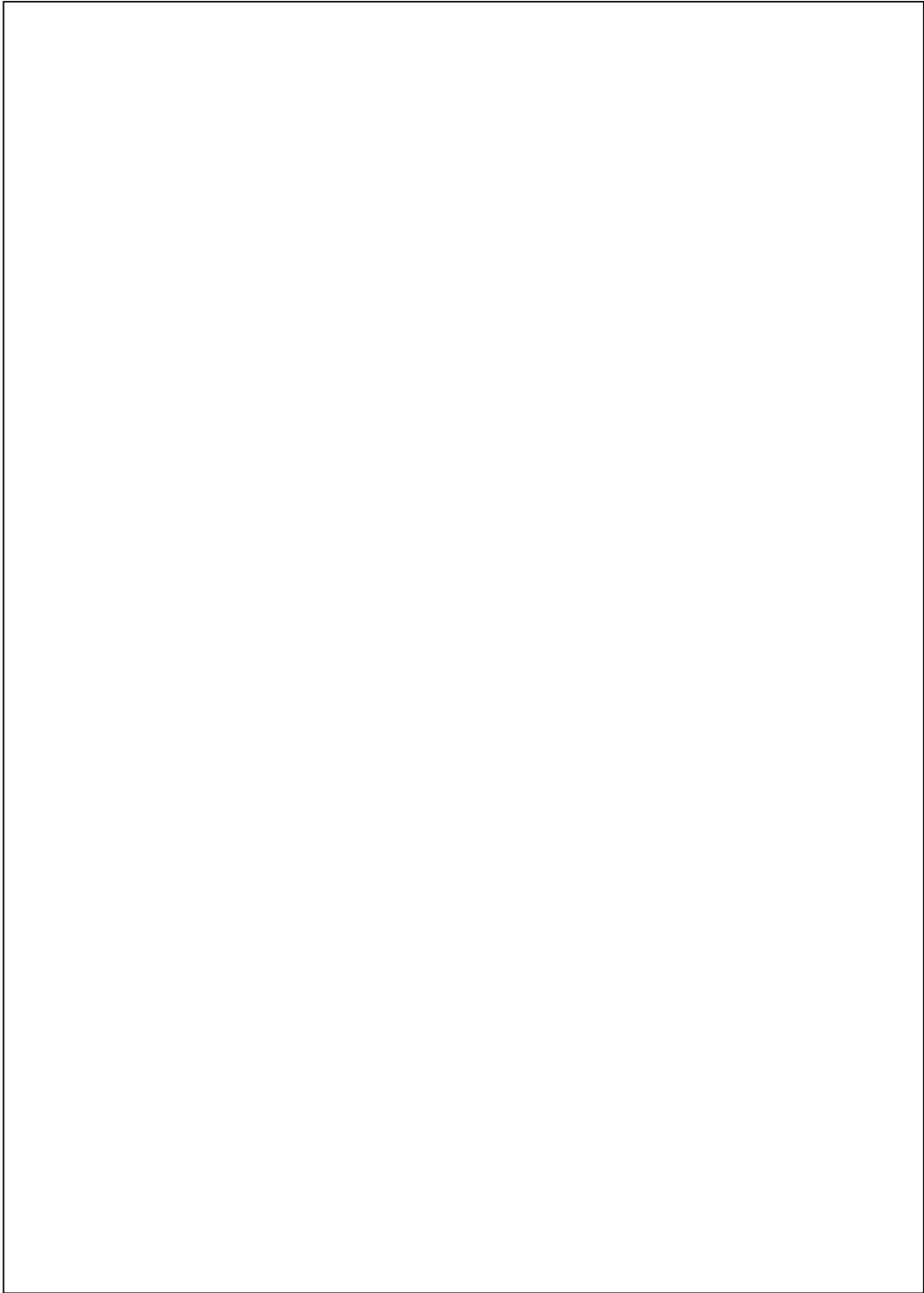
Note 2: All typicals are at V_{CC} = 5V, T_A = 25°C.

Note 3: Not more than one output should be shorted at a time, and the duration should not exceed one second.

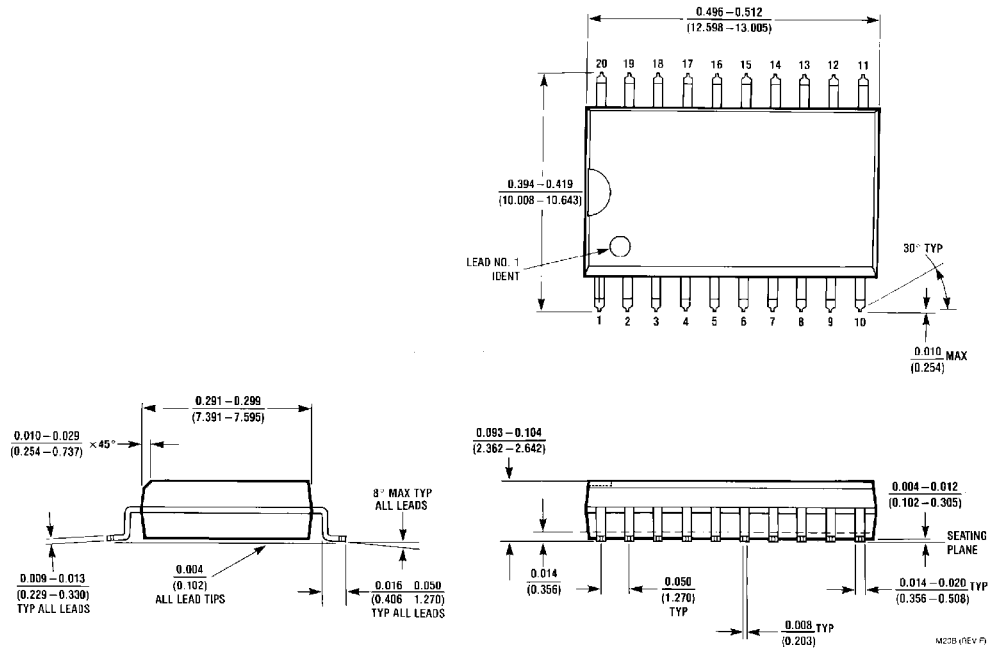
Switching Characteristics

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

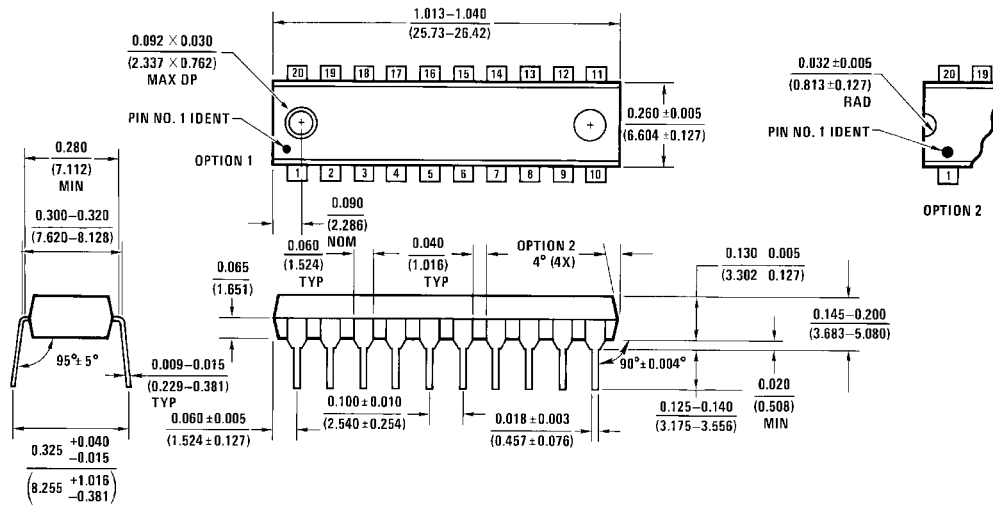
Symbol	Parameter	$R_L = 2\text{ k}\Omega$, $C_L = 50\text{ pF}$		Units
		Min	Max	
t_{PLH}	Propagation Delay		27	ns
t_{PHL}	Data to Q		18	
t_{PLH}	Propagation Delay		36	ns
t_{PHL}	LE to Q		25	
t_{PZH}	3-STATE Enable Time		20	ns
t_{PZL}	\overline{OE} to Q		25	
t_{PHZ}	3-STATE Enable Time		20	ns
t_{PLZ}	\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
	Data to LE			



Physical Dimensions inches (millimeters) unless otherwise noted



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



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