## MC74VHC126

## Quad Bus Buffer with 3-State Control Inputs

The MC74VHC126 is a high speed CMOS quad bus buffer fabricated with silicon gate CMOS technology. It achieves noninverting high speed operation similar to equivalent Bipolar Schottky TTL while maintaining CMOS low power dissipation.

The MC74VHC126 requires the 3-state control input (OE) to be set Low to place the output into high impedance.

The internal circuit is composed of three stages, including a buffer output which provides high noise immunity and stable output. The inputs tolerate voltages up to 7.0 V , allowing the interface of 5.0 V systems to 3.0 V systems.

- High Speed: $\mathrm{t}_{\mathrm{PD}}=3.8 \mathrm{~ns}(\mathrm{Typ})$ at $\mathrm{V}_{\mathrm{CC}}=5.0 \mathrm{~V}$
- Low Power Dissipation: $\mathrm{I}_{\mathrm{CC}}=4.0 \mu \mathrm{~A}$ (Max) at $\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}$
- High Noise Immunity: $\mathrm{V}_{\mathrm{NIH}}=\mathrm{V}_{\mathrm{NIL}}=28 \% \mathrm{~V}_{\mathrm{CC}}$
- Power Down Protection Provided on Inputs
- Balanced Propagation Delays
- Designed for 2.0 V to 5.5 V Operating Range
- Low Noise: V ${ }_{\text {OLP }}=0.8 \mathrm{~V}$ (Max)
- Pin and Function Compatible with Other Standard Logic Families
- Latchup Performance Exceeds 300 mA
- ESD Performance: HBM > 2000 V; Machine Model $>200$ V
- Chip Complexity: 72 FETs or 18 Equivalent Gates
- These Devices are $\mathrm{Pb}-$ Free and are RoHS Compliant



## ON Semiconductor ${ }^{\circledR}$

## http://onsemi.com



PIN CONNECTIONS

(Top View)

## ORDERING INFORMATION

| Device | Package | Shipping |
| :---: | :---: | :---: |
| MC74VHC126DR2G | SOIC | 2500 Units/Reel |
| MC74VHC126DTR2G | TSSOP | 2500 Units/Reel |

DEVICE MARKING INFORMATION
See general marking information in the device marking section on page 7 of this data sheet.

## Active-High Output Enables


FUNCTION TABLE

| VHC126 |  |  |
| :---: | :---: | :---: |
| Inputs | Output |  |
| A | OE | Y |
| H | H | H |
| L | H | L |
| X | L | Z |

Figure 1. Logic Diagram

MAXIMUM RATINGS (Note 1)

| Symbol | Parameter | Value | Unit |
| :---: | :--- | :---: | :---: |
| $\mathrm{V}_{\mathrm{CC}}$ | DC Supply Voltage | -0.5 to +7.0 | V |
| $\mathrm{~V}_{\text {in }}$ | DC Input Voltage | -0.5 to +7.0 | V |
| $\mathrm{~V}_{\text {out }}$ | DC Output Voltage | -0.5 to $\mathrm{V}_{\mathrm{CC}}+0.5$ | V |
| $\mathrm{I}_{\mathrm{IK}}$ | Input Diode Current | -20 | mA |
| $\mathrm{I}_{\mathrm{OK}}$ | Output Diode Current | $\pm 20$ | mA |
| $\mathrm{I}_{\text {out }}$ | DC Output Current, per Pin | $\pm 25$ | mA |
| $\mathrm{I}_{\mathrm{CC}}$ | DC Supply Current, $\mathrm{V}_{\mathrm{CC}}$ and GND Pins | $\pm 50$ | mA |
| $\mathrm{P}_{\mathrm{D}}$ | Power Dissipation in Still Air (Note 2) | SOIC Packages <br> TSSOP Package | 500 |

1. Maximum Ratings are those values beyond which damage to the device may occur. Exposure to these conditions or conditions beyond those indicated may adversely affect device reliability. Functional operation under absolute maximum-rated conditions is not implied. Functional operation should be restricted to the Recommended Operating Conditions.
2. Derating - SOIC Packages: $-7.0 \mathrm{~mW} /{ }^{\circ} \mathrm{C}$ 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 | 2.0 | 5.5 | V |
| $\mathrm{~V}_{\text {in }}$ | DC Input Voltage | 0 | 5.5 | V |
| $\mathrm{~V}_{\text {out }}$ | DC Output Voltage | 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 | $\mathrm{V}_{\mathrm{CC}}=3.3 \mathrm{~V} \pm 0.3 \mathrm{~V}$ | 0 | 100 |
|  |  | $\mathrm{Vs} / \mathrm{V}$ |  |  |
|  |  | 0 | 20 |  |

DC ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Test Conditions | $\mathrm{V}_{\mathrm{cc}}$ <br> (V) | $\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}$ |  |  | $\mathrm{T}_{\mathrm{A}} \leq 85^{\circ} \mathrm{C}$ |  | $\mathrm{T}_{\mathrm{A}} \leq 125^{\circ} \mathrm{C}$ |  | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Min | Typ | Max | Min | Max | Min | Max |  |
| $\mathrm{V}_{\mathrm{IH}}$ | Minimum High-Level Input Voltage |  | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \\ & 5.5 \end{aligned}$ | $\begin{aligned} & \hline 1.5 \\ & 2.1 \\ & 3.15 \\ & 3.85 \end{aligned}$ |  |  | $\begin{gathered} \hline 1.5 \\ 2.1 \\ 3.15 \\ 3.85 \end{gathered}$ |  | $\begin{aligned} & \hline 1.5 \\ & 2.1 \\ & 3.15 \\ & 3.85 \end{aligned}$ |  | V |
| $\mathrm{V}_{\text {IL }}$ | Maximum Low-Level Input Voltage |  | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \\ & 5.5 \end{aligned}$ |  |  | $\begin{gathered} 0.5 \\ 0.9 \\ 1.35 \\ 1.65 \end{gathered}$ |  | $\begin{gathered} 0.5 \\ 0.9 \\ 1.35 \\ 1.65 \end{gathered}$ |  | $\begin{gathered} 0.5 \\ 0.9 \\ 1.35 \\ 1.65 \end{gathered}$ | V |
| $\mathrm{V}_{\mathrm{OH}}$ | Minimum High-Level Output Voltage $\mathrm{V}_{\mathrm{IN}}=\mathrm{V}_{\mathrm{IH}}$ or $\mathrm{V}_{\mathrm{IL}}$ | $\begin{aligned} & \mathrm{V}_{\mathrm{IN}}=\mathrm{V}_{\mathrm{IH}} \text { or } \mathrm{V}_{\mathrm{IL}} \\ & \mathrm{I}_{\mathrm{OH}}=-50 \mu \mathrm{~A} \end{aligned}$ | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \end{aligned}$ | $\begin{aligned} & 1.9 \\ & 2.9 \\ & 4.4 \end{aligned}$ | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \end{aligned}$ |  | $\begin{aligned} & 1.9 \\ & 2.9 \\ & 4.4 \end{aligned}$ |  | $\begin{aligned} & \hline 1.9 \\ & 2.9 \\ & 4.4 \end{aligned}$ |  | V |
|  |  | $\begin{aligned} & \mathrm{V}_{\mathrm{IN}}=\mathrm{V}_{\mathrm{IH}} \text { or } \mathrm{V}_{\mathrm{IL}} \\ & \mathrm{I}_{\mathrm{OH}}=-4.0 \mathrm{~mA} \\ & \mathrm{I}_{\mathrm{OH}}=-8.0 \mathrm{~mA} \end{aligned}$ | $\begin{aligned} & 3.0 \\ & 4.5 \end{aligned}$ | $\begin{aligned} & 2.58 \\ & 3.94 \end{aligned}$ |  |  | $\begin{aligned} & 2.48 \\ & 3.80 \end{aligned}$ |  | $\begin{aligned} & 2.34 \\ & 3.66 \end{aligned}$ |  | V |
| V OL | Maximum Low-Level Output Voltage $\mathrm{V}_{\mathrm{IN}}=\mathrm{V}_{\mathrm{IH}}$ or $\mathrm{V}_{\mathrm{IL}}$ | $\begin{aligned} & \mathrm{V}_{\mathrm{IN}}=\mathrm{V}_{\mathrm{IH}} \text { or } \mathrm{V}_{\mathrm{IL}} \\ & \mathrm{I}_{\mathrm{OL}}=50 \mu \mathrm{~A} \end{aligned}$ | $\begin{aligned} & 2.0 \\ & 3.0 \\ & 4.5 \end{aligned}$ |  | $\begin{aligned} & 0.0 \\ & 0.0 \\ & 0.0 \end{aligned}$ | $\begin{aligned} & 0.1 \\ & 0.1 \\ & 0.1 \end{aligned}$ |  | $\begin{aligned} & 0.1 \\ & 0.1 \\ & 0.1 \end{aligned}$ |  | $\begin{aligned} & 0.1 \\ & 0.1 \\ & 0.1 \end{aligned}$ | V |
|  |  | $\begin{aligned} & \mathrm{V}_{\mathrm{IN}}=\mathrm{V}_{\mathrm{IH}} \text { or } \mathrm{V}_{\mathrm{IL}} \\ & \mathrm{I}_{\mathrm{OL}}=4.0 \mathrm{~mA} \\ & \mathrm{l}_{\mathrm{OL}}=8.0 \mathrm{~mA} \end{aligned}$ | $\begin{aligned} & 3.0 \\ & 4.5 \end{aligned}$ |  |  | $\begin{aligned} & 0.36 \\ & 0.36 \end{aligned}$ |  | $\begin{aligned} & 0.44 \\ & 0.44 \end{aligned}$ |  | $\begin{aligned} & 0.52 \\ & 0.52 \end{aligned}$ | V |
| l Oz | Maximum 3-State Leakage Current | $\begin{aligned} & \mathrm{V}_{\text {IN }}=\mathrm{V}_{\text {IH }} \text { or } \mathrm{V}_{\text {IL }} \\ & \mathrm{V}_{\text {OUT }}=\mathrm{V}_{\text {CC }} \text { or } \text { GND } \end{aligned}$ | 5.5 |  |  | $\pm 0.25$ |  | $\pm 2.5$ |  | $\pm 2.5$ | $\mu \mathrm{A}$ |
| $\mathrm{I}_{\mathrm{N}}$ | Maximum Input Leakage Current | $\mathrm{V}_{\mathrm{IN}}=5.5 \mathrm{~V}$ or GND | $\begin{aligned} & 0 \text { to } \\ & 5.5 \end{aligned}$ |  |  | $\pm 0.1$ |  | $\pm 1.0$ |  | $\pm 1.0$ | $\mu \mathrm{A}$ |
| ICC | Maximum Quiescent Supply Current | $\mathrm{V}_{\mathrm{IN}}=\mathrm{V}_{\text {CC }}$ or GND | 5.5 |  |  | 4.0 |  | 40 |  | 40 | $\mu \mathrm{A}$ |

AC ELECTRICAL CHARACTERISTICS (Input $t_{r}=t_{f}=3.0 \mathrm{~ns}$ )

| Symbol | Parameter | Test Conditions |  | $\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}$ |  |  | $\mathrm{T}_{\mathrm{A}}=\leq \mathbf{8 5}^{\circ} \mathrm{C}$ |  | $\mathrm{T}_{\mathrm{A}}=\leq 125^{\circ} \mathrm{C}$ |  | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Min | Typ | Max | Min | Max | Min | Max |  |
| $\begin{aligned} & \hline \mathrm{t}_{\mathrm{PLLH}}, \\ & \mathrm{t}_{\text {PHL }} \end{aligned}$ | Maximum Propagation Delay, A to $Y$ | $\mathrm{V}_{\mathrm{CC}}=3.3 \pm 0.3 \mathrm{~V}$ | $\begin{aligned} & C_{\mathrm{L}}=15 \mathrm{pF} \\ & \mathrm{C}_{\mathrm{L}}=50 \mathrm{pF} \end{aligned}$ |  | $\begin{aligned} & 5.6 \\ & 8.1 \end{aligned}$ | $\begin{gathered} \hline 8.0 \\ 11.5 \end{gathered}$ | $\begin{aligned} & 1.0 \\ & 1.0 \end{aligned}$ | $\begin{gathered} \hline 9.5 \\ 13.0 \end{gathered}$ | $\begin{aligned} & 1.0 \\ & 1.0 \end{aligned}$ | $\begin{aligned} & 12.0 \\ & 15.0 \end{aligned}$ | ns |
|  |  | $\mathrm{V}_{\mathrm{CC}}=5.0 \pm 0.5 \mathrm{~V}$ | $\begin{aligned} & \mathrm{C}_{\mathrm{L}}=15 \mathrm{pF} \\ & \mathrm{C}_{\mathrm{L}}=50 \mathrm{pF} \end{aligned}$ |  | $\begin{aligned} & \hline 3.8 \\ & 5.3 \end{aligned}$ | $\begin{aligned} & 5.5 \\ & 7.5 \end{aligned}$ | $\begin{aligned} & 1.0 \\ & 1.0 \end{aligned}$ | $\begin{aligned} & \hline 6.5 \\ & 8.5 \end{aligned}$ | $\begin{aligned} & \hline 1.0 \\ & 1.0 \end{aligned}$ | $\begin{gathered} \hline 8.5 \\ 10.5 \end{gathered}$ |  |
| $\begin{aligned} & \text { tpzL, } \\ & \text { tpzH }^{\prime} \end{aligned}$ | Maximum Output Enable TIme, OE to Y | $\begin{aligned} & \mathrm{V}_{\mathrm{CC}}=3.3 \pm 0.3 \mathrm{~V} \\ & \mathrm{R}_{\mathrm{L}}=1.0 \mathrm{k} \Omega \end{aligned}$ | $\begin{aligned} & C_{L}=15 \mathrm{pF} \\ & \mathrm{C}_{\mathrm{L}}=50 \mathrm{pF} \end{aligned}$ |  | $\begin{aligned} & 5.4 \\ & 7.9 \end{aligned}$ | $\begin{gathered} \hline 8.0 \\ 11.5 \end{gathered}$ | $\begin{aligned} & 1.0 \\ & 1.0 \end{aligned}$ | $\begin{gathered} \hline 9.5 \\ 13.0 \end{gathered}$ | $\begin{aligned} & 1.0 \\ & 1.0 \end{aligned}$ | $\begin{aligned} & \hline 11.5 \\ & 15.0 \end{aligned}$ | ns |
|  |  | $\begin{aligned} & V_{C C}=5.0 \pm 0.5 \mathrm{~V} \\ & R_{L}=1.0 \mathrm{k} \Omega \end{aligned}$ | $\begin{aligned} & \mathrm{C}_{\mathrm{L}}=15 \mathrm{pF} \\ & \mathrm{C}_{\mathrm{L}}=50 \mathrm{pF} \end{aligned}$ |  | $\begin{aligned} & 3.6 \\ & 5.1 \end{aligned}$ | $\begin{aligned} & 5.1 \\ & 7.1 \end{aligned}$ | $\begin{aligned} & 1.0 \\ & 1.0 \end{aligned}$ | $\begin{aligned} & \hline 6.0 \\ & 8.0 \end{aligned}$ | $\begin{aligned} & \hline 1.0 \\ & 1.0 \end{aligned}$ | $\begin{aligned} & \hline 7.5 \\ & 9.5 \end{aligned}$ |  |
| $\begin{aligned} & \mathrm{t}_{\mathrm{PLZ}}, \\ & \mathrm{t}_{\mathrm{PHZ}} \end{aligned}$ | Maximum Output Disable Time, OE to Y | $\begin{aligned} & \mathrm{V}_{\mathrm{CC}}=3.3 \pm 0.3 \mathrm{~V} \\ & \mathrm{R}_{\mathrm{L}}=1.0 \mathrm{k} \Omega \end{aligned}$ | $\mathrm{C}_{\mathrm{L}}=50 \mathrm{pF}$ |  | 9.5 | 13.2 | 1.0 | 15.0 | 1.0 | 18.0 | ns |
|  |  | $\begin{aligned} & \mathrm{V}_{\mathrm{CC}}=5.0 \pm 0.5 \mathrm{~V} \\ & \mathrm{R}_{\mathrm{L}}=1.0 \mathrm{k} \Omega \end{aligned}$ | $\mathrm{C}_{\mathrm{L}}=50 \mathrm{pF}$ |  | 6.1 | 8.8 | 1.0 | 10.0 | 1.0 | 12.0 |  |
| tosth, toshl | Output-to-Output Skew | $\begin{aligned} & \mathrm{V}_{\mathrm{CC}}=3.3 \pm 0.3 \mathrm{~V} \\ & \text { (Note 3) } \end{aligned}$ | $\mathrm{C}_{\mathrm{L}}=50 \mathrm{pF}$ |  |  | 1.5 |  | 1.5 |  | 1.5 | ns |
|  |  | $\begin{aligned} & \mathrm{V}_{\mathrm{CC}}=5.0 \pm 0.5 \mathrm{~V} \\ & \text { (Note 3) } \end{aligned}$ | $\mathrm{C}_{\mathrm{L}}=50 \mathrm{pF}$ |  |  | 1.0 |  | 1.0 |  | 1.0 |  |
| $\mathrm{Cin}_{\text {in }}$ | Maximum Input Capacitance |  |  |  | 4.0 | 10 |  | 10 |  | 10 | pF |
| Cout | Maximum Three-State Output Capacitance (Output in High Impedance State) |  |  |  | 6.0 |  |  |  |  |  | pF |


|  |  | Typical @ $\mathbf{2 5}{ }^{\circ} \mathbf{C}, \mathbf{V}_{\mathbf{C C}}=\mathbf{5 . 0 V}$ |  |
| :--- | :--- | :---: | :---: |
| $\mathrm{C}_{\text {PD }}$ | Power Dissipation Capacitance (Note 4) | $\mathbf{p F}$ |  |

3. Parameter guaranteed by design. $\mathrm{t}_{\mathrm{OSLH}}=\left|\mathrm{t}_{\mathrm{PLHm}}-\mathrm{t}_{\mathrm{PLHn}}\right|, \mathrm{t}_{\mathrm{OSHL}}=\left|\mathrm{t}_{\mathrm{PHLm}}-\mathrm{t}_{\mathrm{PHLn}}\right|$.
4. $C_{P D}$ is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load. Average operating current can be obtained by the equation: $\mathrm{I}_{\mathrm{CC}(\mathrm{OPR})}=\mathrm{C}_{\mathrm{PD}} \bullet \mathrm{V}_{\mathrm{CC}} \bullet \mathrm{f}_{\mathrm{in}}+\mathrm{I}_{\mathrm{CC}} / 4$ (per buffer). $\mathrm{C}_{P D}$ is used to determine the no-load dynamic power consumption; $\mathrm{P}_{\mathrm{D}}=\mathrm{C}_{\mathrm{PD}} \bullet \mathrm{V}_{\mathrm{CC}}{ }^{2} \bullet \mathrm{f}_{\text {in }}+\mathrm{I}_{\mathrm{CC}} \bullet \mathrm{V}_{\mathrm{CC}}$.

NOISE CHARACTERISTICS (Input $\mathrm{t}_{\mathrm{r}}=\mathrm{t}_{\mathrm{f}}=3.0 \mathrm{~ns}, \mathrm{C}_{\mathrm{L}}=50 \mathrm{pF}, \mathrm{V}_{\mathrm{CC}}=5.0 \mathrm{~V}$ )

|  |  | $\mathbf{T}_{\mathbf{A}}=\mathbf{2 5} \mathbf{C}$ |  |  |
| :---: | :--- | :---: | :---: | :---: |
| Symbol | Characteristic | $\mathbf{T y p}$ | Max | Unit |
| $\mathrm{V}_{\text {OLP }}$ | Quiet Output Maximum Dynamic $\mathrm{V}_{\mathrm{OL}}$ | 0.3 | 0.8 | V |
| $\mathrm{~V}_{\text {OLV }}$ | Quiet Output Minimum Dynamic $\mathrm{V}_{\mathrm{OL}}$ | -0.3 | -0.8 | V |
| $\mathrm{~V}_{\text {IHD }}$ | Minimum High Level Dynamic Input Voltage |  | 3.5 | V |
| $\mathrm{~V}_{\text {ILD }}$ | Maximum Low Level Dynamic Input Voltage |  | 1.5 | V |

## MC74VHC126

## SWITCHING WAVEFORMS



*Includes all probe and jig capacitance
Figure 4. Test Circuit

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


Figure 6. Input Equivalent Circuit

MC74VHC126

## MARKING DIAGRAMS

| 14 | 13 | 12 | 11 | 10 | $9 \longdiv { 8 }$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| VHC126 |  |  |  |  |  |  |
| AWLYWW* |  |  |  |  |  |  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

14-LEAD SOIC
D SUFFIX CASE 751A


14-LEAD TSSOP DT SUFFIX CASE 948G
*See Applications Note \#AND8004/D for date code and traceability information.


CASE 751A-03
ISSUE L
SCALE 1:1


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF AT MAXIMUM MATERIAL CONDITION.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSIONS.
5. MAXIMUM MOLD PROTRUSION 0.15 PER 5. MAXIM
SIDE.

|  | MILLIMETERS |  | INCHES |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIM | MIN | MAX | MIN | MAX |  |  |
| A | 1.35 | 1.75 | 0.054 | 0.068 |  |  |
| A1 | 0.10 | 0.25 | 0.004 | 0.010 |  |  |
| A3 | 0.19 | 0.25 | 0.008 | 0.010 |  |  |
| b | 0.35 | 0.49 | 0.014 | 0.019 |  |  |
| D | 8.55 | 8.75 | 0.337 | 0.344 |  |  |
| E | 3.80 | 4.00 | 0.150 | 0.157 |  |  |
| e | 1.27 |  | BSC | 0.050 |  | BSC |
| H | 5.80 | 6.20 | 0.228 | 0.244 |  |  |
| h | 0.25 | 0.50 | 0.010 | 0.019 |  |  |
| L | 0.40 | 1.25 | 0.016 | 0.049 |  |  |
| M | $0^{\circ}$ | $7^{\circ}$ | $0^{\circ}$ | $7^{\circ}$ |  |  |

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

DIMENSIONS: MILLIMETERS
*For additional information on our $\mathrm{Pb}-$ Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

## STYLES ON PAGE 2

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| ---: | :--- | :--- | :--- |
| DESCRIPTION: | SOIC-14 NB | PAGE 1 OF 2 |

[^0]STYLE 1:
PIN 1. COMMON CATHODE 2. ANODE/CATHODE ANODE/CATHODE
. ANODE/CATHODE
4. NO CONNECTION
5. ANODE/CATHODE
6. NO CONNECTION
7. ANODE/CATHODE
8. ANODE/CATHODE
9. ANODE/CATHODE
10. NO CONNECTION
11. ANODE/CATHODE
2. ANODE/CATHODE
3. NO CONNECTION
4. COMMON ANODE

STYLE $5:$
PIN 1. COMMON CATHODE
2. ANODE/CATHODE
3. ANODE/CATHOD
4. ANODE/CATHODE
4. ANODE/CATHODE
6. ANODE/CATHODE
7. NO CONNECTION
7. COMMON ANODE
8. COMMON CATHOD
9. ANODE/CATHODE
0. ANODE/CATHODE
11. ANODE/CATHODE
2. ANODE/CATHODE
13. NO CONNECTION
14. COMMON ANODE

STYLE 2:
CANCELLED

STYLE 3:
PIN 1. NO CONNECTION 2. ANODE 3. ANODE
4. NO CONNECTION 5. ANODE
6. NO CONNECTION
7. ANODE
8. ANODE
9. ANODE
10. NO CONNECTION
11. ANODE
12. ANODE
13. NO CONNECTION
14. COMMON CATHODE

STYLE 6:
PIN 1. CATHODE
2. CATHODE
3. CATHODE
4. CATHODE
4. CATHODE
5. CATHODE
6. CATHODE
7. CATHOD

ANODE
9. ANODE
10. ANODE
11. ANODE
12. ANODE
13. ANODE
14. ANODE

STYLE 7:
PIN 1. ANODE/CATHODE
. COMMON ANODE
. COMMON CATHODE
4. ANODE/CATHODE
5. ANODE/CATHODE
6. ANODE/CATHODE
7. ANODE/CATHODE
7. ANODE/CATHODE
8. ANODE/CATHODE
10. ANODE/CATHODE
11. COMMON CATHODE
12. COMMON ANODE
13. ANODE/CATHODE
14. ANODE/CATHODE

STYLE 4:
PIN 1. NO CONNECTION 2. CATHODE 3. CATHODE
4. NO CONNECTION 5. CATHODE
6. NO CONNECTION
7. CATHODE
8. CATHODE
9. CATHODE
10. NO CONNECTION
11. CATHODE
12. CATHODE
13. NO CONNECTION
14. COMMON ANODE

STYLE 8:
PIN 1. COMMON CATHODE
2. ANODE/CATHODE
3. ANODE/CATHODE
4. NO CONNECTION
4. NO CONNECTION
5. ANODE/CATHODE
6. ANODE/CATHODE
7. COMMON ANODE
8. COMMON ANODE
9. ANODE/CATHODE
10. ANODE/CATHODE
11. NO CONNECTION
11. NO CONNECTION
12. ANODE/CATHODE
13. ANODE/CATHODE
14. COMMON CATHODE

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| ---: | :--- | :--- | :--- |
| DESCRIPTION: | SOIC-14 NB | PAGE 2 OF 2 |

[^1] rights of others.


DIMENSIONS：MILLIMETERS

## NOTES：

．DIMENSIONING AND TOLERANCING PER ANSI Y14．5M， 1982
2．CONTROLLING DIMENSION：MILLIMETER．
3．DIMENSION A DOES NOT INCLUDE MOLD FLASH，PROTRUSIONS OR GATE BURRS． FLASH，PROTRUSIONS OR GATE BURRS． MOLD FLASH OR GATE BURRS
4．DIMENSION BDOES 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 | 4.90 | 5.10 | 0.193 | 0.200 |
| 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 | 0.50 | 0.60 | 0.020 | 0.024 |
| 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 | $0^{\circ}$ | $8^{\circ}$ | $0^{\circ}$ | $8^{\circ}$ |

GENERIC MARKING DIAGRAM＊

| 14 月HBHE日为 |
| :---: |
| XXXX |
| XXXX |
| ALYW• |
| $\bigcirc$－ |
| 渣昰 |


| 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． $\mathrm{Pb}-F r e e ~ i n d i c a t o r, ~ " ~ G " ~ o r ~ m i c r o d o t ~ " ~ " ", ~$ may or may not be present．

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| ---: | :--- | :--- | :--- |
| DESCRIPTION： | TSSOP－14 WB | PAGE 1 OF 1 |

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