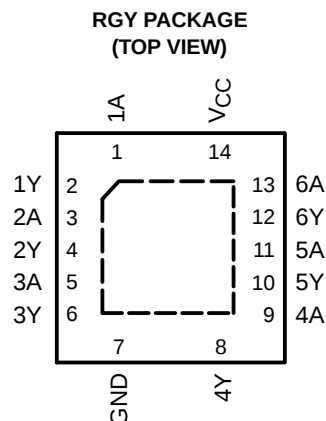


## FEATURES

- Optimized for 1.8-V Operation and Is 3.6-V I/O Tolerant to Support Mixed-Mode Signal Operation
- $I_{off}$  Supports Partial-Power-Down Mode Operation
- Sub-1-V Operable
- Max  $t_{pd}$  of 1.8 ns at 1.8 V
- Low Power Consumption, 10- $\mu$ A Max  $I_{CC}$
- $\pm 8$ -mA Output Drive at 1.8 V
- Latch-Up Performance Exceeds 100 mA Per JESD 78, Class II
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)



## DESCRIPTION/ORDERING INFORMATION

This hex buffer gate is operational at 0.8-V to 2.7-V  $V_{CC}$ , but is designed specifically for 1.65-V to 1.95-V  $V_{CC}$  operation.

The SN74AUC34 performs the Boolean function  $Y = A$ .

This device is fully specified for partial-power-down applications using  $I_{off}$ . The  $I_{off}$  circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

## ORDERING INFORMATION

| $T_A$         | PACKAGE <sup>(1)</sup> |               | ORDERABLE PART NUMBER | TOP-SIDE MARKING |
|---------------|------------------------|---------------|-----------------------|------------------|
| –40°C to 85°C | QFN – RGY              | Tape and reel | SN74AUC34RGYR         | MS34             |

(1) Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).

## FUNCTION TABLE (EACH GATE)

| INPUT<br>A | OUTPUT<br>Y |
|------------|-------------|
| H          | H           |
| L          | L           |

## LOGIC DIAGRAM, EACH GATE (POSITIVE LOGIC)



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

# SN74AUC34

## HEX BUFFER GATE

SCES474–AUGUST 2003–REVISED OCTOBER 2005

### Absolute Maximum Ratings<sup>(1)</sup>

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

|               |                                                                                             | MIN       | MAX            | UNIT |
|---------------|---------------------------------------------------------------------------------------------|-----------|----------------|------|
| $V_{CC}$      | Supply voltage range                                                                        | –0.5      | 3.6            | V    |
| $V_I$         | Input voltage range <sup>(2)</sup>                                                          | –0.5      | 3.6            | V    |
| $V_O$         | Voltage range applied to any output in the high-impedance or power-off state <sup>(2)</sup> | –0.5      | 3.6            | V    |
| $V_O$         | Output voltage range <sup>(2)</sup>                                                         | –0.5      | $V_{CC} + 0.5$ | V    |
| $I_{IK}$      | Input clamp current                                                                         | $V_I < 0$ | –50            | mA   |
| $I_{OK}$      | Output clamp current                                                                        | $V_O < 0$ | –50            | mA   |
| $I_O$         | Continuous output current                                                                   |           | ±20            | mA   |
|               | Continuous current through $V_{CC}$ or GND                                                  |           | ±100           | mA   |
| $\theta_{JA}$ | Package thermal impedance <sup>(3)</sup>                                                    |           | 47             | °C/W |
| $T_{stg}$     | 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 negative-voltage and output voltage ratings may be exceeded if the input and output current ratings are observed.
- (3) The package thermal impedance is calculated in accordance with JESD 51-5.

### Recommended Operating Conditions<sup>(1)</sup>

|                     |                                    | MIN                                      | MAX                  | UNIT |
|---------------------|------------------------------------|------------------------------------------|----------------------|------|
| $V_{CC}$            | Supply voltage                     | 0.8                                      | 2.7                  | V    |
| $V_{IH}$            | High-level input voltage           | $V_{CC} = 0.8\text{ V}$                  | $V_{CC}$             | V    |
|                     |                                    | $V_{CC} = 1.1\text{ V to }1.95\text{ V}$ | $0.65 \times V_{CC}$ |      |
|                     |                                    | $V_{CC} = 2.3\text{ V to }2.7\text{ V}$  | 1.7                  |      |
| $V_{IL}$            | Low-level input voltage            | $V_{CC} = 0.8\text{ V}$                  | 0                    | V    |
|                     |                                    | $V_{CC} = 1.1\text{ V to }1.95\text{ V}$ | $0.35 \times V_{CC}$ |      |
|                     |                                    | $V_{CC} = 2.3\text{ V to }2.7\text{ V}$  | 0.7                  |      |
| $V_I$               | Input voltage                      | 0                                        | 3.6                  | V    |
| $V_O$               | Output voltage                     | 0                                        | $V_{CC}$             | V    |
| $I_{OH}$            | High-level output current          | $V_{CC} = 0.8\text{ V}$                  | –0.7                 | mA   |
|                     |                                    | $V_{CC} = 1.1\text{ V}$                  | –3                   |      |
|                     |                                    | $V_{CC} = 1.4\text{ V}$                  | –5                   |      |
|                     |                                    | $V_{CC} = 1.65\text{ V}$                 | –8                   |      |
|                     |                                    | $V_{CC} = 2.3\text{ V}$                  | –9                   |      |
| $I_{OL}$            | Low-level output current           | $V_{CC} = 0.8\text{ V}$                  | 0.7                  | mA   |
|                     |                                    | $V_{CC} = 1.1\text{ V}$                  | 3                    |      |
|                     |                                    | $V_{CC} = 1.4\text{ V}$                  | 5                    |      |
|                     |                                    | $V_{CC} = 1.65\text{ V}$                 | 8                    |      |
|                     |                                    | $V_{CC} = 2.3\text{ V}$                  | 9                    |      |
| $\Delta t/\Delta v$ | Input transition rise or fall rate | $V_{CC} = 0.8\text{ V to }1.95\text{ V}$ | 20                   | ns/V |
|                     |                                    | $V_{CC} = 2.3\text{ V to }2.7\text{ V}$  | 10                   |      |
| $T_A$               | Operating free-air temperature     | –40                                      | 85                   | °C   |

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

## Electrical Characteristics

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

| PARAMETER        |          | TEST CONDITIONS                                             | V <sub>CC</sub> | MIN                   | TYP <sup>(1)</sup> | MAX  | UNIT |
|------------------|----------|-------------------------------------------------------------|-----------------|-----------------------|--------------------|------|------|
| V <sub>OH</sub>  |          | I <sub>OH</sub> = −100 μA                                   | 0.8 V to 2.7 V  | V <sub>CC</sub> − 0.1 |                    |      | V    |
|                  |          | I <sub>OH</sub> = −0.7 mA                                   | 0.8 V           | 0.55                  |                    |      |      |
|                  |          | I <sub>OH</sub> = −3 mA                                     | 1.1 V           | 0.8                   |                    |      |      |
|                  |          | I <sub>OH</sub> = −5 mA                                     | 1.4 V           | 1                     |                    |      |      |
|                  |          | I <sub>OH</sub> = −8 mA                                     | 1.65 V          | 1.2                   |                    |      |      |
|                  |          | I <sub>OH</sub> = −9 mA                                     | 2.3 V           | 1.8                   |                    |      |      |
| V <sub>OL</sub>  |          | I <sub>OL</sub> = 100 μA                                    | 0.8 V to 2.7 V  |                       |                    | 0.2  | V    |
|                  |          | I <sub>OL</sub> = 0.7 mA                                    | 0.8 V           | 0.25                  |                    |      |      |
|                  |          | I <sub>OL</sub> = 3 mA                                      | 1.1 V           |                       |                    | 0.3  |      |
|                  |          | I <sub>OL</sub> = 5 mA                                      | 1.4 V           |                       |                    | 0.4  |      |
|                  |          | I <sub>OL</sub> = 8 mA                                      | 1.65 V          |                       |                    | 0.45 |      |
|                  |          | I <sub>OL</sub> = 9 mA                                      | 2.3 V           |                       |                    | 0.6  |      |
| I <sub>I</sub>   | A inputs | V <sub>I</sub> = V <sub>CC</sub> or GND                     | 0 to 2.7 V      |                       |                    | ±5   | μA   |
| I <sub>off</sub> |          | V <sub>I</sub> or V <sub>O</sub> = 2.7 V                    | 0               |                       |                    | ±10  | μA   |
| I <sub>CC</sub>  |          | V <sub>I</sub> = V <sub>CC</sub> or GND, I <sub>O</sub> = 0 | 0.8 V to 2.7 V  |                       |                    | 10   | μA   |
| C <sub>i</sub>   |          | V <sub>I</sub> = V <sub>CC</sub> or GND                     | 2.5 V           | 2                     |                    |      | pF   |

(1) All typical values are at T<sub>A</sub> = 25°C.

## Switching Characteristics

over recommended operating free-air temperature range, C<sub>L</sub> = 15 pF (unless otherwise noted) (see Figure 1)

| PARAMETER       | FROM<br>(INPUT) | TO<br>(OUTPUT) | V <sub>CC</sub> = 0.8 V | V <sub>CC</sub> = 1.2 V<br>± 0.1 V |     | V <sub>CC</sub> = 1.5 V<br>± 0.1 V |     | V <sub>CC</sub> = 1.8 V<br>± 0.15 V |     |     | V <sub>CC</sub> = 2.5 V<br>± 0.2 V |     | UNIT |
|-----------------|-----------------|----------------|-------------------------|------------------------------------|-----|------------------------------------|-----|-------------------------------------|-----|-----|------------------------------------|-----|------|
|                 |                 |                | TYP                     | MIN                                | MAX | MIN                                | MAX | MIN                                 | TYP | MAX | MIN                                | MAX |      |
| t <sub>pd</sub> | A               | Y              | 5.6                     | 0.9                                | 3.7 | 0.9                                | 2.5 | 0.6                                 | 0.9 | 1.8 | 0.5                                | 1.4 | ns   |

## Switching Characteristics

over recommended operating free-air temperature range, C<sub>L</sub> = 30 pF (unless otherwise noted) (see Figure 1)

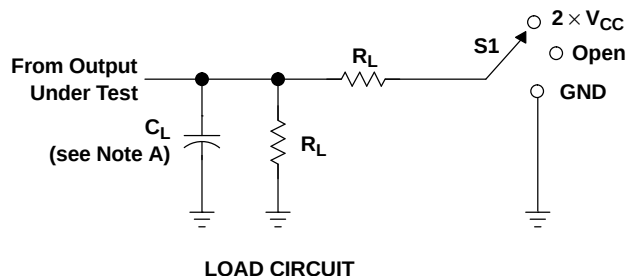
| PARAMETER       | FROM<br>(INPUT) | TO<br>(OUTPUT) | V <sub>CC</sub> = 1.8 V<br>± 0.15 V |     |     | V <sub>CC</sub> = 2.5 V<br>± 0.2 V |     | UNIT |
|-----------------|-----------------|----------------|-------------------------------------|-----|-----|------------------------------------|-----|------|
|                 |                 |                | MIN                                 | TYP | MAX | MIN                                | MAX |      |
| t <sub>pd</sub> | A               | Y              | 0.9                                 | 1.4 | 2.4 | 0.9                                | 1.8 | ns   |

## Operating Characteristics

T<sub>A</sub> = 25°C

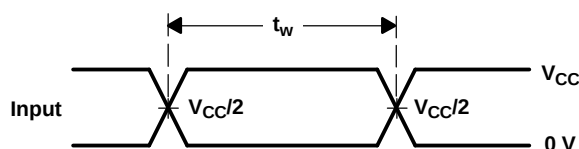
| PARAMETER                                     | TEST<br>CONDITIONS | V <sub>CC</sub> = 0.8 V | V <sub>CC</sub> = 1.2 V | V <sub>CC</sub> = 1.5 V | V <sub>CC</sub> = 1.8 V | V <sub>CC</sub> = 2.5 V | UNIT |
|-----------------------------------------------|--------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|------|
|                                               |                    | TYP                     | TYP                     | TYP                     | TYP                     | TYP                     |      |
| C <sub>pd</sub> Power dissipation capacitance | f = 10 MHz         | 16                      | 17                      | 17                      | 17                      | 19                      | pF   |

## PARAMETER MEASUREMENT INFORMATION

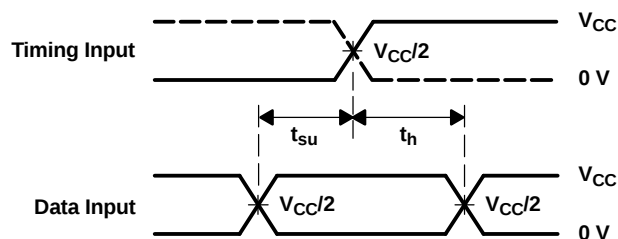


| TEST              | S1                |
|-------------------|-------------------|
| $t_{PLH}/t_{PHL}$ | Open              |
| $t_{PLZ}/t_{PZL}$ | $2 \times V_{CC}$ |
| $t_{PHZ}/t_{PZH}$ | GND               |

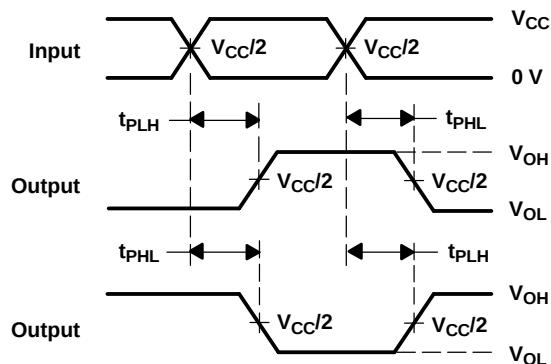
| $V_{CC}$           | $C_L$ | $R_L$        | $V_{\Delta}$ |
|--------------------|-------|--------------|--------------|
| 0.8 V              | 15 pF | 2 k $\Omega$ | 0.1 V        |
| 1.2 V $\pm$ 0.1 V  | 15 pF | 2 k $\Omega$ | 0.1 V        |
| 1.5 V $\pm$ 0.1 V  | 15 pF | 2 k $\Omega$ | 0.1 V        |
| 1.8 V $\pm$ 0.15 V | 15 pF | 2 k $\Omega$ | 0.15 V       |
| 2.5 V $\pm$ 0.2 V  | 15 pF | 2 k $\Omega$ | 0.15 V       |
| 1.8 V $\pm$ 0.15 V | 30 pF | 1 k $\Omega$ | 0.15 V       |
| 2.5 V $\pm$ 0.2 V  | 30 pF | 500 $\Omega$ | 0.15 V       |



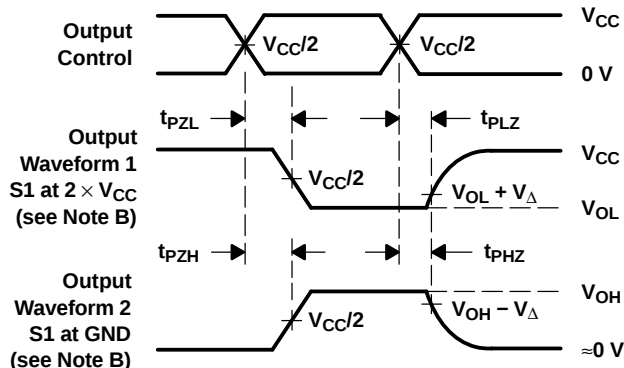
VOLTAGE WAVEFORMS  
PULSE DURATION



VOLTAGE WAVEFORMS  
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS  
PROPAGATION DELAY TIMES  
INVERTING AND NONINVERTING OUTPUTS



VOLTAGE WAVEFORMS  
ENABLE AND DISABLE TIMES  
LOW- AND HIGH-LEVEL ENABLING

- NOTES:
- $C_L$  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  $\leq$  10 MHz,  $Z_O = 50 \Omega$ , slew rate  $\geq$  1 V/ns.
  - The outputs are measured one at a time, with one transition per measurement.
  - $t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{dis}$ .
  - $t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{en}$ .
  - $t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{pd}$ .
  - All parameters and waveforms are not applicable to all devices.

Figure 1. Load Circuit and Voltage Waveforms

## 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="#">SN74AUC34RGYR</a> | Active        | Production           | VQFN (RGY)   14 | 3000   LARGE T&R      | Yes         | NIPDAU                               | Level-2-260C-1 YEAR               | -40 to 85    | MS34                |
| SN74AUC34RGYR.B               | Active        | Production           | VQFN (RGY)   14 | 3000   LARGE T&R      | Yes         | NIPDAU                               | Level-2-260C-1 YEAR               | -40 to 85    | MS34                |
| SN74AUC34RGYRG4               | Active        | Production           | VQFN (RGY)   14 | 3000   LARGE T&R      | Yes         | NIPDAU                               | Level-2-260C-1 YEAR               | -40 to 85    | MS34                |
| SN74AUC34RGYRG4.B             | Active        | Production           | VQFN (RGY)   14 | 3000   LARGE T&R      | Yes         | NIPDAU                               | Level-2-260C-1 YEAR               | -40 to 85    | MS34                |

<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.

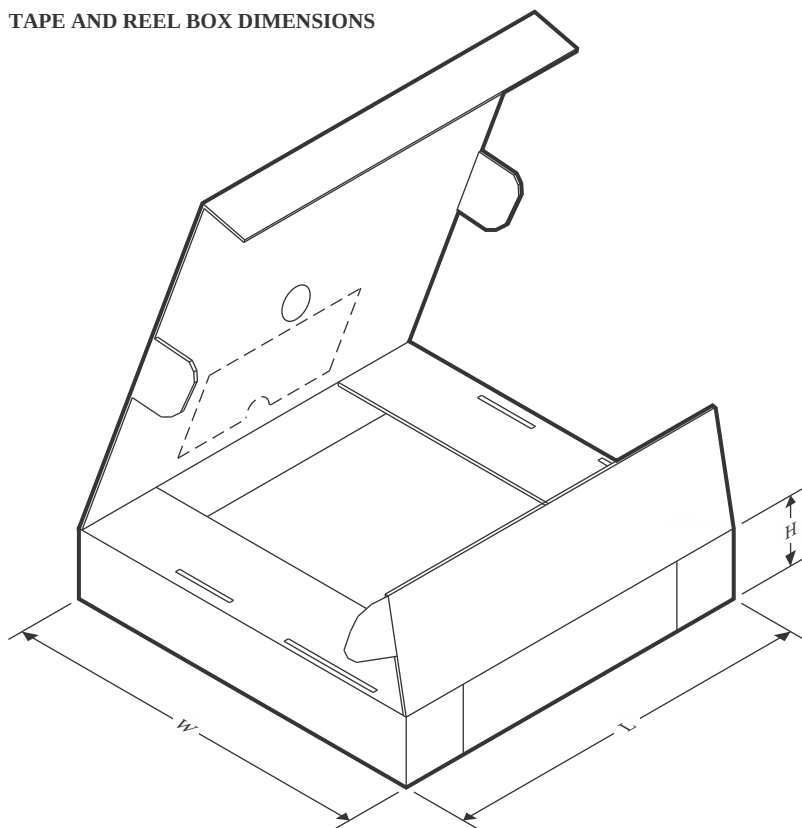
## TAPE AND REEL INFORMATION



\*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 |
|-----------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74AUC34RGYR   | VQFN         | RGY             | 14   | 3000 | 330.0              | 12.4               | 3.75    | 3.75    | 1.15    | 8.0     | 12.0   | Q1            |
| SN74AUC34RGYRG4 | 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) |
|-----------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74AUC34RGYR   | VQFN         | RGY             | 14   | 3000 | 353.0       | 353.0      | 32.0        |
| SN74AUC34RGYRG4 | VQFN         | RGY             | 14   | 3000 | 353.0       | 353.0      | 32.0        |

## GENERIC PACKAGE VIEW

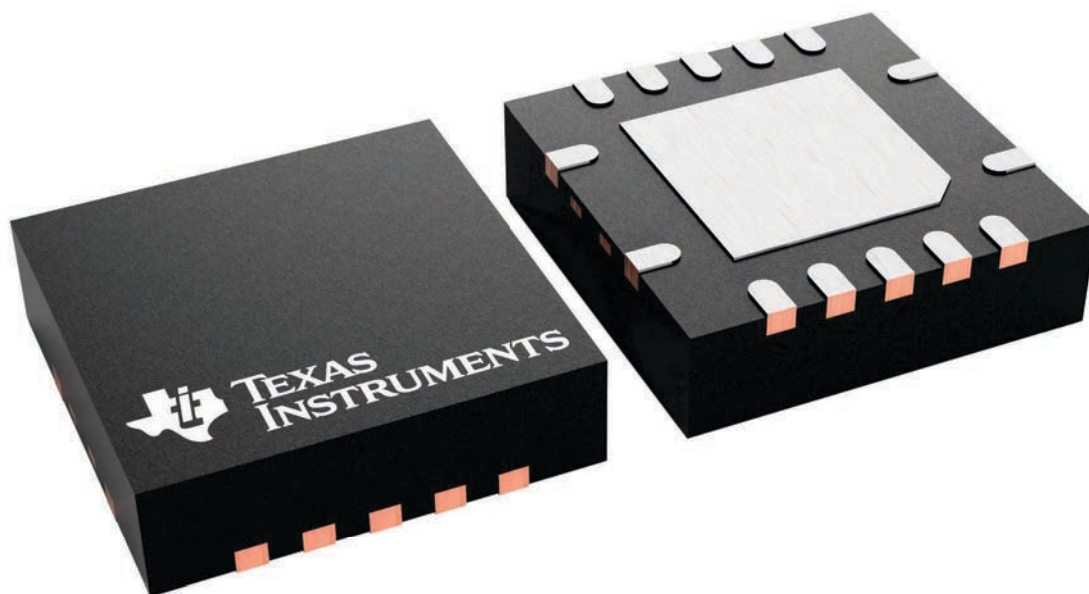
**RGY 14**

**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.



## IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you fully indemnify TI and its representatives against any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to [TI's Terms of Sale](#), [TI's General Quality Guidelines](#), or other applicable terms available either on [ti.com](#) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products. Unless TI explicitly designates a product as custom or customer-specified, TI products are standard, catalog, general purpose devices.

TI objects to and rejects any additional or different terms you may propose.

Copyright © 2026, Texas Instruments Incorporated

Last updated 10/2025