## MC74HC573A

## Octal 3-State Noninverting Transparent Latch

## High-Performance Silicon-Gate CMOS

The MC74HC573A is identical in pinout to the LS573. The devices are compatible with standard CMOS outputs; with pullup resistors, they are compatible with LSTTL outputs.

These latches appear transparent to data (i.e., the outputs change asynchronously) when Latch Enable is high. When Latch Enable goes low, data meeting the setup and hold time becomes latched.

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

## Features

- Output Drive Capability: 15 LSTTL Loads
- Outputs Directly Interface to CMOS, NMOS and TTL
- Operating Voltage Range: 2.0 to 6.0 V
- Low Input Current: $1.0 \mu \mathrm{~A}$
- In Compliance with the JEDEC Standard No. 7.0 A Requirements
- Chip Complexity: 218 FETs or 54.5 Equivalent Gates
- NLV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable
- These Devices are $\mathrm{Pb}-$ Free and are RoHS Compliant


| Design Criteria | Value | Units |
| :--- | :---: | :---: |
| Internal Gate Count* | 54.5 | ea. |
| Internal Gate Progation Delay | 1.5 | ns |
| Internal Gate Power Dissipation | 5.0 | $\mu \mathrm{~W}$ |
| Speed Power Product | 0.0075 | pJ |

*Equivalent to a two-input NAND gate.

ON Semiconductor ${ }^{\circledR}$
www.onsemi.com


PIN ASSIGNMENT

| OUTPUT |  |  |
| :---: | :---: | :---: |
| ENABLE 1 | 20 | $\square \mathrm{V}_{\mathrm{CC}}$ |
| D0 ${ }^{2}$ | 19 | $\square$ Q0 |
| D1 ${ }^{-1}$ | 18 | $\square$ Q1 |
| D2 4 | 17 | $\square \mathrm{Q} 2$ |
| D3 5 | 16 | $\square$ Q3 |
| D4 ${ }^{-6}$ | 15 | $\square$ Q4 |
| D5 7 | 14 | $\square$ Q5 |
| D6 8 | 13 | $\square \mathrm{Q} 6$ |
| D7 9 | 12 | $\square$ Q7 |
| GND $\square 10$ | 11 | LATCH |

MARKING DIAGRAMS


SOIC-20
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 <br> Enable | Latch <br> 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 in the package dimensions section on page 5 of this data sheet.

MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
| :---: | :--- | :---: | :---: |
| $\mathrm{V}_{\mathrm{CC}}$ | DC Supply Voltage (Referenced to GND) | -0.5 to +7.0 | V |
| $\mathrm{~V}_{\text {in }}$ | DC Input Voltage (Referenced to GND) | -0.5 to $\mathrm{V}_{\mathrm{CC}}+0.5$ | V |
| $\mathrm{~V}_{\text {out }}$ | DC Output Voltage (Referenced to GND) | -0.5 to $\mathrm{V}_{\mathrm{CC}}+0.5$ | V |
| $\mathrm{I}_{\text {in }}$ | DC Input Current, per Pin | $\pm 20$ | mA |
| $\mathrm{I}_{\text {out }}$ | DC Output Current, per Pin | $\pm 35$ | mA |
| $\mathrm{I}_{\mathrm{CC}}$ | DC Supply Current, $\mathrm{V}_{\mathrm{CC}}$ and GND Pins | $\pm 75$ | mA |
| $\mathrm{P}_{\mathrm{D}}$ | Power Dissipation in Still Air,SOIC Packaget <br> TSSOP Packaget | 500 | mW |
|  | 450 |  |  |
| $\mathrm{~T}_{\text {stg }}$ | Storage Temperature | -65 to +150 | ${ }^{\circ} \mathrm{C}$ |
| $\mathrm{T}_{\mathrm{L}}$ | Lead Temperature, 1 mm from Case for 10 Seconds |  |  |
| (TSSOP or SOIC Package) |  |  |  |

This device contains protection circuitry to guard against damage due to high static voltages or electric fields. However, precautions must be taken to avoid applications of any voltage higher than maximum rated voltages to this high-impedance circuit. For proper operation, $\mathrm{V}_{\text {in }}$ and $V_{\text {out }}$ should be constrained to the range $\mathrm{GND} \leq\left(\mathrm{V}_{\text {in }}\right.$ or $\left.\mathrm{V}_{\text {out }}\right) \leq \mathrm{V}_{\mathrm{CC}}$. Unused inputs must always be tied to an appropriate logic voltage level (e.g., either GND or $\mathrm{V}_{\mathrm{CC}}$ ). Unused outputs must be left open.

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.
$\dagger$ Derating: SOIC Package: $-7 \mathrm{~mW} /{ }^{\circ} \mathrm{C}$ from $65^{\circ}$ to $125^{\circ} \mathrm{C}$
TSSOP Package: $-6.1 \mathrm{~mW} /{ }^{\circ} \mathrm{C}$ from $65^{\circ}$ to $125^{\circ} \mathrm{C}$
RECOMMENDED OPERATING CONDITIONS

| Symbol | Parameter | Min | Max | Unit |
| :---: | :--- | :---: | :---: | :---: |
| $\mathrm{V}_{\mathrm{CC}}$ | DC Supply Voltage (Referenced to GND) | 2.0 | 6.0 | V |
| $\mathrm{~V}_{\text {in }}, \mathrm{V}_{\text {out }}$ | DC Input Voltage, Output Voltage (Referenced to GND) | 0 | $\mathrm{~V}_{\mathrm{CC}}$ | V |
| $\mathrm{T}_{\mathrm{A}}$ | Operating Temperature, All Package Types | -55 | +125 | ${ }^{\circ} \mathrm{C}$ |
| $\mathrm{t}_{\mathrm{r}}, \mathrm{t}_{\mathrm{f}}$ | Input Rise and Fall Time |  | $\mathrm{V}_{\mathrm{CC}}=2.0 \mathrm{~V}$ | 0 |
|  | (Figure 1) | $\mathrm{V}_{\mathrm{CC}}=4.5 \mathrm{~V}$ | 0 | 1000 |
|  |  | $\mathrm{~V}_{\mathrm{CC}}=6.0 \mathrm{~V}$ | 0 | ns |
|  |  | 400 |  |  |

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.

DC ELECTRICAL CHARACTERISTICS (Voltages Referenced to GND)

| Symbol | Parameter | Test Conditions | $\mathrm{v}_{\mathrm{cc}}$ | Guaranteed Limit |  |  | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{aligned} & -55 \text { to } \\ & 25^{\circ} \mathrm{C} \end{aligned}$ | $\leq 85^{\circ} \mathrm{C}$ | $\leq 125^{\circ} \mathrm{C}$ |  |
| $\mathrm{V}_{\mathrm{IH}}$ | Minimum High-Level Input Voltage | $\begin{aligned} & \mathrm{V}_{\text {out }}=0.1 \mathrm{~V} \text { or } \mathrm{V}_{\mathrm{CC}}-0.1 \mathrm{~V} \\ & \left.\right\|_{\text {lout }} \leq 20 \mu \mathrm{~A} \end{aligned}$ | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{gathered} 1.5 \\ 2.1 \\ 3.15 \\ 4.2 \end{gathered}$ | $\begin{gathered} 1.5 \\ 2.1 \\ 3.15 \\ 4.2 \end{gathered}$ | $\begin{gathered} \hline 1.5 \\ 2.1 \\ 3.15 \\ 4.2 \end{gathered}$ | V |
| $\mathrm{V}_{\text {IL }}$ | Maximum Low-Level Input Voltage | $\begin{aligned} & \mathrm{V}_{\text {out }}=0.1 \mathrm{~V} \text { or } \mathrm{V}_{\mathrm{CC}}-0.1 \mathrm{~V} \\ & \left.\right\|_{\text {lout }} \leq 20 \mu \mathrm{~A} \end{aligned}$ | $\begin{aligned} & \hline 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{gathered} \hline 0.5 \\ 0.9 \\ 1.35 \\ 1.8 \end{gathered}$ | $\begin{gathered} \hline 0.5 \\ 0.9 \\ 1.35 \\ 18 \end{gathered}$ | $\begin{gathered} \hline 0.5 \\ 0.9 \\ 1.35 \\ 1.8 \end{gathered}$ | V |
| $\mathrm{V}_{\mathrm{OH}}$ | Minimum High-Level Output Voltage | $\begin{aligned} & \mathrm{V}_{\text {in }}=\mathrm{V}_{\text {IH }} \text { or } \mathrm{V}_{\text {IL }} \\ & \\|_{\text {out }} \leq 20 \leq 20 \end{aligned}$ | $\begin{aligned} & \hline 2.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{aligned} & 1.9 \\ & 4.4 \\ & 5.9 \end{aligned}$ | $\begin{aligned} & 1.9 \\ & 4.4 \\ & 5.9 \end{aligned}$ | $\begin{aligned} & 1.9 \\ & 4.4 \\ & 5.9 \end{aligned}$ | V |
|  |  | $\mathrm{V}_{\text {in }}=\mathrm{V}_{\mathrm{IH}}$ or $\mathrm{V}_{\mathrm{IL}} \quad$$\\|_{\text {out }} \leq 2.4 \mathrm{~mA}$ <br>  <br>  <br> $\\|_{\text {out }} \leq 6.0 \mathrm{~mA}$ <br> $\\| I_{\text {out }} \mid \leq 7.8 \mathrm{~mA}$ | $\begin{aligned} & \hline 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{aligned} & 2.48 \\ & 3.98 \\ & 5.48 \end{aligned}$ | $\begin{aligned} & \hline 2.34 \\ & 3.84 \\ & 5.34 \end{aligned}$ | $\begin{aligned} & 2.2 \\ & 3.7 \\ & 5.2 \end{aligned}$ |  |
| V ${ }_{\text {OL }}$ | Maximum Low-Level Output Voltage | $\begin{aligned} & \hline \mathrm{V}_{\text {out }}=0.1 \mathrm{~V} \text { or } \mathrm{V}_{\mathrm{CC}}-0.1 \mathrm{~V} \\ & \left.\right\|_{\text {lout }} \leq 20 \mu \mathrm{~A} \end{aligned}$ | $\begin{aligned} & \hline 2.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{aligned} & 0.1 \\ & 0.1 \\ & 0.1 \end{aligned}$ | $\begin{aligned} & 0.1 \\ & 0.1 \\ & 0.1 \end{aligned}$ | $\begin{aligned} & 0.1 \\ & 0.1 \\ & 0.1 \end{aligned}$ | V |
|  |  | $\mathrm{V}_{\text {in }}=\mathrm{V}_{\mathrm{IH}}$ or $\mathrm{V}_{\mathrm{IL}} \quad$$\\|_{\text {out }} \leq 2.4 \mathrm{~mA}$ <br>  <br>  <br> $\mid \\|_{\text {out }} \leq 6.0 \mathrm{~mA}$ <br> $\| \|_{\text {out }} \leq 7.8 \mathrm{~mA}$ | $\begin{aligned} & \hline 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{aligned} & 0.26 \\ & 0.26 \\ & 0.26 \end{aligned}$ | $\begin{aligned} & 0.33 \\ & 0.33 \\ & 0.33 \end{aligned}$ | $\begin{aligned} & 0.4 \\ & 0.4 \\ & 0.4 \end{aligned}$ |  |
| $\mathrm{l}_{\text {in }}$ | Maximum Input Leakage Current | $\mathrm{V}_{\text {in }}=\mathrm{V}_{\text {cc }}$ or GND | 6.0 | $\pm 0.1$ | $\pm 1.0$ | $\pm 1.0$ | $\mu \mathrm{A}$ |
| $\mathrm{l}_{0}$ | Maximum Three-State Leakage Current | Output in High-Impedance State $\mathrm{V}_{\mathrm{in}}=\mathrm{V}_{\mathrm{IL}}$ or $\mathrm{V}_{\mathrm{IH}}$ <br> $V_{\text {out }}=V_{\text {CC }}$ or GND | 6.0 | $\pm 0.5$ | $\pm 5.0$ | $\pm 10$ | $\mu \mathrm{A}$ |
| $\mathrm{I}_{\mathrm{CC}}$ | Maximum Quiescent Supply Current (per Package) | $\begin{aligned} & \mathrm{V}_{\text {in }}=\mathrm{V}_{\mathrm{CC}} \text { or GND } \\ & \mathrm{I}_{\text {out }}=0 \mu \mathrm{~A} \end{aligned}$ | 6.0 | 4.0 | 40 | 160 | $\mu \mathrm{A}$ |

AC ELECTRICAL CHARACTERISTICS $\left(\mathrm{C}_{\mathrm{L}}=50 \mathrm{pF}\right.$, $\left.\operatorname{Input} \mathrm{t}_{\mathrm{r}}=\mathrm{t}_{\mathrm{f}}=6.0 \mathrm{~ns}\right)$

| Symbol | Parameter | $\mathrm{v}_{\mathrm{cc}}$ | Guaranteed Limit |  |  | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | -55 to $25^{\circ} \mathrm{C}$ | $\leq 85{ }^{\circ} \mathrm{C}$ | $\leq 125^{\circ} \mathrm{C}$ |  |
| $\begin{aligned} & \text { tpLH, } \\ & \mathrm{t}_{\text {PHL }} \end{aligned}$ | Maximum Propagation Delay, Input D to Q (Figures 1 and 5) | $\begin{aligned} & \hline 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{gathered} \hline 150 \\ 100 \\ 30 \\ 26 \end{gathered}$ | $\begin{gathered} 190 \\ 140 \\ 38 \\ 33 \end{gathered}$ | $\begin{gathered} \hline 225 \\ 180 \\ 45 \\ 38 \end{gathered}$ | ns |
| $\begin{aligned} & \text { tpLH, } \\ & \text { tpHL } \end{aligned}$ | Maximum Propagation Delay, Latch Enable to Q (Figures 2 and 5) | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{gathered} 160 \\ 105 \\ 32 \\ 27 \end{gathered}$ | $\begin{gathered} 200 \\ 145 \\ 40 \\ 34 \end{gathered}$ | $\begin{gathered} 240 \\ 190 \\ 48 \\ 41 \end{gathered}$ | ns |
| $\begin{aligned} & \hline \mathrm{tpLZ}^{\prime} \\ & \mathrm{t}_{\mathrm{PHZ}} \end{aligned}$ | Maximum Propagation Delay, Output Enable to Q (Figures 3 and 6) | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{gathered} \hline 150 \\ 100 \\ 30 \\ 26 \end{gathered}$ | $\begin{gathered} 190 \\ 125 \\ 38 \\ 33 \end{gathered}$ | $\begin{gathered} 225 \\ 150 \\ 45 \\ 38 \end{gathered}$ | ns |
| $\begin{aligned} & \text { tpzL, } \\ & \text { tpzH }^{2} \end{aligned}$ | Maximum Propagation Delay, Output Enable to Q (Figures 3 and 6) | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{gathered} 150 \\ 100 \\ 30 \\ 26 \end{gathered}$ | $\begin{gathered} \hline 190 \\ 125 \\ 38 \\ 33 \end{gathered}$ | $\begin{gathered} 225 \\ 150 \\ 45 \\ 38 \end{gathered}$ | ns |
| $\begin{aligned} & \mathrm{t}_{\mathrm{T} \mathrm{LH}}, \\ & \mathrm{t}_{\mathrm{TH}} \mathrm{~L} \end{aligned}$ | Maximum Output Transition Time, Any Output (Figures 1 and 5) | $\begin{aligned} & \hline 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{aligned} & 60 \\ & 27 \\ & 12 \\ & 10 \end{aligned}$ | $\begin{aligned} & 75 \\ & 32 \\ & 15 \\ & 13 \end{aligned}$ | $\begin{aligned} & 90 \\ & 36 \\ & 18 \\ & 15 \end{aligned}$ | ns |
| $\mathrm{C}_{\text {in }}$ | Maximum Input Capacitance |  | 10 | 10 | 10 | pF |
| $\mathrm{C}_{\text {out }}$ | Maximum 3-State Output Capacitance (Output in High-Impedance State) |  | 15 | 15 | 15 | pF |
|  | Power Dissipation Capacitance (Per Enabled Output)* |  | Typical @ $25^{\circ} \mathrm{C}, \mathrm{V}_{\mathrm{Cc}}=5.0 \mathrm{~V}$ |  |  | pF |
| $\mathrm{C}_{\text {PD }}$ |  |  | 23 |  |  |  |

* Used to determine the no-load dynamic power consumption: $\mathrm{P}_{\mathrm{D}}=\mathrm{C}_{\mathrm{PD}} \mathrm{V}_{\mathrm{CC}}{ }^{2} \mathrm{f}+\mathrm{I}_{\mathrm{CC}} \mathrm{V}_{\mathrm{CC}}$.

TIMING REQUIREMENTS ( $\mathrm{C}_{\mathrm{L}}=50 \mathrm{pF}$, Input $\mathrm{t}_{\mathrm{r}}=\mathrm{t}_{\mathrm{f}}=6.0 \mathrm{~ns}$ )

| Symbol | Parameter | Figure | $\mathrm{v}_{\mathrm{cc}}$ | Guaranteed Limit |  |  |  |  |  | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | -55 to $25^{\circ} \mathrm{C}$ |  | $\leq 85^{\circ} \mathrm{C}$ |  | $\leq 125^{\circ} \mathrm{C}$ |  |  |
|  |  |  |  | Min | Max | Min | Max | Min | Max |  |
| $\mathrm{t}_{\text {su }}$ | Minimum Setup Time, Input D to Latch Enable | 4 | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{aligned} & 50 \\ & 40 \\ & 10 \\ & 9.0 \end{aligned}$ |  | $\begin{aligned} & \hline 65 \\ & 50 \\ & 13 \\ & 11 \end{aligned}$ |  | $\begin{aligned} & 75 \\ & 60 \\ & 15 \\ & 13 \end{aligned}$ |  | ns |
| $t_{\text {h }}$ | Minimum Hold Time, Latch Enable to Input D | 4 | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{aligned} & \hline 5.0 \\ & 5.0 \\ & 5.0 \\ & 5.0 \end{aligned}$ |  | $\begin{aligned} & \hline 5.0 \\ & 5.0 \\ & 5.0 \\ & 5.0 \end{aligned}$ |  | $\begin{aligned} & 5.0 \\ & 5.0 \\ & 5.0 \\ & 5.0 \end{aligned}$ |  | ns |
| $\mathrm{t}_{\text {w }}$ | Minimum Pulse Width, Latch Enable | 2 | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ | $\begin{aligned} & 75 \\ & 60 \\ & 15 \\ & 13 \end{aligned}$ |  | $\begin{aligned} & 95 \\ & 80 \\ & 19 \\ & 16 \end{aligned}$ |  | $\begin{gathered} \hline 110 \\ 90 \\ 22 \\ 19 \end{gathered}$ |  | ns |
| $\mathrm{tr}_{\mathrm{r}}, \mathrm{t}_{\mathrm{f}}$ | Maximum Input Rise and Fall Times | 1 | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \\ & 6.0 \end{aligned}$ |  | $\begin{gathered} \hline 1000 \\ 800 \\ 500 \\ 400 \end{gathered}$ |  | $\begin{gathered} \hline 1000 \\ 800 \\ 500 \\ 400 \end{gathered}$ |  | $\begin{gathered} \hline 1000 \\ 800 \\ 500 \\ 400 \end{gathered}$ | ns |

## SWITCHING WAVEFORMS

INPUT D


Figure 1.


Figure 3.

*Includes all probe and jig capacitance
Figure 5. Test Circuit

*Includes all probe and jig capacitance
Figure 6. Test Circuit


Figure 2.


Figure 4.


Figure 7. EXPANDED LOGIC DIAGRAM

## MC74HC573A

ORDERING INFORMATION

| Device | Package | Shipping $^{\dagger}$ |
| :--- | :---: | :---: |
| MC74HC573ADWG | SOIC-20 WIDE <br> (Pb-Free) | 38 Units / Rail |
| MC74HC573ADWR2G | SOIC-20 WIDE <br> (Pb-Free) | 1000 Tape \& Reel |
| MC74HC573ADTG | TSSOP-20 <br> (Pb-Free) | 75 Units / Rail |
| MC74HC573ADTR2G | TSSOP-20 <br> (Pb-Free) | 2500 Tape \& Reel |
| NLV74HC573ADTR2G* | TSSOP-20 <br> (Pb-Free) | 2500 Tape \& Reel |

$\dagger$ 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.
*NLV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable.


SCALE 1:1


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 PROTRUSION. ALLOWABLE PROTRUSION
SHALL BE 0.13 TOTAL IN EXCESS OF B 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 |
| $\mathbf{c}$ | 0.23 | 0.32 |
| D | 12.65 | 12.95 |
| E | 7.40 | 7.60 |
| e | 1.27 BSC |  |
| H | 10.05 | 10.55 |
| $\mathbf{h}$ | 0.25 | 0.75 |
| L | 0.50 | 0.90 |
| $\boldsymbol{\theta}$ | $0^{\circ}$ | $7^{\circ}$ |

GENERIC
MARKING DIAGRAM*


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

*This information is generic. Please refer to device data sheet for actual part marking. $\mathrm{Pb}-$ Free indicator, " G " or microdot " $\mathrm{\nabla}$ ", may or may not be present.

| DOCUMENT NUMBER: | 98ASB42343B | Electronic versions are uncontrolled except when accessed directly from the Document Repository. <br> Printed versions are uncontroled except when stamped "CONTROLLED COPY" in red. |
| ---: | :--- | :--- | :--- |
| DESCRIPTION: | SOIC-20 WB | PAGE 1 OF 1 |

ON Semiconductor and (iN) are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

TSSOP-20 WB
CASE 948E
ISSUE D
DATE 17 FEB 2016

SCALE 2:1


1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
CONTROLLING DIMENSION: MILLIMETER
2. DIMENSION A DOES NOT INCLUDE MOLD

FLASH, PROTRUSIONS OR GATE BURRS.
FLASH, PROTRUSIONS OR GATE BURRS.
MOLD FLASH OR GATE BURRS SHALL NO
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-

|  | MILLIMETERS |  | INCHES |  |
| :---: | :---: | :---: | :---: | :---: |
| DIM | 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 | $0^{\circ}$ | $8^{\circ}$ | 0 |

GENERIC MARKING DIAGRAM* НРННННННН

|  | XXXX |
| :---: | :---: |
|  | XXXX |
|  | ALYW. |
| $\bigcirc$ | - |

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. $\mathrm{Pb}-$ Free indicator, " G " or microdot " $\mathrm{\nabla}$ ", may or may not be present.
DIMENSIONS: MILLIMETERS

| DOCUMENT NUMBER: | 98ASH70169A | Electronic versions are uncontrolled except when accessed directly from the Document Repository. <br> Printed versions are uncontroled except when stamped "CONTROLLED COPY" in red. |
| ---: | :--- | :--- | :--- |
| DESCRIPTION: | TSSOP-20 WB | PAGE 1 OF 1 |

ON Semiconductor and ON are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. ON Semiconductor does not convey any license under its patent rights nor the rights of others.
onsemi, OnSeMi., and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "onsemi" or its affiliates and/or subsidiaries in the United States and/or other countries. onsemi owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of onsemi's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. onsemi reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and onsemi makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using onsemi products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by onsemi. "Typical" parameters which may be provided in onsemi data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. onsemi does not convey any license under any of its intellectual property rights nor the rights of others. onsemi products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use onsemi products for any such unintended or unauthorized application, Buyer shall indemnify and hold onsemi and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that onsemi was negligent regarding the design or manufacture of the part. onsemi is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Email Requests to: orderlit@onsemi.com
onsemi Website: www.onsemi.com

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components
Click to view similar products for Counter Shift Registers category:
Click to view products by ON Semiconductor manufacturer:
Other Similar products are found below :
74HC165N 74HC195N CD4031BE CD4034BE NLV74HC165ADTR2G 5962-9172201M2A MC74HC597ADG MC100EP142MNG
MC100EP016AMNG 5962-9172201MFA TC74HC165AP(F) NTE4517B MC74LV594ADR2G 74HCT4094D-Q100J 74HCT595D, 118
TPIC6C595PWG4 74VHC164MTCX MIC5891BN CD74HC195M96 NLV74HC165ADR2G NPIC6C596ADJ NPIC6C596D-Q100,11
74HC164T14-13 STPIC6D595MTR 74HC164D.653 74HC164D.652 74HCT164D.652 74HCT164D.653 74HC4094D.653
74VHC4020FT(BJ) 74HC194D,653 74HCT164DB. 118 74HCT4094D. 112 74LV164DB. 112 74LVC594AD. 112 HEF4094BT. 653
74VHC164FT(BE) 74HCT594DB. 112 74HCT597DB.112 74LV164D. 112 74LV165D. 112 74LV4094D.112 74LV4094PW. 112
CD74HC165M 74AHC594T16-13 74AHCT595T16-13 74HC164S14-13 74HC595S16-13 74AHCT595S16-13 74AHC595S16-13

