FAIRCHILD SEMICONDUCTOR™

October 1988
Revised March 2000

DM74LS573
Octal D-Type Latch with 3-STATE Outputs

General Description

The DM74LS573 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 DM74LS373, but has different pinouts.

Features

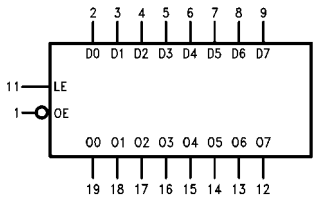
- Inputs and outputs on opposite sides of package allowing easy interface with microprocessors
- Useful as input or output port for microprocessors
- Functionally identical to DM74LS373
- Input clamp diodes limit high speed termination effects
- Fully TTL and CMOS compatible

Ordering Code:

Order Number	Package Number	Package Description
DM74LS573WM	M20B	20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide
DM74LS573N	N20A	20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide

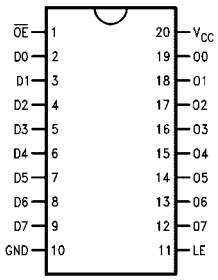
Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

Logic Symbol



V_{CC} = Pin 20
GND = Pin 10

Connection Diagram



Pin Descriptions

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 Tables

$\overline{\text{Output}}$ Enable	Latch Enable	D	Output 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	7V
Input Voltage	7V
Operating Free Air Temperature Range	0°C to +70°C
Storage Temperature Range	−65°C to +150°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 tables 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	Min	Nom	Max	Units
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 Input 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 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.

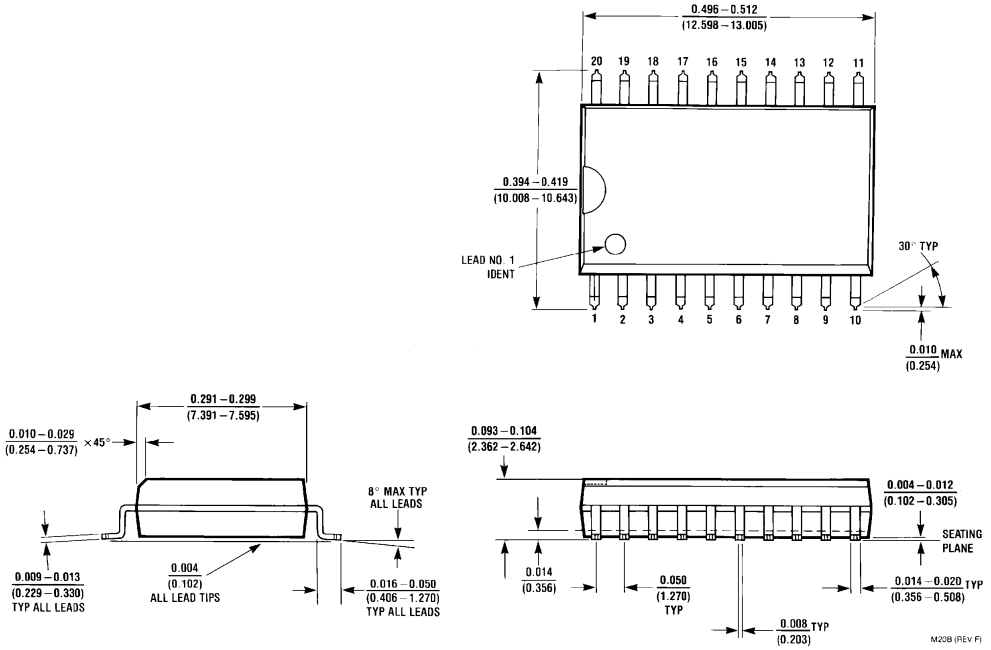
Note 3: Not more than one output should be shorted at a time, and the duration should not exceed one second.

Switching Characteristics

at V_{CC} = 5V and T_A = 25°C

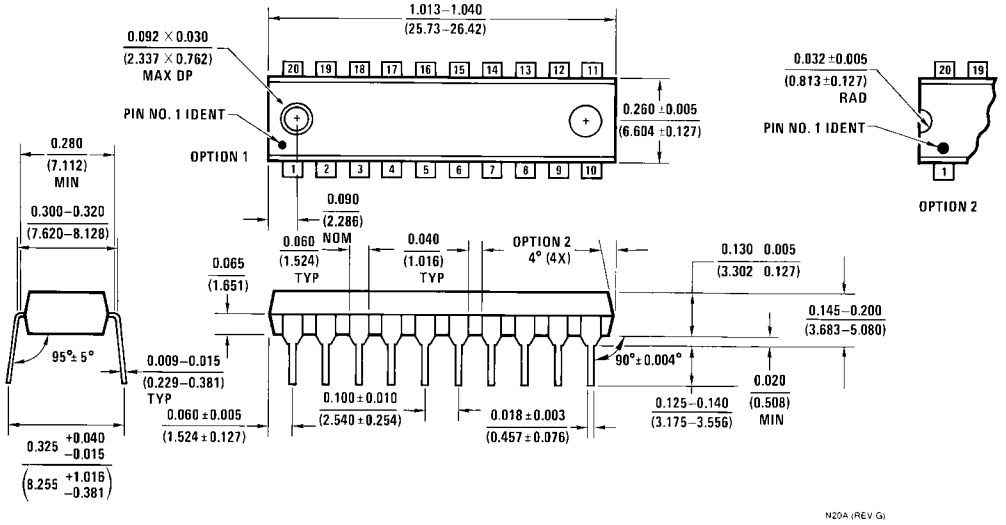
Symbol	Parameter	R_L = 2 kΩ, C_L = 50 pF		Units
		Min	Max	
t_{PLH} t_{PHL}	Propagation Delay Data to Q		27 18	ns
t_{PLH} t_{PHL}	Propagation Delay LE to Q		36 25	ns
t_{PZH} t_{PZL}	3-STATE Enable Time $\overline{OE}$ to Q		20 25	ns
t_{PHZ} t_{PLZ}	3-STATE Enable Time $\overline{OE}$ to Q		20 25	ns
$t_S(H)$ $t_S(L)$	Setup Time (HIGH/LOW) Data to LE	3 7		ns
$t_H(H)$ $t_H(L)$	Hold Time (HIGH/LOW) Data to LE	10 10		ns
$t_W(H)$	Pulse Width (HIGH) Data to LE	15		ns

Physical Dimensions inches (millimeters) unless otherwise noted



20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide
Package Number M20B

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide
Package Number N20A

LIFE SUPPORT POLICY

FAIRCHILD'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 FAIRCHILD 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 (c) 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 in 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.

www.fairchildsemi.com