

Sample &

Buy







#### SN74AHCT1G04

SCLS319P - MARCH 1996-REVISED DECEMBER 2014

# SN74AHCT1G04 Single Inverter Gate

#### 1 Features

- Operating Range 4.5-V to 5.5-V
- Max t<sub>pd</sub> of 7.5 ns at 5-V
- Low Power Consumption, 10-µA Max I<sub>CC</sub>
- ±8-mA Output Drive at 5-V
- Inputs are TTL-Voltage Compatible
- Latch-Up Performance Exceeds 250 mA Per JESD 17

#### 2 Applications

- Notebook PCs
- Electronic Points of Sale
- Patient Monitoring
- Motor Controls: AC Induction
- Network Switches
- Tests

### **3 Description**

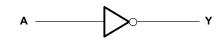
The SN74AHCT1G04 contains one gate. The device performs the Boolean function  $Y = \overline{A}$ .

#### **Device Information**<sup>(1)</sup>

PART NUMBER	PACKAGE	BODY SIZE (NOM)		
SN74AHCT1G04	SOT-23 (5)	2.90 mm x 1.60 mm		
	SC-70 (5)	2.00 mm x 1.30 mm		

(1) For all available packages, see the orderable addendum at the end of the data sheet.

**4** Simplified Schematic



2

## **Table of Contents**

9.2 9.3

9.4

1

1	Feat	tures 1								
2	Арр	lications1								
3	Des	Description 1								
4	Sim	plified Schematic1								
5	Rev	ision History 2								
6	Pin	Configuration and Functions 3								
7	Spe	cifications 4								
	7.1	Absolute Maximum Ratings 4								
	7.2	ESD Ratings 4								
	7.3	Recommended Operating Conditions 4								
	7.4	Thermal Information 4								
	7.5	Electrical Characteristics 5								
	7.6	Switching Characteristics 5								
	7.7	Operating Characteristics 5								
	7.8	Typical Characteristics 5								
8	Para	ameter Measurement Information								
9	Deta	ailed Description7								

#### **Revision History** 5

### Changes from Revision O (C

ristics	13.1 Trademarks	10
ristics5	13.2 Electrostatic Discharge Caution	10
tics5	13.3 Glossary	10
ent Information 6	14 Mechanical, Packaging, and Orderable Information	10
October 2013) to Revision P		

•	Added Applications, Device Information table, Pin Functions table, ESD Ratings table, Thermal Information table, Typical Characteristics, Feature Description section, Device Functional Modes, Application and Implementation section, Power Supply Recommendations section, Layout section, Device and Documentation Support section, and Mechanical, Packaging, and Orderable Information section.	. 1
•	Deleted Ordering Information table.	1
•	Changed MAX operating temperature to 125°C in Recommended Operating Conditions table.	4

EXAS STRUMENTS

10.2 Typical Application ......8 12 Layout...... 10 12.1 Layout Guidelines ..... 10 12.2 Layout Example ..... 10 13 Device and Documentation Support ...... 10

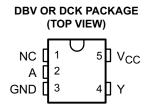
Functional Block Diagram ...... 7

Feature Description......7 Device Functional Modes......7

www.ti.com



# 6 Pin Configuration and Functions



NC - No internal connection

#### **Pin Functions**

PIN		ТҮРЕ	DESCRIPTION		
NO.	NAME	ITPE	DESCRIPTION		
1	NC	—	No Connection		
2	А	I	Input A		
3	GND	—	Ground Pin		
4	Y	0	Output Y		
5	V <sub>CC</sub>	—	Power Pin		

### 7 Specifications

#### 7.1 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
VI	Input voltage range <sup>(2)</sup>		-0.5	7	V
Vo	Output voltage range <sup>(2)</sup>		-0.5	V <sub>CC</sub> + 0.5	V
I <sub>IK</sub>	Input clamp current	V <sub>1</sub> < 0		-20	mA
I <sub>OK</sub>	Output clamp current	$V_{O}$ < 0 or $V_{O}$ > $V_{CC}$		±20	mA
I <sub>O</sub>	Continuous output current	$V_{O} = 0$ to $V_{CC}$		±25	mA
	Continuous current through $V_{CC}$ or GND			±50	mA
T <sub>stg</sub>	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*<sup>()</sup> 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.

### 7.2 ESD Ratings

			VALUE	UNIT
V <sub>(ESD)</sub> Electrostatic discharge	Human body model (HBM), per ANSI/ESDA/JEDEC JS-001, all pins <sup>(1)</sup>			
	Charged device model (CDM), per JEDEC specification JESD22-C101, all $\ensuremath{\text{pins}}^{(2)}$	1000	V	

(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.

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

		MIN	MAX	UNIT
V <sub>CC</sub>	Supply voltage	4.5	5.5	V
VIH	High-level input voltage	2		V
VIL	Low-level Input voltage		0.8	V
VI	Input voltage	0	5.5	V
Vo	Output voltage	0	V <sub>CC</sub>	V
I <sub>OH</sub>	High-level output current		-8	mA
I <sub>OL</sub>	Low-level output current		8	mA
Δt/Δv	Input Transition rise or fall rate		20	ns/V
T <sub>A</sub>	Operating free-air temperature	-40	125	°C

 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 (SCBA004)

#### 7.4 Thermal Information

		SN74AH	SN74AHCT1G04			
	THERMAL METRIC <sup>(1)</sup>	DBV	DCK	UNIT		
		5 P	5 PINS			
R <sub>θJA</sub>	Junction-to-ambient thermal resistance	231.3	287.6			
R <sub>0JC(top)</sub>	Junction-to-case (top) thermal resistance	119.9	97.7			
$R_{\theta JB}$	Junction-to-board thermal resistance	60.6	65.	°C/W		
Ψ <sub>JT</sub>	Junction-to-top characterization parameter	17.8	2.0			
Ψ <sub>JB</sub>	Junction-to-board characterization parameter	60.1	64.2			

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

#### 7.5 Electrical Characteristics

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

PARAMETER	TEST CONDITIONS	T <sub>A</sub> =		<sub>λ</sub> = 25°C		–40°C to 85°C		-40°C to 125°C		
PARAMETER	TEST CONDITIONS	V <sub>cc</sub>	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
M	I <sub>OH</sub> = -50 μA	4.5 V	4.4	4.5		4.4		4.4		V
V <sub>OH</sub>	$I_{OH} = -8 \text{ mA}$	4.5 V	3.94			3.8		3.8		V
N/	I <sub>OL</sub> = 50 μA	4.5 V			0.1		0.1		0.1	V
V <sub>OL</sub>	$I_{OL} = 8 \text{ mA}$				0.36		0.44		0.44	v
I <sub>I</sub>	$V_1 = 5.5 V \text{ or GND}$	0 V to 5.5 V			±0.1		±1		±1	μA
I <sub>CC</sub>		5.5 V			1		10		10	μA
$\Delta I_{CC}^{(1)}$	One input at 3.4 V, Other Inputs at $V_{CC}$ or GND	5.5 V			1.35		1.5		1.5	mA
C <sub>i</sub>	$V_{I} = V_{CC}$ or GND	5 V		4			10		10	pF

(1) This is the increase in supply current for each input at one of the specified TTL voltage levels, rather than 0 V or V<sub>CC</sub>.

### 7.6 Switching Characteristics

over recommended operating free-air temperature range,  $V_{CC} = 5 V \pm 0.5 V$  (unless otherwise noted) (see Figure 2)

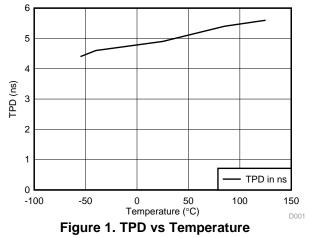
PARAMETER	FROM	то	OUTPUT	T <sub>A</sub> = 2	5°C	–40°C t	o 85°C	–40°C to	o 125°C	UNIT
	(INPUT)	(OUTPUT)	CAPACITANCE	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
t <sub>PLH</sub>	A or B	Y	C <sub>L</sub> = 15 pF	4.7		1	7.5	1	8	2
t <sub>PHL</sub>				4.7		1	7.5	1	8	ns
t <sub>PLH</sub>	A or B	V		5.5		1	8.5	1	9	2
t <sub>PHL</sub>			C <sub>L</sub> = 50 pF	5.5		1	8.5	1	9	ns

### 7.7 Operating Characteristics

 $V_{CC} = 5 \text{ V}, \text{ } \text{T}_{A} = 25^{\circ}\text{C}$ 

PARAMETER		TEST C	ONDITIONS	TYP	UNIT
C <sub>pd</sub>	Power dissipation capacitance	No load,	f = 1 MHz	14	pF

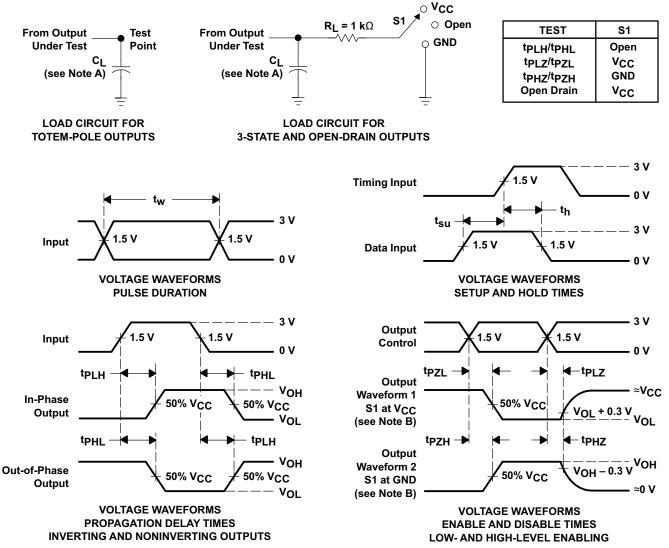
#### 7.8 Typical Characteristics



SN74AHCT1G04 SCLS319P – MARCH 1996 – REVISED DECEMBER 2014 Texas Instruments

www.ti.com

### 8 Parameter Measurement Information



- A. C<sub>L</sub> includes probe and jig capacitance.
- B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control.

Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.

- C. All input pulses are supplied by generators having the following characteristics: PRR ≤ 1 MHz,  $Z_0$  = 50  $\Omega$ ,  $t_r$  ≤ 3 ns,  $t_f$  ≤ 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.

Figure 2. Load Circuit And Voltage Waveforms

6



#### 9 Detailed Description

#### 9.1 Overview

The SN74AHCT1G04 device contains one inverter. This device has TTL input levels that allow up translation from 3.3 V to 5 V.

#### 9.2 Functional Block Diagram

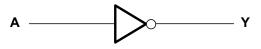


Figure 3. Logic Diagram (Positive Logic)

#### 9.3 Feature Description

- $V_{CC}$  is optimized at 5 V
- Allows up voltage translation from 3.3 V to 5 V
  Inputs accept V<sub>IH</sub> levels of 2 V
- · Slow edge rates minimize output ringing
- Inputs are TTL-Voltage compatible

#### 9.4 Device Functional Modes

#### Table 1. Function Table

INPUT A	OUTPUT Y
н	L
L	Н

TEXAS INSTRUMENTS

www.ti.com

#### **10** Application and Implementation

#### NOTE

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

#### **10.1** Application Information

SN74AHCT1G04 is a low-drive CMOS device that can be used for a multitude of inverting type applications where output ringing is a concern. The low drive and slow edge rates will minimize overshoot and undershoot on the outputs. The input switching levels have been lowered to accommodate TTL inputs of 0.8 V V<sub>IL</sub>and 2 V V<sub>IH</sub>. This feature makes it Ideal for translating up from 3.3 V to 5 V. Figure 5 shows this type of translation.

#### **10.2 Typical Application**

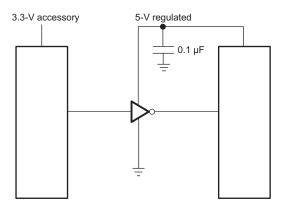


Figure 4. Typical Application Schematic

#### 10.2.1 Design Requirements

This device uses CMOS technology and has balanced output drive. Care should be taken to avoid bus contention because it can drive currents that would exceed maximum limits. The high drive will also create fast edges into light loads, so routing and load conditions should be considered to prevent ringing.

#### 10.2.2 Detailed Design Procedure

- 1. Recommended Input Conditions
  - For rise time and fall time specifications, see  $\Delta t/\Delta V$  in the *Recommended Operating Conditions*<sup>(1)</sup> table.
  - For specified High and low levels, see V<sub>IH</sub> and V<sub>IL</sub> in the *Recommended Operating Conditions*<sup>(1)</sup> table.
  - Inputs are overvoltage tolerant allowing them to go as high as 5.5 V at any valid  $V_{CC}$ .
- 2. Recommend Output Conditions
  - Load currents should not exceed 25 mA per output and 50 mA total for the part.
  - Outputs should not be pulled above V<sub>CC</sub>.
- 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 (SCBA004)



#### **Typical Application (continued)**

#### 10.2.3 Application Curves

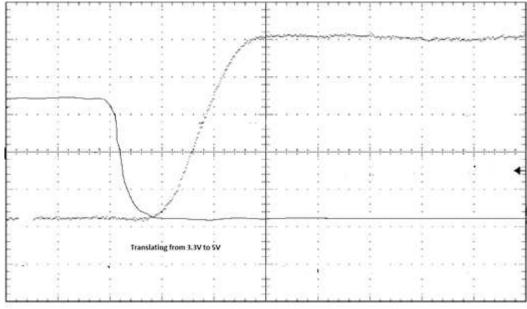


Figure 5. 3.3-V to 5-V Translation

#### **11 Power Supply Recommendations**

The power supply can be any voltage between the MIN and MAX supply voltage rating located in the *Recommended Operating Conditions*<sup>(1)</sup> table.

Each V<sub>CC</sub> pin should have a good bypass capacitor to prevent power disturbance. For devices with a single supply, 0.1  $\mu$ F is recommended. If there are multiple V<sub>CC</sub> pins, 0.01  $\mu$ F or 0.022  $\mu$ F is recommended for each power pin. It is acceptable to parallel multiple bypass caps to reject different frequencies of noise. A 0.1  $\mu$ F and 1  $\mu$ F are commonly used in parallel. The bypass capacitor should be installed as close to the power pin as possible for best results.

TEXAS INSTRUMENTS

#### 12 Layout

#### 12.1 Layout Guidelines

When using multiple bit logic devices, inputs should not float. In many cases, functions or parts of functions of digital logic devices are unused. Some examples are when only two inputs of a triple-input AND gate are used, or when only 3 of the 4-buffer gates are used. Such input pins should not be left unconnected because the undefined voltages at the outside connections result in undefined operational states.

Specified in Figure 6 are rules that 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 makes more sense or is more convenient. It is acceptable to float outputs unless the part is a transceiver. If the transceiver has an output enable pin, it will disable the outputs section of the part when asserted. This will not disable the input section of the I/Os so they also cannot float when disabled.

#### 12.2 Layout Example

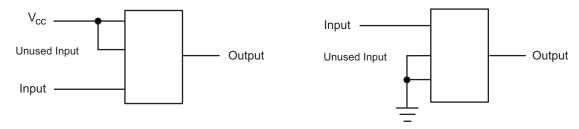


Figure 6. Layout Diagram

#### **13 Device and Documentation Support**

#### 13.1 Trademarks

All trademarks are the property of their respective owners.

#### 13.2 Electrostatic Discharge Caution



These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

#### 13.3 Glossary

#### SLYZ022 — TI Glossary.

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

#### 14 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.



4-Apr-2019

## PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp	Op Temp (°C)	Device Marking (4/5)	Samples
74AHCT1G04DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	B04G	Samples
74AHCT1G04DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	B04G	Samples
74AHCT1G04DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	B04G	Samples
74AHCT1G04DCKRE4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	BC3	Samples
74AHCT1G04DCKRG4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	BC3	Samples
74AHCT1G04DCKTG4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	BC3	Samples
SN74AHCT1G04DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU   CU SN	Level-1-260C-UNLIM	-40 to 125	(B043, B04G, B04J, B04L, B04S)	Samples
SN74AHCT1G04DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU   CU SN	Level-1-260C-UNLIM	-40 to 125	(B043, B04G, B04J, B04L, B04S)	Samples
SN74AHCT1G04DCKR	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU   CU SN	Level-1-260C-UNLIM	-40 to 125	(BC3, BCG, BCJ, BC L, BCS)	Samples
SN74AHCT1G04DCKT	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU   CU SN	Level-1-260C-UNLIM	-40 to 125	(BC3, BCG, BCJ, BC L, BCS)	Samples

<sup>(1)</sup> 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.

 $\label{eq:obscalar} \textbf{OBSOLETE:} \ \textbf{TI} \ \textbf{has discontinued the production of the device}.$ 

<sup>(2)</sup> 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 (CI) 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-Apr-2019

<sup>(4)</sup> There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

<sup>(5)</sup> 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.

<sup>(6)</sup> Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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 SN74AHCT1G04 :

• Automotive: SN74AHCT1G04-Q1

NOTE: Qualified Version Definitions:

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

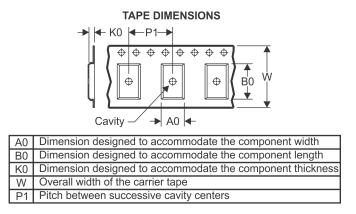
# **PACKAGE MATERIALS INFORMATION**

www.ti.com

Texas Instruments

### **TAPE AND REEL INFORMATION**





### QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE

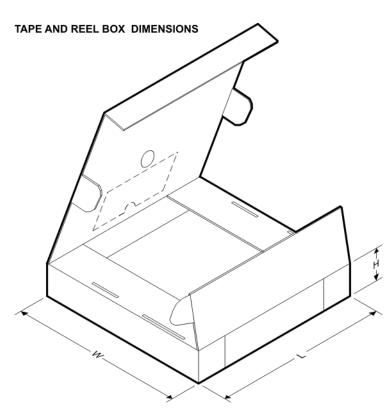


Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
74AHCT1G04DBVRG4	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
74AHCT1G04DBVTG4	SOT-23	DBV	5	250	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
74AHCT1G04DCKRG4	SC70	DCK	5	3000	178.0	9.2	2.4	2.4	1.22	4.0	8.0	Q3
74AHCT1G04DCKTG4	SC70	DCK	5	250	178.0	9.2	2.4	2.4	1.22	4.0	8.0	Q3
SN74AHCT1G04DBVR	SOT-23	DBV	5	3000	180.0	8.4	3.23	3.17	1.37	4.0	8.0	Q3
SN74AHCT1G04DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.3	3.2	1.4	4.0	8.0	Q3
SN74AHCT1G04DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
SN74AHCT1G04DBVR	SOT-23	DBV	5	3000	178.0	9.2	3.3	3.23	1.55	4.0	8.0	Q3
SN74AHCT1G04DBVT	SOT-23	DBV	5	250	178.0	9.2	3.3	3.23	1.55	4.0	8.0	Q3
SN74AHCT1G04DBVT	SOT-23	DBV	5	250	180.0	8.4	3.23	3.17	1.37	4.0	8.0	Q3
SN74AHCT1G04DBVT	SOT-23	DBV	5	250	178.0	9.0	3.3	3.2	1.4	4.0	8.0	Q3
SN74AHCT1G04DBVT	SOT-23	DBV	5	250	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
SN74AHCT1G04DCKR	SC70	DCK	5	3000	180.0	8.4	2.47	2.3	1.25	4.0	8.0	Q3
SN74AHCT1G04DCKR	SC70	DCK	5	3000	178.0	9.0	2.4	2.5	1.2	4.0	8.0	Q3
SN74AHCT1G04DCKR	SC70	DCK	5	3000	178.0	9.0	2.4	2.5	1.2	4.0	8.0	Q3
SN74AHCT1G04DCKR	SC70	DCK	5	3000	178.0	9.2	2.4	2.4	1.22	4.0	8.0	Q3
SN74AHCT1G04DCKT	SC70	DCK	5	250	178.0	9.2	2.4	2.4	1.22	4.0	8.0	Q3
SN74AHCT1G04DCKT	SC70	DCK	5	250	178.0	9.0	2.4	2.5	1.2	4.0	8.0	Q3



9-Sep-2019

Device	Package Type	Package Drawing		SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74AHCT1G04DCKT	SC70	DCK	5	250	178.0	9.0	2.4	2.5	1.2	4.0	8.0	Q3



Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
74AHCT1G04DBVRG4	SOT-23	DBV	5	3000	180.0	180.0	18.0
74AHCT1G04DBVTG4	SOT-23	DBV	5	250	180.0	180.0	18.0
74AHCT1G04DCKRG4	SC70	DCK	5	3000	180.0	180.0	18.0
74AHCT1G04DCKTG4	SC70	DCK	5	250	180.0	180.0	18.0
SN74AHCT1G04DBVR	SOT-23	DBV	5	3000	202.0	201.0	28.0
SN74AHCT1G04DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
SN74AHCT1G04DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
SN74AHCT1G04DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
SN74AHCT1G04DBVT	SOT-23	DBV	5	250	180.0	180.0	18.0
SN74AHCT1G04DBVT	SOT-23	DBV	5	250	202.0	201.0	28.0
SN74AHCT1G04DBVT	SOT-23	DBV	5	250	180.0	180.0	18.0
SN74AHCT1G04DBVT	SOT-23	DBV	5	250	180.0	180.0	18.0
SN74AHCT1G04DCKR	SC70	DCK	5	3000	202.0	201.0	28.0
SN74AHCT1G04DCKR	SC70	DCK	5	3000	180.0	180.0	18.0
SN74AHCT1G04DCKR	SC70	DCK	5	3000	180.0	180.0	18.0
SN74AHCT1G04DCKR	SC70	DCK	5	3000	180.0	180.0	18.0





9-Sep-2019

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74AHCT1G04DCKT	SC70	DCK	5	250	180.0	180.0	18.0
SN74AHCT1G04DCKT	SC70	DCK	5	250	180.0	180.0	18.0
SN74AHCT1G04DCKT	SC70	DCK	5	250	180.0	180.0	18.0

# **DBV0005A**



# **PACKAGE OUTLINE**

### SOT-23 - 1.45 mm max height

SMALL OUTLINE TRANSISTOR



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. Refernce JEDEC MO-178.

- 4. Body dimensions do not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.



# DBV0005A

# **EXAMPLE BOARD LAYOUT**

### SOT-23 - 1.45 mm max height

SMALL OUTLINE TRANSISTOR



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.



# DBV0005A

# **EXAMPLE STENCIL DESIGN**

### SOT-23 - 1.45 mm max height

SMALL OUTLINE TRANSISTOR



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.



DCK (R-PDSO-G5)

PLASTIC SMALL-OUTLINE PACKAGE



- 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. Mold flash and protrusion shall not exceed 0.15 per side.
  - D. Falls within JEDEC MO-203 variation AA.



## LAND PATTERN DATA



NOTES:

- A. All linear dimensions are in millimeters.B. This drawing is subject to change without notice.
- C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
- D. Publication IPC-7351 is recommended for alternate designs.
- E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC-7525 for other stencil recommendations.



#### 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, 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 will 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 (www.ti.com/legal/termsofsale.html) 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.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265 Copyright © 2019, Texas Instruments Incorporated