



3 Description





**SN74AHC367** 

SCLS424G - JUNE 1998 - REVISED JULY 2024

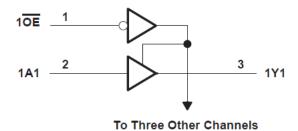
# SN74AHC367 Hex Buffers and Line Drivers With 3-State Outputs

## 1 Features

- Operating range 2V to 5.5V V<sub>CC</sub>
- Latch-up performance exceeds 100 mA per JESD 78, class II

## 2 Applications

- Enable or disable a digital signal
- Controlling an indicator LED
- Translation between communication modules and system controllers

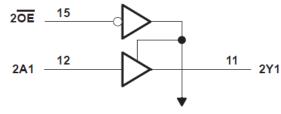


| •           |         |         |         |     |        |         |
|-------------|---------|---------|---------|-----|--------|---------|
|             |         |         |         |     |        |         |
| The 'AHC367 | devices | are hex | buffers | and | line ( | drivers |

designed for 2V to 5.5V V<sub>CC</sub> operation.

|             | Package information    |                 |                 |  |  |  |  |  |  |
|-------------|------------------------|-----------------|-----------------|--|--|--|--|--|--|
| PART NUMBER | PACKAGE <sup>(1)</sup> | PACKAGE SIZE(2) | BODY SIZE (3)   |  |  |  |  |  |  |
|             | D (SOIC, 16)           | 9.9mm × 6mm     | 9.9mm × 3.9mm   |  |  |  |  |  |  |
| SN74AHC367  | N (PDIP, 16)           | 19.3mm x 9.4mm  | 19.3mm x 6.35mm |  |  |  |  |  |  |
|             | PW (TSSOP, 16)         | 5.00mm x 6.4mm  | 5.00mm x 4.4mm  |  |  |  |  |  |  |

- For more information, see Mechanical, Packaging, and Orderable Information.
- (2) The package size (length × width) is a nominal value and includes pins, where applicable.
- (3) The body size (length × width) is a nominal value and does not include pins.



To One Other Channel

**Logic Diagram (Positive Logic)** 



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# **4 Pin Configurations and Functions**

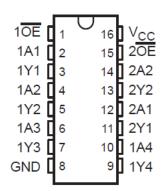


Figure 4-1. D, DB, DGV, N, or PW Package (Top View)

**Table 4-1. Pin Functions** 

|     | PIN             | TYPE | DESCRIPTION     |
|-----|-----------------|------|-----------------|
| NO. | NAME            | ITPE | DESCRIPTION     |
| 1   | 1 OE            | I    | Output Enable 1 |
| 2   | 1A1             | I    | 1A1 Input       |
| 3   | 1Y1             | 0    | 1Y1 Output      |
| 4   | 1A2             | I    | 1A2 Input       |
| 5   | 1Y2             | 0    | 1Y2 Output      |
| 6   | 1A3             | I    | 1A3 Input       |
| 7   | 1Y3             | 0    | 1Y3 Output      |
| 8   | GND             | _    | Ground Pin      |
| 9   | 1Y4             | 0    | 1Y4 Output      |
| 10  | 1A4             | I    | 1A4 Input       |
| 11  | 2Y1             | 0    | 2Y1 Output      |
| 12  | 2A1             | I    | 2A1 Input       |
| 13  | 2Y2             | 0    | 2Y2 Output      |
| 14  | 2A2             | I    | 2A2 Input       |
| 15  | 2 OE            | I    | Output Enable 2 |
| 16  | V <sub>CC</sub> | _    | Power Pin       |



## **5 Specifications**

## **5.1 Absolute Maximum Ratings**

over operating free-air temperature range (unless otherwise noted)(1)

|                    |   |                                | MIN  | MAX                   | UNIT |
|--------------------|---|--------------------------------|------|-----------------------|------|
| V <sub>CC</sub>    | Supply voltage range                              |                                | -0.5 | 7                     | V    |
| V <sub>I</sub> (2) | Input voltage range                               |                                | -0.5 | 7                     | V    |
| V <sub>O</sub> (2) | Output voltage range                              |                                | -0.5 | V <sub>CC</sub> + 0.5 | V    |
| I <sub>IK</sub>    | Input clamp current                               | (V <sub>I</sub> < 0)           |      | -20                   | mA   |
| I <sub>OK</sub>    | Output clamp current                              | (V <sub>O</sub> < 0)           |      | ±20                   | mA   |
| Io                 | Continuous output current                         | $(V_O = 0 \text{ to } V_{CC})$ |      | ±25                   | mA   |
|                    | Continuous current through V <sub>CC</sub> or GND |                                |      | ±75                   | mA   |
| T <sub>stg</sub>   | Storage temperature range                         |                                | -65  | 150                   | °C   |

<sup>(1)</sup> Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

# 5.2 ESD Ratings

|                    |                         |  | VALUE | UNIT |
|--------------------|-------------------------|--|-------|------|
| V                  | Electrostatic discharge | Human-Body Model (A114-A), per ANSI/ESDA/JEDEC JS-001 <sup>(1)</sup> | ±2000 | \ \/ |
| V <sub>(ESD)</sub> | Electrostatic discharge | Charged-Device Model (C101), per JESD22-C101 <sup>(2)</sup>          | ±1000 | ]    |

<sup>1)</sup> JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

## **5.3 Recommended Operating Conditions**

over operating free-air temperature range (unless otherwise noted)(1)

|                    |                                    |  | MIN  | MAX             | UNIT  |  |
|--------------------|------------------------------------|--|------|-----------------|-------|--|
| V <sub>CC</sub>    | Supply voltage                     |  | 2    | 5.5             | V     |  |
|                    |                                    | V <sub>CC</sub> = 2 V                      | 1.5  |                 |       |  |
| $V_{IH}$           | High-level input voltage           | V <sub>CC</sub> = 3 V                      | 2.1  |                 | V     |  |
|                    |                                    | V <sub>CC</sub> = 5.5 V                    | 3.85 |                 |       |  |
|                    |                                    | V <sub>CC</sub> = 2 V                      |      | 0.5             |       |  |
| $V_{IL}$           | Low-level input voltage            | V <sub>CC</sub> = 3 V                      |      | 0.9             | V     |  |
|                    |                                    | V <sub>CC</sub> = 5.5 V                    |      | 1.65            |       |  |
| VI                 | Input voltage                      | ·  | 0    | 5.5             | V     |  |
| Vo                 | Output voltage                     |  | 0    | V <sub>CC</sub> | V     |  |
|                    |                                    | V <sub>CC</sub> = 2 V                      |      | -50             | μA    |  |
| I <sub>OH</sub>    | High-level output current          | V <sub>CC</sub> = 3.3 V ± 0.3 V            |      | -4              | m Λ   |  |
|                    |                                    | V <sub>CC</sub> = 5 V ± 0.5 V              |      | -8              | mA    |  |
|                    |                                    | V <sub>CC</sub> = 2 V                      |      | 50              | μA    |  |
| I <sub>OL</sub>    | Low-level output current           | $V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$ |      | 4               | Л     |  |
|                    |                                    | $V_{CC} = 5 V \pm 0.5 V$                   |      | 8               | 8 mA  |  |
| Λ+/Λ·              | Input transition vice or fellt-    | V <sub>CC</sub> = 3.3 V ± 0.3 V            |      | 100             | no/\/ |  |
| Δt/Δv Input transi | Input transition rise or fall rate | V <sub>CC</sub> = 5 V ± 0.5 V              |      | 20              | ns/V  |  |
| T <sub>A</sub>     | Operating free-air temperature     |  | -40  | 85              | °C    |  |

<sup>(1)</sup> All unused inputs of the device must be held at V<sub>CC</sub> or GND to ensure proper device operation. Refer to the TI application report, Implications of Slow or Floating CMOS Inputs.

Product Folder Links: SN74AHC367

<sup>2)</sup> The input and output negative-voltage ratings may be exceeded if the input and output current ratings are observed.

<sup>(2)</sup> JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.



## **5.4 Thermal Information**

|                 |  |          |           | SN74AHC367  |          |            |      |
|-----------------|--|----------|-----------|-------------|----------|------------|------|
|                 | THERMAL METRIC <sup>(1)</sup>          | D (SOIC) | DB (SSOP) | DGV (TVSOP) | N (PDIP) | PW (TSSOP) | UNIT |
|                 |  | 16 PINS  | 16 PINS   | 16 PINS     | 16 PINS  | 16 PINS    |      |
| $R_{\theta JA}$ | Junction-to-ambient thermal resistance | 73       | 82        | 120         | 67       | 135.9      | °C/W |

(1) For more information about traditional and new thermal metrics, see the IC Package Thermal Metrics application report (SPRA953).

## 5.5 Electrical Characteristics

over recommended operating free-air temperature range (unless otherwise noted)

| DADAMETED       | TEST CONDITIONS  | V               | T,   | = 25°C |        | SN74AHC | UNIT  |      |
|-----------------|--|-----------------|------|--------|--------|---------|-------|------|
| PARAMETER       | TEST CONDITIONS  | V <sub>cc</sub> | MIN  | TYP    | MAX    | MIN     | MAX   | UNII |
|                 |  | 2 V             | 1.9  | 2      |        | 1.9     |       |      |
|                 | I <sub>OH</sub> = -50 μA   | 3 V             | 2.9  | 3      |        | 2.9     |       |      |
| / <sub>OH</sub> |  | 4.5 V           | 4.4  | 4.5    |        | 4.4     |       | V    |
|                 | I <sub>OH</sub> = -4 mA  | 3 V             | 2.58 |        |        | 2.48    |       |      |
|                 | I <sub>OH</sub> = -8 mA  | 4.5 V           | 3.94 |        |        | 3.8     |       |      |
|                 |  | 2 V             |      |        | 0.1    |         | 0.1   | _    |
|                 | I <sub>OL</sub> = 50 μA  | 3 V             |      |        | 0.1    |         | 0.1   |      |
| / <sub>OL</sub> |  | 4.5 V           |      |        | 0.1    |         | 0.1   | V    |
|                 | I <sub>OL</sub> = 4 mA   | 3 V             |      |        | 0.36   |         | 0.1   |      |
|                 | I <sub>OL</sub> = 8 mA   | 4.5 V           |      |        | 0.36   |         |       |      |
| I               | V <sub>I</sub> = 5.5 V or GND  | 0 V to 5.5<br>V |      |        | ± 0.1  |         | ± 1   | μA   |
| OZ              | $V_I = V_{CC}$ or GND, $V_O = V_{CC}$ or GND, $\overline{OE} = V_{IH}$ | 5.5 V           |      |        | ± 0.25 |         | ± 2.5 | μA   |
| CC              | $V_I = V_{CC}$ or GND, $I_O = 0$                                       | 5.5 V           |      |        | 4      |         | 40    | μΑ   |
| D <sub>i</sub>  | V <sub>I</sub> = V <sub>CC</sub> or GND                                | 5 V             |      | 3      | 10     |         | 10    | pF   |
| Co              | V <sub>O</sub> = V <sub>CC</sub> or GND                                | 5 V             |      | 5.1    |        |         |       | pF   |

## 5.6 Switching Characteristics, $V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$

over recommended operating free-air temperature range (unless otherwise noted)

| DADAMETED        | FROM    | то       | LOAD                   | T,  | T <sub>A</sub> = 25°C SN74AHC36 |                   |     | 67   | LINUT |
|------------------|---------|----------|------------------------|-----|---------------------------------|-------------------|-----|------|-------|
| PARAMETER        | (INPUT) | (OUTPUT) | CAPACITANCE            | MIN | TYP                             | MAX               | MIN | MAX  | UNIT  |
| t <sub>PLH</sub> | Α       | Y        | C <sub>L</sub> = 15 pF |     | 4.7 <sup>1</sup>                | 8.3 <sup>1</sup>  | 1   | 10   | ns    |
| t <sub>PHL</sub> |         | ,        | CL = 13 pr             |     | 4.7 <sup>1</sup>                | 8.3 <sup>1</sup>  | 1   | 10   | 115   |
| t <sub>PZH</sub> | OE      | Y        | C <sub>1</sub> = 15 pF |     | 5.1 <sup>1</sup>                | 10.5 <sup>1</sup> | 1   | 12.5 | ns    |
| t <sub>PZL</sub> | - OE    | ,        | CL = 13 pr             |     | 5.1 <sup>1</sup>                | 10.5 <sup>1</sup> | 1   | 12.5 | 115   |
| t <sub>PHZ</sub> | - OE    | Y        | C <sub>1</sub> = 15 pF |     | 41                              | 10.5 <sup>1</sup> | 1   | 12.5 | ns    |
| t <sub>PLZ</sub> |         | T T      | C <sub>L</sub> = 15 pr |     | 4.91                            | 10.51             | 1   | 12.5 | ns    |
| t <sub>PLH</sub> | Α       | Y        | C = 50 mF              |     | 6.1                             | 11.8              | 1   | 13.5 |       |
| t <sub>PHL</sub> |         | T T      | C <sub>L</sub> = 50 pF |     | 6.2                             | 11.8              | 1   | 13.5 | ns    |
| t <sub>PZH</sub> | ŌĒ      | Y        | C = 50 mF              |     | 6.4                             | 14                | 1   | 16   |       |
| t <sub>PZL</sub> | - OE    | T T      | C <sub>L</sub> = 50 pF |     | 6.8                             | 14                | 1   | 16   | ns    |
| t <sub>PHZ</sub> | ŌĒ      | Y        | C = 50 mF              |     | 6.2                             | 13.6              | 1   | 15.5 |       |
| t <sub>PLZ</sub> | - OE    | Y        | C <sub>L</sub> = 50 pF |     | 7.3                             | 13.6              | 1   | 15.5 | ns    |

1. On products compliant to MIL-PRF-38535, this parameter is not production tested.



# 5.7 Switching Characteristics, $V_{CC}$ = 5 V ± 0.5 V

over recommended operating free-air temperature range (unless otherwise noted)

| DADAMETED        | FROM    | то                    | LOAD                    | T <sub>A</sub> = 25°C |                  |                  | SN74AHC36        | 7    | UNIT |     |
|------------------|---------|-----------------------|-------------------------|-----------------------|------------------|------------------|------------------|------|------|-----|
| PARAMETER        | (INPUT) | (OUTPUT)              | CAPACITANCE             | MIN                   | TYP              | MAX              | MIN              | MAX  | UNII |     |
| t <sub>PLH</sub> | Α       | Υ                     | C <sub>L</sub> = 15 pF  |                       | 3.4 <sup>1</sup> | 5.9 <sup>1</sup> | 1                | 7    | ns   |     |
| t <sub>PHL</sub> |         | ı                     | OL - 13 pi              |                       | 3.6 <sup>1</sup> | 5.9 <sup>1</sup> | 1                | 7    | 115  |     |
| t <sub>PZH</sub> | ŌĒ      | Υ                     | C <sub>L</sub> = 15 pF  |                       | 3.6 <sup>1</sup> | 7.2 <sup>1</sup> | 1                | 8.5  | ns   |     |
| t <sub>PZL</sub> | OL      | ī                     | ľ                       | OL - 13 pi            |                  | 3.8 <sup>1</sup> | 7.2 <sup>1</sup> | 1    | 8.5  | 115 |
| t <sub>PHZ</sub> | ŌĒ      | Υ                     | C <sub>L</sub> = 15 pF  |                       | 2.61             | 7.21             | 0                | 8.5  | ns   |     |
| t <sub>PLZ</sub> | OL      | Γ ΟΕ = 13 μι          | '                       | OL - 13 pi            |                  | 2.6 <sup>1</sup> | 7.2 <sup>1</sup> | 0    | 8.5  | 115 |
| t <sub>PLH</sub> | А       | Υ                     | C <sub>L</sub> = 50 pF  |                       | 4.3              | 7.9              | 1                | 9    | 20   |     |
| t <sub>PHL</sub> | , A     | Y C <sub>L</sub> = 50 | Y                       | CL = 50 pr            |                  | 4.5              | 7.9              | 1    | 9    | ns  |
| t <sub>PZH</sub> | ŌĒ      | Υ                     | C <sub>L</sub> = 50 pF  |                       | 4.6              | 9.2              | 1                | 10.5 | 20   |     |
| t <sub>PZL</sub> | ) OE    | r                     | OL - 50 PF              |                       | 4.9              | 9.2              | 1                | 10.5 | ns   |     |
| t <sub>PHZ</sub> | ŌĒ      | Y                     | C = 50 pE               |                       | 3.4              | 9.2              | 0                | 10.5 | 20   |     |
| t <sub>PLZ</sub> | OE .    | ľ                     | Y $C_L = 50 \text{ pF}$ |                       | 4.5              | 9.2              | 0                | 10.5 | ns   |     |

1. On products compliant to MIL-PRF-38535, this parameter is not production tested.

## **5.8 Noise Characteristics**

 $V_{CC} = 3.3 \text{ V}, C_L = 50 \text{ pF}, T_A = 25^{\circ}\text{C}$ 

|                    | PARAMETER                                     | MIN | TYP  | MAX | UNIT |
|--------------------|---|-----|------|-----|------|
| V <sub>OL(P)</sub> | Quiet output, maximum dynamic V <sub>OL</sub> |     | 0.9  |     | V    |
| V <sub>OL(V)</sub> | Quiet output, minimum dynamic V <sub>OL</sub> |     | -0.8 |     | V    |
| V <sub>OH(V)</sub> | Quiet output, minimum dynamic V <sub>OH</sub> |     | 4.2  |     | V    |
| V <sub>IH(D)</sub> | High-level dynamic input voltage              | 3.5 |      |     | V    |
| V <sub>IL(D)</sub> | Low-level dynamic input voltage               |     |      | 1.5 | V    |

# **5.9 Operating Characteristics**

 $T_A = 25^{\circ}C$ 

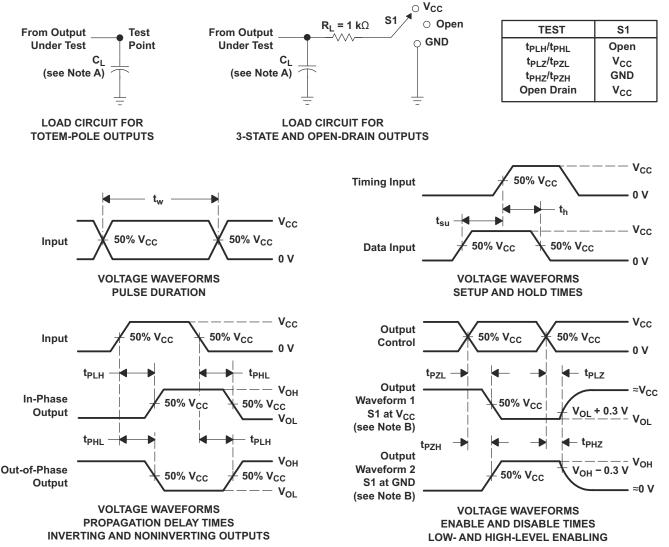
|     | PARAMETER                     | TEST CONDITIONS    | TYP  | UNIT |
|-----|-------------------------------|--------------------|------|------|
| Cpc | Power dissipation capacitance | No load, f = 1 MHz | 22.4 | pF   |

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### **6 Parameter Measurement Information**



- A. C<sub>L</sub> includes probe and jig capacitance.
- B. Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.
- C. All input pulses are supplied by generators having the following characteristics: PRR  $\leq$  1 MHz,  $Z_O = 50 \Omega$ ,  $t_r \leq 3$  ns.  $t_r \leq 3$  ns.
- D. The outputs are measured one at a time, with one input transition per measurement.
- E.  $t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{dis}$ .
- F. t<sub>PZL</sub> and t<sub>PZH</sub> are the same as t<sub>en</sub>.
- G.  $t_{PHL}$  and  $t_{PLH}$  are the same as  $t_{pd}$ .
- H. All parameters and waveforms are not applicable to all devices.

Figure 6-1. Load Circuit and Voltage Waveforms

## 7 Detailed Description

### 7.1 Overview

These devices are designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters. The 'AHC367 devices are organized as dual 4-line and 2-line buffers/drivers with active-low output-enable ( $1\overline{OE}$  and  $2\overline{OE}$ ) inputs. When  $\overline{OE}$  is low, the device passes noninverted data from the A inputs to the Y outputs. When  $\overline{OE}$  is high, the outputs are in the high-impedance state.

To ensure the high-impedance state during power up or power down,  $\overline{OE}$  should be tied to  $V_{CC}$  through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

## 7.2 Functional Block Diagram



Figure 7-1. Logic Diagram (Positive Logic)

#### 7.3 Device Functional Modes

Table 7-1. Function Table (Each Buffer/ Driver)

| INP | OUTPUT |   |  |  |
|-----|--------|---|--|--|
| ŌĒ  | ŌE A   |   |  |  |
| L   | Н      | Н |  |  |
| L   | L      | L |  |  |
| н   | X      | Z |  |  |

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# 8 Application and Implementation

#### Note

Information in the following applications sections is not part of the TI component specification, and TI does not warrant its accuracy or completeness. TI's customers are responsible for determining suitability of components for their purposes, as well as validating and testing their design implementation to confirm system functionality.

## 8.1 Application Information

In this application, three 2-input AND gates are combined to produce a 4-input AND gate function as shown in Block Diagram. The fourth gate can be used for another application in the system, or the inputs can be grounded and the channel left unused.

The SN74AHC367 is used to directly control the RESET pin of a motor controller. The controller requires four input signals to all be HIGH before being enabled, and should be disabled in the event that any one signal goes LOW. The 4-input AND gate function combines the four individual reset signals into a single active-low reset signal.

## 8.2 Typical Application

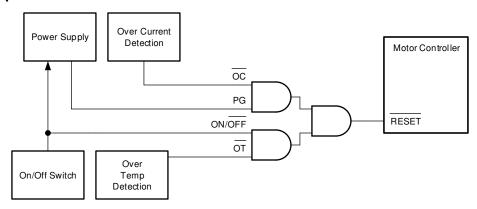


Figure 8-1. Typical Application Block Diagram

#### 8.3 Power Supply Recommendations

The power supply can be any voltage between the minimum and maximum supply voltage rating located in the *Recommended Operating Conditions*. Each  $V_{CC}$  terminal should have a good bypass capacitor to prevent power disturbance. A 0.1- $\mu$ F capacitor is recommended for this device. It is acceptable to parallel multiple bypass capacitors to reject different frequencies of noise. The 0.1- $\mu$ F and 1- $\mu$ F capacitors are commonly used in parallel. The bypass capacitor should be installed as close to the power terminal as possible for best results, as shown in the following layout example.

## 8.4 Layout

### 8.4.1 Layout Guidelines

When using multiple-input and multiple-channel logic devices, inputs must never be left floating. In many cases, functions or parts of functions of digital logic devices are unused (for example, when only two inputs of a triple-input AND gate are used or only 3 of the 4 buffer gates are used). Such unused input pins must not be left unconnected because the undefined voltages at the outside connections result in undefined operational states. All unused inputs of digital logic devices must be connected to a logic high or logic low voltage, as defined by the input voltage specifications, to prevent them from floating. The logic level that must be applied to any particular unused input depends on the function of the device. Generally, the inputs are tied to GND or  $V_{CC}$ , whichever makes more sense for the logic function or is more convenient.



## 8.4.2 Layout Example

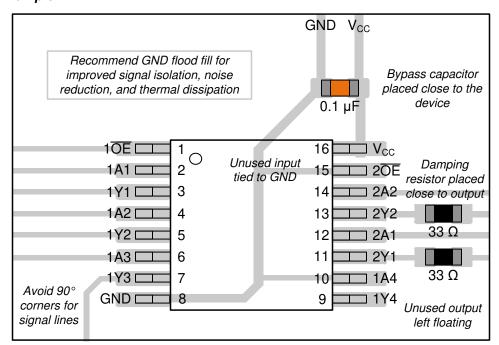


Figure 8-2. Example Layout for the SN74AHC367



## 9 Device and Documentation Support

## 9.1 Documentation Support (Analog)

#### 9.1.1 Related Documentation

The table below lists quick access links. Categories include technical documents, support and community resources, tools and software, and quick access to sample or buy.

#### Table 9-1. Related Links

| PARTS      | PRODUCT FOLDER | SAMPLE & BUY | TECHNICAL DOCUMENTS | TOOLS &<br>SOFTWARE | SUPPORT & COMMUNITY |  |
|------------|----------------|--------------|---------------------|---------------------|---------------------|--|
| SN74AHC367 | Click here     | Click here   | Click here          | Click here          | Click here          |  |

## 9.2 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on ti.com. Click on *Notifications* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

## 9.3 Support Resources

TI E2E<sup>™</sup> support forums are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

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#### 9.4 Trademarks

TI E2E<sup>™</sup> is a trademark of Texas Instruments.

All trademarks are the property of their respective owners.

## 9.5 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

### 9.6 Glossary

TI Glossary

This glossary lists and explains terms, acronyms, and definitions.

## 10 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

# Changes from Revision F (November 2023) to Revision G (July 2024)

Page

Updated RθJA value: PW = 108 to 135.9, all values in °C/W .......5

### Changes from Revision E (February 2002) to Revision F (November 2023)

Page



# 11 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

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#### PACKAGING INFORMATION

| Orderable part number | Status   | Material type | Package   Pins  | Package qty   Carrier | RoHS | Lead finish/  | MSL rating/        | Op temp (°C) | Part marking |
|-----------------------|----------|---------------|-----------------|-----------------------|------|---------------|--------------------|--------------|--------------|
|                       | (1)      | (2)           |                 |                       | (3)  | Ball material | Peak reflow        |              | (6)          |
|                       |          |               |                 |                       |      | (4)           | (5)                |              |              |
| SN74AHC367D           | Obsolete | Production    | SOIC (D)   16   | -                     | -    | Call TI       | Call TI            | -40 to 85    | AHC367       |
| SN74AHC367DR          | Active   | Production    | SOIC (D)   16   | 2500   LARGE T&R      | Yes  | NIPDAU        | Level-1-260C-UNLIM | -40 to 85    | AHC367       |
| SN74AHC367DR.A        | Active   | Production    | SOIC (D)   16   | 2500   LARGE T&R      | Yes  | NIPDAU        | Level-1-260C-UNLIM | -40 to 85    | AHC367       |
| SN74AHC367N           | Active   | Production    | PDIP (N)   16   | 25   TUBE             | Yes  | NIPDAU        | N/A for Pkg Type   | -40 to 85    | SN74AHC367N  |
| SN74AHC367N.A         | Active   | Production    | PDIP (N)   16   | 25   TUBE             | Yes  | NIPDAU        | N/A for Pkg Type   | -40 to 85    | SN74AHC367N  |
| SN74AHC367PWR         | Active   | Production    | TSSOP (PW)   16 | 2000   LARGE T&R      | Yes  | NIPDAU   SN   | Level-1-260C-UNLIM | -40 to 85    | HA367        |
| SN74AHC367PWR.A       | Active   | Production    | TSSOP (PW)   16 | 2000   LARGE T&R      | Yes  | NIPDAU        | Level-1-260C-UNLIM | -40 to 85    | HA367        |

<sup>(1)</sup> Status: For more details on status, see our product life cycle.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

<sup>(2)</sup> Material type: When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

<sup>(3)</sup> RoHS values: Yes, No, RoHS Exempt. See the TI RoHS Statement for additional information and value definition.

<sup>(4)</sup> Lead finish/Ball material: Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

<sup>(5)</sup> MSL rating/Peak reflow: The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

<sup>(6)</sup> Part marking: There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.



# **PACKAGE OPTION ADDENDUM**

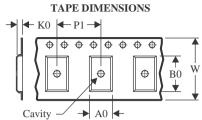
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# **PACKAGE MATERIALS INFORMATION**

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## TAPE AND REEL INFORMATION





|    | -   |
|----|---|
| A0 | Dimension designed to accommodate the component width     |
| В0 | Dimension designed to accommodate the component length    |
| K0 | Dimension designed to accommodate the component thickness |
| W  | Overall width of the carrier tape                         |
| P1 | Pitch between successive cavity centers                   |

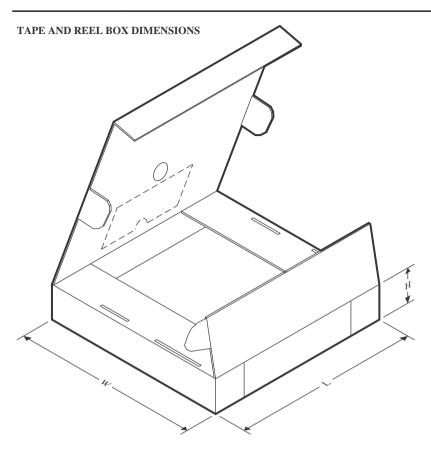
### QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



#### \*All dimensions are nominal

| Device        | Package<br>Type | Package<br>Drawing |    | SPQ  | Reel<br>Diameter<br>(mm) | Reel<br>Width<br>W1 (mm) | A0<br>(mm) | B0<br>(mm) | K0<br>(mm) | P1<br>(mm) | W<br>(mm) | Pin1<br>Quadrant |
|---------------|-----------------|--------------------|----|------|--------------------------|--------------------------|------------|------------|------------|------------|-----------|------------------|
| SN74AHC367DR  | SOIC            | D                  | 16 | 2500 | 330.0                    | 16.4                     | 6.5        | 10.3       | 2.1        | 8.0        | 16.0      | Q1               |
| SN74AHC367PWR | TSSOP           | PW                 | 16 | 2000 | 330.0                    | 12.4                     | 6.9        | 5.6        | 1.6        | 8.0        | 12.0      | Q1               |

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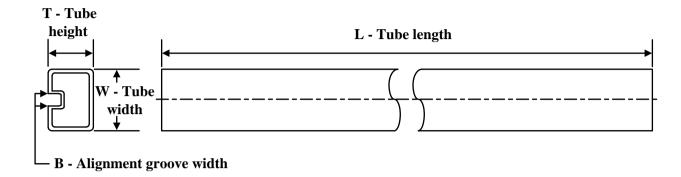
## \*All dimensions are nominal

| Device        | Package Type | Package Drawing | Pins | SPQ  | Length (mm) | Width (mm) | Height (mm) |
|---------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74AHC367DR  | SOIC         | D               | 16   | 2500 | 340.5       | 336.1      | 32.0        |
| SN74AHC367PWR | TSSOP        | PW              | 16   | 2000 | 353.0       | 353.0      | 32.0        |

# **PACKAGE MATERIALS INFORMATION**

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## **TUBE**

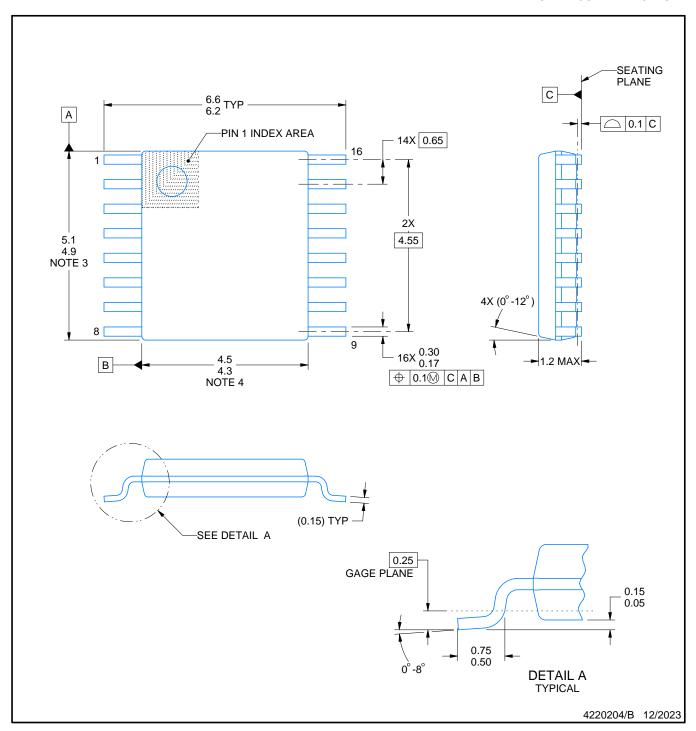


### \*All dimensions are nominal

| Device        | Package Name | Package Type | Pins | SPQ | L (mm) | W (mm) | T (µm) | B (mm) |
|---------------|--------------|--------------|------|-----|--------|--------|--------|--------|
| SN74AHC367N   | N            | PDIP         | 16   | 25  | 506    | 13.97  | 11230  | 4.32   |
| SN74AHC367N   | N            | PDIP         | 16   | 25  | 506    | 13.97  | 11230  | 4.32   |
| SN74AHC367N.A | N            | PDIP         | 16   | 25  | 506    | 13.97  | 11230  | 4.32   |
| SN74AHC367N.A | N            | PDIP         | 16   | 25  | 506    | 13.97  | 11230  | 4.32   |



SMALL OUTLINE PACKAGE



### NOTES:

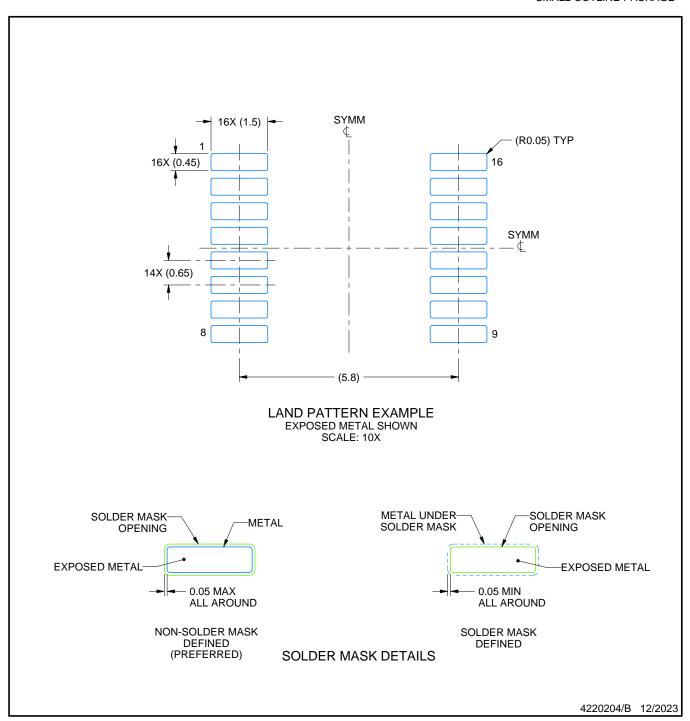
- 1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.

  2. This drawing is subject to change without notice.

  3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not
- exceed 0.15 mm per side.
- 4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm per side.
- 5. Reference JEDEC registration MO-153.



SMALL OUTLINE PACKAGE

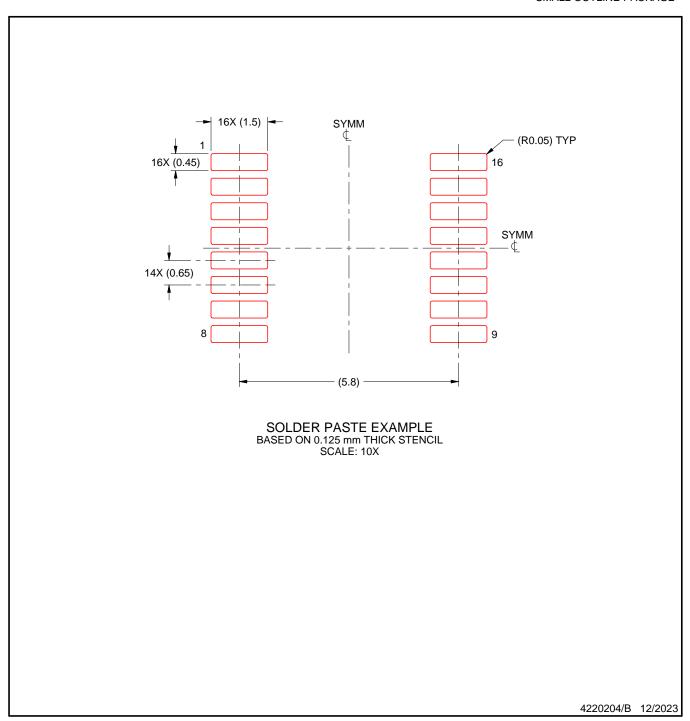


NOTES: (continued)

- 6. Publication IPC-7351 may have alternate designs.
- 7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.



SMALL OUTLINE PACKAGE



NOTES: (continued)

- 8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
- 9. Board assembly site may have different recommendations for stencil design.



# N (R-PDIP-T\*\*)

# PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



NOTES:

- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
- The 20 pin end lead shoulder width is a vendor option, either half or full width.



# D (R-PDS0-G16)

## PLASTIC SMALL OUTLINE



NOTES:

- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
- Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
- E. Reference JEDEC MS-012 variation AC.



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