

SN74AHC1G00 シングル、2 入力、正論理 NAND ゲート

1 特長

- 動作範囲：2V～5.5V
- 最大 t_{pd} 6.5ns (5V 時)
- 低い消費電力： $I_{CC} = 10\mu A$ (最大値)
- $\pm 8mA$ の出力駆動能力 (5V 時)
- すべての入力におけるシュミット・トリガ動作により、回路は低速の入力立ち上がり / 立ち下がり時間に対する耐性を備える
- JESD 17 準拠で 250mA 超のラッチアップ性能

2 アプリケーション

- デジタル信号のイネーブルまたはディセーブル
- インジケータ LED の制御
- 通信モジュールとシステム・コントローラの間レベル変換

3 概要

SN74AHC1G00 は、ブール関数 $Y = \overline{A \cdot B}$ 、または $Y = \overline{A} + \overline{B}$ を正論理で実行します。

パッケージ情報

| 部品番号 | パッケージ ⁽¹⁾ | パッケージ・サイズ ⁽²⁾ | 本体サイズ ⁽²⁾ |
|-------------|----------------------|--------------------------|----------------------|
| SN74AHC1G00 | DBV (SOT-23, 5) | 2.9mm × 2.8mm | 2.9mm × 1.6mm |
| | DCK (SC-70, 5) | 2mm × 2.1mm | 2mm × 1.25mm |
| | DRL (SOT, 5) | 1.6mm × 1.6mm | 1.6mm × 1.2mm |

- 利用可能なすべてのパッケージについては、データシートの末尾にある注文情報を参照してください。
- パッケージ・サイズ (長さ×幅) は公称値で、該当する場合はピンも含まれます。



論理図 (正論理)



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4 Pin Configuration and Functions

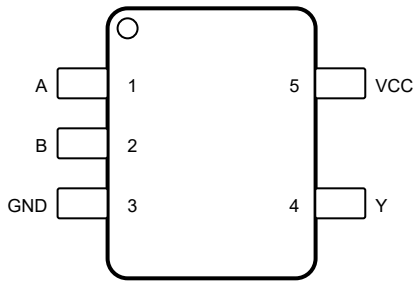


図 4-1. DBV Package 5-Pin SOT-23 Top View

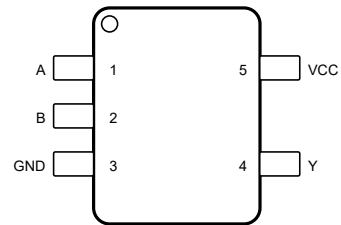


図 4-2. DCK Package 5-Pin SC70 Top View

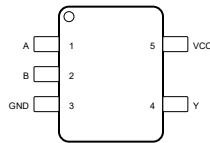


図 4-3. DRL Package 5-Pin SOT Top View

表 4-1. Pin Functions

| PIN | | TYPE ⁽¹⁾ | DESCRIPTION |
|-----|-----------------|---------------------|-------------|
| NO. | NAME | | |
| 1 | A | I | A input |
| 2 | B | I | B input |
| 3 | GND | — | Ground |
| 4 | Y | O | Output |
| 5 | V _{CC} | — | Power |

(1) Signal Types: I = Input, O = Output, I/O = Input or Output

5 Specifications

5.1 Absolute Maximum Ratings

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

| | | | MIN | MAX | UNIT |
|-------------------------------|---|---|------|-----------------------|------|
| V _{CC} | Supply voltage | | -0.5 | 7 | V |
| V _I ⁽²⁾ | Input voltage | | -0.5 | 7 | V |
| V _O ⁽²⁾ | Output voltage | | -0.5 | V _{CC} + 0.5 | V |
| I _{IK} | Input clamp current | (V _I < 0) | | -20 | mA |
| I _{OK} | Output clamp current | (V _O < 0 or V _O > V _{CC}) | | ±20 | mA |
| I _O | Continuous output current | (V _O = 0 to V _{CC}) | | ±25 | mA |
| | Continuous current through V _{CC} or GND | | | ±50 | mA |
| T _J | Maximum junction temperature | | | 150 | °C |
| T _{stg} | Storage temperature | | -65 | 150 | °C |

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

(2) The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

5.2 ESD Ratings

| | | | VALUE | UNIT |
|--------------------|-------------------------|--|-------|------|
| V _(ESD) | Electrostatic discharge | Human-body model (HBM), per ANSI/ESDA/JEDEC JS-001 ⁽¹⁾ | ±2000 | V |
| | | Charged-device model (CDM), per JEDEC specification JESD22-C101 ⁽²⁾ | ±1000 | |

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

(2) JEDEC document JEP157 states that 250-V CDM 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 _{CC} | Supply voltage | | 2 | 5.5 | V |
| V _{IH} | High-level input voltage | V _{CC} = 2 V | 1.5 | | V |
| | | V _{CC} = 3 V | 2.1 | | |
| | | V _{CC} = 5.5 V | 3.85 | | |
| V _{IL} | Low-level input voltage | V _{CC} = 2 V | | 0.5 | V |
| | | V _{CC} = 3 V | | 0.9 | |
| | | V _{CC} = 5.5 V | | 1.65 | |
| V _I | Input voltage | | 0 | 5.5 | V |
| V _O | Output voltage | | 0 | V _{CC} | V |
| I _{OH} | High-level output current | V _{CC} = 2 V | | -50 | μA |
| | | V _{CC} = 3.3 V ± 0.3 V | | -4 | |
| | | V _{CC} = 5 V ± 0.5 V | | -8 | |
| I _{OL} | Low-level output current | V _{CC} = 2 V | | 50 | μA |
| | | V _{CC} = 3.3 V ± 0.3 V | | 4 | |
| | | V _{CC} = 5 V ± 0.5 V | | 8 | |
| Δt/Δv | Input transition rise or fall rate | V _{CC} = 3.3 V ± 0.3 V | | 100 | ns/V |
| | | V _{CC} = 5 V ± 0.5 V | | 20 | |

5.3 Recommended Operating Conditions (続き)

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

| | | MIN | MAX | UNIT |
|----------------|--------------------------------|-----|-----|------|
| T _A | Operating free-air temperature | -40 | 125 | °C |

- (1) All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation. See the TI application report, *Implications of Slow or Floating CMOS Inputs*, [SCBA004](#).

5.4 Thermal Information

| THERMAL METRIC ⁽¹⁾ | SN74AHC1G00 | | | UNIT | |
|-------------------------------|--|------------|-----------|------|------|
| | DBV (SOT-23) | DCK (SC70) | DRL (SOT) | | |
| | 5 PINS | 5 PINS | 5 PINS | | |
| R _{θJA} | Junction-to-ambient thermal resistance | 278 | 289.2 | 256 | °C/W |
| R _{θJC(top)} | Junction-to-case (top) thermal resistance | 180.5 | 205.8 | 130 | °C/W |
| R _{θJB} | Junction-to-board thermal resistance | 184.4 | 176.2 | 152 | °C/W |
| ψ _{JT} | Junction-to-top characterization parameter | 115.4 | 117.6 | 9.9 | °C/W |
| ψ _{JB} | Junction-to-board characterization parameter | 183.4 | 175.1 | 152 | °C/W |
| R _{θJC(bot)} | Junction-to-case (bot) thermal resistance | N/A | N/A | N/A | °C/W |

- (1) For more information about traditional and new thermal metrics, see the *Semiconductor and IC Package Thermal Metrics* application report, [SPRA953](#).

5.5 Electrical Characteristics

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

| PARAMETER ⁽¹⁾ | TEST CONDITIONS | | V _{CC} | MIN | TYP | MAX | UNIT |
|---|--------------------------|----------------------------------|-----------------|------|-----|-----|------|
| V _{OH} High level output voltage | I _{OH} = -50 μA | T _A = 25°C | 2 V | 1.9 | 2 | | V |
| | | T _A = -40°C to +85°C | | 1.9 | | | |
| | | T _A = -40°C to +125°C | | 1.9 | | | |
| | | T _A = 25°C | 3 V | 2.9 | 3 | | |
| | | T _A = -40°C to +85°C | | 2.9 | | | |
| | | T _A = -40°C to +125°C | | 2.9 | | | |
| | | T _A = 25°C | 4.5 V | 4.4 | 4.5 | | |
| | | T _A = -40°C to +85°C | | 4.4 | | | |
| | | T _A = -40°C to +125°C | | 4.4 | | | |
| | I _{OH} = -4 mA | T _A = 25°C | 3 V | 2.58 | | | |
| | | T _A = -40°C to +85°C | | 2.48 | | | |
| | | T _A = -40°C to +125°C | | 2.48 | | | |
| | I _{OH} = -8 mA | T _A = 25°C | 4.5 V | 3.94 | | | |
| | | T _A = -40°C to +85°C | | 3.8 | | | |
| | | T _A = -40°C to +125°C | | 3.8 | | | |

5.5 Electrical Characteristics (続き)

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

| PARAMETER ⁽¹⁾ | | TEST CONDITIONS | | | V _{CC} | MIN | TYP | MAX | UNIT |
|--------------------------|----------------------------------|---|----------------------------------|--------------|-----------------|------|------|-----|------|
| V _{OL} | Low level output voltage | I _{OL} = 50 μA | T _A = 25°C | 2 V | 0 V to 5.5 V | | | 0.1 | V |
| | | | T _A = -40°C to +85°C | | | | | 0.1 | |
| | | | T _A = -40°C to +125°C | | | | | 0.1 | |
| | | | T _A = 25°C | 3 V | | | | 0.1 | |
| | | | T _A = -40°C to +85°C | | | | | 0.1 | |
| | | | T _A = -40°C to +125°C | | | | | 0.1 | |
| | | | T _A = 25°C | 4.5 V | | | | 0.1 | |
| | | | T _A = -40°C to +85°C | | | | | 0.1 | |
| | | | T _A = -40°C to +125°C | | | | | 0.1 | |
| | | I _{OL} = 4 mA | T _A = 25°C | 3 V | | | 0.36 | | |
| | | | T _A = -40°C to +85°C | | | | 0.44 | | |
| | | | T _A = -40°C to +125°C | | | | 0.44 | | |
| I _{OL} = 8 mA | T _A = 25°C | | 4.5 V | | | 0.36 | | | |
| | T _A = -40°C to +85°C | | | | | 0.44 | | | |
| | T _A = -40°C to +125°C | | | | | 0.44 | | | |
| I _I | Input leakage current | V _I = 5.5 V or GND | T _A = 25°C | 0 V to 5.5 V | | | ±0.1 | μA | |
| | | | T _A = -40°C to +85°C | | | | ±1 | | |
| | | | T _A = -40°C to +125°C | | | | ±1 | | |
| I _{CC} | Supply current | V _I = V _{CC} or GND, I _O = 0 | T _A = 25°C | 5.5 V | | | 1 | μA | |
| | | | T _A = -40°C to +85°C | | | | 10 | | |
| | | | T _A = -40°C to +125°C | | | | 10 | | |
| C _i | Input Capacitance | V _I = V _{CC} or GND | T _A = 25°C | 5 V | | | 2 | pF | |
| | | | T _A = -40°C to +85°C | | | | 10 | | |
| | | | T _A = -40°C to +125°C | | | | 10 | | |

(1) Recommended T_A = -40°C to +125°C

5.6 Switching Characteristics: V_{CC} = 3.3 V ± 0.3 V

over recommended operating free-air temperature range, V_{CC} = 3.3 V ± 0.3 V (unless otherwise noted) (see [Load Circuit and Voltage Waveforms](#))

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | OUTPUT CAPACITANCE | T _A ⁽¹⁾ | MIN | TYP | MAX | UNIT | |
|------------------|--------------|-------------|------------------------|-------------------------------|-----|-----|-----|------|----|
| t _{PLH} | A or B | Y | C _L = 15 pF | 25°C | | | 5.5 | 7.9 | ns |
| | | | | -40°C to +85°C | | | 1 | 9.5 | |
| | | | | -40°C to +125°C | | | 1 | 10.5 | |
| t _{PHL} | | | | 25°C | | | 5.5 | 7.9 | |
| | | | | -40°C to +85°C | | | 1 | 9.5 | |
| | | | | -40°C to +125°C | | | 1 | 10.5 | |
| t _{PLH} | A or B | Y | C _L = 50 pF | 25°C | | | 8 | 11.4 | ns |
| | | | | -40°C to +85°C | | | 1 | 13 | |
| | | | | -40°C to +125°C | | | 1 | 14 | |
| t _{PHL} | | | | 25°C | | | 8 | 11.4 | |
| | | | | -40°C to +85°C | | | 1 | 13 | |
| | | | | -40°C to +125°C | | | 1 | 14 | |

(1) Recommended T_A = -40°C to +125°C

5.7 Switching Characteristics: $V_{CC} = 5\text{ V} \pm 0.5\text{ V}$

over recommended operating free-air temperature range, $V_{CC} = 5\text{ V} \pm 0.5\text{ V}$ (unless otherwise noted) (see [Load Circuit and Voltage Waveforms](#))

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | OUTPUT CAPACITANCE | T_A (1) | MIN | TYP | MAX | UNIT |
|-----------|--------------|-------------|----------------------|-----------------|-----|-----|-----|------|
| t_{PLH} | A or B | Y | $C_L = 15\text{ pF}$ | 25°C | 3.7 | 5.5 | ns | |
| | | | | -40°C to +85°C | 1 | 6.5 | | |
| | | | | -40°C to +125°C | 1 | 7 | | |
| t_{PHL} | A or B | Y | $C_L = 15\text{ pF}$ | 25°C | 3.7 | 5.5 | ns | |
| | | | | -40°C to +85°C | 1 | 6.5 | | |
| | | | | -40°C to +125°C | 1 | 7 | | |
| t_{PLH} | A or B | Y | $C_L = 50\text{ pF}$ | 25°C | 5.2 | 7.5 | ns | |
| | | | | -40°C to +85°C | 1 | 6.5 | | |
| | | | | -40°C to +125°C | 1 | 9 | | |
| t_{PHL} | A or B | Y | $C_L = 50\text{ pF}$ | 25°C | 5.2 | 7.5 | ns | |
| | | | | -40°C to +85°C | 1 | 6.5 | | |
| | | | | -40°C to +125°C | 1 | 9 | | |

(1) Recommended $T_A = -40^\circ\text{C}$ to $+125^\circ\text{C}$

5.8 Operating Characteristics

$V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|-----------------------------|-----|-----|-----|------|
| C_{pd} Power dissipation capacitance | No load, $f = 1\text{ MHz}$ | | 9.5 | | pF |

5.9 Typical Characteristics

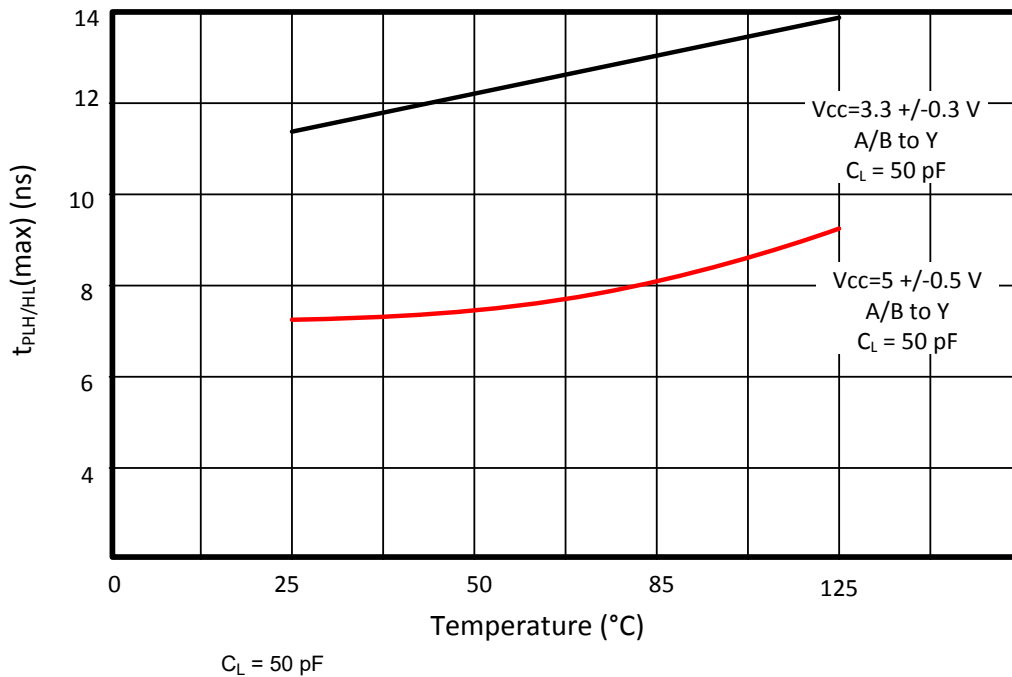
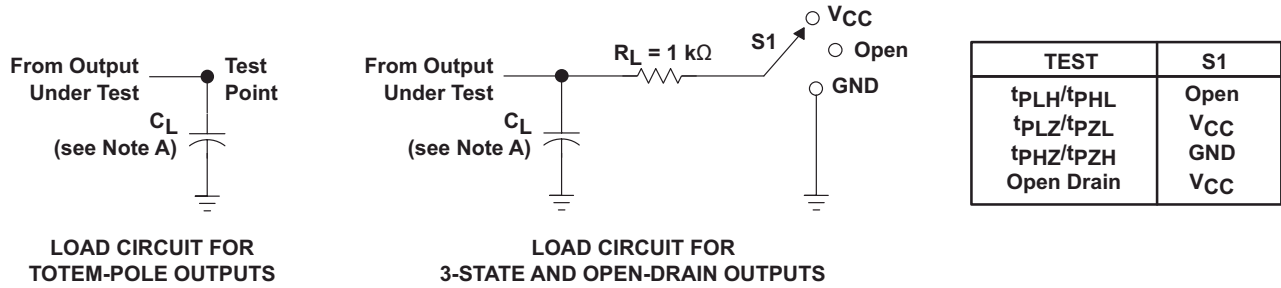


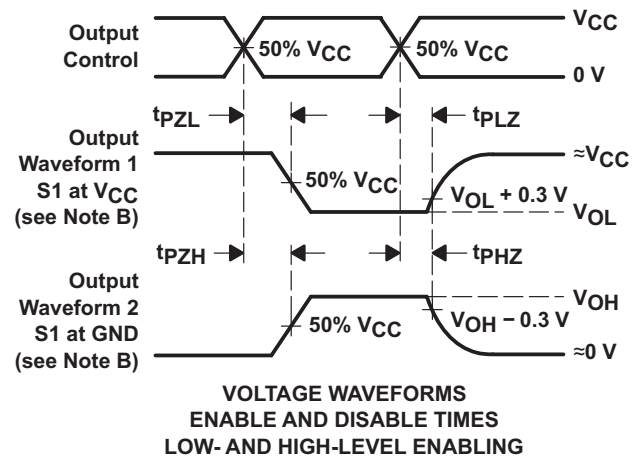
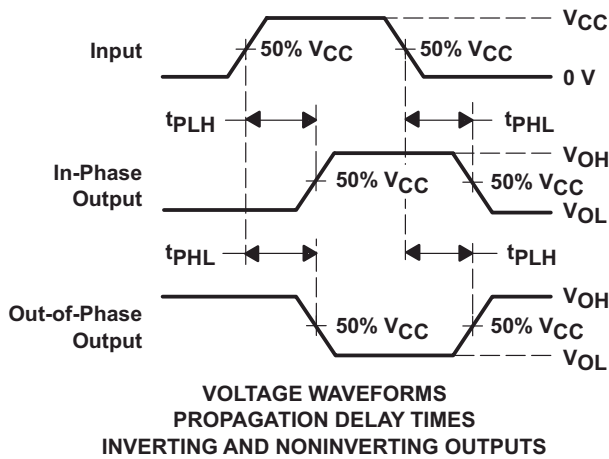
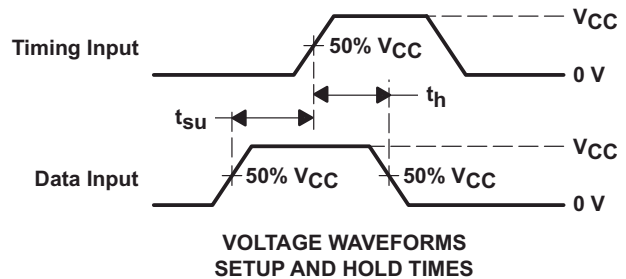
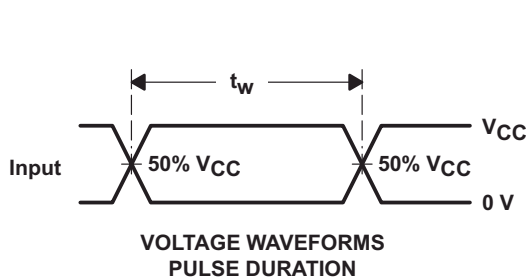
図 5-1. Propagation Delay vs Temperature

6 Parameter Measurement information



LOAD CIRCUIT FOR
TOTEM-POLE OUTPUTS

LOAD CIRCUIT FOR
3-STATE AND OPEN-DRAIN OUTPUTS



- A. C_L 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, $t_f \leq 3$ ns.
- D. The outputs are measured one at a time with one input transition per measurement.
- E. All parameters and waveforms are not applicable to all devices.

图 6-1. Load Circuit and Voltage Waveforms

7 Detailed Description

7.1 Overview

The SN74AHC1G00 device performs the NAND Boolean function $Y = \overline{A \times B}$ or $Y = \overline{A} + \overline{B}$ in positive logic. The device has a wide operating range of V_{CC} from 2 V to 5 V.

7.2 Functional Block Diagram



図 7-1. Logic Diagram (Positive Logic)

7.3 Feature Description

The SN74AHC1G00 device has wide operating voltage range for logic system from 2 V to 5 V. The low propagation delay allows fast switching and higher speeds of operation. In addition, the low power consumption of 10- μ A (maximum) makes this device a good choice for portable and battery power-sensitive applications. The Schmitt trigger action on all inputs have noise rejection capabilities.

7.4 Device Functional Modes

表 7-1. Function Table

| INPUTS ⁽¹⁾ | | OUTPUT ⁽²⁾ |
|-----------------------|---|-----------------------|
| A | B | Y |
| H | H | L |
| L | X | H |
| X | L | H |

- (1) H = High Voltage Level, L = Low Voltage Level, X = Don't Care
 (2) H = Driving High, L = Driving Low, Z = High Impedance State

8 Application and Implementation

注

以下のアプリケーション情報は、TI の製品仕様に含まれるものではなく、TI ではその正確性または完全性を保証いたしません。個々の目的に対する製品の適合性については、お客様の責任で判断していただくことになります。お客様は自身の設計実装を検証しテストすることで、システムの機能を確認する必要があります。

8.1 Typical Application

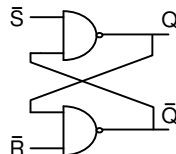


図 8-1. Typical Application

8.1.1 Design Requirements

This SN74AHC1G00 device uses CMOS technology and has balanced output drive. Take care to avoid bus contention because it can drive currents that would exceed maximum limits. The high drive also creates fast edges into light loads. Routing and load conditions must be considered to prevent ringing.

8.1.2 Detailed Design Procedure

- Recommended input conditions:
 - Specified high and low levels. See V_{IH} and V_{IL} in [セクション 5.3](#).
 - Inputs are overvoltage tolerant allowing them to go as high as 5.5 V at any valid V_{CC} .
- Recommended output conditions:
 - Load currents must not exceed 25 mA per output and 50 mA total for the part.
 - Outputs should not be pulled above V_{CC} .

8.1.3 Application Curve

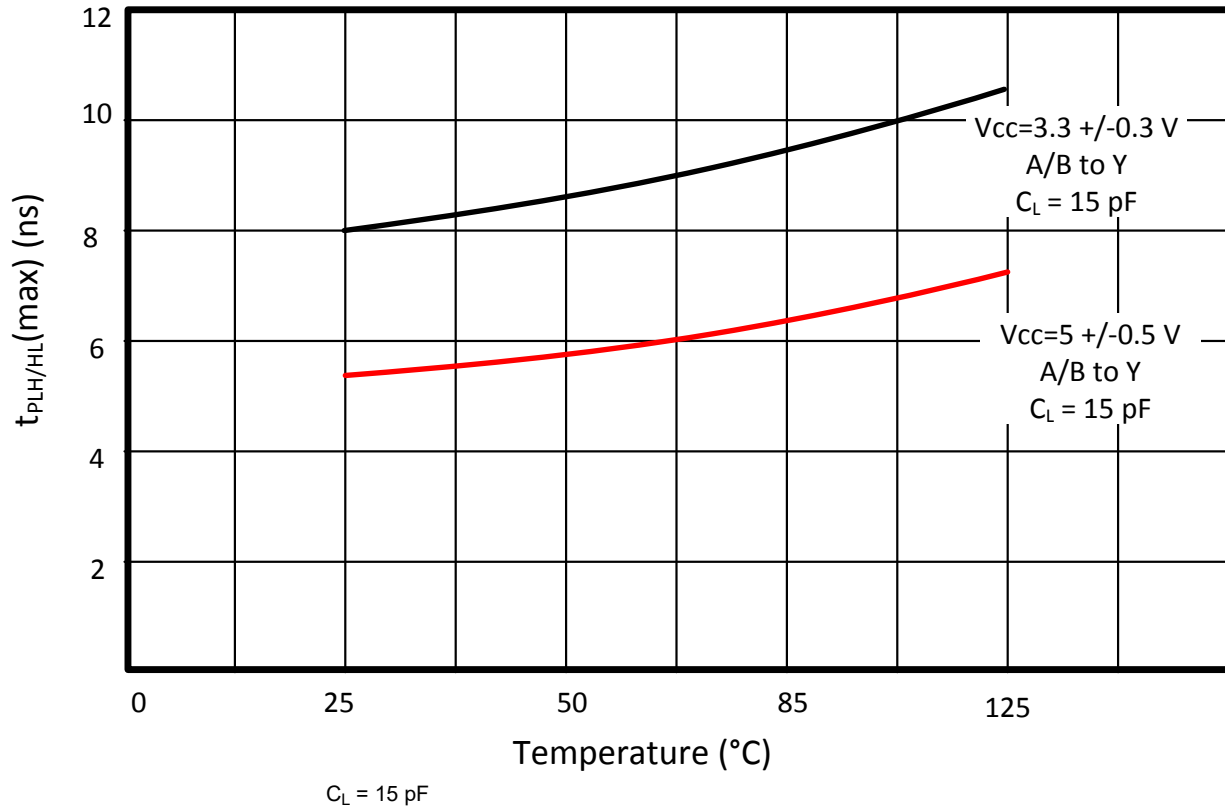


図 8-2. Propagation Delay vs Temperature

8.2 Power Supply Recommendations

The power supply can be any voltage between the minimum and maximum supply voltage rating located in the [セクション 5.3](#).

Each V_{CC} terminal should have a good bypass capacitor to prevent power disturbance. For devices with a single supply, TI recommends a 0.1-μF capacitor; if there are multiple V_{CC} terminals, then TI recommends a 0.01-μF or 0.022-μF capacitor for each power terminal. Multiple bypass capacitors can be paralleled to reject different frequencies of noise. Frequencies of 0.1 μF and 1 μF are commonly used in parallel. The bypass capacitor must be installed as close as possible to the power terminal for best results.

8.3 Layout

8.3.1 Layout Guidelines

When using multiple bit logic devices inputs must not ever float.

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 three of the four buffer gates are used. Such input pins must not be left unconnected because the undefined voltages at the outside connections result in undefined operational states. The following are the rules must be observed under all circumstances.

All unused inputs of digital logic devices must be connected to a high or low bias to prevent them from floating. The logic level that should be applied to any particular unused input depends on the function of the device. Generally they will be tied to GND or V_{CC} whichever make more sense or is more convenient. Floating outputs is generally acceptable, unless the part is a transceiver. If the transceiver has an output enable pin, it disables the outputs section of the part when asserted. This does not disable the input section of the input and output, so they also cannot float when disabled.

8.3.2 Layout Example

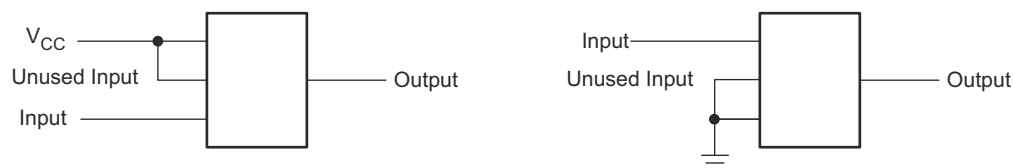


图 8-3. Layout Recommendation

9 Device and Documentation Support

9.1 Documentation Support

9.1.1 Related Documentation

For related documentation, see the following:

- Texas Instruments, [Introduction to Logic application report](#)
- Texas Instruments, [Implications of Slow or Floating CMOS Inputs application note](#)

9.2 ドキュメントの更新通知を受け取る方法

ドキュメントの更新についての通知を受け取るには、www.tij.co.jp のデバイス製品フォルダを開いてください。
[通知] をクリックして登録すると、変更されたすべての製品情報に関するダイジェストを毎週受け取ることができます。変更の詳細については、改訂されたドキュメントに含まれている改訂履歴をご覧ください。

9.3 サポート・リソース

[テキサス・インスツルメンツ E2E™ サポート・フォーラム](#) は、エンジニアが検証済みの回答と設計に関するヒントをエキスパートから迅速かつ直接得ることができる場所です。既存の回答を検索したり、独自の質問をしたりすることで、設計に必要な支援を迅速に得ることができます。

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9.4 Trademarks

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すべての商標は、それぞれの所有者に帰属します。

9.5 静電気放電に関する注意事項



この IC は、ESD によって破損する可能性があります。テキサス・インスツルメンツは、IC を取り扱う際には常に適切な注意を払うことを推奨します。正しい取り扱いおよび設置手順に従わない場合、デバイスを破損するおそれがあります。

ESD による破損は、わずかな性能低下からデバイスの完全な故障まで多岐にわたります。精密な IC の場合、パラメータがわずかに変化するだけで公表されている仕様から外れる可能性があるため、破損が発生しやすくなっています。

9.6 用語集

[テキサス・インスツルメンツ用語集](#) この用語集には、用語や略語の一覧および定義が記載されています。

10 Revision History

資料番号末尾の英字は改訂を表しています。その改訂履歴は英語版に準じています。

Changes from Revision P (October 2023) to Revision Q (January 2024) Page

- Updated thermal values for DBV package from R θ JA = 240 to 278, R θ JC(top) = 174.5 to 180.5, R θ JB = 73.7 to 184.4, Ψ JT = 54.9 to 115.4, Ψ JB = 60.1 to 183.4, R θ JC(bot) = N/A, all values in °C/W 5

Changes from Revision O (April 2016) to Revision P (October 2023) Page

- ドキュメント全体にわたって表、図、相互参照の採番方法を更新 1
- Updated thermal values for DCK package from R θ JA = 276.53 to 289.2, R θ JC(top) = 118.5 to 205.8, R θ JB = 62.8 to 176.2, Ψ JT = 6.7 to 117.6, Ψ JB = 62.1 to 175.1, R θ JC(bot) = N/A, all values in °C/W 5

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.

PACKAGING INFORMATION

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead finish/ Ball material (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|-------------------|---------------|--------------|-----------------|------|-------------|------------------|--------------------------------------|----------------------|--------------|--------------------------------------|-------------------------|
| SN74AHC1G00DBVR | ACTIVE | SOT-23 | DBV | 5 | 3000 | RoHS & Green | NIPDAU SN | Level-1-260C-UNLIM | -40 to 125 | (35XH, A003, A00G, A00J, A00L, A00S) | Samples |
| SN74AHC1G00DBVRG4 | ACTIVE | SOT-23 | DBV | 5 | 3000 | RoHS & Green | NIPDAU | Level-1-260C-UNLIM | -40 to 125 | A00G | Samples |
| SN74AHC1G00DBVT | OBSOLETE | SOT-23 | DBV | 5 | | TBD | Call TI | Call TI | -40 to 125 | (A003, A00G, A00J, A00S) | |
| SN74AHC1G00DCK3 | ACTIVE | SC70 | DCK | 5 | 3000 | RoHS & Non-Green | SNBI | Level-1-260C-UNLIM | -40 to 125 | AA3 | Samples |
| SN74AHC1G00DCKR | ACTIVE | SC70 | DCK | 5 | 3000 | RoHS & Green | SN | Level-1-260C-UNLIM | -40 to 125 | (1QP, AA3, AAG, AAJ, AAL, AAS) | Samples |
| SN74AHC1G00DCKRE4 | ACTIVE | SC70 | DCK | 5 | 3000 | RoHS & Green | NIPDAU | Level-1-260C-UNLIM | -40 to 125 | AA3 | Samples |
| SN74AHC1G00DCKRG4 | ACTIVE | SC70 | DCK | 5 | 3000 | RoHS & Green | NIPDAU | Level-1-260C-UNLIM | -40 to 125 | AA3 | Samples |
| SN74AHC1G00DCKT | OBSOLETE | SC70 | DCK | 5 | | TBD | Call TI | Call TI | -40 to 125 | (AA3, AAG, AAJ, AAS) | |
| SN74AHC1G00DCKTG4 | ACTIVE | SC70 | DCK | 5 | 250 | RoHS & Green | NIPDAU | Level-1-260C-UNLIM | -40 to 125 | AA3 | Samples |
| SN74AHC1G00DRLR | ACTIVE | SOT-5X3 | DRL | 5 | 4000 | RoHS & Green | NIPDAU NIPDAUAG | Level-1-260C-UNLIM | -40 to 125 | (AAB, AAS) | Samples |

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

- (4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.
- (5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.
- (6) Lead finish/Ball material - Orderable Devices 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.

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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.

OTHER QUALIFIED VERSIONS OF SN74AHC1G00 :

- Automotive : [SN74AHC1G00-Q1](#)

NOTE: Qualified Version Definitions:

- Automotive - Q100 devices qualified for high-reliability automotive applications targeting zero defects

TAPE AND REEL INFORMATION

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE


*All dimensions are nominal

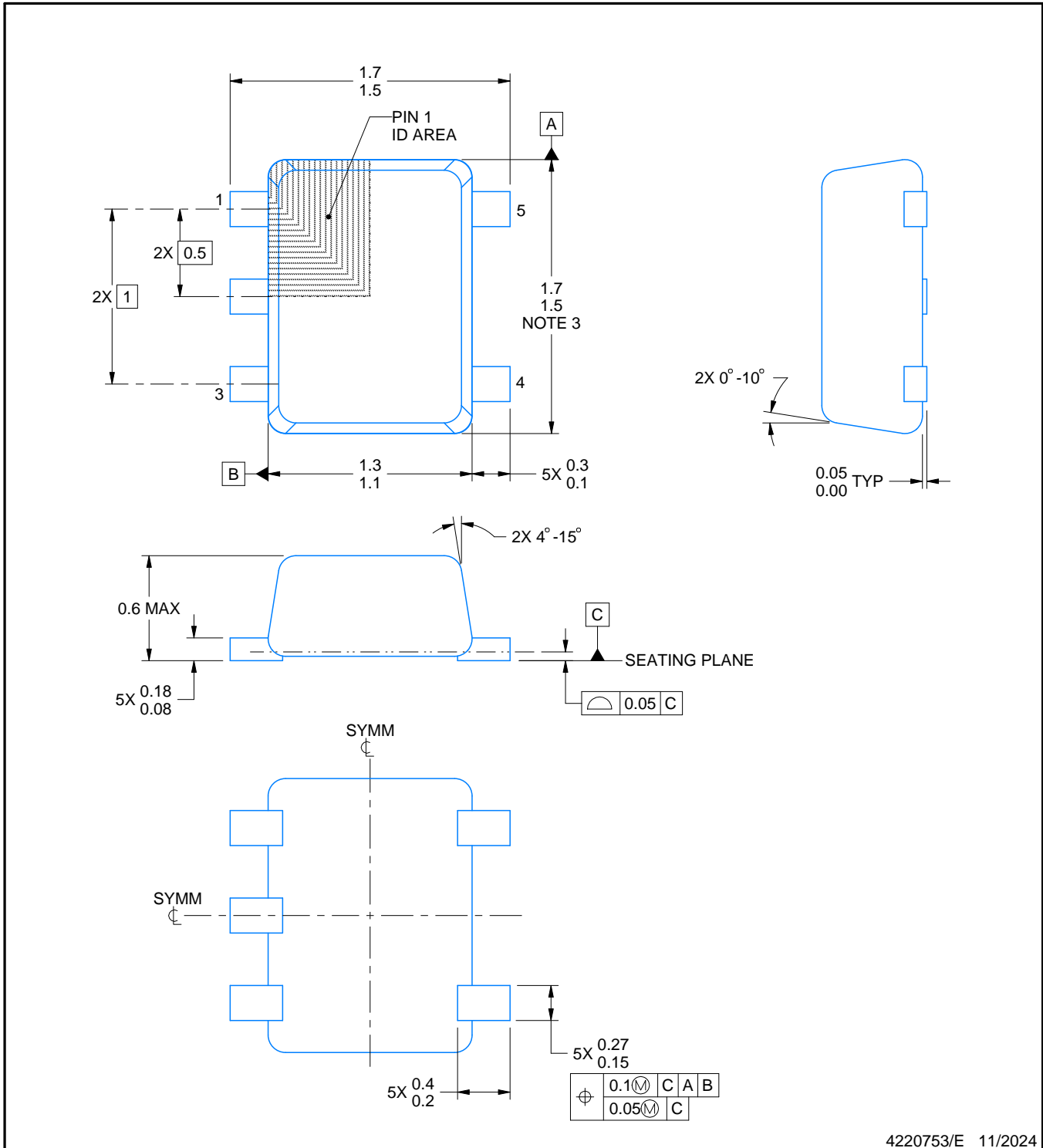
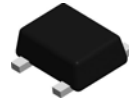
| Device | Package Type | Package Drawing | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|-------------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74AHC1G00DBVR | SOT-23 | DBV | 5 | 3000 | 178.0 | 9.0 | 3.3 | 3.2 | 1.4 | 4.0 | 8.0 | Q3 |
| SN74AHC1G00DBVRG4 | SOT-23 | DBV | 5 | 3000 | 178.0 | 9.0 | 3.23 | 3.17 | 1.37 | 4.0 | 8.0 | Q3 |
| SN74AHC1G00DCKR | SC70 | DCK | 5 | 3000 | 178.0 | 9.0 | 2.4 | 2.5 | 1.2 | 4.0 | 8.0 | Q3 |
| SN74AHC1G00DCKR | SC70 | DCK | 5 | 3000 | 180.0 | 8.4 | 2.3 | 2.5 | 1.2 | 4.0 | 8.0 | Q3 |
| SN74AHC1G00DCKRG4 | SC70 | DCK | 5 | 3000 | 178.0 | 9.2 | 2.4 | 2.4 | 1.22 | 4.0 | 8.0 | Q3 |
| SN74AHC1G00DCKTG4 | SC70 | DCK | 5 | 250 | 178.0 | 9.2 | 2.4 | 2.4 | 1.22 | 4.0 | 8.0 | Q3 |
| SN74AHC1G00DRLR | SOT-5X3 | DRL | 5 | 4000 | 180.0 | 8.4 | 1.98 | 1.78 | 0.69 | 4.0 | 8.0 | Q3 |

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|-------------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74AHC1G00DBVR | SOT-23 | DBV | 5 | 3000 | 180.0 | 180.0 | 18.0 |
| SN74AHC1G00DBVRG4 | SOT-23 | DBV | 5 | 3000 | 180.0 | 180.0 | 18.0 |
| SN74AHC1G00DCKR | SC70 | DCK | 5 | 3000 | 180.0 | 180.0 | 18.0 |
| SN74AHC1G00DCKR | SC70 | DCK | 5 | 3000 | 210.0 | 185.0 | 35.0 |
| SN74AHC1G00DCKRG4 | SC70 | DCK | 5 | 3000 | 180.0 | 180.0 | 18.0 |
| SN74AHC1G00DCKTG4 | SC70 | DCK | 5 | 250 | 180.0 | 180.0 | 18.0 |
| SN74AHC1G00DRLR | SOT-5X3 | DRL | 5 | 4000 | 202.0 | 201.0 | 28.0 |



4220753/E 11/2024

NOTES:

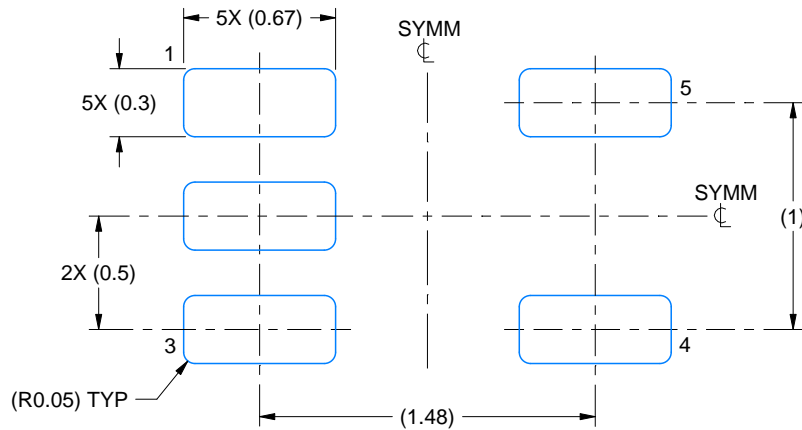
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. Reference JEDEC registration MO-293 Variation UAAD-1

EXAMPLE BOARD LAYOUT

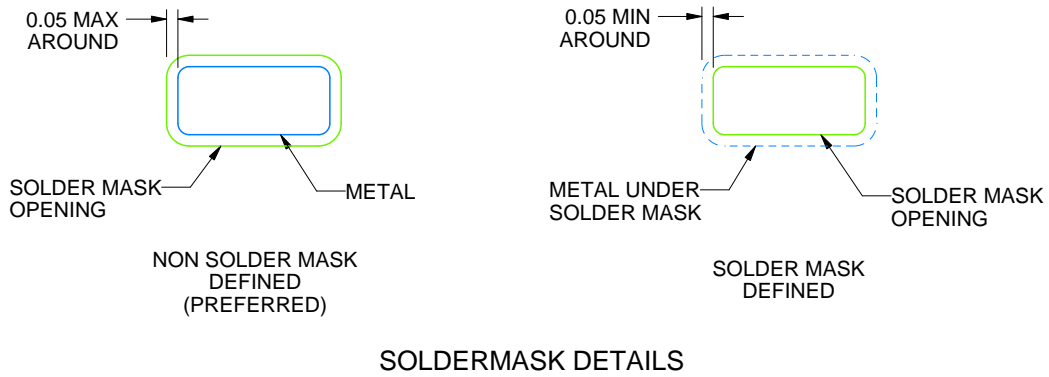
DRL0005A

SOT - 0.6 mm max height

PLASTIC SMALL OUTLINE



LAND PATTERN EXAMPLE
SCALE:30X



SOLDERMASK DETAILS

4220753/E 11/2024

NOTES: (continued)

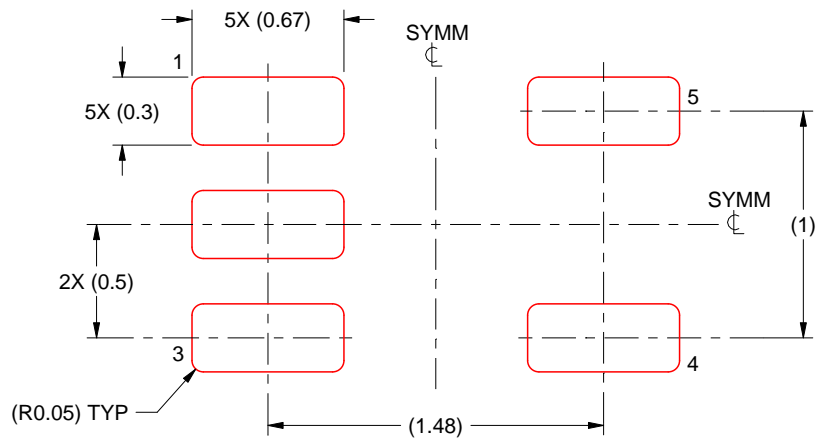
- 5. Publication IPC-7351 may have alternate designs.
- 6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

EXAMPLE STENCIL DESIGN

DRL0005A

SOT - 0.6 mm max height

PLASTIC SMALL OUTLINE



SOLDER PASTE EXAMPLE
BASED ON 0.1 mm THICK STENCIL
SCALE:30X

4220753/E 11/2024

NOTES: (continued)

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

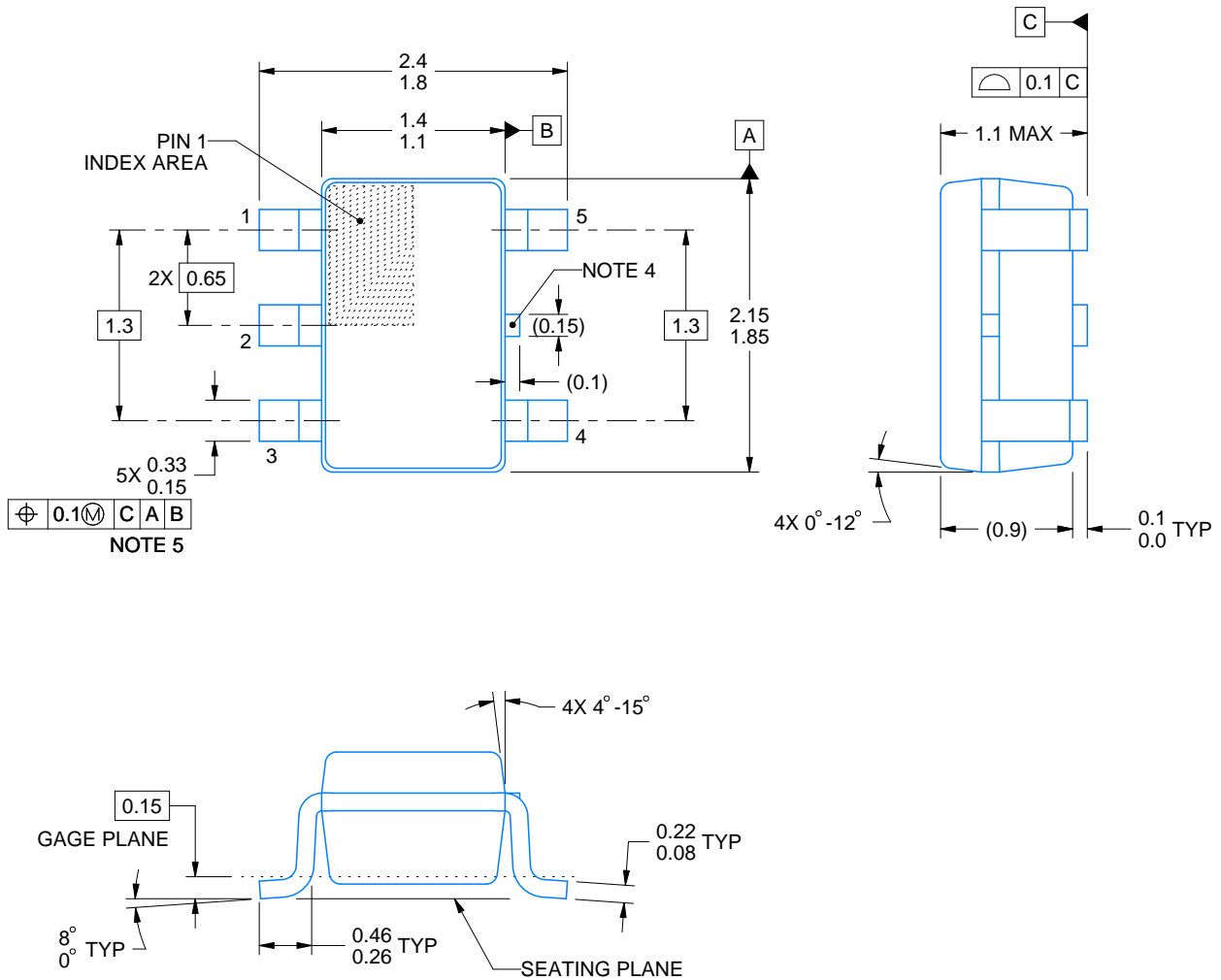
DCK0005A



PACKAGE OUTLINE

SOT - 1.1 max height

SMALL OUTLINE TRANSISTOR



4214834/G 11/2024

NOTES:

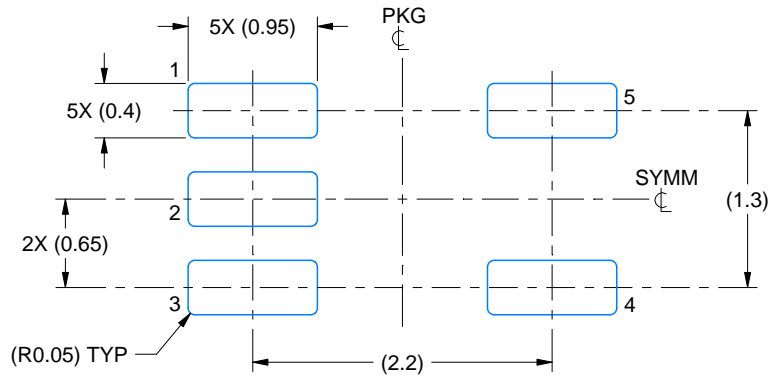
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. Reference JEDEC MO-203.
4. Support pin may differ or may not be present.
5. Lead width does not comply with JEDEC.
6. Body dimensions do not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.25mm per side

EXAMPLE BOARD LAYOUT

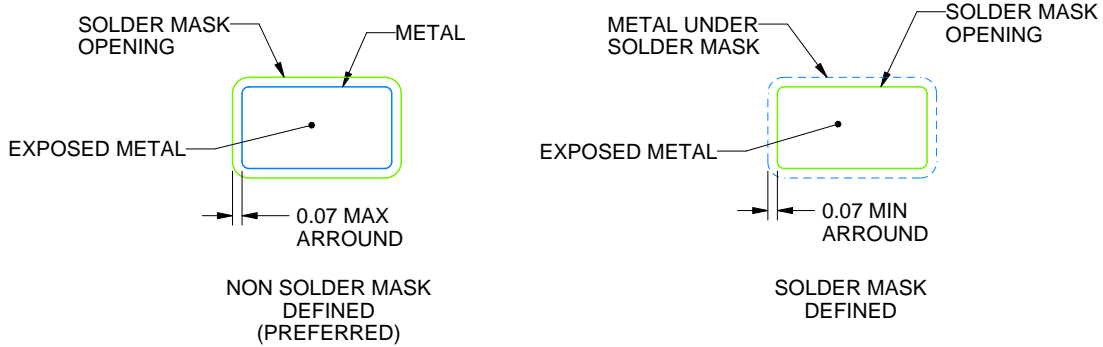
DCK0005A

SOT - 1.1 max height

SMALL OUTLINE TRANSISTOR



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE:18X



SOLDER MASK DETAILS

4214834/G 11/2024

NOTES: (continued)

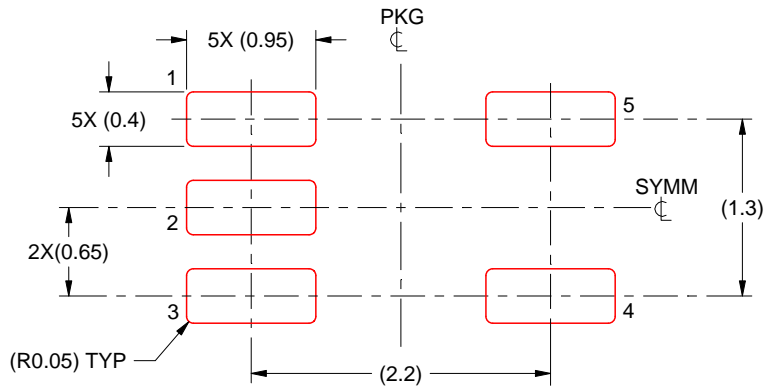
- 7. Publication IPC-7351 may have alternate designs.
- 8. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

EXAMPLE STENCIL DESIGN

DCK0005A

SOT - 1.1 max height

SMALL OUTLINE TRANSISTOR



SOLDER PASTE EXAMPLE
BASED ON 0.125 THICK STENCIL
SCALE:18X

4214834/G 11/2024

NOTES: (continued)

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

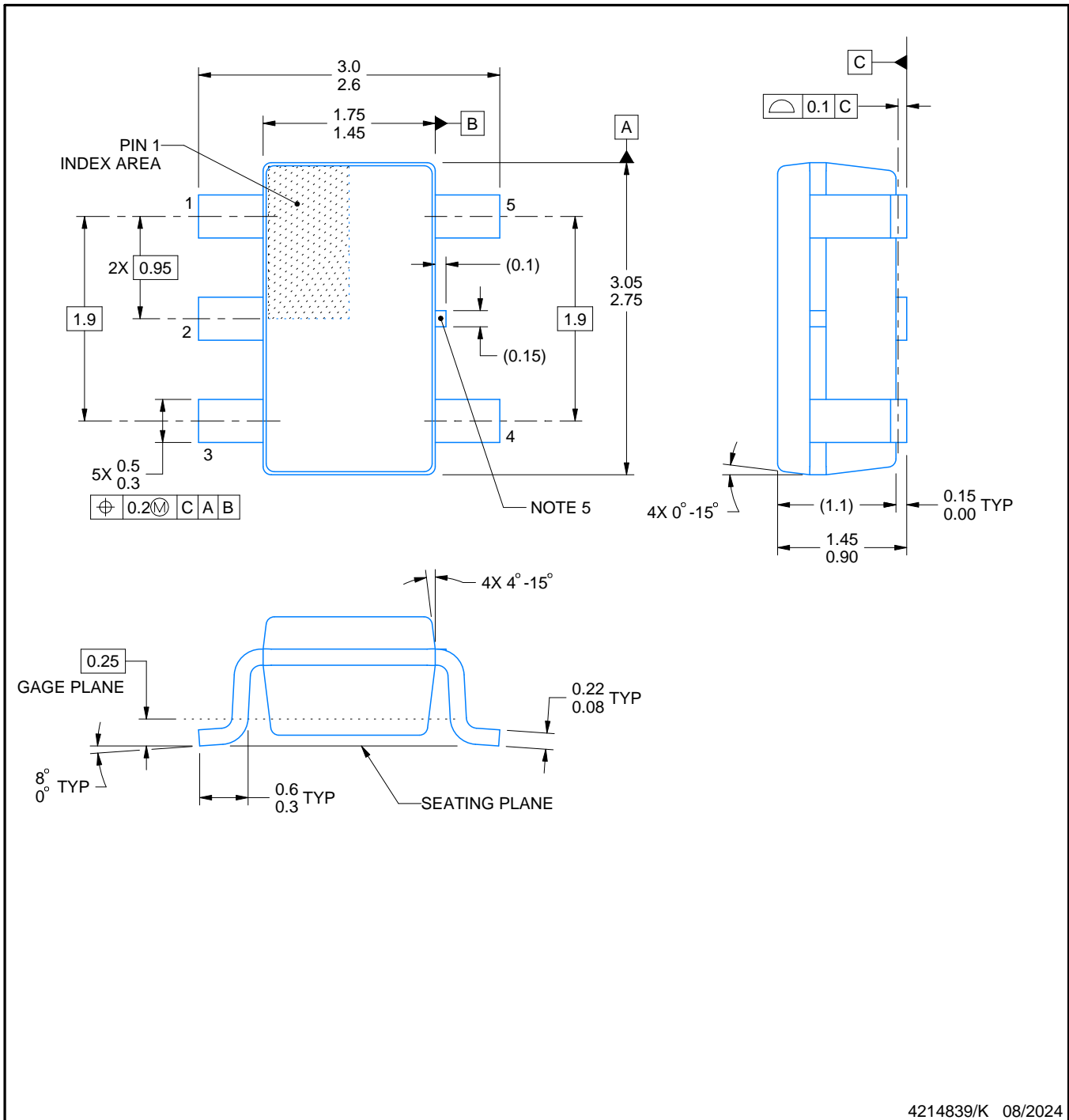
DBV0005A



PACKAGE OUTLINE

SOT-23 - 1.45 mm max height

SMALL OUTLINE TRANSISTOR



4214839/K 08/2024

NOTES:

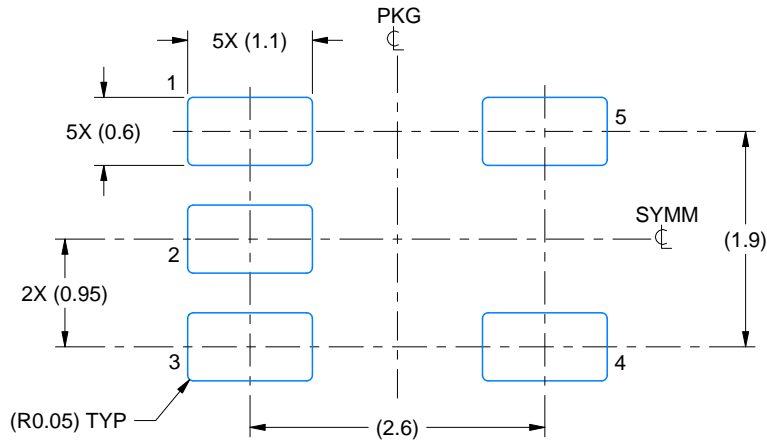
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. Reference JEDEC MO-178.
4. Body dimensions do not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.25 mm per side.
5. Support pin may differ or may not be present.

EXAMPLE BOARD LAYOUT

DBV0005A

SOT-23 - 1.45 mm max height

SMALL OUTLINE TRANSISTOR



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE:15X



SOLDER MASK DETAILS

4214839/K 08/2024

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.

EXAMPLE STENCIL DESIGN

DBV0005A

SOT-23 - 1.45 mm max height

SMALL OUTLINE TRANSISTOR



SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE:15X

4214839/K 08/2024

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.

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