

# Octal 3-State Non-Inverting Transparent Latch

## High-Performance Silicon-Gate CMOS

### MC74HC373A, MC74HCT373A

The MC74HC373A/MC74HCT373A is identical in pinout to the LS373. The MC74HC373A inputs are compatible with standard CMOS outputs; with pullup resistors, they are compatible with LSTTL outputs. The MC74HCT373A may be used as a level converter for interfacing TTL or NMOS outputs to High-Speed CMOS inputs.

The eight latches of this device are transparent D-type latches. While Latch Enable is high, the Q outputs follow the Data Inputs. When Latch Enable goes low, data meeting the setup and hold time becomes latched.

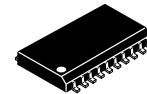
The Output Enable input does not affect the state of the latches, but when Output Enable is high, all outputs are forced to the high-impedance state. Thus, data may be latched even when the outputs are not enabled.

The HC373A/HCT373A is identical in function to the HC573A/HCT573A which has the data inputs on the opposite side of the package from the outputs to facilitate PC board layout.

The HC373A/HCT373A is the non-inverting version of the HC533A/HCT533A.

#### Features

- Output Drive Capability: 15 LSTTL Loads
- Outputs Directly Interface to CMOS, NMOS and TTL
- Operating Voltage Range: 2.0 to 6.0 V (HC), 4.5 to 5.5 V (HCT)
- Low Input Current: 1.0  $\mu$ A
- High Noise Immunity Characteristic of CMOS Devices
- In Compliance with the JEDEC Standard No. 7.0 A Requirements
- Chip Complexity: 196 FETs or 49 Equivalent Gates
- These Devices are Pb-Free and are RoHS Compliant

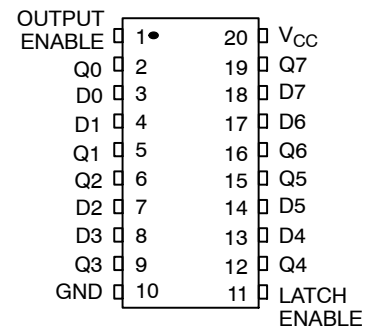


SOIC-20  
DW SUFFIX  
CASE 751D

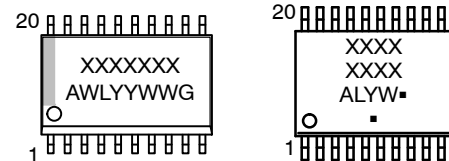


TSSOP-20  
DT SUFFIX  
CASE 948E

#### PIN ASSIGNMENT



#### MARKING DIAGRAMS



SOIC-20

TSSOP-20

XXXXXXXX = Specific Device Code  
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)

#### FUNCTION TABLE

| Inputs        |              |   | Output    |
|---------------|--------------|---|-----------|
| Output Enable | Latch Enable | D | Q         |
| L             | H            | H | H         |
| L             | H            | L | L         |
| L             | L            | X | No Change |
| H             | X            | X | Z         |

X = Don't Care

Z = High Impedance

#### ORDERING INFORMATION

See detailed ordering and shipping information on page 8 of this data sheet.

# MC74HC373A, MC74HCT373A

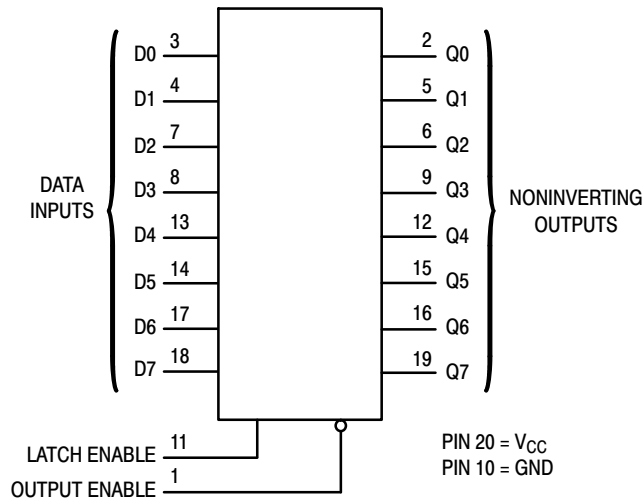


Figure 1. Logic Diagram

## MAXIMUM RATINGS

| Symbol           | Parameter                                                                                       | Value                                     | Unit |
|------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------|------|
| V <sub>CC</sub>  | DC Supply Voltage                                                                               | −0.5 to +6.5                              | V    |
| V <sub>IN</sub>  | DC Input Voltage                                                                                | −0.5 to V <sub>CC</sub> +0.5              | V    |
| V <sub>OUT</sub> | DC Output Voltage                                                                               | −0.5 to V <sub>CC</sub> +0.5              | V    |
| I <sub>IN</sub>  | DC Input Diode Current, per Pin                                                                 | ±20                                       | mA   |
| I <sub>OUT</sub> | DC Input Diode Current, Per Pin                                                                 | ±35                                       | mA   |
| I <sub>CC</sub>  | DC Supply Current, V <sub>CC</sub> and GND Pins                                                 | ±75                                       | mA   |
| I <sub>IK</sub>  | Input Clamp Current (V <sub>IN</sub> < 0 or V <sub>IN</sub> > V <sub>CC</sub> )                 | ±20                                       | mA   |
| I <sub>OK</sub>  | Output Clamp Current (V <sub>OUT</sub> < 0 or V <sub>OUT</sub> > V <sub>CC</sub> )              | ±20                                       | mA   |
| T <sub>STG</sub> | Storage Temperature Range                                                                       | −65 to +150                               | °C   |
| T <sub>L</sub>   | Lead Temperature, 1 mm from Case for 10 secs                                                    | 260                                       | °C   |
| T <sub>J</sub>   | Junction Temperature Under Bias                                                                 | +150                                      | °C   |
| θ <sub>JA</sub>  | Thermal Resistance (Note 1)<br><div>SOIC−20W<br/>WQFN20<br/>QFN20<br/>TSSOP−20</div>            | <div>96<br/>99<br/>111<br/>150</div>      | °C/W |
| P <sub>D</sub>   | Power Dissipation in Still Air at 25°C<br><div>SOIC−20W<br/>WQFN20<br/>QFN20<br/>TSSOP−20</div> | <div>1302<br/>1256<br/>1127<br/>833</div> | mW   |
| MSL              | Moisture Sensitivity<br><div>SOIC−20W<br/>All Other Packages</div>                              | <div>Level 3<br/>Level 1</div>            | –    |
| F <sub>R</sub>   | Flammability Rating<br>Oxygen Index: 28 to 34                                                   | UL 94 V−0 @ 0.125 in                      | –    |
| V <sub>ESD</sub> | ESD Withstand Voltage (Note 2)<br><div>Human Body Model<br/>Charged Device Model</div>          | <div>&gt; 2000<br/>&gt; 1000</div>        | V    |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Measured with minimum pad spacing on an FR4 board, using 76 mm-by-114 mm, 2-ounce copper trace no air flow per JESD51-7.
2. HBM tested to EIA / JESD22-A114-A. CDM tested to JESD22-C101-A. JEDEC recommends that ESD qualification to EIA/JESD22-A115A (Machine Model) be discontinued.

# MC74HC373A, MC74HCT373A

## RECOMMENDED OPERATING CONDITIONS

| Symbol            | Parameter                                 | Min                                                                           | Max                | Unit |
|-------------------|-------------------------------------------|-------------------------------------------------------------------------------|--------------------|------|
| <b>MC74HC</b>     |                                           |                                                                               |                    |      |
| $V_{CC}$          | DC Supply Voltage                         | 2.0                                                                           | 6.0                | V    |
| $V_{IN}, V_{OUT}$ | DC Input Voltage, Output Voltage (Note 3) | 0                                                                             | $V_{CC}$           | V    |
| $T_A$             | Operating Free-Air Temperature            | -55                                                                           | +125               | °C   |
| $t_r, t_f$        | Input Rise or Fall Time                   | $V_{CC} = 2.0\text{ V}$<br>$V_{CC} = 4.5\text{ V}$<br>$V_{CC} = 6.0\text{ V}$ | 1000<br>500<br>400 | ns   |

## MC74HCT

|                   |                                           |     |          |    |
|-------------------|-------------------------------------------|-----|----------|----|
| $V_{CC}$          | DC Supply Voltage                         | 4.5 | 5.5      | V  |
| $V_{IN}, V_{OUT}$ | DC Input Voltage, Output Voltage (Note 3) | 0   | $V_{CC}$ | V  |
| $T_A$             | Operating Free-Air Temperature            | -55 | +125     | °C |
| $t_r, t_f$        | Input Rise or Fall Time                   | 0   | 500      | ns |

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

3. Unused inputs must always be tied to an appropriate logic voltage level (e.g., either GND or  $V_{CC}$ ). Unused outputs must be left open.

## DC ELECTRICAL CHARACTERISTICS (MC74HC373A)

| Symbol   | Parameter                                      | Test Conditions                                                                                                      | $V_{CC}$ V               | Guaranteed Limit          |                           |                           | Unit |
|----------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------|---------------------------|---------------------------|------|
|          |                                                |                                                                                                                      |                          | -55 to 25°C               | ≤ 85°C                    | ≤ 125°C                   |      |
| $V_{IH}$ | Minimum High-Level Input Voltage               | $V_{out} = V_{CC} - 0.1\text{ V}$<br>$ I_{out}  \leq 20\text{ }\mu\text{A}$                                          | 2.0<br>3.0<br>4.5<br>6.0 | 1.5<br>2.1<br>3.15<br>4.2 | 1.5<br>2.1<br>3.15<br>4.2 | 1.5<br>2.1<br>3.15<br>4.2 | V    |
| $V_{IL}$ | Maximum Low-Level Input Voltage                | $V_{out} = 0.1\text{ V}$<br>$ I_{out}  \leq 20\text{ }\mu\text{A}$                                                   | 2.0<br>3.0<br>4.5<br>6.0 | 0.5<br>0.9<br>1.35<br>1.8 | 0.5<br>0.9<br>1.35<br>1.8 | 0.5<br>0.9<br>1.35<br>1.8 | V    |
| $V_{OH}$ | Minimum High-Level Output Voltage              | $V_{in} = V_{IH}$<br>$ I_{out}  \leq 20\text{ }\mu\text{A}$                                                          | 2.0<br>4.5<br>6.0        | 1.9<br>4.4<br>5.9         | 1.9<br>4.4<br>5.9         | 1.9<br>4.4<br>5.9         | V    |
|          |                                                | $V_{in} = V_{IH}$ $ I_{out}  \leq 2.4\text{ mA}$<br>$ I_{out}  \leq 6.0\text{ mA}$<br>$ I_{out}  \leq 7.8\text{ mA}$ | 3.0<br>4.5<br>6.0        | 2.48<br>3.98<br>5.48      | 2.34<br>3.84<br>5.34      | 2.2<br>3.7<br>5.2         |      |
| $V_{OL}$ | Maximum Low-Level Output Voltage               | $V_{in} = V_{IL}$<br>$ I_{out}  \leq 20\text{ }\mu\text{A}$                                                          | 2.0<br>4.5<br>6.0        | 0.1<br>0.1<br>0.1         | 0.1<br>0.1<br>0.1         | 0.1<br>0.1<br>0.1         | V    |
|          |                                                | $V_{in} = V_{IL}$ $ I_{out}  \leq 2.4\text{ mA}$<br>$ I_{out}  \leq 6.0\text{ mA}$<br>$ I_{out}  \leq 7.8\text{ mA}$ | 3.0<br>4.5<br>6.0        | 0.26<br>0.26<br>0.26      | 0.33<br>0.33<br>0.33      | 0.4<br>0.4<br>0.4         |      |
| $I_{in}$ | Maximum Input Leakage Current                  | $V_{in} = V_{CC}$ or GND                                                                                             | 6.0                      | ±0.1                      | ±1.0                      | ±1.0                      | μA   |
| $I_{OZ}$ | Maximum Three-State Leakage Current            | Output in High-Impedance State<br>$V_{in} = V_{IL}$ or $V_{IH}$<br>$V_{out} = V_{CC}$ or GND                         | 6.0                      | ±0.5                      | ±5.0                      | ±10                       | μA   |
| $I_{CC}$ | Maximum Quiescent Supply Current (per Package) | $V_{in} = V_{CC}$ or GND<br>$I_{out} = 0\text{ }\mu\text{A}$                                                         | 6.0                      | 4.0                       | 40                        | 160                       | μA   |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

# MC74HC373A, MC74HCT373A

## AC ELECTRICAL CHARACTERISTICS (MC74HC373A) (See Figures 2 and 3)

| Symbol                               | Parameter                                                                  | V <sub>CC</sub> V        | Guaranteed Limit       |                        |                        | Unit |
|--------------------------------------|----------------------------------------------------------------------------|--------------------------|------------------------|------------------------|------------------------|------|
|                                      |                                                                            |                          | -55 to 25°C            | ≤ 85°C                 | ≤ 125°C                |      |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Maximum Propagation Delay, Input D to Q                                    | 2.0<br>3.0<br>4.5<br>6.0 | 125<br>80<br>25<br>21  | 155<br>110<br>31<br>26 | 190<br>130<br>38<br>32 | ns   |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Maximum Propagation Delay, Latch Enable to Q                               | 2.0<br>3.0<br>4.5<br>6.0 | 140<br>90<br>28<br>24  | 175<br>120<br>35<br>30 | 210<br>140<br>42<br>36 | ns   |
| t <sub>PLZ</sub><br>t <sub>PHZ</sub> | Maximum Propagation Delay, Output Enable to Q                              | 2.0<br>3.0<br>4.5<br>6.0 | 150<br>100<br>30<br>26 | 190<br>125<br>38<br>33 | 225<br>150<br>45<br>38 | ns   |
| t <sub>PZL</sub><br>t <sub>PZH</sub> | Maximum Propagation Delay, Output Enable to Q                              | 2.0<br>3.0<br>4.5<br>6.0 | 150<br>100<br>30<br>26 | 190<br>125<br>38<br>33 | 225<br>150<br>45<br>38 | ns   |
| t <sub>TLH</sub><br>t <sub>THL</sub> | Maximum Output Transition Time, Any Output                                 | 2.0<br>3.0<br>4.5<br>6.0 | 60<br>23<br>12<br>10   | 75<br>27<br>15<br>13   | 90<br>32<br>18<br>15   | ns   |
| C <sub>in</sub>                      | Maximum Input Capacitance                                                  |                          | 10                     | 10                     | 10                     | pF   |
| C <sub>out</sub>                     | Maximum Three-State Output Capacitance<br>(Output in High-Impedance State) |                          | 15                     | 15                     | 15                     | pF   |

|                 |                                                     |                                         |    |
|-----------------|-----------------------------------------------------|-----------------------------------------|----|
| C <sub>PD</sub> | Power Dissipation Capacitance (Per Enabled Output)* | Typical @ 25°C, V <sub>CC</sub> = 5.0 V | pF |
|                 |                                                     | 36                                      |    |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

\*Used to determine the no-load dynamic power consumption:  $P_D = C_{PD} V_{CC}^2 f + I_{CC} V_{CC}$ .

## TIMING REQUIREMENTS (MC74HC373A) (See Figures 2 and 3)

| Symbol                          | Parameter                                   | V <sub>CC</sub><br>Volts | Guaranteed Limit |      |        |      |         |      | Unit |
|---------------------------------|---------------------------------------------|--------------------------|------------------|------|--------|------|---------|------|------|
|                                 |                                             |                          | −55 to 25°C      |      | ≤ 85°C |      | ≤ 125°C |      |      |
|                                 |                                             |                          | Min              | Max  | Min    | Max  | Min     | Max  |      |
| t <sub>su</sub>                 | Minimum Setup Time, Input D to Latch Enable | 2.0                      | 25               |      | 30     |      | 40      |      | ns   |
|                                 |                                             | 3.0                      | 20               |      | 25     |      | 30      |      |      |
|                                 |                                             | 4.5                      | 5.0              |      | 6.0    |      | 8.0     |      |      |
|                                 |                                             | 6.0                      | 5.0              |      | 6.0    |      | 7.0     |      |      |
| t <sub>h</sub>                  | Minimum Hold Time, Latch Enable to Input D  | 2.0                      | 5.0              |      | 5.0    |      | 5.0     |      | ns   |
|                                 |                                             | 3.0                      | 5.0              |      | 5.0    |      | 5.0     |      |      |
|                                 |                                             | 4.5                      | 5.0              |      | 5.0    |      | 5.0     |      |      |
|                                 |                                             | 6.0                      | 5.0              |      | 5.0    |      | 5.0     |      |      |
| t <sub>w</sub>                  | Minimum Pulse Width, Latch Enable           | 2.0                      | 60               |      | 75     |      | 90      |      | ns   |
|                                 |                                             | 3.0                      | 23               |      | 27     |      | 32      |      |      |
|                                 |                                             | 4.5                      | 12               |      | 15     |      | 18      |      |      |
|                                 |                                             | 6.0                      | 10               |      | 13     |      | 15      |      |      |
| t <sub>r</sub> , t <sub>f</sub> | Maximum Input Rise and Fall Times           | 2.0                      |                  | 1000 |        | 1000 |         | 1000 | ns   |
|                                 |                                             | 3.0                      |                  | 800  |        | 800  |         | 800  |      |
|                                 |                                             | 4.5                      |                  | 500  |        | 500  |         | 500  |      |
|                                 |                                             | 6.0                      |                  | 400  |        | 400  |         | 400  |      |

# MC74HC373A, MC74HCT373A

## DC ELECTRICAL CHARACTERISTICS (MC74HCT373A)

| Symbol          | Parameter                                      | Test Conditions                                                                                                                     | V <sub>CC</sub><br>V | Guaranteed Limit |            |            | Unit |
|-----------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------|------------|------------|------|
|                 |                                                |                                                                                                                                     |                      | -55 to<br>25°C   | ≤ 85°C     | ≤ 125°C    |      |
| V <sub>IH</sub> | Minimum High-Level Input Voltage               | V <sub>out</sub> = 0.1 V or V <sub>CC</sub> - 0.1 V<br> I <sub>out</sub>   ≤ 20 μA                                                  | 4.5<br>5.5           | 2.0<br>2.0       | 2.0<br>2.0 | 2.0<br>2.0 | V    |
| V <sub>IL</sub> | Maximum Low-Level Input Voltage                | V <sub>out</sub> = 0.1 V or V <sub>CC</sub> - 0.1 V<br> I <sub>out</sub>   ≤ 20 μA                                                  | 4.5<br>5.5           | 0.8<br>0.8       | 0.8<br>0.8 | 0.8<br>0.8 | V    |
| V <sub>OH</sub> | Minimum High-Level Output Voltage              | V <sub>in</sub> = V <sub>IH</sub> or V <sub>IL</sub><br> I <sub>out</sub>   ≤ 20 μA                                                 | 4.5<br>5.5           | 4.4<br>5.4       | 4.4<br>5.4 | 4.4<br>5.4 | V    |
|                 |                                                | V <sub>in</sub> = V <sub>IH</sub> or V <sub>IL</sub><br> I <sub>out</sub>   ≤ 6.0 mA                                                | 4.5                  | 3.98             | 3.84       | 3.7        |      |
| V <sub>OL</sub> | Maximum Low-Level Output Voltage               | V <sub>in</sub> = V <sub>IH</sub> or V <sub>IL</sub><br> I <sub>out</sub>   ≤ 20 μA                                                 | 4.5<br>5.5           | 0.1<br>0.1       | 0.1<br>0.1 | 0.1<br>0.1 | V    |
|                 |                                                | V <sub>in</sub> = V <sub>IH</sub> or V <sub>IL</sub><br> I <sub>out</sub>   ≤ 6.0 mA                                                | 4.5                  | 0.26             | 0.33       | 0.4        |      |
| I <sub>in</sub> | Maximum Input Leakage Current                  | V <sub>in</sub> = V <sub>CC</sub> or GND                                                                                            | 5.5                  | ±0.1             | ±1.0       | ±1.0       | μA   |
| I <sub>OZ</sub> | Maximum Three-State Leakage Current            | Output in High-Impedance State<br>V <sub>in</sub> = V <sub>IL</sub> or V <sub>IH</sub><br>V <sub>out</sub> = V <sub>CC</sub> or GND | 5.5                  | ±0.5             | ±5.0       | ±10        | μA   |
| I <sub>CC</sub> | Maximum Quiescent Supply Current (per Package) | V <sub>in</sub> = V <sub>CC</sub> or GND<br>I <sub>out</sub> = 0 μA                                                                 | 5.5                  | 4.0              | 40         | 160        | μA   |

|                  |                                     |                                                                                                                             |     |         |               |    |
|------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----|---------|---------------|----|
| ΔI <sub>CC</sub> | Additional Quiescent Supply Current | V <sub>in</sub> = 2.4 V, Any One Input<br>V <sub>in</sub> = V <sub>CC</sub> or GND, Other Inputs<br>I <sub>out</sub> = 0 μA | 5.5 | ≥ -55°C | 25°C to 125°C | mA |
|                  |                                     |                                                                                                                             |     | 2.9     | 2.4           |    |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

4. Total Supply Current = I<sub>CC</sub> + ΣΔI<sub>CC</sub>.

# MC74HC373A, MC74HCT373A

## AC ELECTRICAL CHARACTERISTICS (MC74HCT373A)

| Symbol                                 | Parameter                                     | Guaranteed Limit |        |         | Unit |
|----------------------------------------|-----------------------------------------------|------------------|--------|---------|------|
|                                        |                                               | -55 to 25°C      | ≤ 85°C | ≤ 125°C |      |
| t <sub>PLH</sub> ,<br>t <sub>PHL</sub> | Maximum Propagation Delay, Input D to Q       | 28               | 35     | 42      | ns   |
| t <sub>PLH</sub> ,<br>t <sub>PHL</sub> | Maximum Propagation Delay, Latch Enable to Q  | 32               | 40     | 48      | ns   |
| t <sub>PLZ</sub> ,<br>t <sub>PHZ</sub> | Maximum Propagation Delay, Output Enable to Q | 30               | 38     | 45      | ns   |
| t <sub>PZL</sub> ,<br>t <sub>PZH</sub> | Maximum Propagation Delay, Output Enable to Q | 35               | 44     | 53      | ns   |
| t <sub>TLH</sub> ,<br>t <sub>THL</sub> | Maximum Output Transition Time, Any Output    | 12               | 15     | 18      | ns   |
| C <sub>in</sub>                        | Maximum Input Capacitance                     | 10               | 10     | 10      | pF   |
| C <sub>out</sub>                       | Maximum Three-State Output Capacitance        | 15               | 15     | 15      | pF   |

| C <sub>PD</sub> | Power Dissipation Capacitance (Per Latch)* | Typical @ 25°C, V <sub>CC</sub> = 5.0 V | pF |
|-----------------|--------------------------------------------|-----------------------------------------|----|
|                 |                                            | 65                                      |    |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

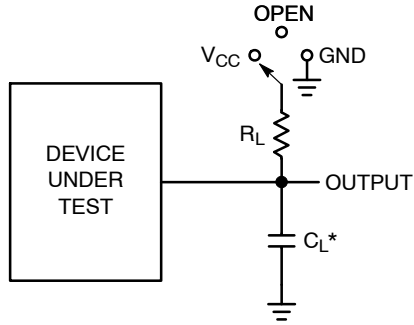
\*Used to determine the no-load dynamic power consumption:  $P_D = C_{PD} V_{CC}^2 f + I_{CC} V_{CC}$ .

## TIMING REQUIREMENTS (MC74HCT373A)

| Symbol                        | Parameter                                   | Guaranteed Limit |        |         | Unit |
|-------------------------------|---------------------------------------------|------------------|--------|---------|------|
|                               |                                             | -55 to 25°C      | ≤ 85°C | ≤ 125°C |      |
| t <sub>su</sub>               | Minimum Setup Time, Input D to Latch Enable | 10               | 13     | 15      | ns   |
| t <sub>h</sub>                | Minimum Hold Time, Latch Enable to Input D  | 10               | 13     | 15      | ns   |
| t <sub>w</sub>                | Minimum Pulse Width, Latch Er               | 12               | 15     | 18      | ns   |
| t <sub>r</sub> t <sub>f</sub> | Maximum Input Rise and Fall Times           | 500              | 500    | 500     | ns   |

# MC74HC373A, MC74HCT373A

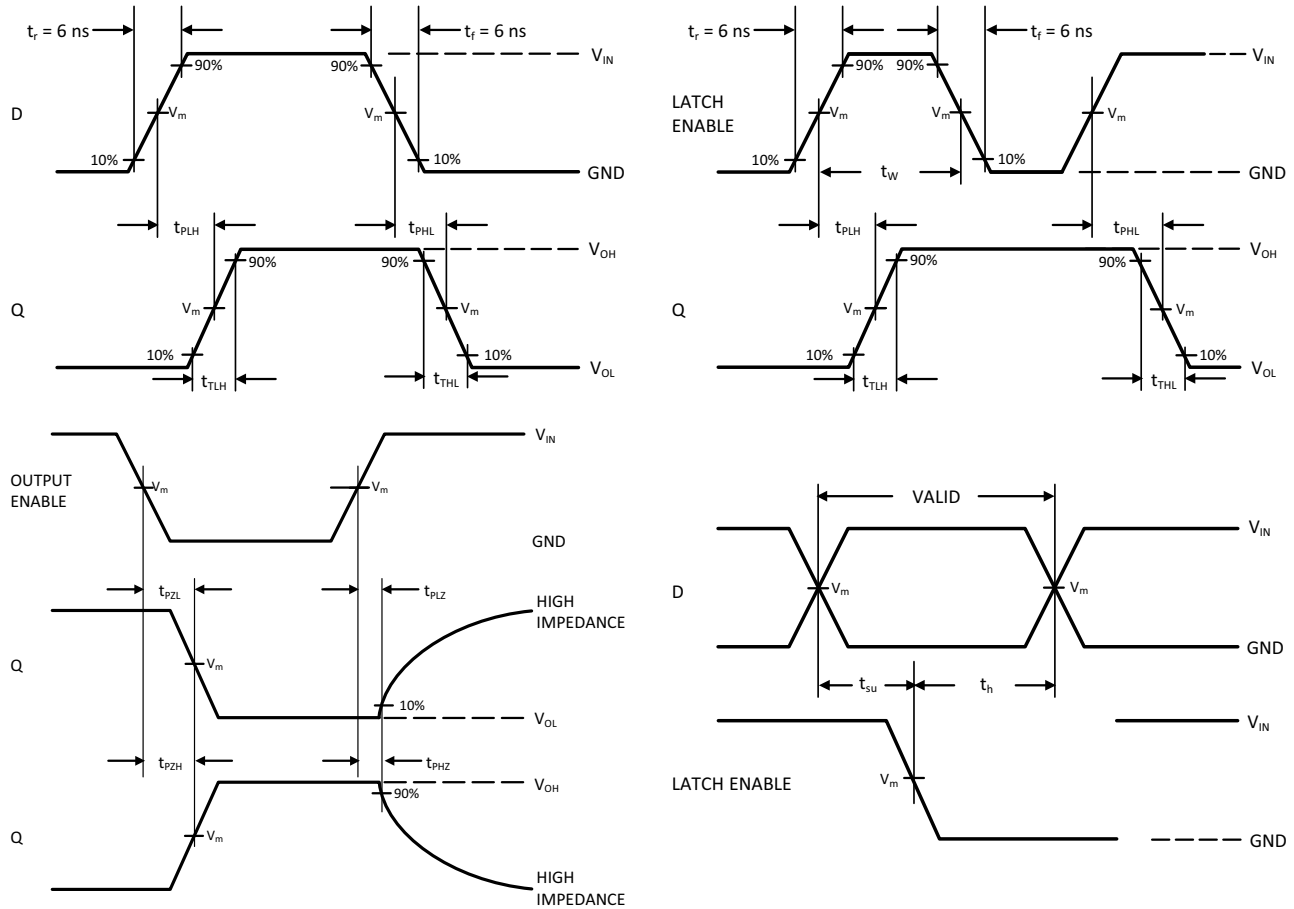
## SWITCHING WAVEFORMS



\*C<sub>L</sub> Includes probe and jig capacitance

| Test                                | Switch Position | C <sub>L</sub> | R <sub>L</sub> |
|-------------------------------------|-----------------|----------------|----------------|
| t <sub>PLH</sub> / t <sub>PHL</sub> | Open            | 50 pF          | 1 kΩ           |
| t <sub>PLZ</sub> / t <sub>PZL</sub> | V <sub>CC</sub> |                |                |
| t <sub>PHZ</sub> / t <sub>PZH</sub> | GND             |                |                |

Figure 2. Test Circuit



| Device      | V <sub>IN</sub> , V | V <sub>m</sub> , V    |
|-------------|---------------------|-----------------------|
| MC74HC373A  | V <sub>CC</sub>     | 50% x V <sub>CC</sub> |
| MC74HCT373A | 3 V                 | 1.3 V                 |

Figure 3. Switching Waveforms

## MC74HC373A, MC74HCT373A

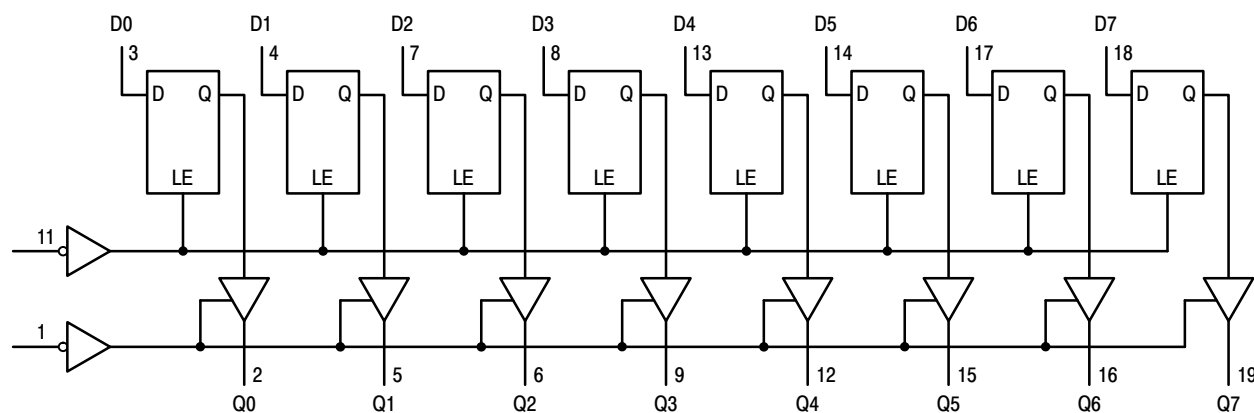


Figure 4. Expanded Logic Diagram

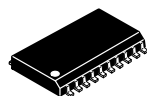
### ORDERING INFORMATION

| Device              | Marking     | Package      | Shipping†          |
|---------------------|-------------|--------------|--------------------|
| MC74HC373ADWG       | HC373A      | SOIC-20 Wide | 38 Units / Rail    |
| MC74HC373ADWR2G     | HC373A      | SOIC-20 Wide | 1000 / Tape & Reel |
| MC74HC373ADWR2G-Q*  | HC373A      | SOIC-20 Wide | 1000 / Tape & Reel |
| MC74HC373ADTG       | HC<br>373A  | TSSOP-20     | 75 Units / Rail    |
| MC74HC373ADTR2G     | HC<br>373A  | TSSOP-20     | 2500 / Tape & Reel |
| MC74HCT373ADWG      | HCT373A     | SOIC-20 Wide | 38 Units / Rail    |
| MC74HCT373ADWR2G    | HCT373A     | SOIC-20 Wide | 1000 / Tape & Reel |
| MC74HCT373ADWR2G-Q* | HCT373A     | SOIC-20 Wide | 1000 / Tape & Reel |
| MC74HCT373ADTR2G    | HCT<br>373A | TSSOP-20     | 2500 / 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.

\*-Q Suffix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable.

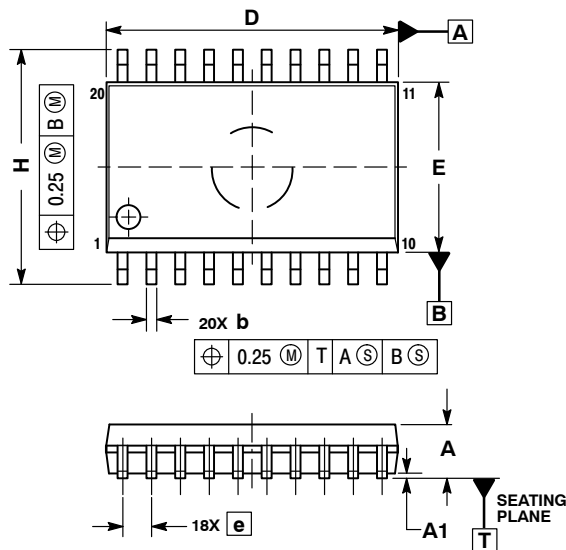




SCALE 1:1

SOIC-20 WB  
CASE 751D-05  
ISSUE H

DATE 22 APR 2015

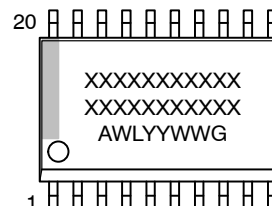


NOTES:

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.

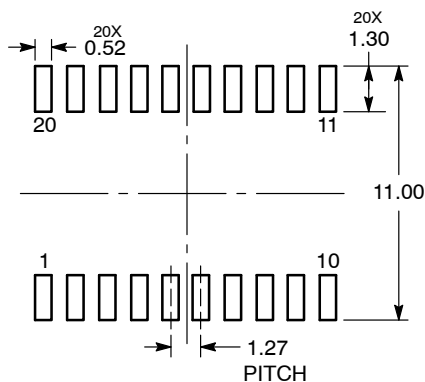
| DIM | MILLIMETERS |       |
|-----|-------------|-------|
|     | MIN         | MAX   |
| A   | 2.35        | 2.65  |
| A1  | 0.10        | 0.25  |
| b   | 0.35        | 0.49  |
| c   | 0.23        | 0.32  |
| D   | 12.65       | 12.95 |
| E   | 7.40        | 7.60  |
| e   | 1.27 BSC    |       |
|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

GENERIC  
MARKING DIAGRAM\*



XXXXXX = Specific Device Code  
A = Assembly Location  
WL = Wafer Lot  
YY = Year  
WW = Work Week  
G = Pb-Free Package

RECOMMENDED  
SOLDERING FOOTPRINT\*



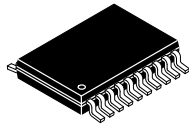
DIMENSIONS: MILLIMETERS

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

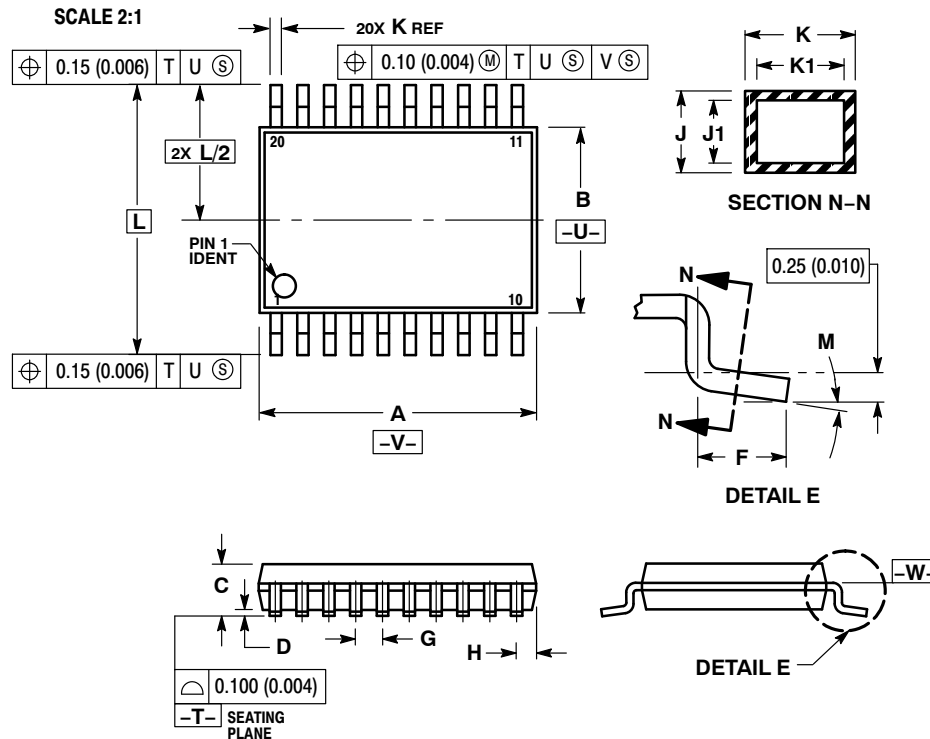
\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

|                  |             |                                                                                                                                                                                     |
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| DESCRIPTION:     | SOIC-20 WB  | PAGE 1 OF 1                                                                                                                                                                         |

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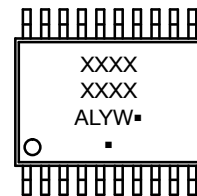

**TSSOP-20 WB**  
**CASE 948E**  
**ISSUE D**

DATE 17 FEB 2016


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
5. DIMENSION K DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE K DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
7. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-.

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 6.40        | 6.60 | 0.252     | 0.260 |
| B   | 4.30        | 4.50 | 0.169     | 0.177 |
| C   | ---         | 1.20 | ---       | 0.047 |
| D   | 0.05        | 0.15 | 0.002     | 0.006 |
| F   | 0.50        | 0.75 | 0.020     | 0.030 |
| G   | 0.65 BSC    |      | 0.026 BSC |       |
| H   | 0.27        | 0.37 | 0.011     | 0.015 |
| J   | 0.09        | 0.20 | 0.004     | 0.008 |
| J1  | 0.09        | 0.16 | 0.004     | 0.006 |
| K   | 0.19        | 0.30 | 0.007     | 0.012 |
| K1  | 0.19        | 0.25 | 0.007     | 0.010 |
| L   | 6.40 BSC    |      | 0.252 BSC |       |
| M   | 0°          | 8°   | 0°        | 8°    |

**GENERIC MARKING DIAGRAM\***


- A = Assembly Location  
L = Wafer Lot  
Y = Year  
W = Work Week  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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

|                         |                    |                                                                                                                                                                                  |
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| <b>DESCRIPTION:</b>     | <b>TSSOP-20 WB</b> | <b>PAGE 1 OF 1</b>                                                                                                                                                               |

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