

## 六路施密特触发反相器

### 1 特性

- $V_{CC}$  工作电压范围为 2V 至 6 V
- 输入电压高达 6 V
- 电压为 5V 时,  $t_{pd}$  最大值为 9.5ns

### 2 应用

- 同步反相时钟输入
- 对开关进行去抖
- 对数字信号进行反相

### 3 说明

这些施密特触发器件包含六个独立的逆变器。

#### 封装信息

器件型号	封装	封装尺寸 (标称值)
SNx4AC14	SOIC	8.65mm x 3.9mm
	SSOP	6.2 mm x 1.95 mm
	PDIP	19.3mm x 6.35mm
	SOP	10.3 mm x 5.3 mm
	TSSOP	5.00 mm x 4.4 mm



逻辑图 (正逻辑)



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## 4 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 G (August 2008) to Revision H (January 2023)

Page

- 添加了应用、器件信息表、引脚功能表、ESD 等级表、热性能信息表、典型特性、特性说明部分、器件功能模式、应用和实施部分、电源相关建议部分、布局部分、器件和文档支持部分以及机械、封装和可订购信息部分..... 1

### 5 Pin Configuration and Functions

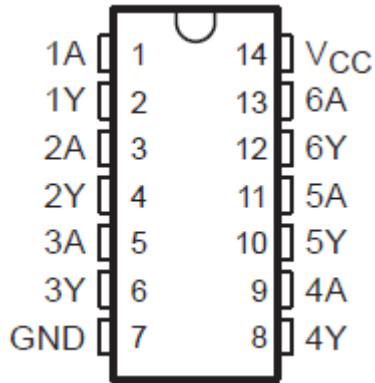
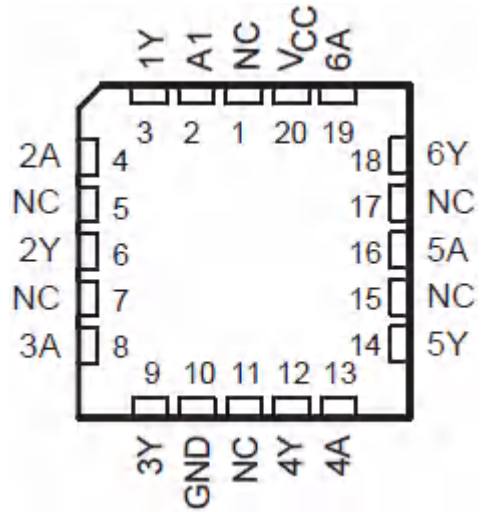


图 5-1. SN54AC14 J or W Package and SN74AC14 D, DB, N, NS, or PW Package Top View



NC – No internal connection

图 5-2. SN54AC14 FK Package Top View

## Pin Functions

NAME	PIN		I/O	DESCRIPTION
	D, DB, N, NS, PW, J, or W	FK		
1A	1	2	Input	Channel 1, Input A
1Y	2	3	Output	Channel 1, Output Y
2A	3	4	Input	Channel 2, Input A
2Y	4	6	Output	Channel 2, Output Y
3A	5	8	Input	Channel 3, Input A
3Y	6	9	Output	Channel 3, Output Y
GND	7	10	—	Ground
4Y	8	12	Output	Channel 4, Output Y
4A	9	13	Input	Channel 4, Input A
5Y	10	14	Output	Channel 5, Output Y
5A	11	16	Input	Channel 5, Input A
6Y	12	18	Output	Channel 6, Output Y
6A	13	19	Input	Channel 6, Input A
V <sub>CC</sub>	14	20	—	Positive Supply
NC		1, 5, 7, 11, 15, 17	—	Not internally connected

## 6 Specifications

### 6.1 Absolute Maximum Ratings

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

		UNIT
Supply voltage range, $V_{CC}$	-0.5 V to 7	V
Input voltage range, $V_I$ <sup>(2)</sup>	-0.5 V to $V_{CC} + 0.5$	V
Output voltage range, $V_O$ <sup>(2)</sup>	-0.5 V to $V_{CC} + 0.5$	V
Input clamp current, $I_{IK}$ ( $V_I < 0$ or $V_I > V_{CC}$ )	$\pm 20$	mA
Output clamp current, $I_{OK}$ ( $V_O < 0$ or $V_O > V_{CC}$ )	$\pm 20$	mA
Continuous output current, $I_O$ ( $V_O = 0$ to $V_{CC}$ )	$\pm 50$	mA
Continuous current through $V_{CC}$ or GND	$\pm 200$	mA
Storage temperature range, $T_{stg}$	-65 to 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.

### 6.2 ESD Ratings

			VALUE	UNIT
$V_{(ESD)}$	Electrostatic discharge	Human body model (HBM), per ANSI/ESDA/JEDEC JS-001, all pins <sup>(1)</sup>	$\pm 4000$	V
		Charged device model (CDM), per JEDEC specification JESD22-C101, all pins <sup>(2)</sup>	$\pm 2000$	

- (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.

### 6.3 Recommend Operating Conditions

			SN54AC14		SN74AC14		UNIT
			MIN	MAX	MIN	MAX	
$V_{CC}$	Supply voltage		2	6	2	6	V
$V_I$	Input voltage		0	$V_{CC}$	0	$V_{CC}$	V
$V_O$	Output voltage		0	$V_{CC}$	0	$V_{CC}$	V
$I_{OH}$	High-level output current	$V_{CC} = 3$ V		-12		-12	mA
		$V_{CC} = 4.5$ V		-24		-24	
		$V_{CC} = 5.5$ V		-24		-24	
$I_{OL}$	Low-level output current	$V_{CC} = 3$ V		12		12	mA
		$V_{CC} = 4.5$ V		24		24	
		$V_{CC} = 5.5$ V		24		24	
$T_A$	Operating free-air temperature		-55	125	-40	85	°C

### 6.4 Thermal Information

THERMAL METRIC <sup>(1)</sup>		SNx4AC14					UNIT
		D (SOIC)	DB (SSOP)	N (PDIP)	NS (SO)	PW (TSSOP)	
		14 PINS					
$R_{\theta JA}$	Junction-to-ambient thermal resistance	86	96	80	76	113	°C/W

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

### 6.5 Electrical Characteristics

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

PARAMETER	TEST CONDITIONS	V <sub>CC</sub>	T <sub>A</sub> = 25°C			SN54AC14		SN74AC14		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V <sub>T+</sub> Positive-going threshold		3 V	0.8	1.8	2.2	0.8	2.2	0.8	2.2	V
		4.5 V	1.5	2.6	3.2	1.5	3.2	1.5	3.2	
		5.5 V	1.6	3.2	3.9	1.6	3.9	1.6	3.9	
V <sub>T-</sub> Negative-going threshold		3 V	0.5	0.8	1	0.5	1.2	0.5	1	V
		4.5 V	0.9	1.4	1.8	0.9	1.8	0.9	1.8	
		5.5 V	1.1	1.8	2.3	1.1	2.3	1.1	2.3	
ΔV <sub>T</sub> Hysteresis (V <sub>T+</sub> - V <sub>T-</sub> )		3 V	0.3	1	1.2	0.3	1.2	0.3	1.2	V
		4.5 V	0.4	1.2	1.4	0.4	1.4	0.4	1.4	
		5.5 V	0.5	1.4	1.6	0.5	1.6	0.5	1.6	
V <sub>OH</sub>	I <sub>OH</sub> = -50 μA	3 V	2.9			2.9		2.9		V
		4.5 V	4.4			4.4		4.4		
		5.5 V	5.4			5.4		5.4		
	I <sub>OH</sub> = -12 mA	3 V	2.56			2.4		2.48		
		4.5 V	3.86			3.7		3.8		
	I <sub>OH</sub> = -24 mA	3 V	2.56			2.4		2.48		
		4.5 V	3.86			3.7		3.8		
I <sub>OH</sub> = -50 mA <sup>(1)</sup>	5.5 V				3.85					
I <sub>OH</sub> = -75 mA <sup>(1)</sup>							3.85			
V <sub>OL</sub>	I <sub>OL</sub> = 50 μA	3 V	0.1			0.1		0.1		V
		4.5 V	0.1			0.1		0.1		
		5.5 V	0.1			0.1		0.1		
	I <sub>OL</sub> = 12 mA	3 V	0.36			0.44		0.44		
		4.5 V	0.36			0.44		0.44		
	I <sub>OL</sub> = 24 mA	3 V	0.36			0.44		0.44		
		4.5 V	0.36			0.44		0.44		
I <sub>OL</sub> = 50 mA <sup>(1)</sup>	5.5 V				1.65					
I <sub>OL</sub> = 75 mA <sup>(1)</sup>							1.65			
I <sub>I</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	5.5 V	±0.1			±1		±1		μA
I <sub>CC</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND, I <sub>O</sub> = 0	5.5 V	2			40		20		μA
C <sub>i</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	5 V	4.5							pF

(1) Not more than one output should be tested at a time, and the duration of the test should not exceed 10 ms.

### 6.6 Switching Characteristics

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 (INPUT)	TO (OUTPUT)	T <sub>A</sub> = 25°C			SN54AC14		SN74AC14		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t <sub>PLH</sub>	A	Y	1.5	6	13.5	1	16	1.5	15	ns
t <sub>PHL</sub>			1.5	6	11.5	1	14	1.5	13	

## 6.7 Switching Characteristics

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

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$T_A = 25^\circ\text{C}$			SN54AC14		SN74AC14		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
$t_{PLH}$	A	Y	1.5	5	10	1.5	12	1.5	11	ns
$t_{PHL}$			1.5	5	8.5	1.5	10	1.5	9.5	

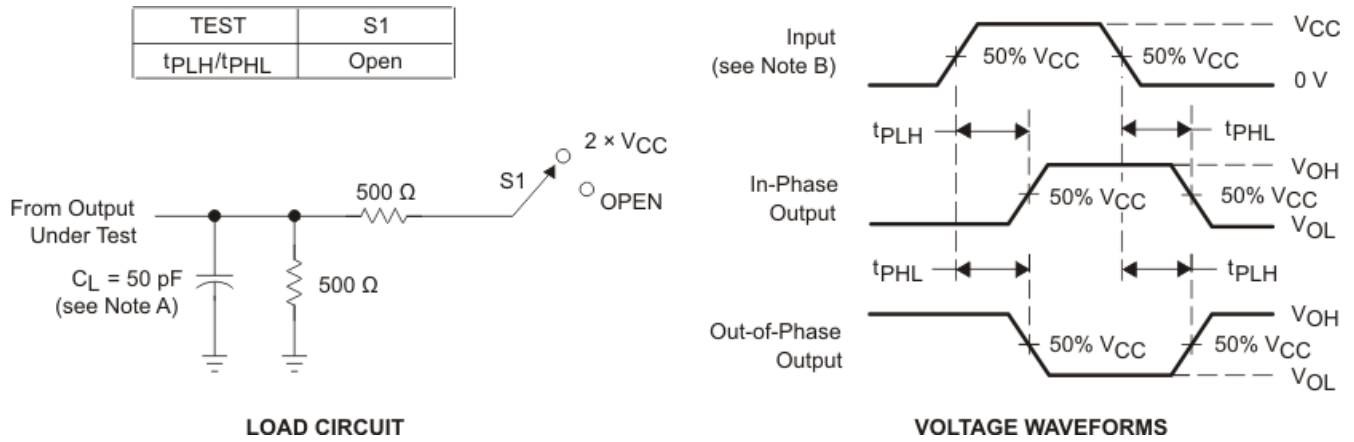
## 6.8 Operating Characteristics

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

PARAMETER		TEST CONDITIONS	TYP	UNIT
$C_{pd}$	Power dissipation capacitance	$C_L = 50\text{ pF}$ , $f = 1\text{ MHz}$	25	pF

## 7 Parameter Measurement Information

### 7.1



- A.  $C_L$  includes probe and jig capacitance.
- B. All input pulses are supplied by generators having the following characteristics:  $PRR \leq 1 \text{ MHz}$ ,  $Z_O = 50 \text{ } \Omega$ ,  $t_r \leq 2.5 \text{ ns}$ ,  $t_f \leq 2.5 \text{ ns}$ .
- C. The outputs are measured one at a time with one input transition per measurement.

图 7-1. Load Circuit and Voltage Waveforms



## 8 Detailed Description

### 8.1 Overview

These 'AC14 devices perform the Boolean function  $Y = \bar{A}$ . Because of the Schmitt action, they have different input threshold levels for positive-going ( $V_{T+}$ ) and for negative-going ( $V_{T-}$ ) signals.

These circuits are temperature compensated and can be triggered from the slowest of input ramps and still give clean, jitter-free output signals. They also have a greater noise margin than conventional inverters.

### 8.2 Functional Block Diagram



### 8.3 Feature Description

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

#### 8.3.1 Balanced CMOS Push-Pull Outputs

This device includes balanced CMOS push-pull outputs. The term *balanced* indicates that the device can sink and source similar currents. The drive capability of this device may create fast edges into light loads, so routing and load conditions should be considered to prevent ringing. Additionally, the outputs of this device are capable of driving larger currents than the device can sustain without being damaged. It is important for the output power of the device to be limited to avoid damage due to overcurrent. The electrical and thermal limits defined in the *Absolute Maximum Ratings* must be followed at all times.

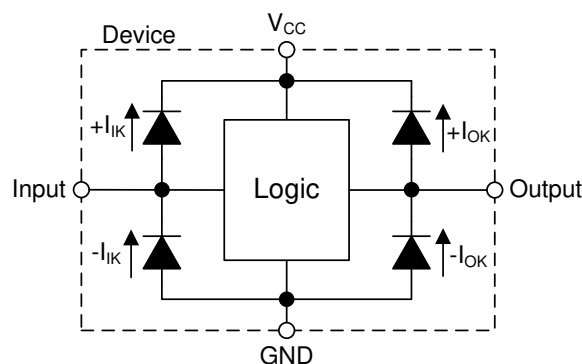
Unused push-pull CMOS outputs should be left disconnected.

#### 8.3.2 Clamp Diode Structure

As shown in [图 8-1](#), the inputs and outputs to this device have both positive and negative clamping diodes.

**CAUTION**

Voltages beyond the values specified in the *Absolute Maximum Ratings* table can cause damage to the device. The input and output voltage ratings may be exceeded if the input and output clamp-current ratings are observed.



**图 8-1. Electrical Placement of Clamping Diodes for Each Input and Output**

## 8.4 Device Functional Modes

表 8-1. Function Table

INPUT	OUTPUT
A	Y
H	L
L	H

## 9 应用信息免责声明

### 备注

以下应用部分中的信息不属于 TI 器件规格的范围，TI 不担保其准确性和完整性。TI 的客户应负责确定器件是否适用于其应用。客户应验证并测试其设计，以确保系统功能。

### 9.1 Application Information

The SNx4AC14 device is a low-drive CMOS device that can be used for a multitude of bus interface type applications where output ringing is a concern. The low drive and slow edge rates will minimize overshoot and undershoot on the outputs. The inputs are tolerant to 5.5 V at any valid  $V_{CC}$ . This feature makes it ideal for translating down to the  $V_{CC}$  level. [Switching Characteristics Comparison](#) shows the reduction in ringing compared to higher drive parts such as AC.

### 9.2 Typical Application

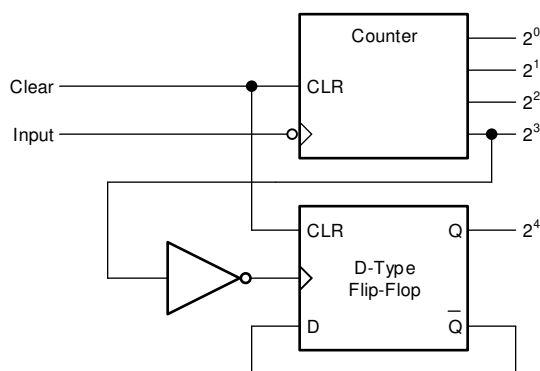


图 9-1. Typical Application Schematic

#### 9.2.1 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.

#### 9.2.2 Detailed Design Procedure

1. Recommended Input Conditions
  - For rise time and fall time specifications, see  $\Delta t / \Delta V$  in the [节 6.3](#) table.
  - For specified High and low levels, see  $V_{IH}$  and  $V_{IL}$  in the [节 6.3](#) 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 35 mA per output and 70 mA total for the part.
  - Outputs should not be pulled above  $V_{CC}$ .

### 9.2.3 Application Curves

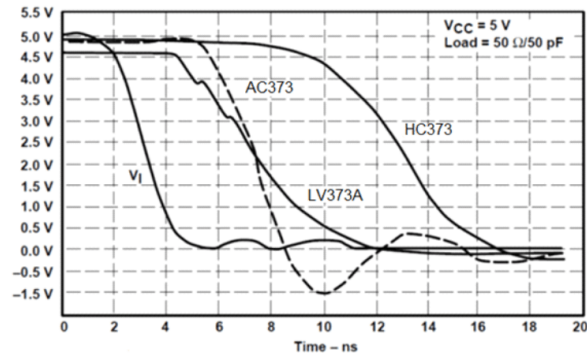


图 9-2. Switching Characteristics Comparison

### 9.3 Power Supply Recommendations

The power supply can be any voltage between the MIN and MAX supply voltage rating located in the [# 6.3](#).

Each  $V_{CC}$  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  $V_{CC}$  pins, then 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 a 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.

### 9.4 Layout

#### 9.4.1 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 [Layout Diagram](#) 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.

#### 9.4.2 Layout Example

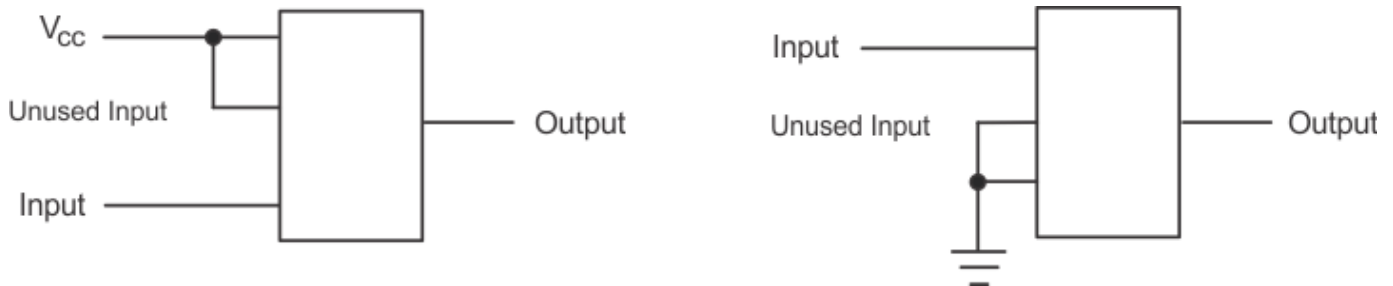


图 9-3. Layout Diagram

## 10 Device and Documentation Support

### 10.1 Documentation Support

#### 10.1.1 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 10-1. Related Links

PARTS	PRODUCT FOLDER	SAMPLE & BUY	TECHNICAL DOCUMENTS	TOOLS & SOFTWARE	SUPPORT & COMMUNITY
SN54AC14	<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>
SN74AC14	<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>

#### 10.2 接收文档更新通知

要接收文档更新通知，请导航至 [ti.com](http://ti.com) 上的器件产品文件夹。点击 [订阅更新](#) 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。

#### 10.3 支持资源

TI E2E™ 支持论坛是工程师的重要参考资料，可直接从专家获得快速、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可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》。

#### 10.4 Trademarks

TI E2E™ is a trademark of Texas Instruments.

所有商标均为其各自所有者的财产。

#### 10.5 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。

#### 10.6 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。

## 11 Mechanical, Packaging, and Orderable Information

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

**PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
5962-87624012A	ACTIVE	LCCC	FK	20	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-87624012A SNJ54AC 14FK	<a href="#">Samples</a>
5962-8762401CA	ACTIVE	CDIP	J	14	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8762401CA SNJ54AC14J	<a href="#">Samples</a>
5962-8762401DA	ACTIVE	CFP	W	14	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8762401DA SNJ54AC14W	<a href="#">Samples</a>
5962-8762401VCA	ACTIVE	CDIP	J	14	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8762401VC A SNV54AC14J	<a href="#">Samples</a>
5962-8762401VDA	ACTIVE	CFP	W	14	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8762401VD A SNV54AC14W	<a href="#">Samples</a>
5962-8762402VCA	ACTIVE	CDIP	J	14	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8762402VC A SNV54AC14J	<a href="#">Samples</a>
5962-8762402VDA	ACTIVE	CFP	W	14	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8762402VD A SNV54AC14W	<a href="#">Samples</a>
SN74AC14D	ACTIVE	SOIC	D	14	50	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC14	<a href="#">Samples</a>
SN74AC14DBR	ACTIVE	SSOP	DB	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC14	<a href="#">Samples</a>
SN74AC14DE4	ACTIVE	SOIC	D	14	50	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC14	<a href="#">Samples</a>
SN74AC14DR	ACTIVE	SOIC	D	14	2500	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC14	<a href="#">Samples</a>
SN74AC14N	ACTIVE	PDIP	N	14	25	RoHS & Green	NIPDAU	N / A for Pkg Type	-40 to 85	SN74AC14N	<a href="#">Samples</a>
SN74AC14NSR	ACTIVE	SO	NS	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC14	<a href="#">Samples</a>
SN74AC14NSRG4	ACTIVE	SO	NS	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC14	<a href="#">Samples</a>
SN74AC14PW	ACTIVE	TSSOP	PW	14	90	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC14	<a href="#">Samples</a>



Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SN74AC14PWR	ACTIVE	TSSOP	PW	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC14	<a href="#">Samples</a>
SN74AC14PWRE4	ACTIVE	TSSOP	PW	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC14	<a href="#">Samples</a>
SN74AC14PWRG4	ACTIVE	TSSOP	PW	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC14	<a href="#">Samples</a>
SNJ54AC14FK	ACTIVE	LCCC	FK	20	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962- 87624012A SNJ54AC 14FK	<a href="#">Samples</a>
SNJ54AC14J	ACTIVE	CDIP	J	14	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8762401CA SNJ54AC14J	<a href="#">Samples</a>
SNJ54AC14W	ACTIVE	CFP	W	14	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8762401DA SNJ54AC14W	<a href="#">Samples</a>

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

**ACTIVE:** Product device recommended for new designs.

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

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

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

**OBSOLETE:** TI has discontinued the production of the device.

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

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

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

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

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

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

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

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**OTHER QUALIFIED VERSIONS OF SN54AC14, SN54AC14-SP, SN74AC14 :**

- Catalog : [SN74AC14](#), [SN54AC14](#)
  
- Automotive : [SN74AC14-Q1](#), [SN74AC14-Q1](#)
  
- Military : [SN54AC14](#)
  
- Space : [SN54AC14-SP](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
  
- Automotive - Q100 devices qualified for high-reliability automotive applications targeting zero defects
  
- Military - QML certified for Military and Defense Applications
  
- Space - Radiation tolerant, ceramic packaging and qualified for use in Space-based application

**TAPE AND REEL INFORMATION**

**QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE**


\*All dimensions are nominal

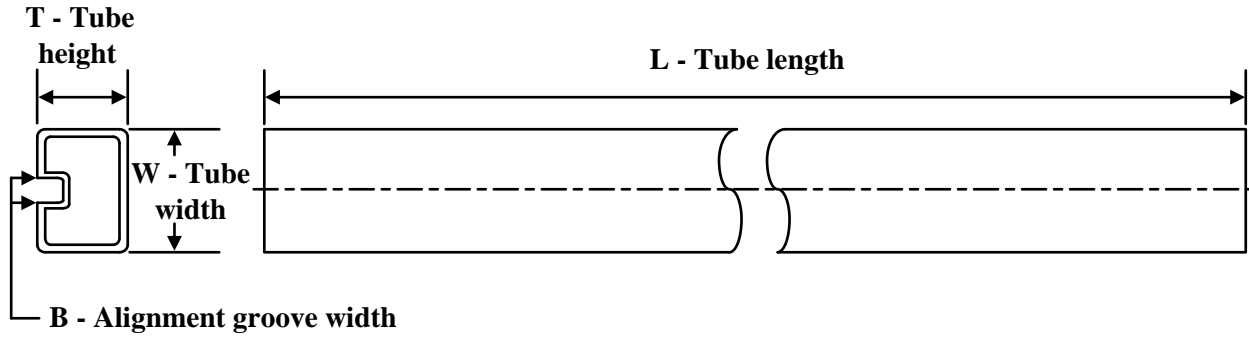
Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74AC14DBR	SSOP	DB	14	2000	330.0	16.4	8.35	6.6	2.4	12.0	16.0	Q1
SN74AC14DR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
SN74AC14DR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
SN74AC14NSR	SO	NS	14	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74AC14PWR	TSSOP	PW	14	2000	330.0	12.4	6.9	5.6	1.6	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)
SN74AC14DBR	SSOP	DB	14	2000	356.0	356.0	35.0
SN74AC14DR	SOIC	D	14	2500	340.5	336.1	32.0
SN74AC14DR	SOIC	D	14	2500	356.0	356.0	35.0
SN74AC14NSR	SO	NS	14	2000	356.0	356.0	35.0
SN74AC14PWR	TSSOP	PW	14	2000	356.0	356.0	35.0

**TUBE**


\*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (µm)	B (mm)
5962-87624012A	FK	LCCC	20	1	506.98	12.06	2030	NA
5962-8762401DA	W	CFP	14	1	506.98	26.16	6220	NA
5962-8762401VDA	W	CFP	14	1	506.98	26.16	6220	NA
5962-8762402VDA	W	CFP	14	1	506.98	26.16	6220	NA
SN74AC14D	D	SOIC	14	50	506.6	8	3940	4.32
SN74AC14DE4	D	SOIC	14	50	506.6	8	3940	4.32
SN74AC14N	N	PDIP	14	25	506	13.97	11230	4.32
SN74AC14N	N	PDIP	14	25	506	13.97	11230	4.32
SN74AC14PW	PW	TSSOP	14	90	530	10.2	3600	3.5
SNJ54AC14FK	FK	LCCC	20	1	506.98	12.06	2030	NA
SNJ54AC14W	W	CFP	14	1	506.98	26.16	6220	NA

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



4214771/A 05/2017

### 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.

# EXAMPLE BOARD LAYOUT

J0014A

CDIP - 5.08 mm max height

CERAMIC DUAL IN LINE PACKAGE



LAND PATTERN EXAMPLE  
NON-SOLDER MASK DEFINED  
SCALE: 5X



4214771/A 05/2017



D (R-PDSO-G14)

PLASTIC SMALL OUTLINE



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

D (R-PDSO-G14)

PLASTIC SMALL OUTLINE

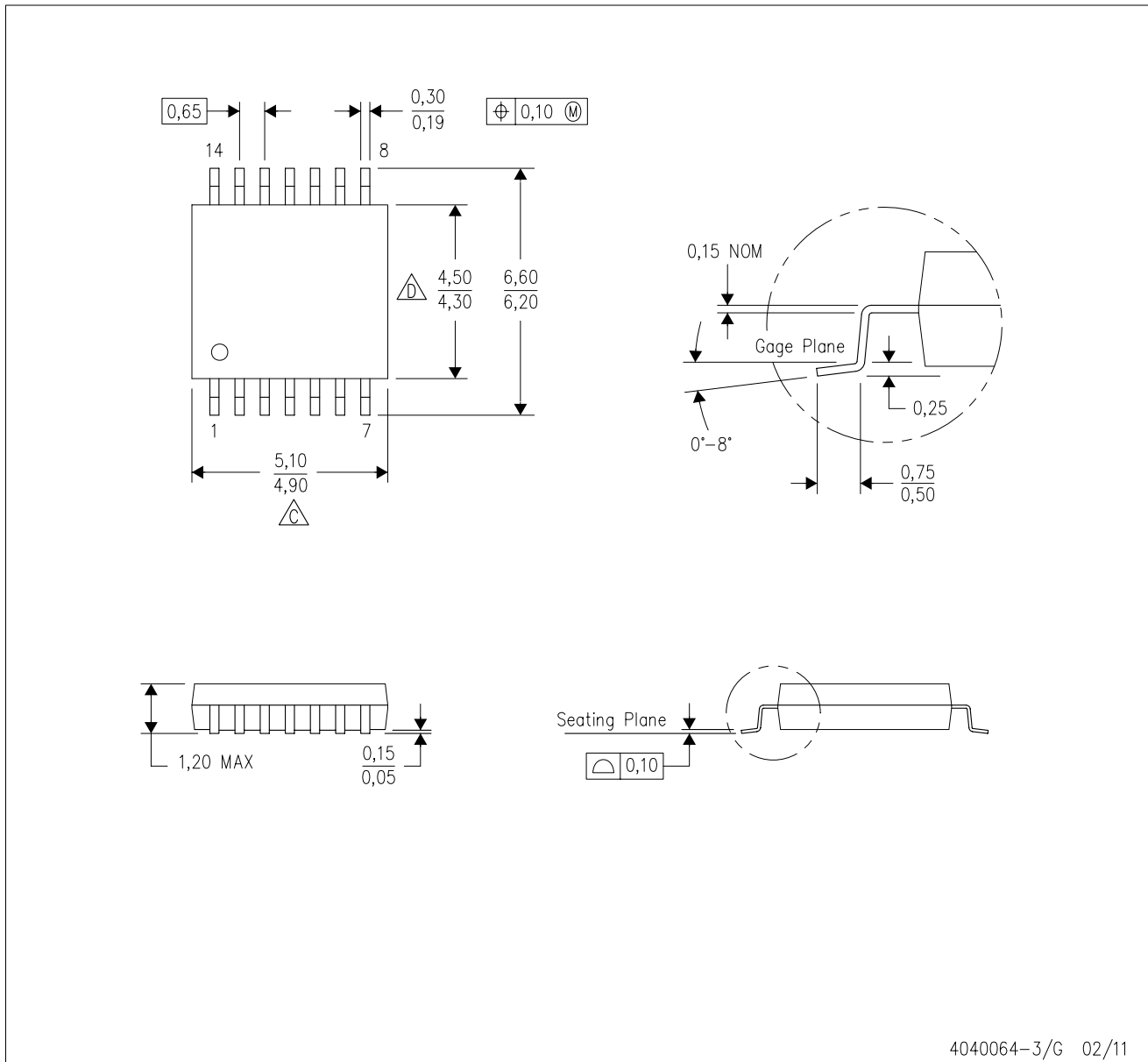


- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Publication IPC-7351 is recommended for alternate designs.
  - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
  - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

# MECHANICAL DATA

PW (R-PDSO-G14)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
  - B. This drawing is subject to change without notice.
  - $\triangle$  C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 each side.
  - $\triangle$  D. Body width does not include interlead flash. Interlead flash shall not exceed 0,25 each side.
  - E. Falls within JEDEC MO-153

PW (R-PDSO-G14)

PLASTIC SMALL OUTLINE



4211284-2/G 08/15

- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Publication IPC-7351 is recommended for alternate designs.
  - D. 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. Refer to IPC-7525 for other stencil recommendations.
  - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

## MECHANICAL DATA

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

**PLASTIC SMALL-OUTLINE PACKAGE**

**14-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.

W (R-GDFP-F14)

CERAMIC DUAL FLATPACK



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

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

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



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

4040049/E 12/2002

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

PLASTIC SMALL-OUTLINE

28 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.  
 D. Falls within JEDEC MO-150



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