MOTOROLA

MC54/74F373

OCTAL TRANSPARENT LATCH WITH 3-STATE OUTPUTS

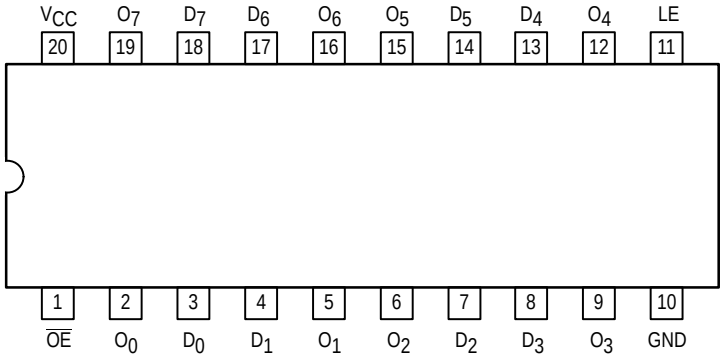
The MC54/74F373 consists of eight latches with 3-state outputs for bus organized system applications. The flip-flops appear transparent to the data when Latch Enable (LE) is HIGH. When LE is LOW, the data that meets the setup times is latched. Data appears on the bus when the Output Enable ($\overline{OE}$) is LOW. When $\overline{OE}$ is HIGH the bus output is in the high impedance state.

- Eight Latches in a Single Package
- 3-State Outputs for Bus Interfacing
- ESD > 4000 Volts

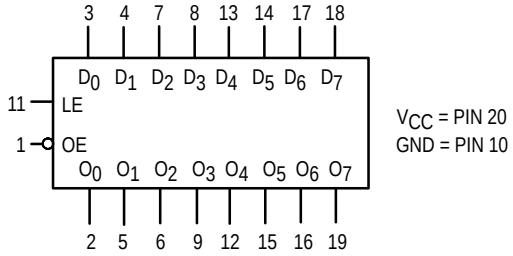
OCTAL TRANSPARENT LATCH WITH 3-STATE OUTPUTS

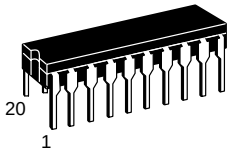
FAST™ SCHOTTKY TTL

CONNECTION DIAGRAM (TOP VIEW)

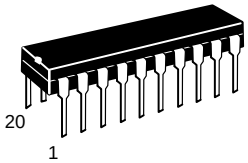


LOGIC SYMBOL

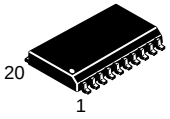




J SUFFIX
CERAMIC
CASE 732-03



N SUFFIX
PLASTIC
CASE 738-03



DW SUFFIX
SOIC
CASE 751D-03

ORDERING INFORMATION

MC54FXXXJ	Ceramic
MC74FXXXN	Plastic
MC74FXXXDW	SOIC

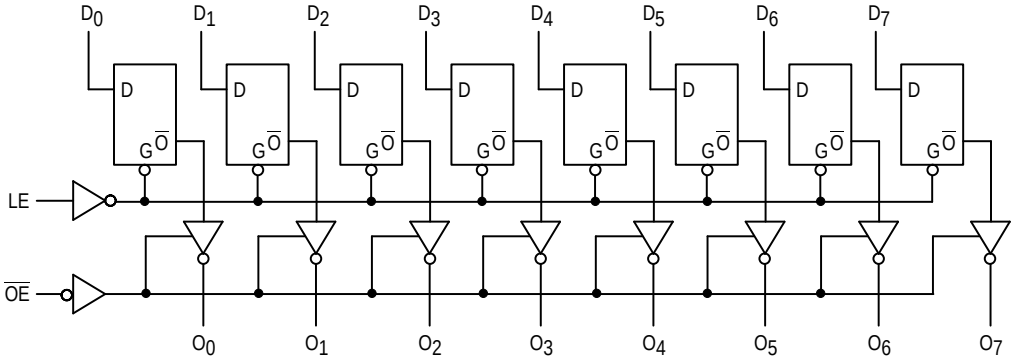
GUARANTEED OPERATING RANGES

Symbol	Parameter		Min	Typ	Max	Unit
V_{CC}	Supply Voltage	54, 74	4.5	5.0	5.5	V
T_A	Operating Ambient Temperature Range	54	–55	25	125	°C
		74	0	25	70	
I_{OH}	Output Current — HIGH	54, 74			–3.0	mA
I_{OL}	Output Current — LOW	54, 74			24	mA

FUNCTIONAL DESCRIPTION

The F373 contains eight D-type latches with 3-state output buffers. When the Latch Enable (LE) input is HIGH, data on the D_n inputs enters the latches. In this condition the latches are transparent; i.e., a latch output will change state each time its D input changes. When LE is LOW the latches store the information that was present on the D inputs one setup time preceding the HIGH-to-LOW transition of LE. The 3-state buffers are controlled by the Output Enable ($\overline{OE}$) input. When ($\overline{OE}$) is LOW, the buffers are in the bi-state mode. When $\overline{OE}$ is HIGH the buffers are in the high impedance mode, but this does not interfere with entering new data into the latches.

LOGIC DIAGRAM



NOTE:
This diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter		Limits Min	Typ	Max	Unit	Test Conditions	
V_{IH}	Input HIGH Voltage		2.0			V	Guaranteed Input HIGH Voltage	
V_{IL}	Input LOW Voltage				0.8	V	Guaranteed Input LOW Voltage	
V_{IK}	Input Clamp Diode Voltage				–1.2	V	I_{IN} = –18 mA	V_{CC} = MIN
V_{OH}	Output HIGH Voltage	54, 74	2.4	3.3		V	I_{OH} = – 3.0 mA	V_{CC} = 4.5 V
		74	2.7	3.3		V	I_{OH} = – 3.0 mA	V_{CC} = 4.75 V
V_{OL}	Output LOW Voltage			0.35	0.5	V	I_{OL} = 24 mA	V_{CC} = MIN
I_{OZH}	Output OFF Current — HIGH				50	µA	V_{OUT} = 2.7 V	V_{CC} = MAX
I_{OZL}	Output OFF Current — LOW				–50	µA	V_{OUT} = 0.5 V	V_{CC} = MAX
I_{IH}	Input HIGH Current				20	µA	V_{IN} = 2.7 V	V_{CC} = MAX
					100	µA	V_{IN} = 7.0 V	V_{CC} = MAX
I_{IL}	Input LOW Current				–0.6	mA	V_{IN} = 0.5 V	V_{CC} = MAX
I_{OS}	Output Short Circuit Current (Note 2)		–60		–150	mA	V_{OUT} = 0 V	V_{CC} = MAX
I_{CCZ}	Power Supply Current (All Outputs OFF)			35	55	mA	$\overline{OE}$ = 4.5 V D_n, LE = GND	V_{CC} = MAX

NOTES:
1. For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.
2. Not more than one output should be shorted at a time, nor for more than 1 second.

AC CHARACTERISTICS

Symbol	Parameter	54/74F T_A = +25°C, V_{CC} = +5.0 V, C_L = 50 pF			54F T_A = −55°C to +125°C, V_{CC} = 5.0 V ± 10%, C_L = 50 pF		74F T_A = 0°C to +70°C, V_{CC} = 5.0 V ± 10%, C_L = 50 pF		Unit
		Min	Typ	Max	Min	Max	Min	Max	
t_{PLH}	Propagation Delay	3.0	5.3	7.0	3.0	8.5	3.0	8.0	ns
t_{PHL}	D_n to O_n	2.0	3.7	5.0	2.0	7.0	2.0	6.0	
t_{PLH}	Propagation Delay	5.0	9.0	11.5	5.0	15	5.0	13	ns
t_{PHL}	LE to $\overline{O}_n$	3.0	5.2	7.0	3.0	8.5	3.0	8.0	
t_{PZH}	Output Enable Time	2.0	5.0	11	2.0	13.5	2.0	12	ns
t_{PZL}		2.0	5.6	7.5	2.0	10	2.0	8.5	
t_{PHZ}	Output Disable Time	1.5	4.5	6.5	1.5	10	1.5	7.5	ns
t_{PLZ}		1.5	3.8	6.0	1.5	7.0	1.5	6.0	

AC OPERATING REQUIREMENTS

Symbol	Parameter	54/74F T_A = +25°C, V_{CC} = +5.0 V			54F T_A = −55°C to +125°C, V_{CC} = 5.0 V ± 10%		74F T_A = 0°C to +70°C, V_{CC} = 5.0 V ± 10%		Unit
		Min	Typ	Max	Min	Max	Min	Max	
t_s(H)	Setup Time, HIGH or LOW	2.0			2.0		2.0		
t_s(L)	D_n to LE	2.0			2.0		2.0		ns
t_h(H)	Hold Time, HIGH or LOW	3.0			3.0		3.0		
t_h(L)	D_n to LE	3.0			3.0		3.0		
t_w(H)	LE Pulse Width, HIGH	6.0			6.0		6.0		ns