

# MC74VHC1G00, MC74VHC1GT00

## Single 2-Input NAND Gate

The MC74VHC1G00 / MC74VHC1GT00 is a 2-input NAND gate in tiny footprint packages. The MC74VHC1G00 has CMOS-level input thresholds while the MC74VHC1GT00 has TTL-level input thresholds.

The input structures provide protection when voltages up to 5.5 V are applied, regardless of the supply voltage. This allows the device to be used to interface 5 V circuits to 3 V circuits. The output structures also provide protection when  $V_{CC} = 0$  V and when the output voltage exceeds  $V_{CC}$ . These input and output structures help prevent device destruction caused by supply voltage – input/output voltage mismatch, battery backup, hot insertion, etc.

### Features

- Designed for 2.0 V to 5.5 V  $V_{CC}$  Operation
- 3.5 ns  $t_{PD}$  at 5 V (typ)
- Inputs/Outputs Over-Voltage Tolerant up to 5.5 V
- $I_{OFF}$  Supports Partial Power Down Protection
- Source/Sink 8 mA at 3.0 V
- Available in SC-88A, SC-74A, TSOP-5, SOT-553, SOT-953 and UDFN6 Packages
- Chip Complexity < 100 FETs
- NLV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

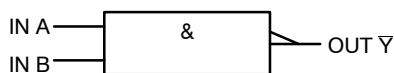


Figure 1. Logic Symbol



**ON Semiconductor®**

[www.onsemi.com](http://www.onsemi.com)

| MARKING DIAGRAMS |                                           |  |
|------------------|-------------------------------------------|--|
|                  | <b>SC-88A</b><br>DF SUFFIX<br>CASE 419A   |  |
|                  | <b>SC-74A</b><br>DBV SUFFIX<br>CASE 318BQ |  |
|                  | <b>TSOP-5</b><br>DT SUFFIX<br>CASE 483    |  |
|                  | <b>SOT-553</b><br>XV5 SUFFIX<br>CASE 463B |  |
|                  | <b>SOT-953</b><br>P5 SUFFIX<br>CASE 527AE |  |
|                  | <b>UDFN6</b><br>1.45 x 1.0<br>CASE 517AQ  |  |
|                  | <b>UDFN6</b><br>1.0 x 1.0<br>CASE 517BX   |  |

XX = Specific Device Code  
M = Date Code\*  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation and/or position may vary depending upon manufacturing location.

### ORDERING INFORMATION

See detailed ordering, marking and shipping information in the package dimensions section on page 7 of this data sheet.

MC74VHC1G00, MC74VHC1GT00

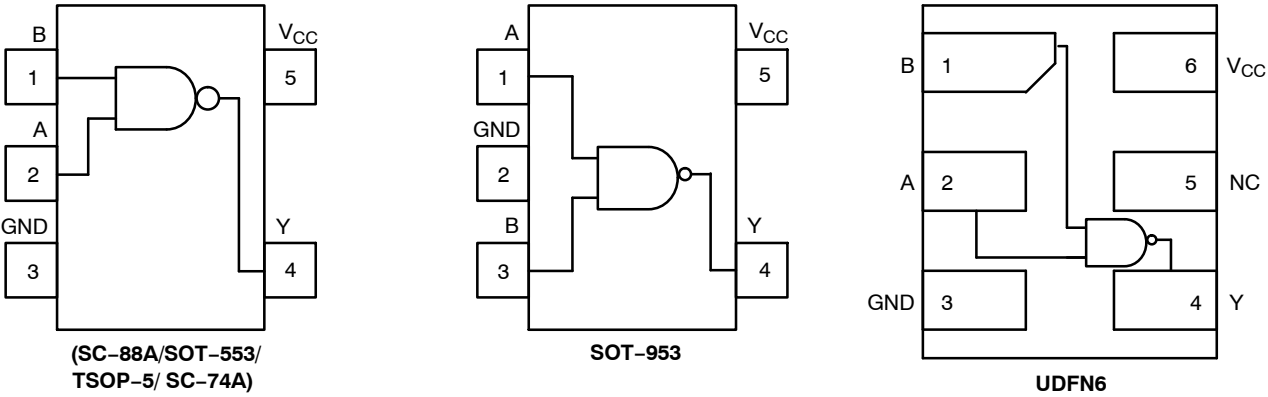


Figure 2. Pinout (Top View)

PIN ASSIGNMENT  
(SC-88A/SOT-553/ TSOP-5/SC-74A)

| Pin | Function        |
|-----|-----------------|
| 1   | B               |
| 2   | A               |
| 3   | GND             |
| 4   | Y               |
| 5   | V <sub>CC</sub> |

PIN ASSIGNMENT (SOT-953)

| Pin | Function        |
|-----|-----------------|
| 1   | A               |
| 2   | GND             |
| 3   | B               |
| 4   | Y               |
| 5   | V <sub>CC</sub> |

PIN ASSIGNMENT (UDFN)

| Pin | Function        |
|-----|-----------------|
| 1   | B               |
| 2   | A               |
| 3   | GND             |
| 4   | Y               |
| 5   | NC              |
| 6   | V <sub>CC</sub> |

FUNCTION TABLE

| Input |   | Output |
|-------|---|--------|
| A     | B | Y      |
| L     | L | H      |
| L     | H | H      |
| H     | L | H      |
| H     | H | L      |

# MC74VHC1G00, MC74VHC1GT00

## MAXIMUM RATINGS

| Symbol                | Characteristics                                                                                                                                                 | Value                                                  | Unit |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|------|
| $V_{CC}$              | DC Supply Voltage<br>TSOP-5, SC-88A (NLV)<br>SC-74A, SC-88A, UDFN6, SOT-553, SOT-953                                                                            | -0.5 to +7.0<br>-0.5 to +6.5                           | V    |
| $V_{IN}$              | DC Input Voltage<br>TSOP-5, SC-88A (NLV)<br>SC-74A, SC-88A, UDFN6, SOT-553, SOT-953                                                                             | -0.5 to +7.0<br>-0.5 to +6.5                           | V    |
| $V_{OUT}$             | DC Output Voltage<br>TSOP-5, SC-88A (NLV)<br>Active-Mode (High or Low State)<br>Tri-State Mode (Note 1)<br>Power-Down Mode ( $V_{CC} = 0$ V)                    | -0.5 to $V_{CC} + 0.5$<br>-0.5 to +7.0<br>-0.5 to +7.0 | V    |
|                       | DC Output Voltage<br>SC-74A, SC-88A, UDFN6, SOT-553, SOT-953<br>Active-Mode (High or Low State)<br>Tri-State Mode (Note 1)<br>Power-Down Mode ( $V_{CC} = 0$ V) | -0.5 to $V_{CC} + 0.5$<br>-0.5 to +6.5<br>-0.5 to +6.5 | V    |
| $I_{IK}$              | DC Input Diode Current<br>$V_{IN} < GND$                                                                                                                        | -20                                                    | mA   |
| $I_{OK}$              | DC Output Diode Current<br>$V_{OUT} < GND$                                                                                                                      | $\pm 20$                                               | mA   |
| $I_{OUT}$             | DC Output Source/Sink Current                                                                                                                                   | $\pm 12.5$                                             | mA   |
| $I_{CC}$ or $I_{GND}$ | DC Supply Current per Supply Pin or Ground Pin                                                                                                                  | $\pm 25$                                               | mA   |
| $T_{STG}$             | Storage Temperature Range                                                                                                                                       | -65 to +150                                            | °C   |
| $T_L$                 | Lead Temperature, 1 mm from Case for 10 secs                                                                                                                    | 260                                                    | °C   |
| $T_J$                 | Junction Temperature Under Bias                                                                                                                                 | +150                                                   | °C   |
| $\theta_{JA}$         | Thermal Resistance (Note 2)<br>SC-88A<br>SC-74A<br>TSOP-5<br>SOT-553<br>SOT-953<br>UDFN6                                                                        | 659<br>555<br>555<br>562<br>560<br>382                 | °C/W |
| $P_D$                 | Power Dissipation in Still Air<br>SC-88A<br>SC-74A<br>TSOP-5<br>SOT-553<br>SOT-953<br>UDFN6                                                                     | 190<br>225<br>225<br>222<br>223<br>327                 | mW   |
| MSL                   | Moisture Sensitivity                                                                                                                                            | Level 1                                                | -    |
| $F_R$                 | Flammability Rating<br>Oxygen Index: 28 to 34                                                                                                                   | UL 94 V-0 @ 0.125 in                                   | -    |
| $V_{ESD}$             | ESD Withstand Voltage (Note 3)<br>Human Body Model<br>Charged Device Model                                                                                      | 2000<br>1000                                           | V    |
| $I_{Latchup}$         | Latchup Performance (Note 4)                                                                                                                                    | $\pm 100$                                              | mA   |

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. Applicable to devices with outputs that may be tri-stated.
2. Measured with minimum pad spacing on an FR4 board, using 10mm-by-1inch, 2 ounce copper trace no air flow.
3. HBM tested to ANSI/ESDA/JEDEC JS-001-2017. CDM tested to EIA/JESD22-C101-F. JEDEC recommends that ESD qualification to EIA/JESD22-A115-A (Machine Model) be discontinued per JEDEC/JEP172A.
4. Tested to EIA/JESD78 Class II.

# MC74VHC1G00, MC74VHC1GT00

## RECOMMENDED OPERATING CONDITIONS

| Symbol                           | Characteristics                                                  | Min | Max             | Unit |
|----------------------------------|------------------------------------------------------------------|-----|-----------------|------|
| V <sub>CC</sub>                  | Positive DC Supply Voltage                                       | 2.0 | 5.5             | V    |
| V <sub>IN</sub>                  | DC Input Voltage                                                 | 0   | 5.5             | V    |
| V <sub>OUT</sub>                 | DC Output Voltage TSOP-5, SC-88A (NLV)                           | 0   | V <sub>CC</sub> | V    |
|                                  | DC Output Voltage SC-74A, SC-88A, UDFN6, SOT-553, SOT-953        |     |                 |      |
|                                  | Active-Mode (High or Low State)                                  | 0   | V <sub>CC</sub> |      |
|                                  | Tri-State Mode (Note 1)                                          | 0   | 5.5             |      |
|                                  | Power-Down Mode (V <sub>CC</sub> = 0 V)                          | 0   | 5.5             |      |
| T <sub>A</sub>                   | Operating Temperature Range                                      | -55 | +125            | °C   |
| t <sub>r</sub> , t <sub>f</sub>  | Input Rise and Fall Time TSOP-5, SC-88A (NLV)                    |     |                 | ns/V |
|                                  | V <sub>CC</sub> = 3.0 V to 3.6 V                                 | 0   | 100             |      |
|                                  | V <sub>CC</sub> = 4.5 V to 5.5 V                                 | 0   | 20              |      |
|                                  | Input Rise and Fall Time SC-74A, SC-88A, UDFN6, SOT-553, SOT-953 |     |                 |      |
|                                  | V <sub>CC</sub> = 1.65 V to 1.95 V                               | 0   | 20              |      |
|                                  | V <sub>CC</sub> = 2.3 V to 2.7 V                                 | 0   | 20              |      |
|                                  | V <sub>CC</sub> = 3.0 V to 3.6 V                                 | 0   | 10              |      |
| V <sub>CC</sub> = 4.5 V to 5.5 V | 0                                                                | 5   |                 |      |

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 (MC74VHC1G00)

| Symbol           | Parameter                 | Test Conditions                                      | V <sub>CC</sub><br>(V) | T <sub>A</sub> = 25°C |     |       | -40°C ≤ T <sub>A</sub> ≤ 85°C |      | -55°C ≤ T <sub>A</sub> ≤ 125°C |      | Unit |
|------------------|---------------------------|------------------------------------------------------|------------------------|-----------------------|-----|-------|-------------------------------|------|--------------------------------|------|------|
|                  |                           |                                                      |                        | Min                   | Typ | Max   | Min                           | Max  | Min                            | Max  |      |
| V <sub>IH</sub>  | High-Level Input Voltage  |                                                      | 2.0                    | 1.5                   | –   | –     | 1.5                           | –    | 1.5                            | –    | V    |
|                  |                           |                                                      | 3.0                    | 2.1                   | –   | –     | 2.1                           | –    | 2.1                            | –    |      |
|                  |                           |                                                      | 4.5                    | 3.15                  | –   | –     | 3.15                          | –    | 3.15                           | –    |      |
|                  |                           |                                                      | 5.5                    | 3.85                  | –   | –     | 3.85                          | –    | 3.85                           | –    |      |
| V <sub>IL</sub>  | Low-Level Input Voltage   |                                                      | 2.0                    | –                     | –   | 0.5   | –                             | 0.5  | –                              | 0.5  | V    |
|                  |                           |                                                      | 3.0                    | –                     | –   | 0.9   | –                             | 0.9  | –                              | 0.9  |      |
|                  |                           |                                                      | 4.5                    | –                     | –   | 1.35  | –                             | 1.35 | –                              | 1.35 |      |
|                  |                           |                                                      | 5.5                    | –                     | –   | 1.65  | –                             | 1.65 | –                              | 1.65 |      |
| V <sub>OH</sub>  | High-Level Output Voltage | V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub> | 2.0                    | 1.9                   | 2.0 | –     | 1.9                           | –    | 1.9                            | –    | V    |
|                  |                           | I <sub>OH</sub> = -50 μA                             | 3.0                    | 2.9                   | 3.0 | –     | 2.9                           | –    | 2.9                            | –    |      |
|                  |                           | I <sub>OH</sub> = -50 μA                             | 4.5                    | 4.4                   | 4.5 | –     | 4.4                           | –    | 4.4                            | –    |      |
|                  |                           | I <sub>OH</sub> = -4 mA                              | 3.0                    | 2.58                  | –   | –     | 2.48                          | –    | 2.34                           | –    |      |
|                  |                           | I <sub>OH</sub> = -8 mA                              | 4.5                    | 3.94                  | –   | –     | 3.80                          | –    | 3.66                           | –    |      |
|                  |                           |                                                      |                        |                       |     |       |                               |      |                                |      |      |
| V <sub>OL</sub>  | Low-Level Output Voltage  | V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub> | 2.0                    | –                     | 0.0 | 0.1   | –                             | 0.1  | –                              | 0.1  | V    |
|                  |                           | I <sub>OL</sub> = 50 μA                              | 3.0                    | –                     | 0.0 | 0.1   | –                             | 0.1  | –                              | 0.1  |      |
|                  |                           | I <sub>OL</sub> = 50 μA                              | 4.5                    | –                     | 0.0 | 0.1   | –                             | 0.1  | –                              | 0.1  |      |
|                  |                           | I <sub>OL</sub> = 4 mA                               | 3.0                    | –                     | –   | 0.36  | –                             | 0.44 | –                              | 0.52 |      |
|                  |                           | I <sub>OL</sub> = 8 mA                               | 4.5                    | –                     | –   | 0.36  | –                             | 0.44 | –                              | 0.52 |      |
|                  |                           |                                                      |                        |                       |     |       |                               |      |                                |      |      |
| I <sub>IN</sub>  | Input Leakage Current     | V <sub>IN</sub> = 5.5 V or GND                       | 1.65 to 5.5            | –                     | –   | ±0.1* | –                             | ±1.0 | –                              | ±1.0 | μA   |
| I <sub>OFF</sub> | Power Off Leakage Current | V <sub>IN</sub> = 5.5 V or V <sub>OUT</sub> = 5.5 V  | 0                      | –                     | –   | 1.0   | –                             | 10   | –                              | 10   | μA   |
| I <sub>CC</sub>  | Quiescent Supply Current  | V <sub>IN</sub> = V <sub>CC</sub> or GND             | 5.5                    | –                     | –   | 1.0   | –                             | 20   | –                              | 40   | μA   |

\*Guaranteed by design.

# MC74VHC1G00, MC74VHC1GT00

## DC ELECTRICAL CHARACTERISTICS (MC74VHC1GT00)

| Symbol           | Parameter                                          | Test Conditions                                                           | V <sub>CC</sub> (V) | T <sub>A</sub> = 25°C |     |      | -40°C ≤ T <sub>A</sub> ≤ 85°C |      | -55°C ≤ T <sub>A</sub> ≤ 125°C |      | Unit |
|------------------|----------------------------------------------------|---------------------------------------------------------------------------|---------------------|-----------------------|-----|------|-------------------------------|------|--------------------------------|------|------|
|                  |                                                    |                                                                           |                     | Min                   | Typ | Max  | Min                           | Max  | Min                            | Max  |      |
| V <sub>IH</sub>  | High-Level Input Voltage                           |                                                                           | 2.0                 | 1.0                   | –   | –    | 1.0                           | –    | 1.0                            | –    | V    |
|                  |                                                    |                                                                           | 3.0                 | 1.4                   | –   | –    | 1.4                           | –    | 1.4                            | –    |      |
|                  |                                                    |                                                                           | 4.5                 | 2.0                   | –   | –    | 2.0                           | –    | 2.0                            | –    |      |
|                  |                                                    |                                                                           | 5.5                 | 2.0                   | –   | –    | 2.0                           | –    | 2.0                            | –    |      |
| V <sub>IL</sub>  | Low-Level Input Voltage                            |                                                                           | 2.0                 | –                     | –   | 0.28 | –                             | 0.28 | –                              | 0.28 | V    |
|                  |                                                    |                                                                           | 3.0                 | –                     | –   | 0.45 | –                             | 0.45 | –                              | 0.45 |      |
|                  |                                                    |                                                                           | 4.5                 | –                     | –   | 0.8  | –                             | 0.8  | –                              | 0.8  |      |
|                  |                                                    |                                                                           | 5.5                 | –                     | –   | 0.8  | –                             | 0.8  | –                              | 0.8  |      |
| V <sub>OH</sub>  | High-Level Output Voltage                          | V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub>                      | 2.0                 | 1.9                   | 2.0 | –    | 1.9                           | –    | 1.9                            | –    | V    |
|                  |                                                    | I <sub>OH</sub> = –50 μA                                                  | 3.0                 | 2.9                   | 3.0 | –    | 2.9                           | –    | 2.9                            | –    |      |
|                  |                                                    | I <sub>OH</sub> = –50 μA                                                  | 4.5                 | 4.4                   | 4.5 | –    | 4.4                           | –    | 4.4                            | –    |      |
|                  |                                                    | I <sub>OH</sub> = –4 mA                                                   | 3.0                 | 2.58                  | –   | –    | 2.48                          | –    | 2.34                           | –    |      |
|                  |                                                    | I <sub>OH</sub> = –8 mA                                                   | 4.5                 | 3.94                  | –   | –    | 3.80                          | –    | 3.66                           | –    |      |
|                  |                                                    |                                                                           |                     |                       |     |      |                               |      |                                |      |      |
| V <sub>OL</sub>  | Low-Level Output Voltage                           | V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub>                      | 2.0                 | –                     | 0.0 | 0.1  | –                             | 0.1  | –                              | 0.1  | V    |
|                  |                                                    | I <sub>OL</sub> = 50 μA                                                   | 3.0                 | –                     | 0.0 | 0.1  | –                             | 0.1  | –                              | 0.1  |      |
|                  |                                                    | I <sub>OL</sub> = 50 μA                                                   | 4.5                 | –                     | 0.0 | 0.1  | –                             | 0.1  | –                              | 0.1  |      |
|                  |                                                    | I <sub>OL</sub> = 4 mA                                                    | 3.0                 | –                     | –   | 0.36 | –                             | 0.44 | –                              | 0.52 |      |
|                  |                                                    | I <sub>OL</sub> = 8 mA                                                    | 4.5                 | –                     | –   | 0.36 | –                             | 0.44 | –                              | 0.52 |      |
|                  |                                                    |                                                                           |                     |                       |     |      |                               |      |                                |      |      |
| I <sub>IN</sub>  | Input Leakage Current                              | V <sub>IN</sub> = 5.5 V or GND                                            | 1.65 to 5.5         | –                     | –   | ±0.1 | –                             | ±1.0 | –                              | ±1.0 | μA   |
| I <sub>OFF</sub> | Power Off Leakage Current                          | V <sub>IN</sub> = 5.5 V or V <sub>OUT</sub> = 5.5 V                       | 0                   | –                     | –   | 1.0  | –                             | 10   | –                              | 10   | μA   |
| I <sub>CC</sub>  | Quiescent Supply Current                           | V <sub>IN</sub> = V <sub>CC</sub> or GND                                  | 5.5                 | –                     | –   | 1.0  | –                             | 20   | –                              | 40   | μA   |
| I <sub>CCT</sub> | Increase in Quiescent Supply Current per Input Pin | One Input: V <sub>IN</sub> = 3.4 V; Other Input at V <sub>CC</sub> or GND | 5.5                 | –                     | –   | 1.35 | –                             | 1.5  | –                              | 1.65 | mA   |

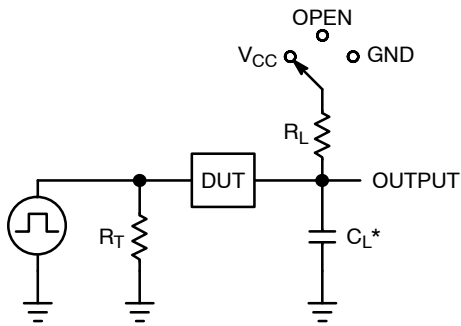
## AC ELECTRICAL CHARACTERISTICS (Input t<sub>r</sub> = t<sub>f</sub> = 3.0 ns)

| Symbol                              | Parameter                                   | Conditions                     | V <sub>CC</sub> (V) | T <sub>A</sub> = 25°C |     |      | -40°C ≤ T <sub>A</sub> ≤ 85°C |      | -55°C ≤ T <sub>A</sub> ≤ 125°C |      | Unit |
|-------------------------------------|---------------------------------------------|--------------------------------|---------------------|-----------------------|-----|------|-------------------------------|------|--------------------------------|------|------|
|                                     |                                             |                                |                     | Min                   | Typ | Max  | Min                           | Max  | Min                            | Max  |      |
| t <sub>PLH</sub> , t <sub>PHL</sub> | Propagation Delay, A to Y (Figures 3 and 4) | C <sub>L</sub> = 15 pF         | 3.0 to 3.6          | –                     | 4.5 | 7.9  | –                             | 9.5  | –                              | 11.0 | ns   |
|                                     |                                             | C <sub>L</sub> = 50 pF         |                     | –                     | 5.6 | 11.4 | –                             | 13.0 | –                              | 15.5 |      |
|                                     |                                             | C <sub>L</sub> = 15 pF         | 4.5 to 5.5          | –                     | 3.0 | 5.5  | –                             | 6.5  | –                              | 8.0  |      |
|                                     |                                             | C <sub>L</sub> = 50 pF         |                     | –                     | 3.8 | 7.5  | –                             | 8.5  | –                              | 10.0 |      |
| C <sub>IN</sub>                     | Input Capacitance                           |                                |                     | –                     | 4.0 | 10   | –                             | 10   | –                              | 10   | pF   |
| C <sub>OUT</sub>                    | Output Capacitance                          | Output in High Impedance State |                     | –                     | 6.0 | –    | –                             | –    | –                              | –    | pF   |

|                 |                                        |                                         |    |
|-----------------|----------------------------------------|-----------------------------------------|----|
| C <sub>PD</sub> | Power Dissipation Capacitance (Note 5) | Typical @ 25°C, V <sub>CC</sub> = 5.0 V | pF |
|                 |                                        | 8.0                                     |    |

5. C<sub>PD</sub> 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: I<sub>CC(OPR)</sub> = C<sub>PD</sub> • V<sub>CC</sub> • f<sub>in</sub> + I<sub>CC</sub>. C<sub>PD</sub> is used to determine the no-load dynamic power consumption; P<sub>D</sub> = C<sub>PD</sub> • V<sub>CC</sub><sup>2</sup> • f<sub>in</sub> + I<sub>CC</sub> • V<sub>CC</sub>.

# MC74VHC1G00, MC74VHC1GT00

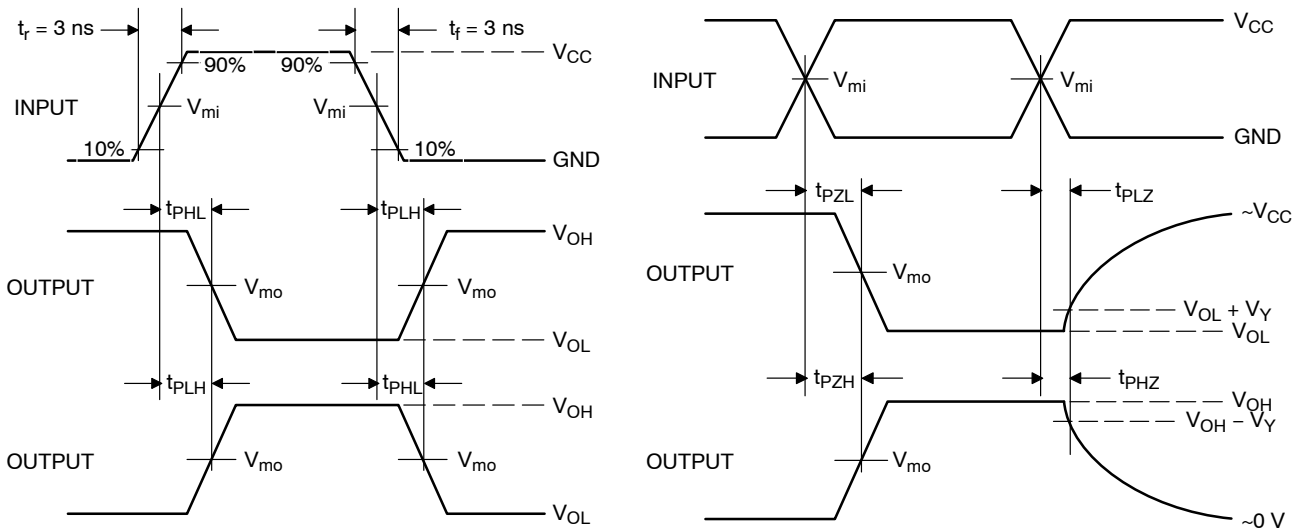


$C_L$  includes probe and jig capacitance  
 $R_T$  is  $Z_{OUT}$  of pulse generator (typically 50  $\Omega$ )  
 $f = 1$  MHz

### Figure 3. Test Circuit

| Test                                | Switch Position | C <sub>L</sub> , pF          | R <sub>L</sub> , Ω |
|-------------------------------------|-----------------|------------------------------|--------------------|
| t <sub>PLH</sub> / t <sub>PHL</sub> | Open            | See AC Characteristics Table | X                  |
| t <sub>PLZ</sub> / t <sub>PZL</sub> | V <sub>CC</sub> |                              | 1 k                |
| t <sub>PHZ</sub> / t <sub>PZH</sub> | GND             |                              | 1 k                |

X = Don't Care



### Figure 4. Switching Waveforms

| V <sub>CC</sub> , V | V <sub>mi</sub> , V | V <sub>mo</sub> , V                    |                                                                           | V <sub>Y</sub> , V |
|---------------------|---------------------|----------------------------------------|---------------------------------------------------------------------------|--------------------|
|                     |                     | t <sub>PLH</sub> , t <sub>PHL</sub>    | t <sub>PZL</sub> , t <sub>PLZ</sub> , t <sub>PZH</sub> , t <sub>PHZ</sub> |                    |
| 3.0 to 3.6          | V <sub>CC</sub> /2  | (V <sub>OH</sub> - V <sub>OL</sub> )/2 | V <sub>CC</sub> /2                                                        | 0.3                |
| 4.5 to 5.5          | V <sub>CC</sub> /2  | (V <sub>OH</sub> - V <sub>OL</sub> )/2 | V <sub>CC</sub> /2                                                        | 0.3                |

# MC74VHC1G00, MC74VHC1GT00

## ORDERING INFORMATION

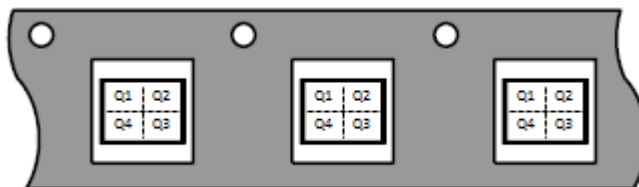
| Device                                 | Packages                | Specific Device Code | Pin 1 Orientation<br>(See below) | Shipping <sup>†</sup> |
|----------------------------------------|-------------------------|----------------------|----------------------------------|-----------------------|
| MC74VHC1G00DFT1G                       | SC-88A                  | V1                   | Q2                               | 3000 / Tape & Reel    |
| MC74VHC1G00DFT2G                       | SC-88A                  | V1                   | Q4                               | 3000 / Tape & Reel    |
| NLVVHC1G00DFT1G*                       | SC-88A                  | V1                   | Q2                               | 3000 / Tape & Reel    |
| NLVVHC1G00DFT2G*                       | SC-88A                  | V1                   | Q4                               | 3000 / Tape & Reel    |
| M74VHC1GT00DFT1G                       | SC-88A                  | VH                   | Q2                               | 3000 / Tape & Reel    |
| M74VHC1GT00DFT2G                       | SC-88A                  | VH                   | Q4                               | 3000 / Tape & Reel    |
| NLVVHC1GT00DFT2G*                      | SC-88A                  | VH                   | Q4                               | 3000 / Tape & Reel    |
| MC74VHC1G00DBVT1G<br>(In Development)  | SC-74A                  | TBD                  | Q4                               | 3000 / Tape & Reel    |
| MC74VHC1GT00DBVT1G<br>(In Development) | SC-74A                  | TBD                  | Q4                               | 3000 / Tape & Reel    |
| MC74VHC1G00DTT1G                       | TSOP-5                  | M1                   | Q4                               | 3000 / Tape & Reel    |
| NLVVHC1G00DTT1G*                       | TSOP-5                  | V1R                  | Q4                               | 3000 / Tape & Reel    |
| M74VHC1GT00DTT1G                       | TSOP-5                  | VH                   | Q4                               | 3000 / Tape & Reel    |
| MC74VHC1G00XV5T2G<br>(In Development)  | SOT-553                 | TBD                  | Q4                               | 3000 / Tape & Reel    |
| MC74VHC1GT00XV5T2G<br>(In Development) | SOT-553                 | TBD                  | Q4                               | 3000 / Tape & Reel    |
| MC74VHC1G00P5T5G<br>(In Development)   | SOT-953                 | TBD                  | Q2                               | 4000 / Tape & Reel    |
| MC74VHC1GT00P5T5G<br>(In Development)  | SOT-953                 | TBD                  | Q2                               | 4000 / Tape & Reel    |
| MC74VHC1G00MU1TCG<br>(In Development)  | UDFN6, 1.45 x 1.0, 0.5P | T                    | Q4                               | 3000 / Tape & Reel    |
| MC74VHC1GT00MU1TCG<br>(In Development) | UDFN6, 1.45 x 1.0, 0.5P | TBD                  | Q4                               | 3000 / Tape & Reel    |
| MC74VHC1G00MU3TCG<br>(In Development)  | UDFN6, 1.0 x 1.0, 0.35  | TBD                  | Q4                               | 3000 / Tape & Reel    |
| MC74VHC1GT00MU3TCG<br>(In Development) | UDFN6, 1.0 x 1.0, 0.35  | TBD                  | Q4                               | 3000 / Tape & Reel    |

<sup>†</sup>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.

## Pin 1 Orientation in Tape and Reel

Direction of Feed



# MC74VHC1G00, MC74VHC1GT00

## PACKAGE DIMENSIONS

SC-88A (SC-70-5/SOT-353)

CASE 419A-02

ISSUE L

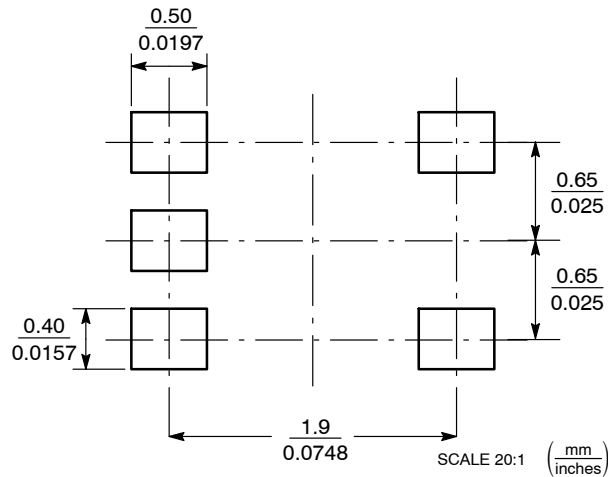


### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 419A-01 OBSOLETE. NEW STANDARD 419A-02.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| DIM | INCHES    |       | MILLIMETERS |      |
|-----|-----------|-------|-------------|------|
|     | MIN       | MAX   | MIN         | MAX  |
| A   | 0.071     | 0.087 | 1.80        | 2.20 |
| B   | 0.045     | 0.053 | 1.15        | 1.35 |
| C   | 0.031     | 0.043 | 0.80        | 1.10 |
| D   | 0.004     | 0.012 | 0.10        | 0.30 |
| G   | 0.026 BSC |       | 0.65 BSC    |      |
| H   | ---       | 0.004 | ---         | 0.10 |
| J   | 0.004     | 0.010 | 0.10        | 0.25 |
| K   | 0.004     | 0.012 | 0.10        | 0.30 |
| N   | 0.008 REF |       | 0.20 REF    |      |
| S   | 0.079     | 0.087 | 2.00        | 2.20 |

### SOLDER FOOTPRINT\*

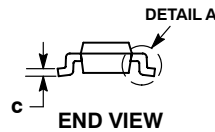
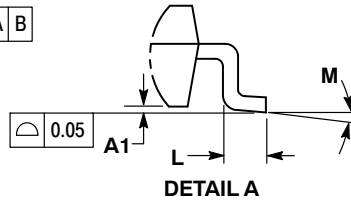


\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# MC74VHC1G00, MC74VHC1GT00

## PACKAGE DIMENSIONS

### SC-74A CASE 318BQ ISSUE B



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | 0.90        | 1.10 |
| A1  | 0.01        | 0.10 |
| b   | 0.25        | 0.50 |
| c   | 0.10        | 0.26 |
| D   | 2.85        | 3.15 |
| E   | 2.50        | 3.00 |
| E1  | 1.35        | 1.65 |
| e   | 0.95 BSC    |      |
| L   | 0.20        | 0.60 |
| M   | 0°          | 10°  |

### RECOMMENDED SOLDERING FOOTPRINT\*



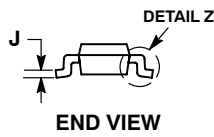
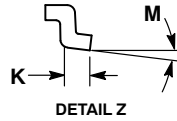
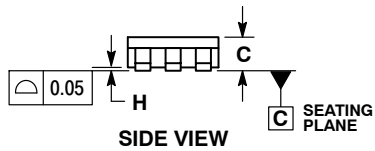
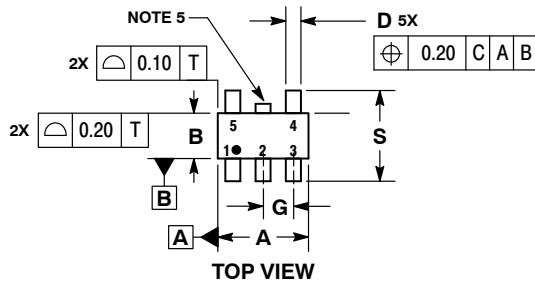
DIMENSIONS: MILLIMETERS

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

# MC74VHC1G00, MC74VHC1GT00

## PACKAGE DIMENSIONS

### TSOP-5 CASE 483-02 ISSUE M



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE. DIMENSION A.
5. OPTIONAL CONSTRUCTION: AN ADDITIONAL TRIMMED LEAD IS ALLOWED IN THIS LOCATION. TRIMMED LEAD NOT TO EXTEND MORE THAN 0.2 FROM BODY.

| MILLIMETERS |          |      |
|-------------|----------|------|
| DIM         | MIN      | MAX  |
| A           | 2.85     | 3.15 |
| B           | 1.35     | 1.65 |
| C           | 0.90     | 1.10 |
| D           | 0.25     | 0.50 |
| G           | 0.95 BSC |      |
| H           | 0.01     | 0.10 |
| J           | 0.10     | 0.26 |
| K           | 0.20     | 0.60 |
| M           | 0°       | 10°  |
| S           | 2.50     | 3.00 |

#### SOLDERING FOOTPRINT\*

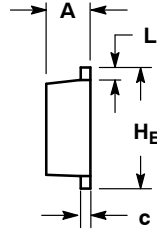


\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# MC74VHC1G00, MC74VHC1GT00

## PACKAGE DIMENSIONS

### SOT-553, 5 LEAD CASE 463B ISSUE C



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

| DIM | MILLIMETERS |      |      | INCHES    |       |       |
|-----|-------------|------|------|-----------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A   | 0.50        | 0.55 | 0.60 | 0.020     | 0.022 | 0.024 |
| b   | 0.17        | 0.22 | 0.27 | 0.007     | 0.009 | 0.011 |
| c   | 0.08        | 0.13 | 0.18 | 0.003     | 0.005 | 0.007 |
| D   | 1.55        | 1.60 | 1.65 | 0.061     | 0.063 | 0.065 |
| E   | 1.15        | 1.20 | 1.25 | 0.045     | 0.047 | 0.049 |
| e   | 0.50 BSC    |      |      | 0.020 BSC |       |       |
| L   | 0.10        | 0.20 | 0.30 | 0.004     | 0.008 | 0.012 |
| H_E | 1.55        | 1.60 | 1.65 | 0.061     | 0.063 | 0.065 |

### SOLDERING FOOTPRINT\*

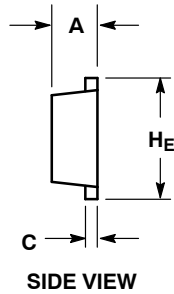
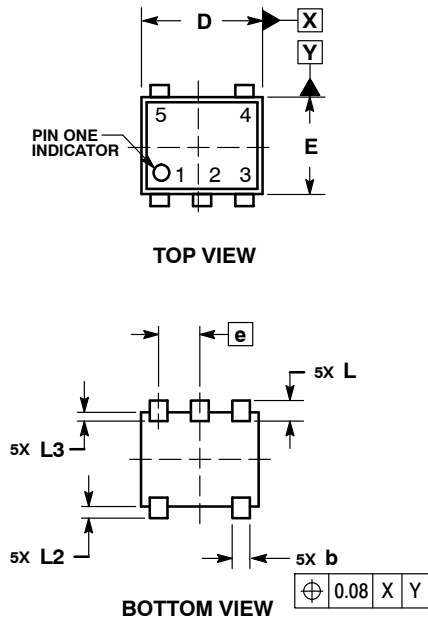


\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# MC74VHC1G00, MC74VHC1GT00

## PACKAGE DIMENSIONS

**SOT-953**  
CASE 527AE  
ISSUE E



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| MILLIMETERS    |           |      |      |
|----------------|-----------|------|------|
| DIM            | MIN       | NOM  | MAX  |
| A              | 0.34      | 0.37 | 0.40 |
| b              | 0.10      | 0.15 | 0.20 |
| C              | 0.07      | 0.12 | 0.17 |
| D              | 0.95      | 1.00 | 1.05 |
| E              | 0.75      | 0.80 | 0.85 |
| e              | 0.35 BSC  |      |      |
| H <sub>E</sub> | 0.95      | 1.00 | 1.05 |
| L              | 0.175 REF |      |      |
| L2             | 0.05      | 0.10 | 0.15 |
| L3             | ---       | ---  | 0.15 |

### SOLDERING FOOTPRINT\*



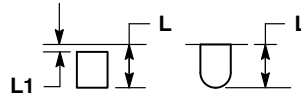
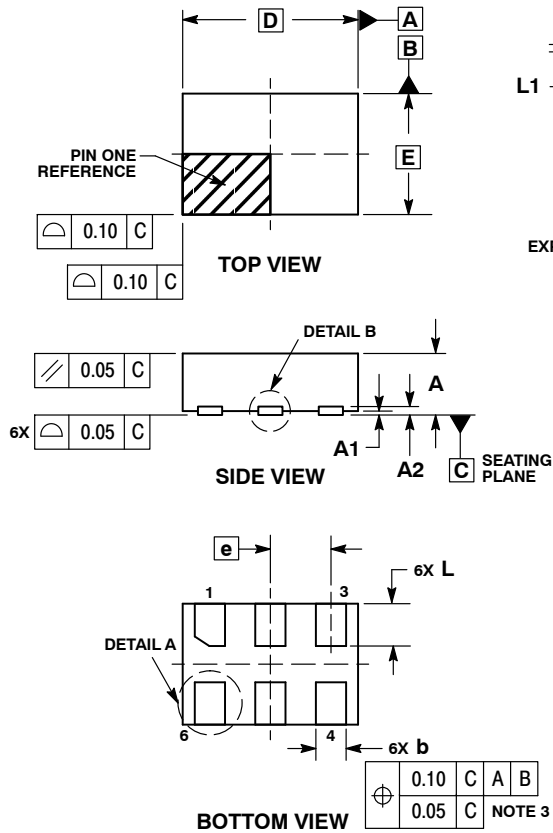
DIMENSIONS: MILLIMETERS

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

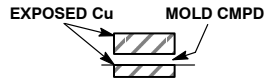
# MC74VHC1G00, MC74VHC1GT00

## PACKAGE DIMENSIONS

UDFN6, 1.45x1.0, 0.5P  
CASE 517AQ  
ISSUE O



**DETAIL A**  
OPTIONAL  
CONSTRUCTIONS



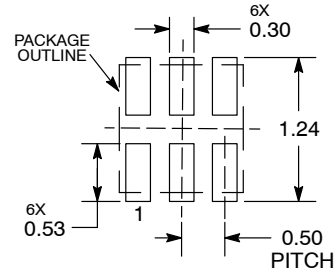
**DETAIL B**  
OPTIONAL  
CONSTRUCTIONS

### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 mm FROM THE TERMINAL TIP.

| MILLIMETERS |      |      |
|-------------|------|------|
| DIM         | MIN  | MAX  |
| A           | 0.45 | 0.55 |
| A1          | 0.00 | 0.05 |
| A2          | 0.07 | REF  |
| b           | 0.20 | 0.30 |
| D           | 1.45 | BSC  |
| E           | 1.00 | BSC  |
| e           | 0.50 | BSC  |
| L           | 0.30 | 0.40 |
| L1          | ---  | 0.15 |

### MOUNTING FOOTPRINT



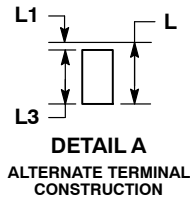
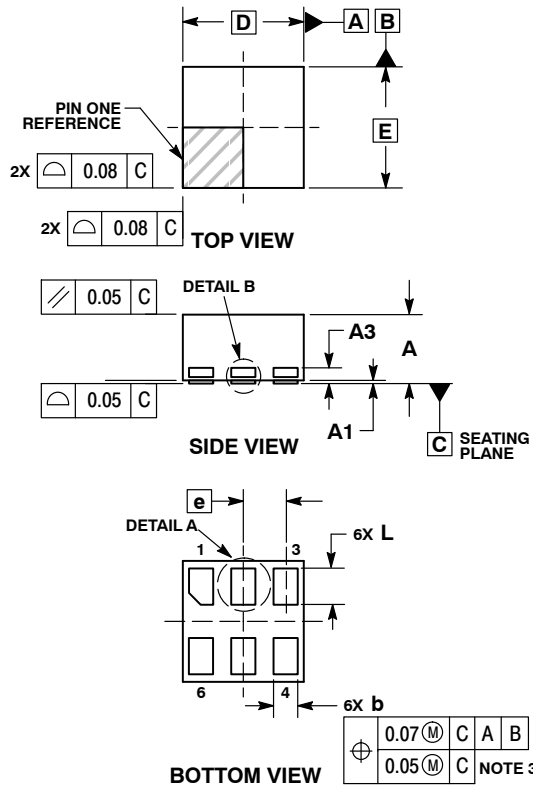
DIMENSIONS: MILLIMETERS

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

# MC74VHC1G00, MC74VHC1GT00

## PACKAGE DIMENSIONS

UDFN6, 1x1, 0.35P  
CASE 517BX  
ISSUE O



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: MILLIMETERS.
  3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.20 MM FROM TERMINAL TIP.
  4. PACKAGE DIMENSIONS EXCLUSIVE OF BURRS AND MOLD FLASH.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | 0.50        | 0.65 |
| A1  | 0.00        | 0.05 |
| A3  | 0.13 REF    |      |
| b   | 0.17        | 0.23 |
| D   | 1.00 BSC    |      |
| E   | 1.00 BSC    |      |
| e   | 0.35        |      |
| L   | 0.20        | 0.40 |
| L1  | ---         | 0.15 |
| L3  | 0.26        | 0.33 |

### RECOMMENDED SOLDERING FOOTPRINT\*



DIMENSION: MILLIMETERS

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

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). 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. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor 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 ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor 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 ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor 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:

Literature Distribution Center for ON Semiconductor  
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA  
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
Email: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

N. American Technical Support: 800-282-9855 Toll Free  
USA/Canada  
Europe, Middle East and Africa Technical Support:  
Phone: 421 33 790 2910

ON Semiconductor Website: [www.onsemi.com](http://www.onsemi.com)

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.