

## SNx4AHC00 四路双输入正与非门

### 1 特性

- 工作电压范围为 2V 至 5.5V
- 闩锁性能超过 250mA，符合 JESD 17 规范

### 2 应用

- 启用或禁用数字信号
- 控制指示灯 LED
- 通信模块和系统控制器之间的转换

### 3 说明

' AHC00 器件以正逻辑执行布尔函数  $Y = \overline{A \cdot B}$  或  $Y = \overline{A} + \overline{B}$ 。

#### 器件信息

| 器件型号      | 封装 <sup>(1)</sup>  | 封装尺寸 <sup>(2)</sup> | 本体尺寸 <sup>(3)</sup> |
|-----------|--------------------|---------------------|---------------------|
| SN54AHC00 | J ( CDIP , 14 )    | 19.55mm x 7.9mm     | 19.56mm x 6.67mm    |
|           | W ( CFP , 14 )     | 9.21mm x 9mm        | 9.21mm x 6.3mm      |
|           | FK ( LCCC , 20 )   | 8.89mm x 8.89mm     | 8.89mm x 8.89mm     |
| SN74AHC00 | D ( SOIC , 14 )    | 8.65mm x 6mm        | 8.65mm x 1.58mm     |
|           | DB ( SSOP , 14 )   | 6.20mm x 7.8mm      | 6.20mm x 1.95mm     |
|           | DGV ( TVSOP , 14 ) | 3.60mm x 6.4mm      | 3.60mm x 1.05mm     |
|           | N ( PDIP , 14 )    | 19.30mm x 9.4mm     | 19.30mm x 6.30mm    |
|           | NS ( SOP , 14 )    | 10.2mm x 7.8mm      | 10.30mm x 1.95mm    |
|           | PW ( SOP , 14 )    | 5.00mm x 6.4mm      | 5.00mm x 4.40mm     |
|           | RGY ( VQFN , 14 )  | 3.50mm x 3.5mm      | 3.50mm x 3.5mm      |
|           | BQA ( WQFN , 14 )  | 3mm x 2.5mm         | 3mm x 2.5mm         |

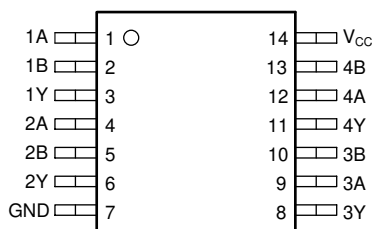
- (1) 有关更多信息，请参阅第 11 节。  
 (2) 封装尺寸 (长 × 宽) 为标称值，并包括引脚 (如适用)。  
 (3) 本体尺寸 (长 × 宽) 为标称值，不包括引脚。



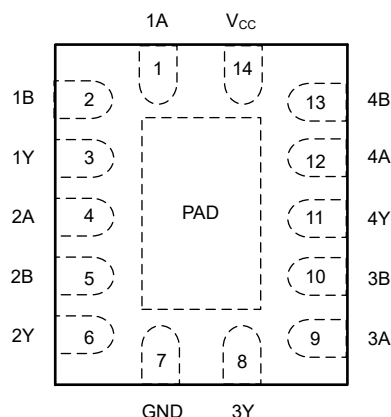
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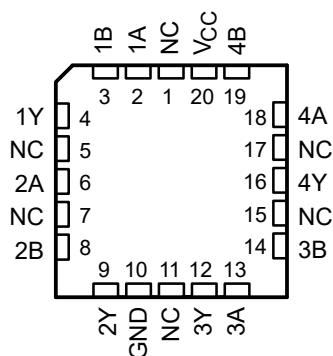
## 4 Pin Configuration and Functions



**图 4-1. SN54AHC00 J or W Package, 14-Pin CDIP or CFP (Top View);  
SN74AHC00 D, DB, DGV, N, NS, or PW Package,  
14-Pin SOIC, SSOP, TVSOP, PDIP, SOP, or TSSOP  
(Top View)**



**图 4-2. SN74AHC00 RGY or BQA Package, 14-Pin VQFN or WQFN (Top View)**



NC – No internal connection

**图 4-3. SN54AHC00 FK Package, 20-Pin LCCC (Top View)**

表 4-1. Pin Functions

| PIN             |                                    |           |                        | TYPE <sup>(1)</sup> | DESCRIPTION   |
|-----------------|------------------------------------|-----------|------------------------|---------------------|---------------|
| NAME            | SN74AHC00                          | SN54AHC00 |                        |                     |               |
|                 | D, DB, DGV, N, NS,<br>PW, RGY, BQA | J, W      | FK                     |                     |               |
| 1A              | 1                                  | 1         | 2                      | I                   | 1A Input      |
| 1B              | 2                                  | 2         | 3                      | I                   | 1B Input      |
| 1Y              | 3                                  | 3         | 4                      | O                   | 1Y Output     |
| 2A              | 4                                  | 4         | 6                      | I                   | 2A Input      |
| 2B              | 5                                  | 5         | 8                      | I                   | 2B Input      |
| 2Y              | 6                                  | 6         | 9                      | O                   | 2Y Output     |
| GND             | 7                                  | 7         | 10                     | —                   | Ground Pin    |
| 3A              | 8                                  | 8         | 13                     | I                   | 3A Input      |
| 3B              | 9                                  | 9         | 14                     | I                   | 3B Input      |
| 3Y              | 10                                 | 10        | 12                     | O                   | 3Y Output     |
| 4A              | 11                                 | 11        | 18                     | I                   | 4A Input      |
| 4B              | 12                                 | 12        | 19                     | I                   | 4B Input      |
| 4Y              | 13                                 | 13        | 16                     | O                   | 4Y Output     |
| V <sub>CC</sub> | 14                                 | 14        | 20                     | —                   | Power Pin     |
| NC              | —                                  | —         | 1, 5, 7,<br>11, 15, 17 | —                   | No Connection |

(1) I = input, O = output

## 5 Specifications

### 5.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted)<sup>(1)</sup>

|                      |                                            | MIN                                  | MAX            | UNIT        |
|----------------------|--------------------------------------------|--------------------------------------|----------------|-------------|
| $V_{CC}$             | Supply voltage range                       | - 0.5                                | 7              | V           |
| $V_I$ <sup>(2)</sup> | Input voltage range                        | - 0.5                                | 7              | V           |
| $V_O$ <sup>(2)</sup> | Output voltage range                       | - 0.5                                | $V_{CC} + 0.5$ | V           |
| $I_{IK}$             | Input clamp current                        | $(V_I < 0)$                          |                | - 20 mA     |
| $I_{OK}$             | Output clamp current                       | $(V_O < 0 \text{ or } V_O > V_{CC})$ |                | $\pm 20$ mA |
| $I_O$                | Continuous output current                  | $(V_O = 0 \text{ to } V_{CC})$       |                | $\pm 25$ mA |
|                      | Continuous current through $V_{CC}$ or GND |                                      | $\pm 50$       | mA          |
| $T_{stg}$            | Storage temperature range                  | - 65                                 | 150            | °C          |

- (1) 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.
- (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 <sup>(1)</sup>     | $\pm 2000$ |
|             |                         | Charged device model (CDM), per ANSI/ESDA/JEDEC JS-002 <sup>(2)</sup> | $\pm 1000$ |

- (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)<sup>(1)</sup>

|                 |                                    |                                 | SN54AHC00 |                 | SN74AHC00 |                 | UNIT |
|-----------------|------------------------------------|---------------------------------|-----------|-----------------|-----------|-----------------|------|
|                 |                                    |                                 | MIN       | MAX             | MIN       | MAX             |      |
| V <sub>CC</sub> | Supply voltage                     |                                 | 2         | 5.5             | 2         | 5.5             | V    |
| V <sub>IH</sub> | High-level input voltage           | V <sub>CC</sub> = 2 V           | 1.5       |                 | 1.5       |                 | V    |
|                 |                                    | V <sub>CC</sub> = 3V            | 2.1       |                 | 2.1       |                 |      |
|                 |                                    | V <sub>CC</sub> = 5.5 V         | 3.85      |                 | 3.85      |                 |      |
| V <sub>IL</sub> | Low-level Input voltage            | V <sub>CC</sub> = 2 V           | 0.5       |                 | 0.5       |                 | V    |
|                 |                                    | V <sub>CC</sub> = 3 V           | 0.9       |                 | 0.9       |                 |      |
|                 |                                    | V <sub>CC</sub> = 5.5 V         | 1.65      |                 | 1.65      |                 |      |
| V <sub>I</sub>  | Input voltage                      |                                 | 0         | 5.5             | 0         | 5.5             | V    |
| V <sub>O</sub>  | Output voltage                     |                                 | 0         | V <sub>CC</sub> | 0         | V <sub>CC</sub> | V    |
| I <sub>OH</sub> | High-level output current          | V <sub>CC</sub> = 2 V           | - 50      |                 | - 50      |                 | mA   |
|                 |                                    | V <sub>CC</sub> = 3.3 V ± 0.3 V | - 4       |                 | - 4       |                 |      |
|                 |                                    | V <sub>CC</sub> = 5 V ± 0.5 V   | - 8       |                 | - 8       |                 |      |
| I <sub>OL</sub> | Low-level output current           | V <sub>CC</sub> = 2 V           | 50        |                 | 50        |                 | mA   |
|                 |                                    | V <sub>CC</sub> = 3.3 V ± 0.3 V | 4         |                 | 4         |                 |      |
|                 |                                    | V <sub>CC</sub> = 5 V ± 0.5 V   | 8         |                 | 8         |                 |      |
| Δ t/ Δ v        | Input Transition rise or fall rate | V <sub>CC</sub> = 3.3 V ± 0.3 V | 100       |                 | 100       |                 | ns/V |
|                 |                                    | V <sub>CC</sub> = 5 V ± 0.5 V   | 20        |                 | 20        |                 |      |

over operating free-air temperature range (unless otherwise noted)<sup>(1)</sup>

|                |                                | SN54AHC00 |     | SN74AHC00 |     | UNIT |
|----------------|--------------------------------|-----------|-----|-----------|-----|------|
|                |                                | MIN       | MAX | MIN       | MAX |      |
| T <sub>A</sub> | Operating free-air temperature | - 55      | 125 | - 40      | 125 | °C   |

(1) 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*, literature number [SCBA004](#).

## 5.4 Thermal Information

| THERMAL METRIC <sup>(1)</sup> |                                        | SN74AHC00 |         |         |         |         |         |         |         | UNIT |
|-------------------------------|----------------------------------------|-----------|---------|---------|---------|---------|---------|---------|---------|------|
|                               |                                        | D         | DB      | DGV     | N       | NS      | PW      | RGY     | BQA     |      |
|                               |                                        | 14 PINS   | 14 PINS | 14 PINS | 14 PINS | 14 PINS | 14 PINS | 14 PINS | 14 PINS |      |
| R <sub>θJA</sub>              | Junction-to-ambient thermal resistance | 124.5     | 96      | 127     | 80      | 76      | 147.7   | 87.1    | 88.3    | °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 operating free-air temperature range (unless otherwise noted)<sup>(1)</sup>

| PARAMETER       | TEST CONDITIONS                                                | V <sub>CC</sub> | T <sub>A</sub> = 25°C |     |      | T <sub>A</sub> = - 55°C TO 125°C |                   | T <sub>A</sub> = - 40°C TO 85°C |      | T <sub>A</sub> = - 40°C TO 125°C |     | UNIT |
|-----------------|----------------------------------------------------------------|-----------------|-----------------------|-----|------|----------------------------------|-------------------|---------------------------------|------|----------------------------------|-----|------|
|                 |                                                                |                 |                       |     |      | SN54AHC00                        |                   | SN74AHC00                       |      | Recommended<br>SN74AHC00         |     |      |
|                 |                                                                |                 | MIN                   | TYP | MAX  | MIN                              | MAX               | MIN                             | MAX  | MIN                              | MAX |      |
| V <sub>OH</sub> | I <sub>OH</sub> = - 50 μA                                      | 2 V             | 1.9                   | 2   |      | 1.9                              |                   | 1.9                             |      | 1.9                              | V   |      |
|                 |                                                                | 3 V             | 2.9                   | 3   |      | 2.9                              |                   | 2.9                             |      | 2.9                              |     |      |
|                 |                                                                | 4.5 V           | 4.4                   | 4.5 |      | 4.4                              |                   | 4.4                             |      | 4.4                              |     |      |
|                 | I <sub>OH</sub> = - 4 mA                                       | 3 V             | 2.58                  |     |      | 2.48                             |                   | 2.48                            |      | 2.48                             |     |      |
|                 | I <sub>OH</sub> = - 8 mA                                       | 4.5 V           | 3.94                  |     |      | 3.8                              |                   | 3.8                             |      | 3.8                              |     |      |
| V <sub>OL</sub> | I <sub>OL</sub> = 50 μA                                        | 2 V             |                       |     | 0.1  |                                  | 0.1               |                                 | 0.1  |                                  | 0.1 | V    |
|                 |                                                                | 3 V             |                       |     | 0.1  |                                  | 0.1               |                                 | 0.1  |                                  | 0.1 |      |
|                 |                                                                | 4.5 V           |                       |     | 0.1  |                                  | 0.1               |                                 | 0.1  |                                  | 0.1 |      |
|                 | I <sub>OH</sub> = 4 mA                                         | 3 V             |                       |     | 0.36 |                                  | 0.5               |                                 | 0.44 |                                  | 0.5 |      |
|                 | I <sub>OH</sub> = 8 mA                                         | 4.5 V           |                       |     | 0.36 |                                  | 0.5               |                                 | 0.44 |                                  | 0.5 |      |
| I <sub>I</sub>  | V <sub>I</sub> = 5.5 V or GND                                  | 0 V to 5.5 V    |                       |     | ±0.1 |                                  | ±1 <sup>(1)</sup> |                                 | ±1   |                                  | ±1  | μA   |
| I <sub>CC</sub> | V <sub>I</sub> = V <sub>CC</sub> or GND,<br>I <sub>O</sub> = 0 | 5.5 V           |                       |     | 2    |                                  | 20                |                                 | 20   |                                  | 20  | μA   |
| C <sub>i</sub>  | V <sub>I</sub> = V <sub>CC</sub> or GND                        | 5 V             |                       | 2   | 10   |                                  |                   |                                 | 10   |                                  |     | pF   |

(1) On products compliant to MIL-PRF-38535, this parameter is not production tested at V<sub>CC</sub> = 0 V.

## 5.6 Switching Characteristics, V<sub>CC</sub> = 3.3 V ± 0.3 V

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

| PARAMETER        | FROM<br>(INPUT) | TO<br>(OUTPUT) | LOAD<br>CAPACITANCE    | T <sub>A</sub> = 25°C |                    | T <sub>A</sub> = - 55°C TO<br>125°C |                    | T <sub>A</sub> = - 40°C TO<br>85°C |     | T <sub>A</sub> = - 40°C TO<br>125°C |     | UNIT |
|------------------|-----------------|----------------|------------------------|-----------------------|--------------------|-------------------------------------|--------------------|------------------------------------|-----|-------------------------------------|-----|------|
|                  |                 |                |                        |                       |                    |                                     |                    |                                    |     | Recommended                         |     |      |
|                  |                 |                |                        | SN54AHC00             |                    | SN74AHC00                           |                    | SN74AHC00                          |     |                                     |     |      |
|                  |                 |                |                        | TYP                   | MAX                | MIN                                 | MAX                | MIN                                | MAX | MIN                                 | MAX |      |
| t <sub>PLH</sub> | A or B          | Y              | C <sub>L</sub> = 15 pF | 5.5 <sup>(1)</sup>    | 7.9 <sup>(1)</sup> | 1 <sup>(1)</sup>                    | 9.5 <sup>(1)</sup> | 1                                  | 9.5 | 1                                   | 9.5 | ns   |
| t <sub>PHL</sub> |                 |                |                        | 5.5 <sup>(1)</sup>    | 7.9 <sup>(1)</sup> | 1 <sup>(1)</sup>                    | 9.5 <sup>(1)</sup> | 1                                  | 9.5 | 1                                   | 9.5 |      |
| t <sub>PLH</sub> | A or B          | Y              | C <sub>L</sub> = 50 pF | 8                     | 11.4               | 1                                   | 13                 | 1                                  | 13  | 1                                   | 13  | ns   |
| t <sub>PHL</sub> |                 |                |                        | 8                     | 11.4               | 1                                   | 13                 | 1                                  | 13  | 1                                   | 13  |      |

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

## 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<br>(INPUT) | TO<br>(OUTPUT) | LOAD<br>CAPACITANCE    | T <sub>A</sub> = 25°C |                    | T <sub>A</sub> = - 55°C TO 125°C |                    | T <sub>A</sub> = - 40°C TO 85°C |     | T <sub>A</sub> = - 40°C TO 125°C |     | UNIT |
|------------------|-----------------|----------------|------------------------|-----------------------|--------------------|----------------------------------|--------------------|---------------------------------|-----|----------------------------------|-----|------|
|                  |                 |                |                        |                       |                    | SN54AHC00                        |                    | SN74AHC00                       |     | Recommended<br>SN74AHC00         |     |      |
|                  |                 |                |                        | TYP                   | MAX                | MIN                              | MAX                | MIN                             | MAX | MIN                              | MAX |      |
|                  |                 |                |                        |                       |                    |                                  |                    |                                 |     |                                  |     |      |
| t <sub>PLH</sub> | A or B          | Y              | C <sub>L</sub> = 15 pF | 3.7 <sup>(1)</sup>    | 5.5 <sup>(1)</sup> | 1 <sup>(1)</sup>                 | 6.5 <sup>(1)</sup> | 1                               | 6.5 | 1                                | 6.5 | ns   |
| t <sub>PHL</sub> |                 |                |                        | 3.7 <sup>(1)</sup>    | 5.5 <sup>(1)</sup> | 1 <sup>(1)</sup>                 | 6.5 <sup>(1)</sup> | 1                               | 6.5 | 1                                | 6.5 |      |
| t <sub>PLH</sub> | A or B          | Y              | C <sub>L</sub> = 50 pF | 5.2                   | 7.5                | 1                                | 8.5                | 1                               | 8.5 | 1                                | 8.5 | ns   |
| t <sub>PHL</sub> |                 |                |                        | 5.2                   | 7.5                | 1                                | 8.5                | 1                               | 8.5 | 1                                | 8.5 |      |

## 5.8 Noise Characteristics

$V_{CC} = 5\text{ V}$ ,  $C_L = 50\text{ pF}$ ,  $T_A = 25^\circ\text{C}$ <sup>(1)</sup>

| PARAMETER   |                                        | SN74AHC00 |      |      | UNIT |
|-------------|----------------------------------------|-----------|------|------|------|
|             |                                        | MIN       | TYP  | MAX  |      |
| $V_{OL(P)}$ | Quiet output, maximum dynamic $V_{OL}$ |           | 0.3  | 0.8  | V    |
| $V_{OL(V)}$ | Quiet output, minimum dynamic $V_{OL}$ |           | -0.3 | -0.8 | V    |
| $V_{OH(V)}$ | Quiet output, minimum dynamic $V_{OH}$ |           | 4.6  |      | V    |
| $V_{IH(D)}$ | High-level dynamic input voltage       | 3.5       |      |      | V    |
| $V_{IL(D)}$ | Low-level dynamic input voltage        |           |      | 1.5  | V    |

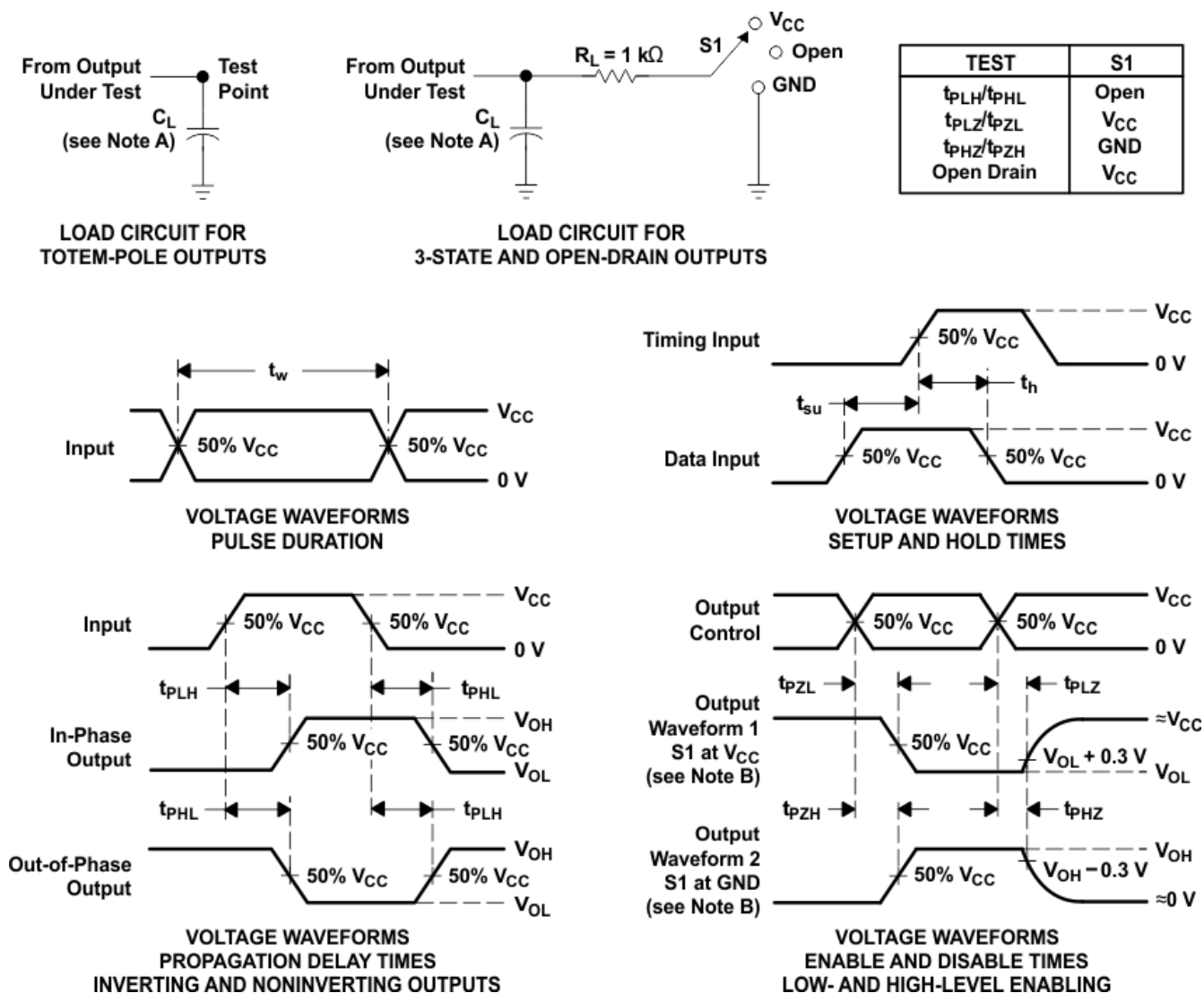
(1) Characteristics are for surface-mount packages only.

## 5.9 Operating Characteristics

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

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

## 6 Parameter Measurement Information



- $C_L$  includes probe and jig capacitance.
- 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.
- All input pulses are supplied by generators having the following characteristics:  $PRR \leq 1\text{ MHz}$ ,  $Z_O = 50\ \Omega$ ,  $t_r \leq 3\text{ ns}$ ,  $t_f \leq 3\text{ ns}$ .
- The outputs are measured one at a time with one input transition per measurement.
- All parameters and waveforms are not applicable to all devices.

图 6-1. Load Circuit and Voltage Waveforms

## 7 Detailed Description

### 7.1 Functional Block Diagram



图 7-1. Logic Diagram, Each Gate (Positive Logic)

### 7.2 Device Functional Modes

表 7-1. Function Table (Each Gate)

| INPUTS <sup>(1)</sup> |   | OUTPUT Y |
|-----------------------|---|----------|
| A                     | B |          |
| H                     | H | L        |
| L                     | X | H        |
| X                     | L | H        |

(1) H = High Voltage Level, L = Low Voltage Level, X = Don't Care

## 8 Application and Implementation

### 备注

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. Customers should validate and test their design implementation to confirm system functionality.

### 8.1 Power Supply Recommendations

The power supply can be any voltage between the MIN and MAX supply-voltage rating located in [节 5.3](#).

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 *Layout Example*.

### 8.2 Layout

#### 8.2.1 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.

#### 8.2.2 Layout Example

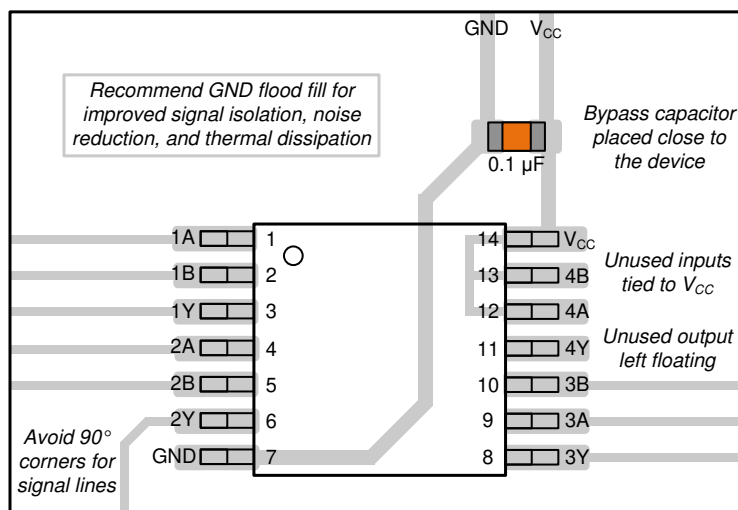


图 8-1. Example Layout for the SN74AHC00

## 9 Device and Documentation Support

TI offers an extensive line of development tools. Tools and software to evaluate the performance of the device, generate code, and develop solutions are listed below.

### 9.1 Documentation Support

#### 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.

表 9-1. Related Links

| PARTS     | PRODUCT FOLDER             | SAMPLE & BUY               | TECHNICAL DOCUMENTS        | TOOLS & SOFTWARE           | SUPPORT & COMMUNITY        |
|-----------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| SN54AHC00 | <a href="#">Click here</a> | <a href="#">Click here</a> | <a href="#">Click here</a> | <a href="#">Click here</a> | <a href="#">Click here</a> |
| SN74AHC00 | <a href="#">Click here</a> | <a href="#">Click here</a> | <a href="#">Click here</a> | <a href="#">Click here</a> | <a href="#">Click here</a> |

### 9.2 接收文档更新通知

要接收文档更新通知，请导航至 [ti.com](#) 上的器件产品文件夹。点击 [通知](#) 进行注册，即可每周接收产品信息更改摘要。有关更改的详细信息，请查看任何已修订文档中包含的修订历史记录。

### 9.3 支持资源

[TI E2E™ 中文支持论坛](#) 是工程师的重要参考资料，可直接从专家处获得快速、经过验证的解答和设计帮助。搜索现有解答或提出自己的问题，获得所需的快速设计帮助。

链接的内容由各个贡献者“按原样”提供。这些内容并不构成 TI 技术规范，并且不一定反映 TI 的观点；请参阅 TI 的 [使用条款](#)。

### 9.4 Trademarks

TI E2E™ is a trademark of Texas Instruments.

所有商标均为其各自所有者的财产。

### 9.5 静电放电警告



静电放电 (ESD) 会损坏这个集成电路。德州仪器 (TI) 建议通过适当的预防措施处理所有集成电路。如果不遵守正确的处理和安装程序，可能会损坏集成电路。

ESD 的损坏小至导致微小的性能降级，大至整个器件故障。精密的集成电路可能更容易受到损坏，这是因为非常细微的参数更改都可能会导致器件与其发布的规格不相符。

### 9.6 术语表

[TI 术语表](#) 本术语表列出并解释了术语、首字母缩略词和定义。

## 10 Revision History

注：以前版本的页码可能与当前版本的页码不同

| Changes from Revision L (February 2024) to Revision M (May 2024)                  | Page               |
|-----------------------------------------------------------------------------------|--------------------|
| • 向 <a href="#">器件信息</a> 表中添加了封装尺寸.....                                           | <a href="#">1</a>  |
| • Updated images and table in <i>Pin Configuration and Functions</i> section..... | <a href="#">3</a>  |
| • Updated image in <i>Layout Example</i> .....                                    | <a href="#">10</a> |

| Changes from Revision K (June 2023) to Revision L (February 2024)           | Page |
|-----------------------------------------------------------------------------|------|
| • Updated $R_{\theta JA}$ value: RGY = 47 to 87.1, all values in °C/W ..... | 6    |
| • Added <i>Application and Implementation</i> section.....                  | 10   |

**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 part number           | Status<br>(1) | Material type<br>(2) | Package   Pins   | Package qty   Carrier | RoHS<br>(3) | Lead finish/<br>Ball material<br>(4) | MSL rating/<br>Peak reflow<br>(5) | Op temp (°C) | Part marking<br>(6)                     |
|---------------------------------|---------------|----------------------|------------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|-----------------------------------------|
| <a href="#">5962-9682201Q2A</a> | Active        | Production           | LCCC (FK)   20   | 55   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>9682201Q2A<br>SNJ54AHC<br>00FK |
| <a href="#">5962-9682201QCA</a> | Active        | Production           | CDIP (J)   14    | 25   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9682201QC<br>A<br>SNJ54AHC00J      |
| <a href="#">5962-9682201QDA</a> | Active        | Production           | CFP (W)   14     | 25   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9682201QD<br>A<br>SNJ54AHC00W      |
| <a href="#">SN74AHC00BQAR</a>   | Active        | Production           | WQFN (BQA)   14  | 3000   LARGE T&R      | Yes         | SELECTIVE<br>AG (TOP SIDE)           | Level-1-260C-UNLIM                | -40 to 125   | AHC00                                   |
| SN74AHC00BQAR.A                 | Active        | Production           | WQFN (BQA)   14  | 3000   LARGE T&R      | Yes         | SELECTIVE<br>AG (TOP SIDE)           | Level-1-260C-UNLIM                | -40 to 125   | AHC00                                   |
| <a href="#">SN74AHC00D</a>      | Obsolete      | Production           | SOIC (D)   14    | -                     | -           | Call TI                              | Call TI                           | -40 to 125   | AHC00                                   |
| <a href="#">SN74AHC00DBR</a>    | Active        | Production           | SSOP (DB)   14   | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | HA00                                    |
| SN74AHC00DBR.A                  | Active        | Production           | SSOP (DB)   14   | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | HA00                                    |
| <a href="#">SN74AHC00DGVR</a>   | Active        | Production           | TVSOP (DGV)   14 | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | HA00                                    |
| SN74AHC00DGVR.A                 | Active        | Production           | TVSOP (DGV)   14 | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | HA00                                    |
| <a href="#">SN74AHC00DR</a>     | Active        | Production           | SOIC (D)   14    | 2500   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | AHC00                                   |
| SN74AHC00DR.A                   | Active        | Production           | SOIC (D)   14    | 2500   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | AHC00                                   |
| SN74AHC00DRG4                   | Active        | Production           | SOIC (D)   14    | 2500   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | AHC00                                   |
| SN74AHC00DRG4.A                 | Active        | Production           | SOIC (D)   14    | 2500   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | AHC00                                   |
| <a href="#">SN74AHC00N</a>      | Active        | Production           | PDIP (N)   14    | 25   TUBE             | Yes         | NIPDAU                               | N/A for Pkg Type                  | -40 to 125   | SN74AHC00N                              |
| SN74AHC00N.A                    | Active        | Production           | PDIP (N)   14    | 25   TUBE             | Yes         | NIPDAU                               | N/A for Pkg Type                  | -40 to 125   | SN74AHC00N                              |
| <a href="#">SN74AHC00NSR</a>    | Active        | Production           | SOP (NS)   14    | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | AHC00                                   |
| SN74AHC00NSR.A                  | Active        | Production           | SOP (NS)   14    | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | AHC00                                   |
| <a href="#">SN74AHC00PW</a>     | Obsolete      | Production           | TSSOP (PW)   14  | -                     | -           | Call TI                              | Call TI                           | -40 to 125   | HA00                                    |
| <a href="#">SN74AHC00PWR</a>    | Active        | Production           | TSSOP (PW)   14  | 2000   LARGE T&R      | Yes         | NIPDAU   SN                          | Level-1-260C-UNLIM                | -40 to 125   | HA00                                    |
| SN74AHC00PWR.A                  | Active        | Production           | TSSOP (PW)   14  | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | HA00                                    |
| <a href="#">SN74AHC00PWRG3</a>  | Active        | Production           | TSSOP (PW)   14  | 2000   LARGE T&R      | Yes         | SN                                   | Level-1-260C-UNLIM                | -40 to 125   | HA00                                    |

| Orderable part number         | Status<br>(1) | Material type<br>(2) | Package   Pins  | Package qty   Carrier | RoHS<br>(3) | Lead finish/<br>Ball material<br>(4) | MSL rating/<br>Peak reflow<br>(5) | Op temp (°C) | Part marking<br>(6)                |
|-------------------------------|---------------|----------------------|-----------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|------------------------------------|
| SN74AHC00PWRG3.A              | Active        | Production           | TSSOP (PW)   14 | 2000   LARGE T&R      | Yes         | SN                                   | Level-1-260C-UNLIM                | -40 to 125   | HA00                               |
| <a href="#">SN74AHC00RGYR</a> | Active        | Production           | VQFN (RGY)   14 | 3000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | HA00                               |
| SN74AHC00RGYR.A               | Active        | Production           | VQFN (RGY)   14 | 3000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | HA00                               |
| SN74AHC00RGYRG4               | Active        | Production           | VQFN (RGY)   14 | 3000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | HA00                               |
| SN74AHC00RGYRG4.A             | Active        | Production           | VQFN (RGY)   14 | 3000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 125   | HA00                               |
| <a href="#">SNJ54AHC00FK</a>  | Active        | Production           | LCCC (FK)   20  | 55   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9682201Q2A<br>SNJ54AHC00FK    |
| SNJ54AHC00FK.A                | Active        | Production           | LCCC (FK)   20  | 55   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9682201Q2A<br>SNJ54AHC00FK    |
| <a href="#">SNJ54AHC00J</a>   | Active        | Production           | CDIP (J)   14   | 25   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9682201QC<br>A<br>SNJ54AHC00J |
| SNJ54AHC00J.A                 | Active        | Production           | CDIP (J)   14   | 25   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9682201QC<br>A<br>SNJ54AHC00J |
| <a href="#">SNJ54AHC00W</a>   | Active        | Production           | CFP (W)   14    | 25   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9682201QD<br>A<br>SNJ54AHC00W |
| SNJ54AHC00W.A                 | Active        | Production           | CFP (W)   14    | 25   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9682201QD<br>A<br>SNJ54AHC00W |

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

<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.

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.

**Important Information and Disclaimer:** The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

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 SN54AHC00, SN74AHC00 :**

- Catalog : [SN74AHC00](#)
- Automotive : [SN74AHC00-Q1](#), [SN74AHC00-Q1](#)
- Enhanced Product : [SN74AHC00-EP](#), [SN74AHC00-EP](#)
- Military : [SN54AHC00](#)

**NOTE: Qualified Version Definitions:**

- Catalog - TI's standard catalog product
- Automotive - Q100 devices qualified for high-reliability automotive applications targeting zero defects
- Enhanced Product - Supports Defense, Aerospace and Medical Applications
- Military - QML certified for Military and Defense Applications

## TAPE AND REEL INFORMATION



\*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 |
|-----------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74AHC00BQAR   | WQFN         | BQA             | 14   | 3000 | 180.0              | 12.4               | 2.8     | 3.3     | 1.1     | 4.0     | 12.0   | Q1            |
| SN74AHC00DBR    | SSOP         | DB              | 14   | 2000 | 330.0              | 16.4               | 8.35    | 6.6     | 2.4     | 12.0    | 16.0   | Q1            |
| SN74AHC00DGVR   | TVSOP        | DGV             | 14   | 2000 | 330.0              | 12.4               | 6.8     | 4.0     | 1.6     | 8.0     | 12.0   | Q1            |
| SN74AHC00DR     | SOIC         | D               | 14   | 2500 | 330.0              | 12.4               | 3.75    | 3.75    | 1.15    | 8.0     | 12.0   | Q1            |
| SN74AHC00DRG4   | SOIC         | D               | 14   | 2500 | 330.0              | 12.4               | 3.75    | 3.75    | 1.15    | 8.0     | 12.0   | Q1            |
| SN74AHC00NSR    | SOP          | NS              | 14   | 2000 | 330.0              | 16.4               | 8.1     | 10.4    | 2.5     | 12.0    | 16.0   | Q1            |
| SN74AHC00PWR    | TSSOP        | PW              | 14   | 2000 | 330.0              | 12.4               | 6.9     | 5.6     | 1.6     | 8.0     | 12.0   | Q1            |
| SN74AHC00PWRG3  | TSSOP        | PW              | 14   | 2000 | 330.0              | 12.4               | 6.9     | 5.6     | 1.6     | 8.0     | 12.0   | Q1            |
| SN74AHC00RGYR   | VQFN         | RGY             | 14   | 3000 | 330.0              | 12.4               | 3.75    | 3.75    | 1.15    | 8.0     | 12.0   | Q1            |
| SN74AHC00RGYRG4 | VQFN         | RGY             | 14   | 3000 | 330.0              | 12.4               | 3.75    | 3.75    | 1.15    | 8.0     | 12.0   | Q1            |

## TAPE AND REEL BOX DIMENSIONS



\*All dimensions are nominal

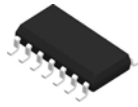
| Device          | Package Type | Package Drawing | Pins | SPQ  | Length (mm) | Width (mm) | Height (mm) |
|-----------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74AHC00BQAR   | WQFN         | BQA             | 14   | 3000 | 210.0       | 185.0      | 35.0        |
| SN74AHC00DBR    | SSOP         | DB              | 14   | 2000 | 353.0       | 353.0      | 32.0        |
| SN74AHC00DGVR   | TVSOP        | DGV             | 14   | 2000 | 353.0       | 353.0      | 32.0        |
| SN74AHC00DR     | SOIC         | D               | 14   | 2500 | 340.5       | 336.1      | 32.0        |
| SN74AHC00DRG4   | SOIC         | D               | 14   | 2500 | 340.5       | 336.1      | 32.0        |
| SN74AHC00NSR    | SOP          | NS              | 14   | 2000 | 353.0       | 353.0      | 32.0        |
| SN74AHC00PWR    | TSSOP        | PW              | 14   | 2000 | 353.0       | 353.0      | 32.0        |
| SN74AHC00PWRG3  | TSSOP        | PW              | 14   | 2000 | 364.0       | 364.0      | 27.0        |
| SN74AHC00RGYR   | VQFN         | RGY             | 14   | 3000 | 360.0       | 360.0      | 36.0        |
| SN74AHC00RGYRG4 | VQFN         | RGY             | 14   | 3000 | 360.0       | 360.0      | 36.0        |

## TUBE

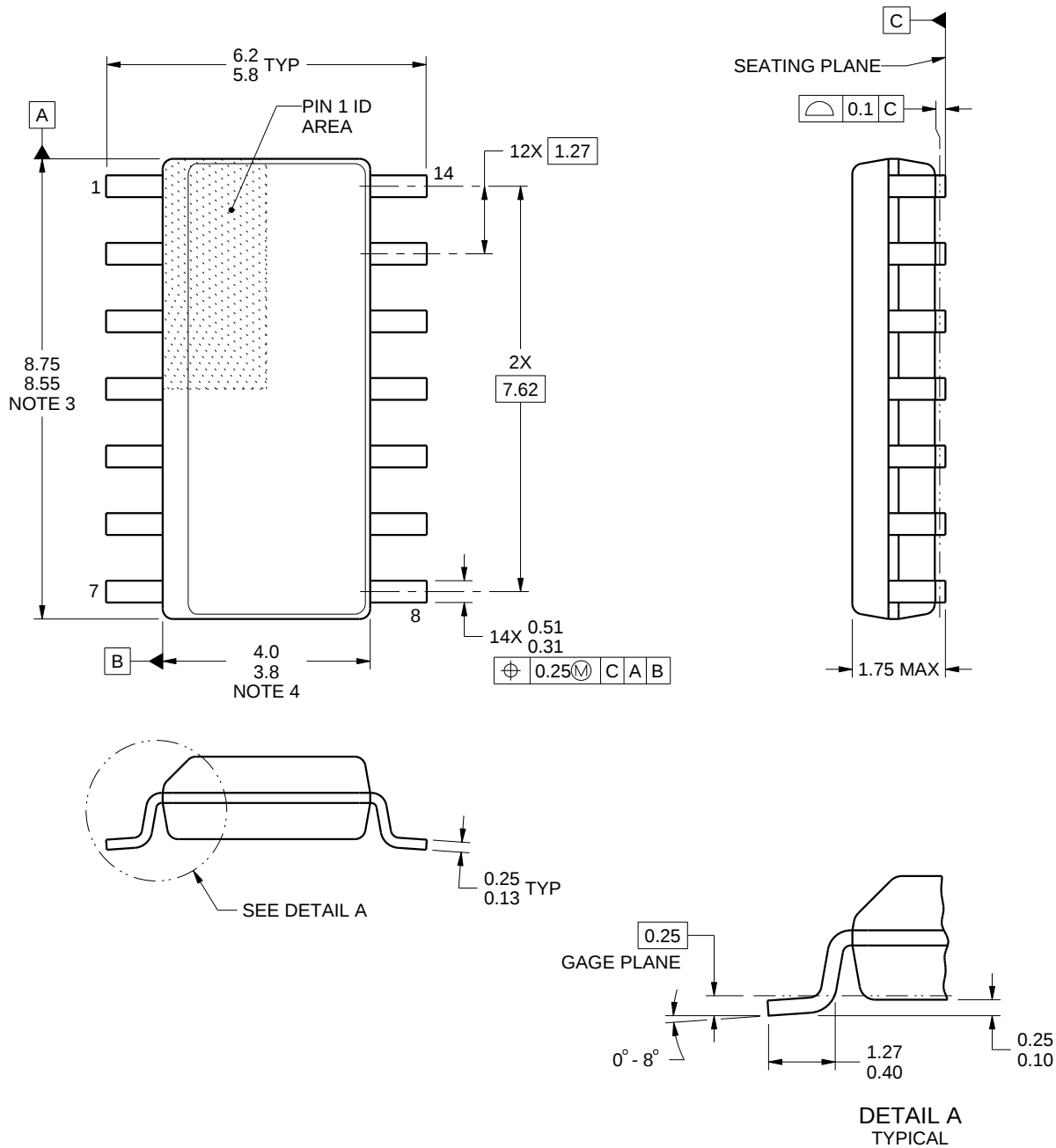


\*All dimensions are nominal

| Device          | Package Name | Package Type | Pins | SPQ | L (mm) | W (mm) | T (μm) | B (mm) |
|-----------------|--------------|--------------|------|-----|--------|--------|--------|--------|
| 5962-9682201Q2A | FK           | LCCC         | 20   | 55  | 506.98 | 12.06  | 2030   | NA     |
| 5962-9682201QDA | W            | CFP          | 14   | 25  | 506.98 | 26.16  | 6220   | NA     |
| SN74AHC00N      | N            | PDIP         | 14   | 25  | 506    | 13.97  | 11230  | 4.32   |
| SN74AHC00N      | N            | PDIP         | 14   | 25  | 506    | 13.97  | 11230  | 4.32   |
| SN74AHC00N.A    | N            | PDIP         | 14   | 25  | 506    | 13.97  | 11230  | 4.32   |
| SN74AHC00N.A    | N            | PDIP         | 14   | 25  | 506    | 13.97  | 11230  | 4.32   |
| SNJ54AHC00FK    | FK           | LCCC         | 20   | 55  | 506.98 | 12.06  | 2030   | NA     |
| SNJ54AHC00FK.A  | FK           | LCCC         | 20   | 55  | 506.98 | 12.06  | 2030   | NA     |
| SNJ54AHC00W     | W            | CFP          | 14   | 25  | 506.98 | 26.16  | 6220   | NA     |
| SNJ54AHC00W.A   | W            | CFP          | 14   | 25  | 506.98 | 26.16  | 6220   | NA     |

**D0014A****PACKAGE OUTLINE****SOIC - 1.75 mm max height**

SMALL OUTLINE INTEGRATED CIRCUIT



4220718/A 09/2016

**NOTES:**

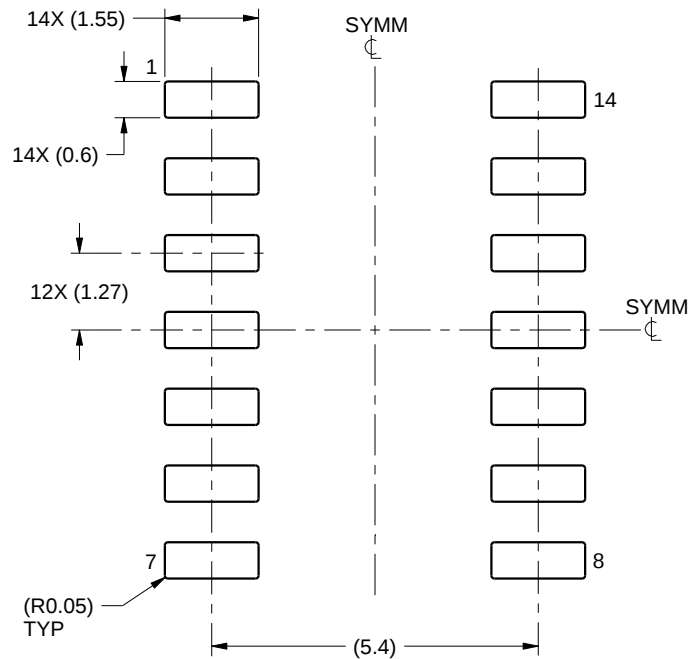
1. All linear dimensions are in millimeters. Dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm, per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.43 mm, per side.
5. Reference JEDEC registration MS-012, variation AB.

# EXAMPLE BOARD LAYOUT

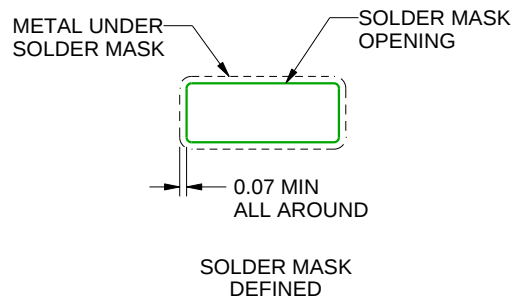
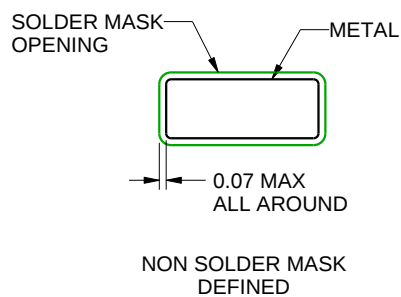
D0014A

SOIC - 1.75 mm max height

SMALL OUTLINE INTEGRATED CIRCUIT



LAND PATTERN EXAMPLE  
SCALE:8X



SOLDER MASK DETAILS

4220718/A 09/2016

NOTES: (continued)

6. Publication IPC-7351 may have alternate designs.

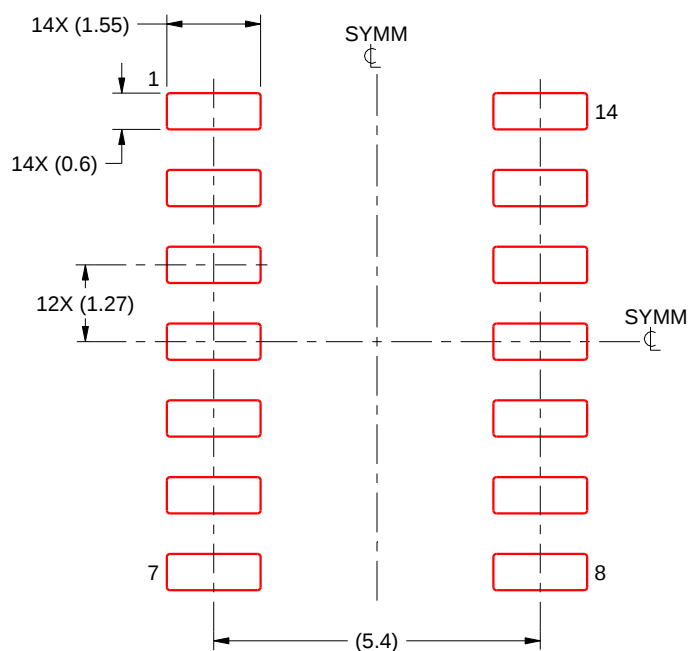
7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

## EXAMPLE STENCIL DESIGN

D0014A

SOIC - 1.75 mm max height

SMALL OUTLINE INTEGRATED CIRCUIT



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE:8X

4220718/A 09/2016

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.

## GENERIC PACKAGE VIEW

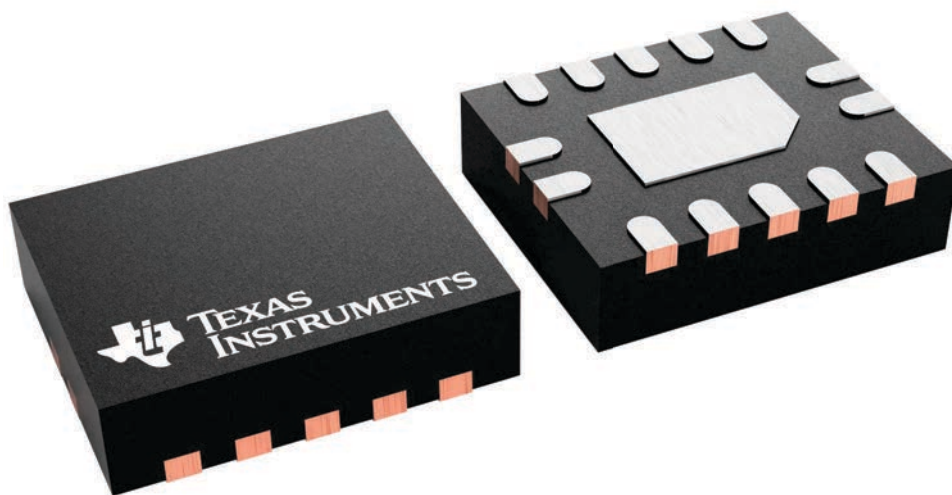
**BQA 14**

**WQFN - 0.8 mm max height**

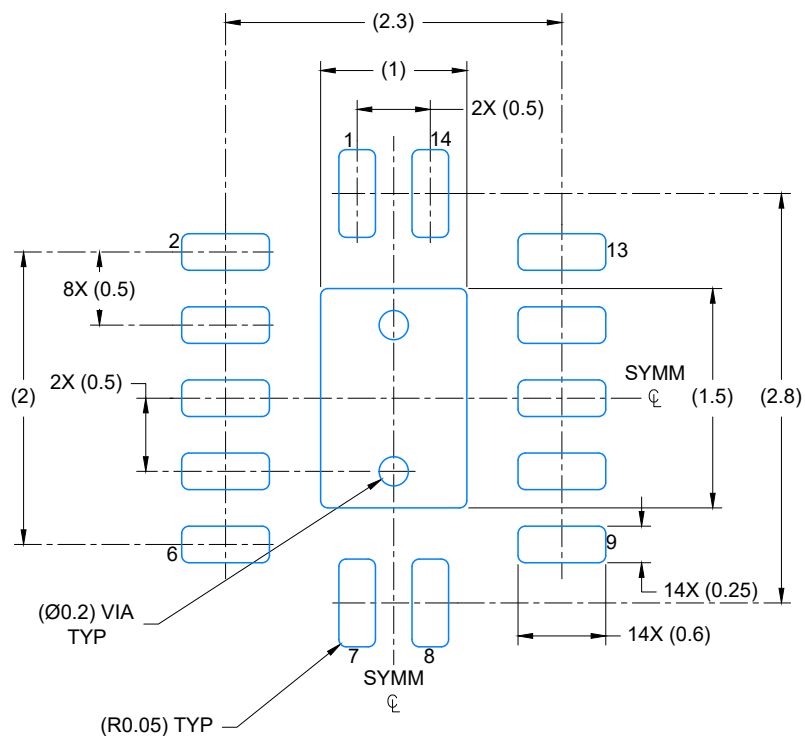
2.5 x 3, 0.5 mm pitch

PLASTIC QUAD FLATPACK - NO LEAD

This image is a representation of the package family, actual package may vary.  
Refer to the product data sheet for package details.



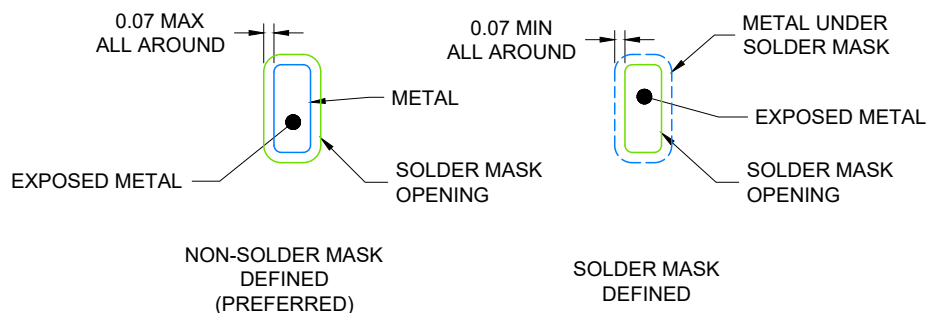




## LAND PATTERN EXAMPLE

EXPOSED METAL SHOWN

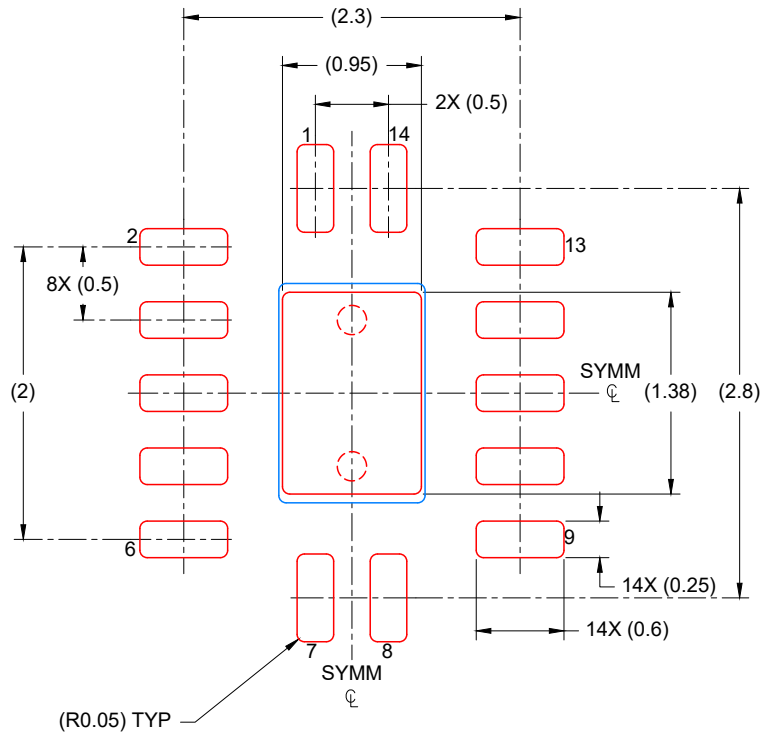
SCALE: 20X



4224636/A 11/2018

## NOTES: (continued)

4. This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature number SLUA271 ([www.ti.com/lit/sluea271](http://www.ti.com/lit/sluea271)).
5. Vias are optional depending on application, refer to device data sheet. If any vias are implemented, refer to their locations shown on this view. It is recommended that vias under paste be filled, plugged or tented.



SOLDER PASTE EXAMPLE  
 BASED ON 0.125 mm THICK STENCIL

EXPOSED PAD  
 88% PRINTED COVERAGE BY AREA  
 SCALE: 20X

4224636/A 11/2018

NOTES: (continued)

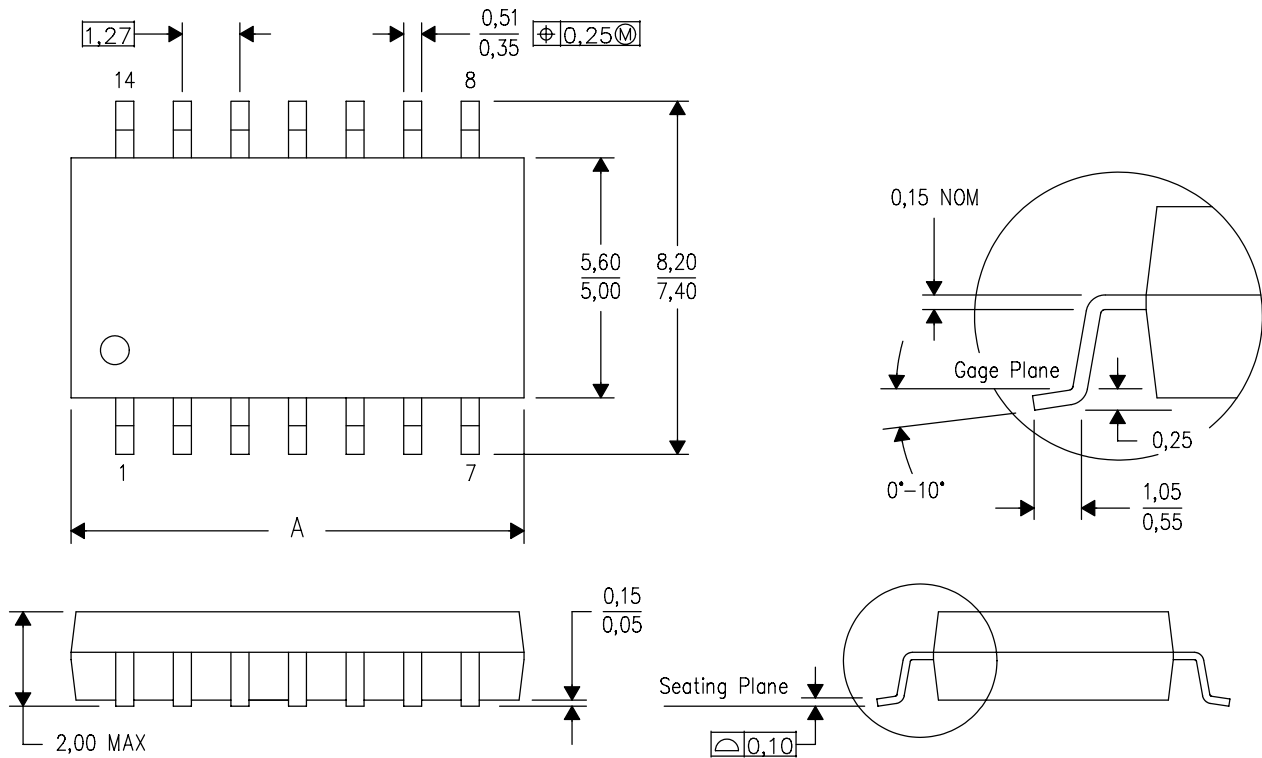
6. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

# MECHANICAL DATA

NS (R-PDSO-G\*\*)

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN



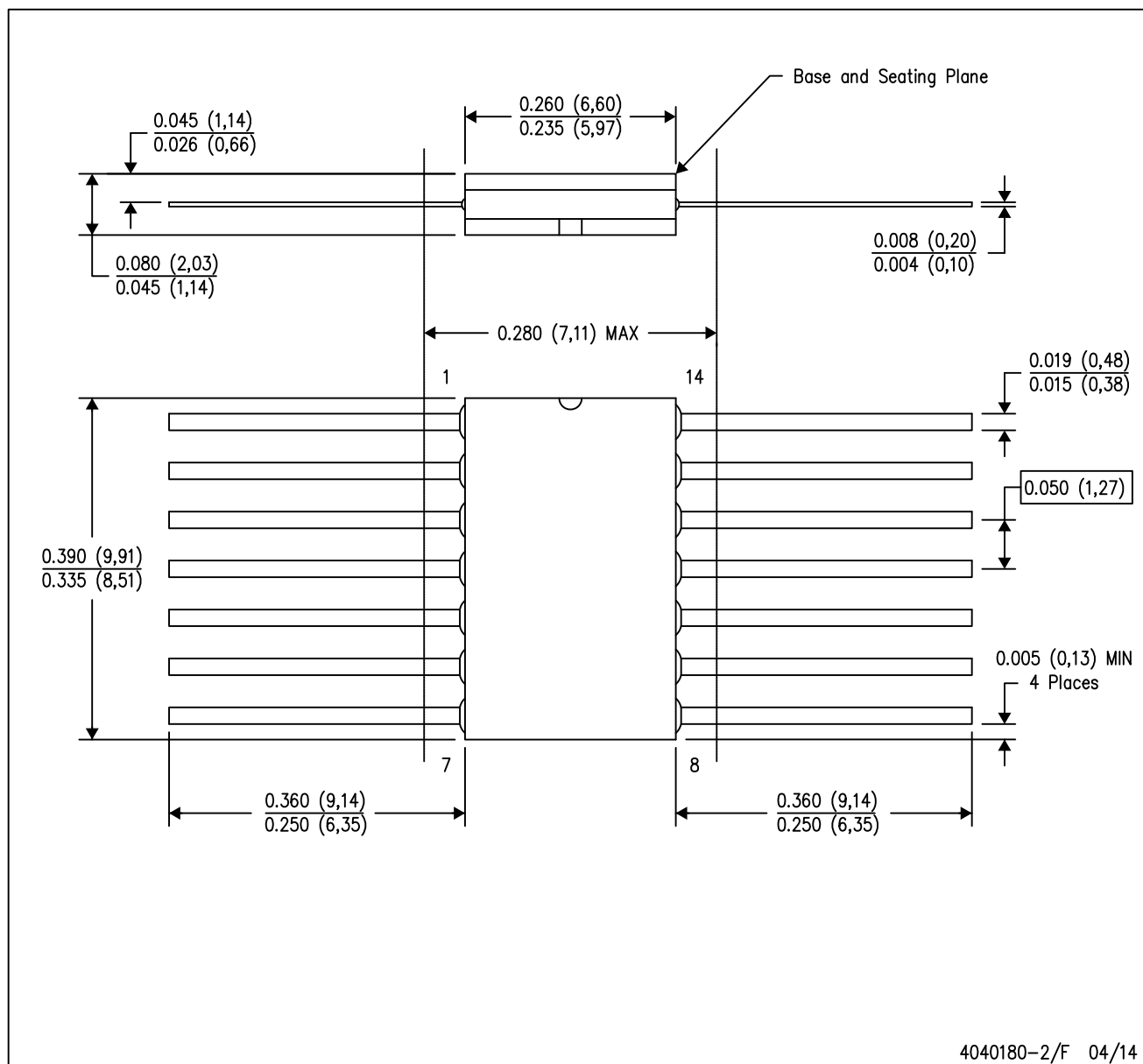
| DIM \ PINS ** | 14    | 16    | 20    | 24    |
|---------------|-------|-------|-------|-------|
| A MAX         | 10,50 | 10,50 | 12,90 | 15,30 |
| A MIN         | 9,90  | 9,90  | 12,30 | 14,70 |

4040062/C 03/03

- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.

W (R-GDFP-F14)

CERAMIC DUAL FLATPACK



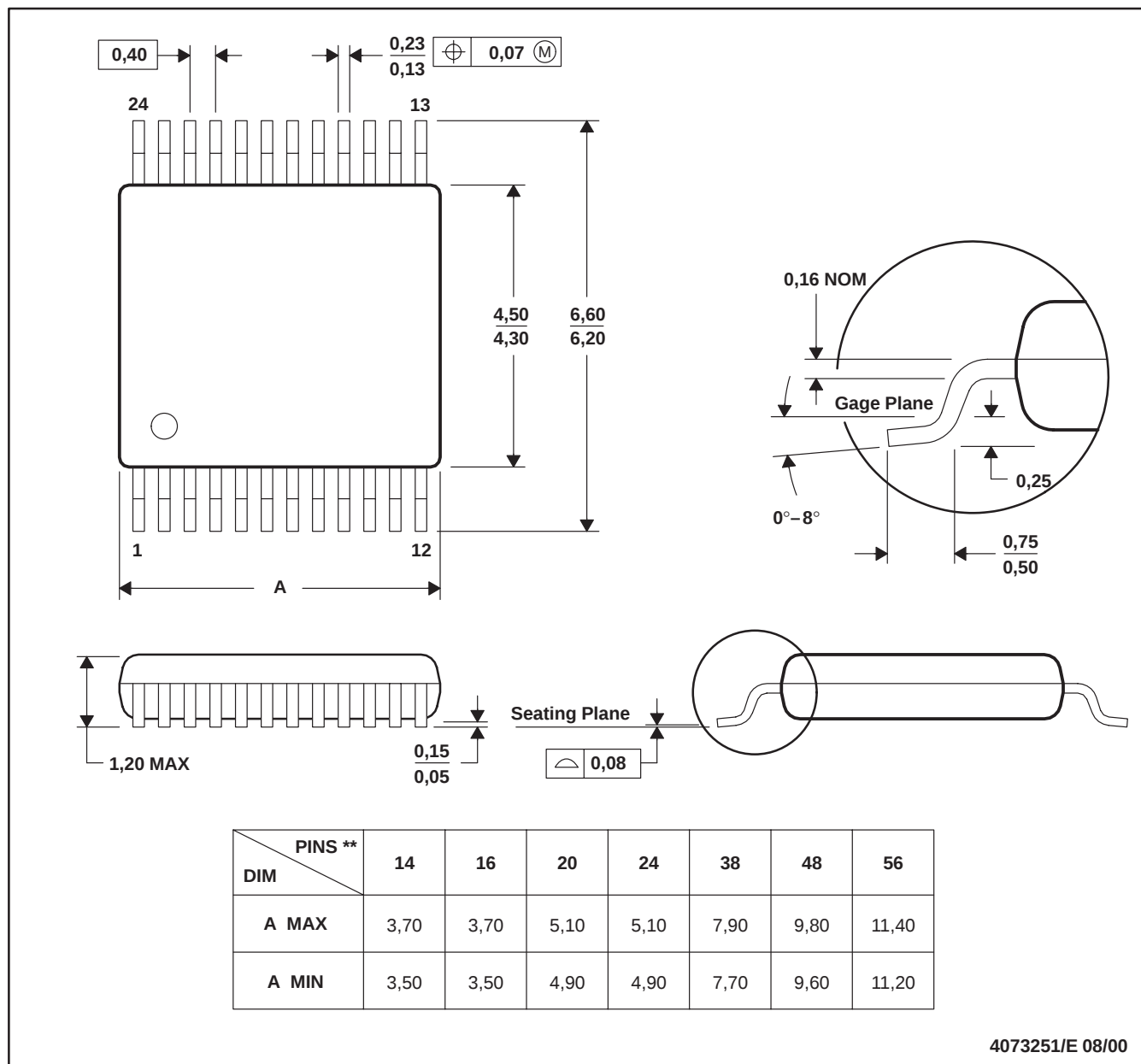
## NOTES:

- All linear dimensions are in inches (millimeters).
- This drawing is subject to change without notice.
- This package can be hermetically sealed with a ceramic lid using glass frit.
- Index point is provided on cap for terminal identification only.
- Falls within MIL STD 1835 GDFP1-F14

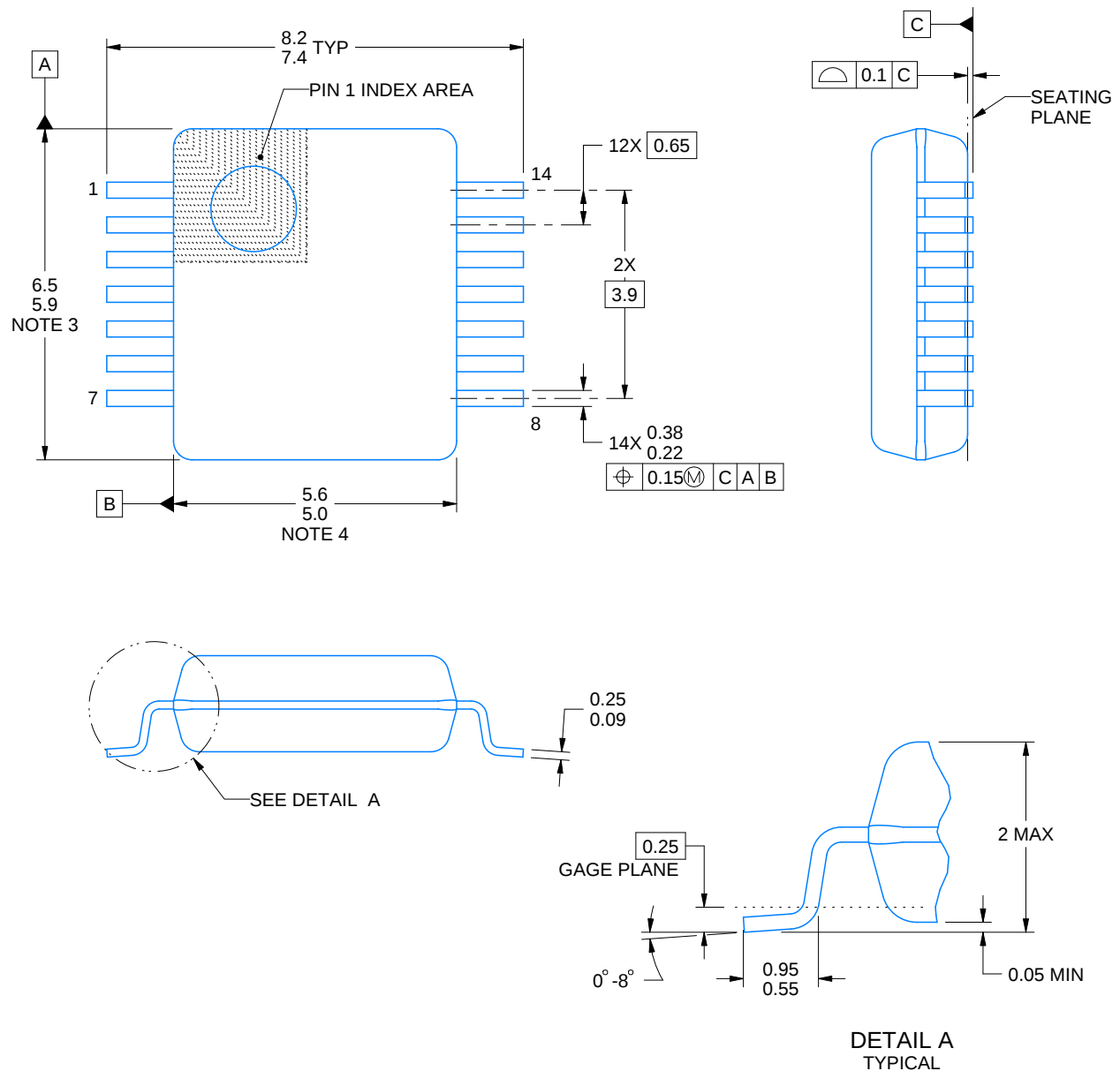
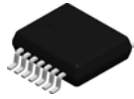
## DGV (R-PDSO-G\*\*)

## PLASTIC SMALL-OUTLINE

24 PINS SHOWN



- NOTES: A. All linear dimensions are in millimeters.  
 B. This drawing is subject to change without notice.  
 C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15 per side.  
 D. Falls within JEDEC: 24/48 Pins – MO-153  
 14/16/20/56 Pins – MO-194



4220762/A 05/2024

## NOTES:

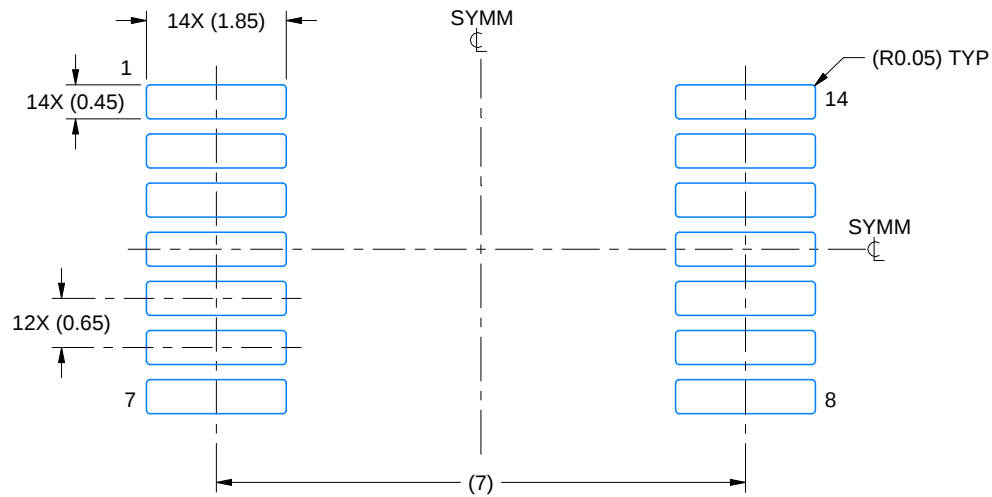
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. Reference JEDEC registration MO-150.

# EXAMPLE BOARD LAYOUT

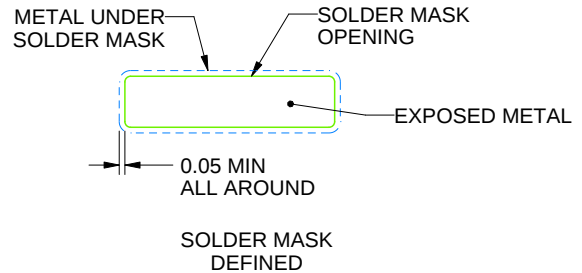
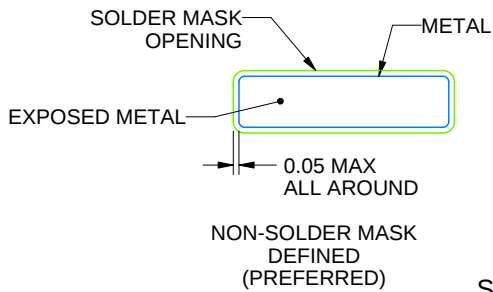
DB0014A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE: 10X



SOLDER MASK DETAILS

4220762/A 05/2024

NOTES: (continued)

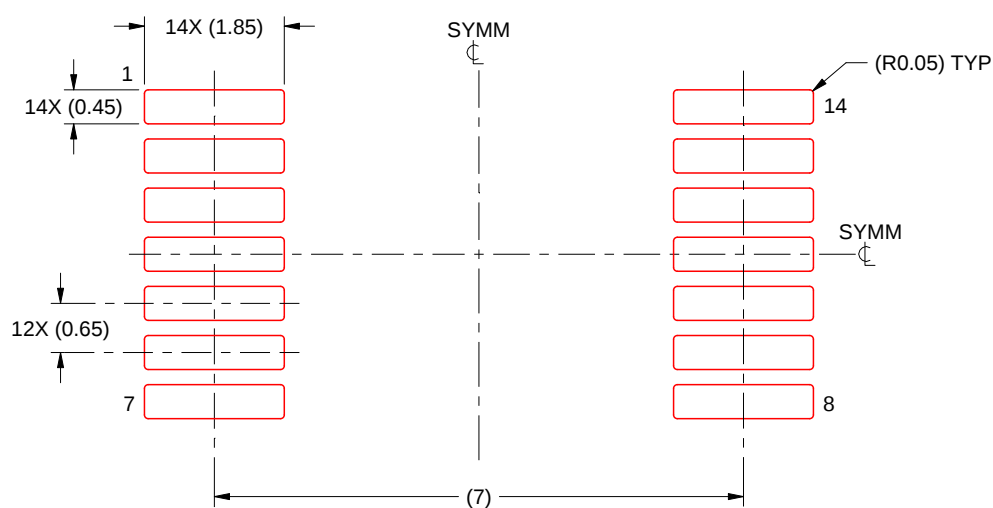
5. Publication IPC-7351 may have alternate designs.
6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

DB0014A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 10X

4220762/A 05/2024

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.

## GENERIC PACKAGE VIEW

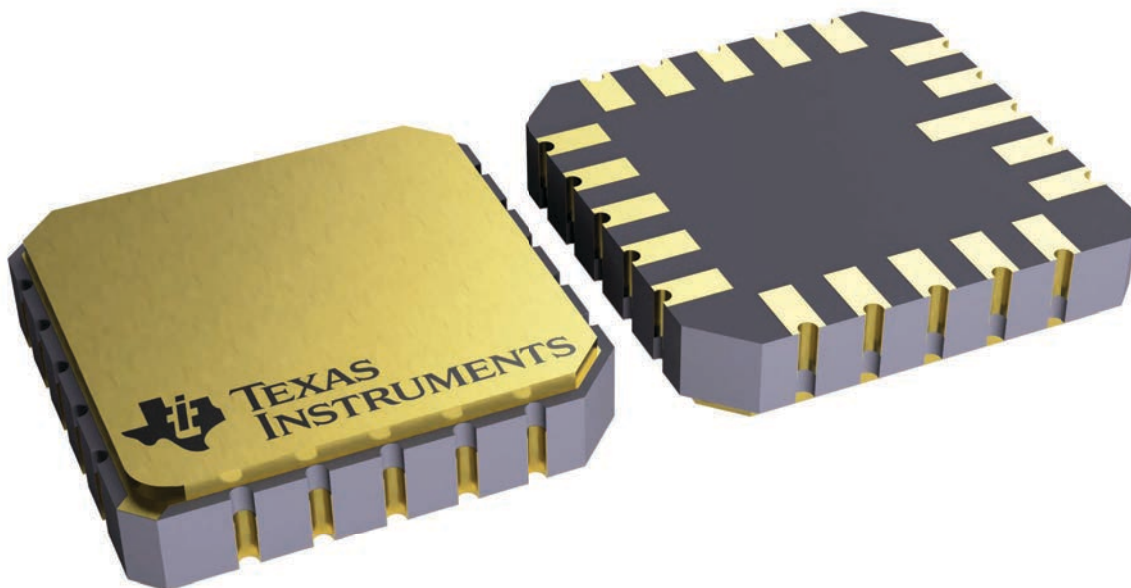
**FK 20**

**LCCC - 2.03 mm max height**

8.89 x 8.89, 1.27 mm pitch

LEADLESS CERAMIC CHIP CARRIER

This image is a representation of the package family, actual package may vary.  
Refer to the product data sheet for package details.



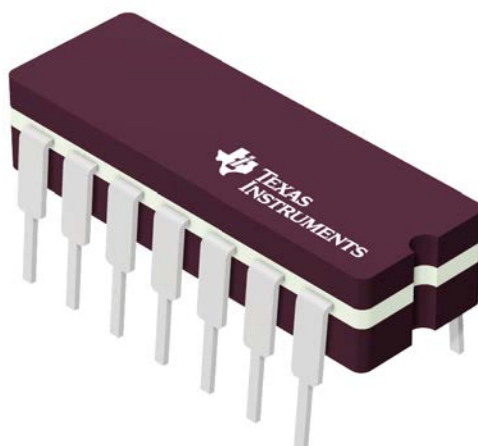
4229370VA\

**J 14**

## GENERIC PACKAGE VIEW

**CDIP - 5.08 mm max height**

CERAMIC DUAL IN LINE PACKAGE



Images above are just a representation of the package family, actual package may vary.  
Refer to the product data sheet for package details.

4040083-5/G

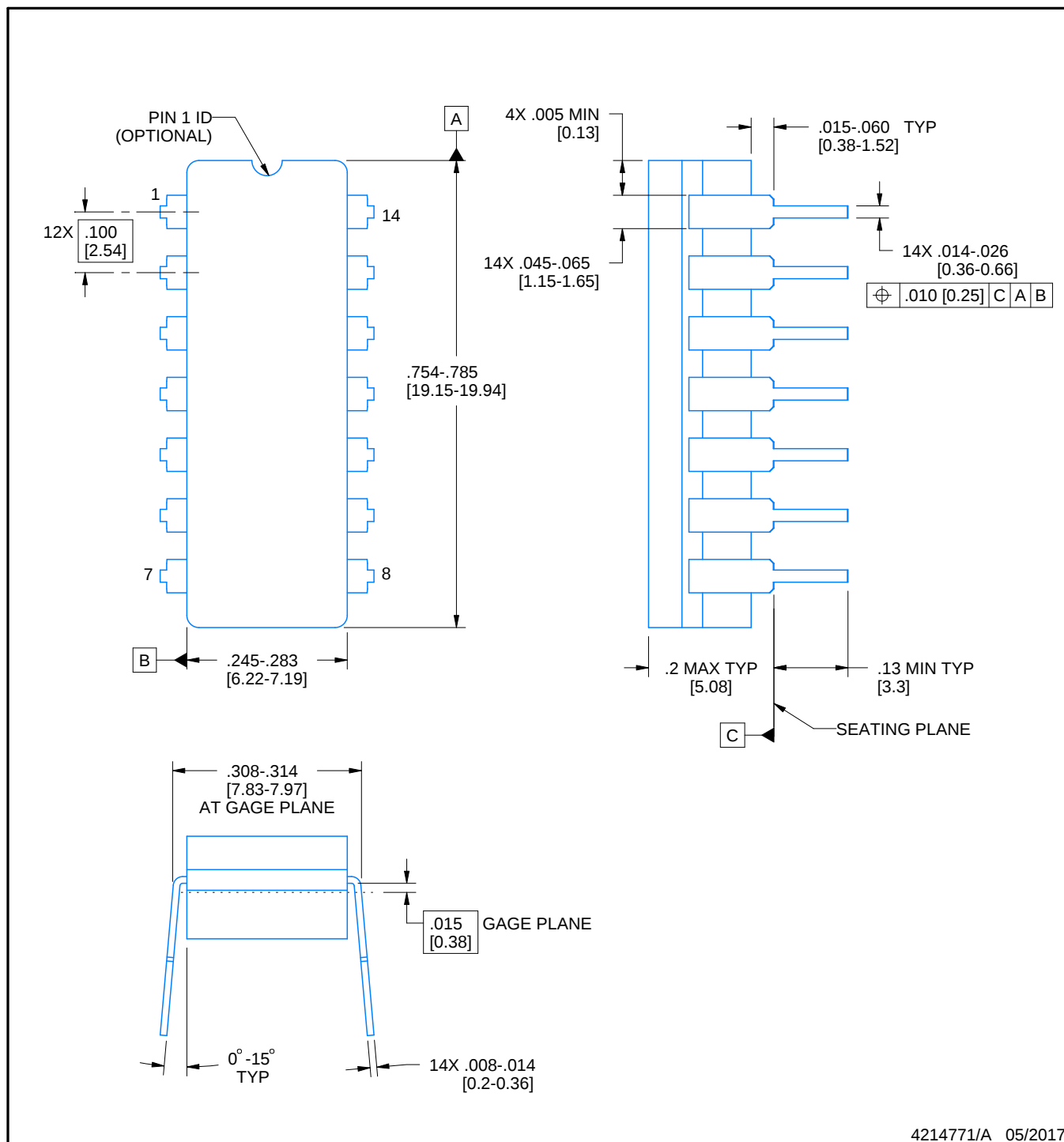


**J0014A**

## PACKAGE OUTLINE

**CDIP - 5.08 mm max height**

CERAMIC DUAL IN LINE PACKAGE



### NOTES:

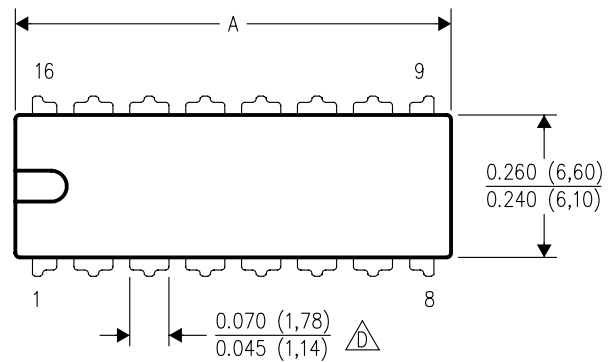
1. All controlling linear dimensions are in inches. Dimensions in brackets are in millimeters. Any dimension in brackets or parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This package is hermetically sealed with a ceramic lid using glass frit.
4. Index point is provided on cap for terminal identification only and on press ceramic glass frit seal only.
5. Falls within MIL-STD-1835 and GDIP1-T14.



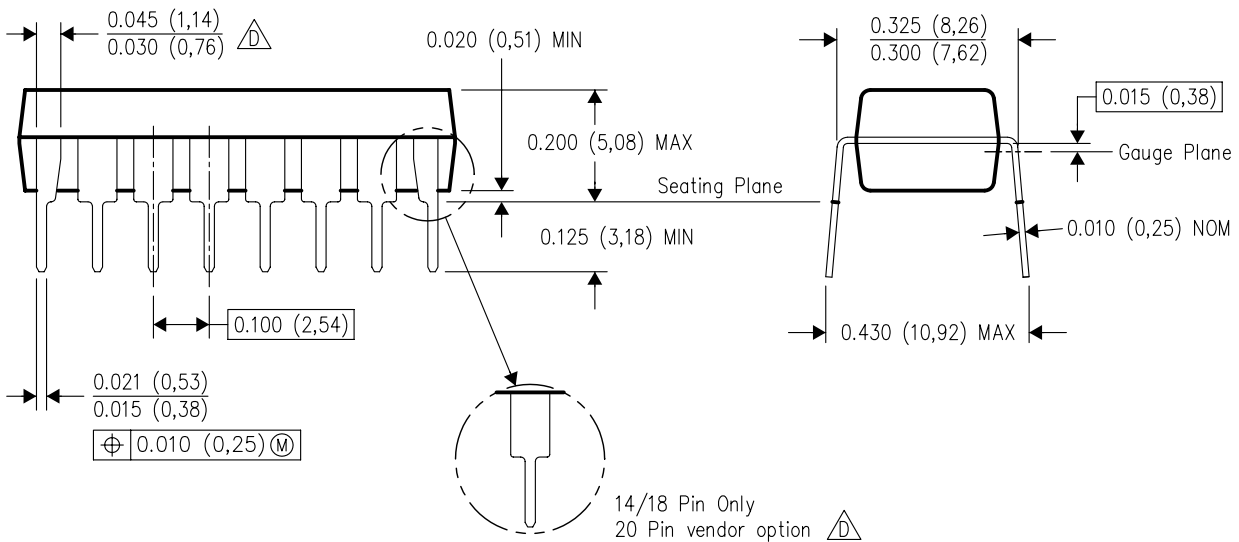
## N (R-PDIP-T\*\*)

16 PINS SHOWN

## PLASTIC DUAL-IN-LINE PACKAGE



| PINS **             | 14               | 16               | 18               | 20               |
|---------------------|------------------|------------------|------------------|------------------|
| DIM                 |                  |                  |                  |                  |
| A MAX               | 0.775<br>(19,69) | 0.775<br>(19,69) | 0.920<br>(23,37) | 1.060<br>(26,92) |
| A MIN               | 0.745<br>(18,92) | 0.745<br>(18,92) | 0.850<br>(21,59) | 0.940<br>(23,88) |
| MS-001<br>VARIATION | AA               | BB               | AC               | AD               |



4040049/E 12/2002

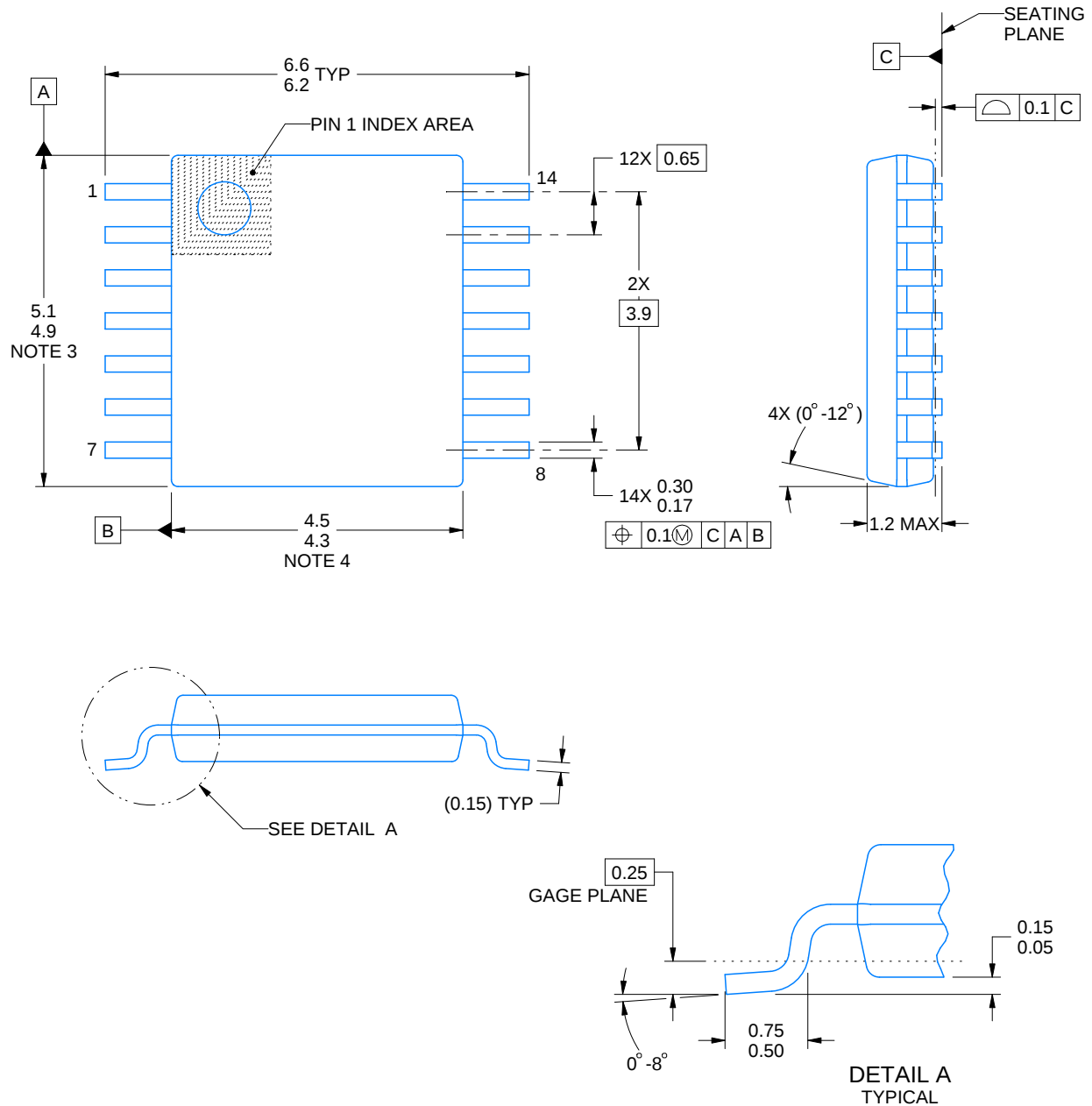
- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
  - D. The 20 pin end lead shoulder width is a vendor option, either half or full width.

**PW0014A**

## PACKAGE OUTLINE

**TSSOP - 1.2 mm max height**

SMALL OUTLINE PACKAGE



4220202/B 12/2023

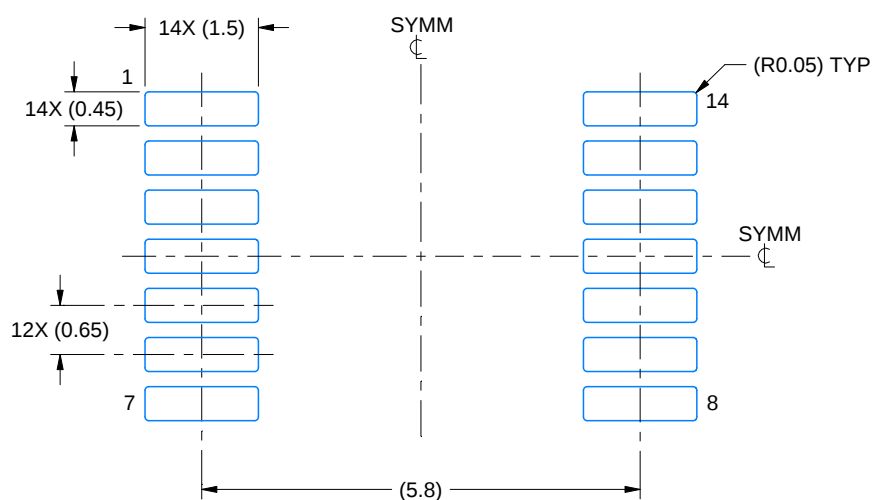
NOTES:

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.

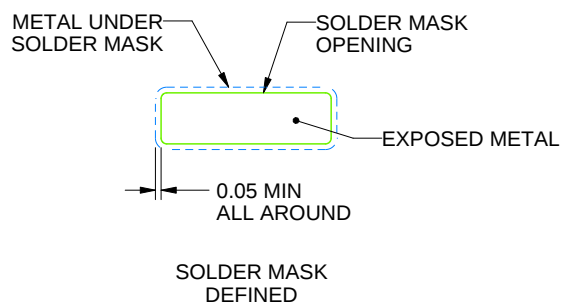
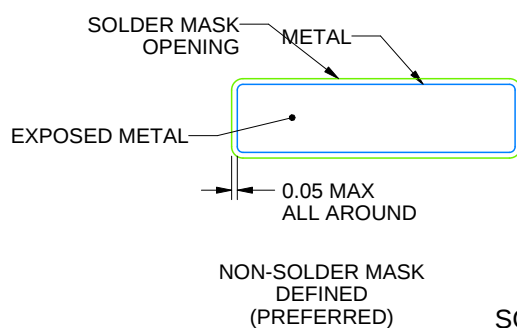
**PW0014A**

## TSSOP - 1.2 mm max height

## SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE: 10X



## SOLDER MASK DETAILS

4220202/B 12/2023

NOTES: (continued)

6. Publication IPC-7351 may have alternate designs.

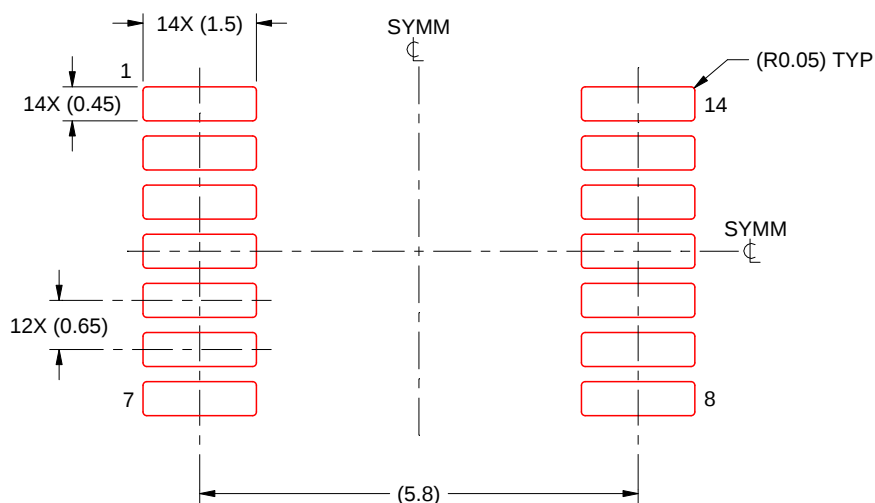
7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

## EXAMPLE STENCIL DESIGN

PW0014A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 10X

4220202/B 12/2023

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.

## GENERIC PACKAGE VIEW

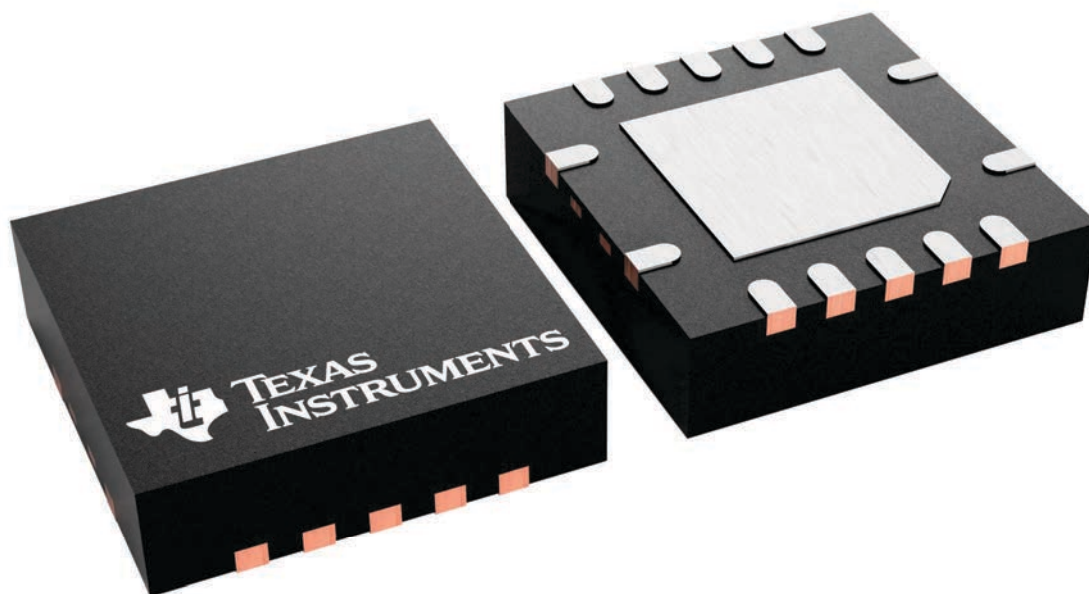
**RGY 14**

**VQFN - 1 mm max height**

3.5 x 3.5, 0.5 mm pitch

PLASTIC QUAD FLATPACK - NO LEAD

This image is a representation of the package family, actual package may vary.  
Refer to the product data sheet for package details.





### VQFN - 1 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



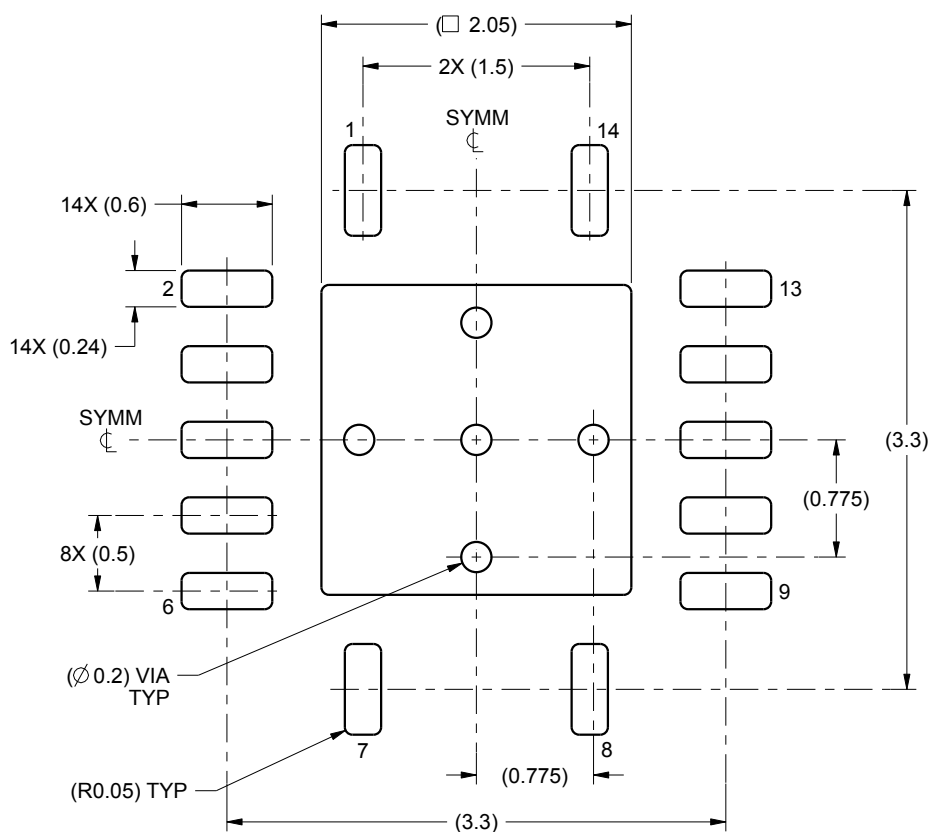
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. The package thermal pad must be soldered to the printed circuit board for thermal and mechanical performance.

# EXAMPLE BOARD LAYOUT

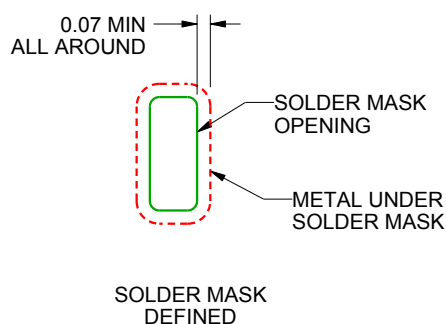
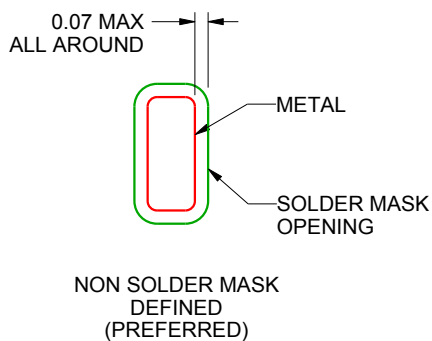
RGY0014A

VQFN - 1 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



LAND PATTERN EXAMPLE  
SCALE:20X



SOLDER MASK DETAILS

4219040/A 09/2015

NOTES: (continued)

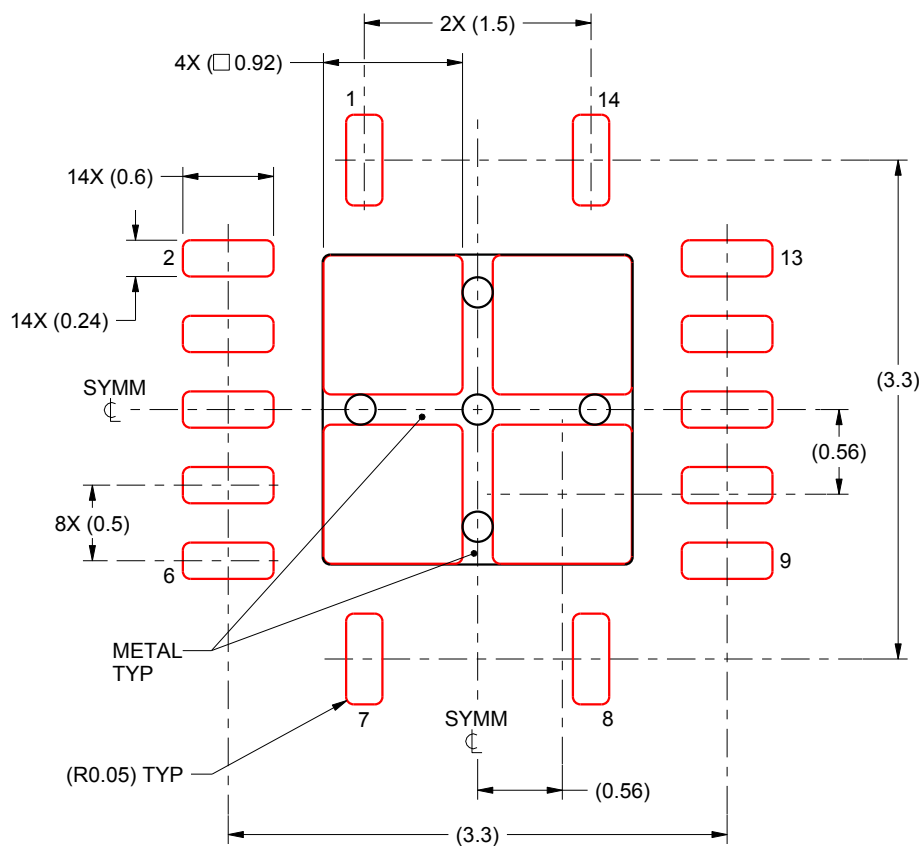
- This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature number SLUA271 ([www.ti.com/lit/slue271](http://www.ti.com/lit/slue271)).

## EXAMPLE STENCIL DESIGN

RGY0014A

VQFN - 1 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



**SOLDER PASTE EXAMPLE**  
BASED ON 0.125 mm THICK STENCIL

EXPOSED PAD  
80% PRINTED SOLDER COVERAGE BY AREA  
SCALE:20X

4219040/A 09/2015

NOTES: (continued)

5. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

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