

MC74AC573, MC74ACT573

Octal Buffer/Line Driver with 3-State Outputs

The MC74AC573/74ACT573 is a high-speed octal latch with buffered common Latch Enable (LE) and buffered common Output Enable (\overline{OE}) inputs.

The MC74AC573/74ACT573 is functionally identical to the MC74AC373/74ACT373 but has inputs and outputs on opposite sides.

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 MC74AC373/74ACT373
- 3-State Outputs for Bus Interfacing
- Outputs Source/Sink 24 mA
- 'ACT573 Has TTL Compatible Inputs
- Pb-Free Packages are Available*

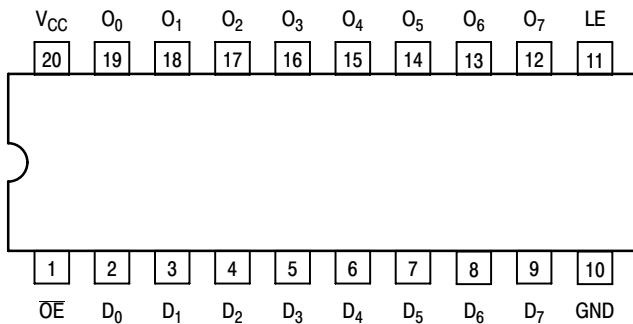


Figure 1. Pinout 20-Lead Packages Conductors (Top View)

PIN ASSIGNMENT

PIN	FUNCTION
D ₀ -D ₇	Data Inputs
LE	Latch Enable Input
\overline{OE}	3-State Output Enable Input
O ₀ -O ₇	3-State Latch Outputs

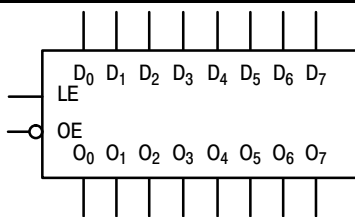


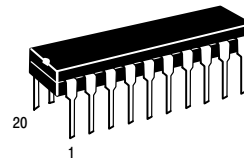
Figure 2. Logic Symbol

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

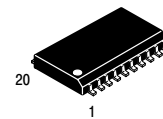
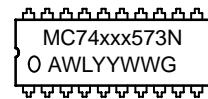


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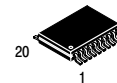
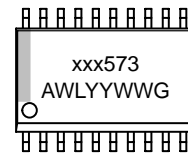
MARKING DIAGRAM



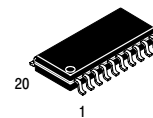
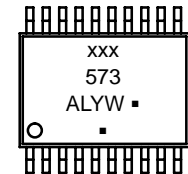
PDIP-20
N SUFFIX
CASE 738



SO-20
DW SUFFIX
CASE 751D



TSSOP-20
DT SUFFIX
CASE 948E



EIAJ-20
M SUFFIX
CASE 967



xxx = AC or ACT
A = Assembly Location
WL, L = Wafer Lot
YY, Y = Year
WW, W = Work Week
G or ■ = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 8 of this data sheet.

MC74AC573, MC74ACT573

MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	DC Supply Voltage (Referenced to GND)	-0.5 to +7.0	V
V_{IN}	DC Input Voltage (Referenced to GND)	-0.5 to $V_{CC} + 0.5$	V
V_{OUT}	DC Output Voltage (Referenced to GND)	-0.5 to $V_{CC} + 0.5$	V
I_{IN}	DC Input Current, per Pin	± 20	mA
I_{OUT}	DC Output Sink/Source Current, per Pin	± 50	mA
I_{CC}	DC V_{CC} or GND Current per Output Pin	± 50	mA
T_{stg}	Storage Temperature	-65 to +150	$^{\circ}\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Typ	Max	Unit	
V_{CC}	Supply Voltage	'AC	2.0	5.0	6.0	V
		'ACT	4.5	5.0	5.5	
V_{IN}, V_{OUT}	DC Input Voltage, Output Voltage (Ref. to GND)	0	-	V_{CC}	V	
t_r, t_f	Input Rise and Fall Time (Note 1) 'AC Devices except Schmitt Inputs	$V_{CC} @ 3.0\text{ V}$	-	150	-	ns/V
		$V_{CC} @ 4.5\text{ V}$	-	40	-	
		$V_{CC} @ 5.5\text{ V}$	-	25	-	
t_r, t_f	Input Rise and Fall Time (Note 2) 'ACT Devices except Schmitt Inputs	$V_{CC} @ 4.5\text{ V}$	-	10	-	ns/V
		$V_{CC} @ 5.5\text{ V}$	-	8.0	-	
T_J	Junction Temperature (PDIP)	-	-	140	$^{\circ}\text{C}$	
T_A	Operating Ambient Temperature Range	-40	25	85	$^{\circ}\text{C}$	
I_{OH}	Output Current – High	-	-	-24	mA	
I_{OL}	Output Current – Low	-	-	24	mA	

1. V_{IN} from 30% to 70% V_{CC} ; see individual Data Sheets for devices that differ from the typical input rise and fall times.
2. V_{IN} from 0.8 V to 2.0 V; see individual Data Sheets for devices that differ from the typical input rise and fall times.

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DC CHARACTERISTICS

Symbol	Parameter	V _{CC} (V)	74AC		74AC	Unit	Conditions
			T _A = +25°C		T _A = -40°C to +85°C		
			Typ	Guaranteed Limits			
V _{IH}	Minimum High Level Input Voltage	3.0	1.5	2.1	2.1	V	V _{OUT} = 0.1 V or V _{CC} - 0.1 V
		4.5	2.25	3.15	3.15		
		5.5	2.75	3.85	3.85		
V _{IL}	Maximum Low Level Input Voltage	3.0	1.5	0.9	0.9	V	V _{OUT} = 0.1 V or V _{CC} - 0.1 V
		4.5	2.25	1.35	1.35		
		5.5	2.75	1.65	1.65		
V _{OH}	Minimum High Level Output Voltage	3.0	2.99	2.9	2.9	V	I _{OUT} = -50 μA
		4.5	4.49	4.4	4.4		
		5.5	5.49	5.4	5.4		
		3.0	-	2.56	2.46	V	*V _{IN} = V _{IL} or V _{IH} -12 mA I _{OH} -24 mA -24 mA
		4.5	-	3.86	3.76		
		5.5	-	4.86	4.76		
V _{OL}	Maximum Low Level Output Voltage	3.0	0.002	0.1	0.1	V	I _{OUT} = 50 μA
		4.5	0.001	0.1	0.1		
		5.5	0.001	0.1	0.1		
		3.0	-	0.36	0.44	V	*V _{IN} = V _{IL} or V _{IH} 12 mA I _{OL} 24 mA 24 mA
		4.5	-	0.36	0.44		
		5.5	-	0.36	0.44		
I _{IN}	Maximum Input Leakage Current	5.5	-	±0.1	±1.0	μA	V _I = V _{CC} , GND
I _{OZ}	Maximum 3-State Current	5.5	-	±0.5	±5.0	μA	V _I (OE) = V _{IL} , V _{IH} V _I = V _{CC} , GND V _O = V _{CC} , GND
I _{OLD}	†Minimum Dynamic Output Current	5.5	-	-	75	mA	V _{OLD} = 1.65 V Max
I _{OHD}		5.5	-	-	-75	mA	V _{OHD} = 3.85 V Min
I _{CC}	Maximum Quiescent Supply Current	5.5	-	8.0	80	μA	V _{IN} = V _{CC} or GND

NOTE: I_{IN} and I_{CC} @ 3.0 V are guaranteed to be less than or equal to the respective limit @ 5.5 V V_{CC}.

*All outputs loaded; thresholds on input associated with output under test.

†Maximum test duration 2.0 ms, one output loaded at a time.

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AC CHARACTERISTICS (For Figures and Waveforms – See Section 3)

Symbol	Parameter	V _{CC} * (V)	74AC			74AC		Unit	Fig. No.
			T _A = +25°C C _L = 50 pF			T _A = -40°C to +85°C C _L = 50 pF			
			Min	Typ	Max	Min	Max		
t _{PLH}	Propagation Delay D _n to O _n	3.3	2.5	–	13.0	2.0	15.0	ns	3–5
		5.0	2.5	–	10.0	2.0	11.5		
t _{PHL}	Propagation Delay D _n to O _n	3.3	2.5	–	12.0	2.0	14.0	ns	3–5
		5.0	2.5	–	9.5	2.0	11.0		
t _{PLH}	Propagation Delay LE to O _n	3.3	2.5	–	13.0	2.0	15.0	ns	3–6
		5.0	2.5	–	9.5	2.0	11.0		
t _{PHL}	Propagation Delay LE to O _n	3.3	2.5	–	12.0	2.0	14.0	ns	3–6
		5.0	2.5	–	8.5	2.0	10.0		
t _{PZH}	Output Enable Time	3.3	2.5	–	11.0	2.0	12.0	ns	3–7
		5.0	2.5	–	9.0	2.0	10.0		
t _{PZL}	Output Enable Time	3.3	2.5	–	11.0	2.0	12.5	ns	3–8
		5.0	2.5	–	8.5	2.0	9.5		
t _{PHZ}	Output Disable Time	3.3	2.5	–	12.5	2.0	13.5	ns	3–7
		5.0	2.5	–	11.0	2.0	12.0		
t _{PLZ}	Output Disable Time	3.3	2.5	–	9.5	2.0	10.5	ns	3–8
		5.0	2.5	–	8.0	2.0	9.0		

*Voltage Range 3.3 V is 3.3 V ±0.3 V.
Voltage Range 5.0 V is 5.0 V ±0.5 V.

AC OPERATING REQUIREMENTS

Symbol	Parameter	V _{CC} * (V)	74AC		74AC		Unit	Fig. No.
			T _A = +25°C C _L = 50 pF		T _A = -40°C to +85°C C _L = 50 pF			
			Typ	Guaranteed Minimum				
t _s	Setup Time, HIGH or LOW D _n to LE	3.3	–	3.5	4.0	ns	3–9	
		5.0	–	3.0	3.5			
t _h	Hold Time, HIGH or LOW D _n to LE	3.3	–	2.0	2.0	ns	3–9	
		5.0	–	2.0	2.0			
t _w	LE Pulse Width, HIGH	3.3	–	6.0	7.0	ns	3–6	
		5.0	–	4.0	5.0			

*Voltage Range 3.3 V is 3.3 V ±0.3 V.
Voltage Range 5.0 V is 5.0 V ±0.5 V.

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ORDERING INFORMATION

Device	Package	Shipping†
MC74AC573N	PDIP-20	18 Units / Rail
MC74AC573NG	PDIP-20 (Pb-Free)	18 Units / Rail
MC74AC573DW	SOIC-20	38 Units / Rail
MC74AC573DWG	SOIC-20 (Pb-Free)	38 Units / Rail
MC74AC573DWR2	SOIC-20	1000 Units / Tape & Reel
MC74AC573DWR2G	SOIC-20 (Pb-Free)	1000 Units / Tape & Reel
MC74AC573DTR2	TSSOP-20*	2500 Units / Tape & Reel
MC74AC573DTR2G	TSSOP-20*	2500 Units / Tape & Reel
MC74AC573MEL	SOEIAJ-20	2000 Units / Tape & Reel
MC74AC573MELG	SOEIAJ-20 (Pb-Free)	2000 Units / Tape & Reel
MC74ACT573N	PDIP-20	18 Units / Rail
MC74ACT573NG	PDIP-20 (Pb-Free)	18 Units / Rail
MC74ACT573DW	SOIC-20	38 Units / Rail
MC74ACT573DWG	SOIC-20 (Pb-Free)	38 Units / Rail
MC74ACT573DWR2	SOIC-20	1000 Units / Tape & Reel
MC74ACT573DWR2G	SOIC-20 (Pb-Free)	1000 Units / Tape & Reel
MC74ACT573DTR2	TSSOP-20*	2500 Units / Tape & Reel
MC74ACT573DTR2G	TSSOP-20*	2500 Units / Tape & Reel

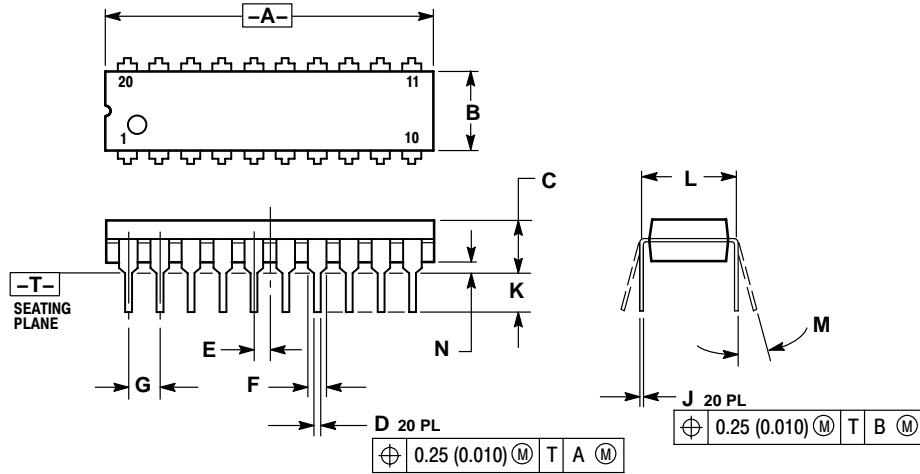
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*This package is inherently Pb-Free.

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PACKAGE DIMENSIONS

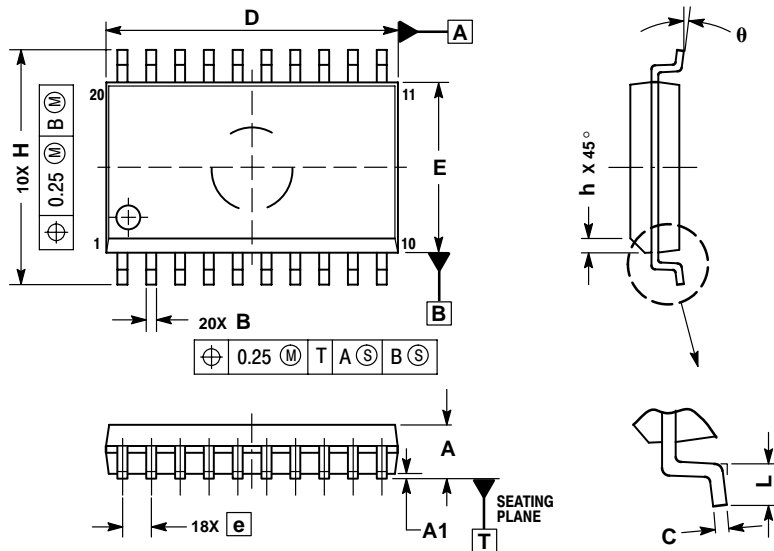
PDIP-20
N SUFFIX
 20 PIN PLASTIC DIP PACKAGE
 CASE 738-03
 ISSUE E



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
 4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.010	1.070	25.66	27.17
B	0.240	0.260	6.10	6.60
C	0.150	0.180	3.81	4.57
D	0.015	0.022	0.39	0.55
E	0.050 BSC		1.27 BSC	
F	0.050	0.070	1.27	1.77
G	0.100 BSC		2.54 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.140	2.80	3.55
L	0.300 BSC		7.62 BSC	
M	0°	15°	0°	15°
N	0.020	0.040	0.51	1.01

SO-20
DW SUFFIX
 20 PIN PLASTIC SOIC PACKAGE
 CASE 751D-05
 ISSUE G



- NOTES:
1. DIMENSIONS ARE IN MILLIMETERS.
 2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.
 3. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
 4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
 5. DIMENSION B DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF B DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS	
	MIN	MAX
A	2.35	2.65
A1	0.10	0.25
B	0.35	0.49
C	0.23	0.32
D	12.65	12.95
E	7.40	7.60
e	1.27 BSC	
H	10.05	10.55
h	0.25	0.75
L	0.50	0.90
θ	0°	7°