

SNx4AC32 四通道双输入正或门

1 特性

- 2V 至 6V V_{CC} 运行
- 输入支持高达 6V 电压
- t_{pd} 最大值为 7.5ns (5V 时)

2 说明

' AC32 器件是四通道双输入正或门。此系列器件以正逻辑执行布尔函数 $Y = A + B$ 或 $Y = \overline{A} \cdot \overline{B}$ 。

器件信息

器件型号	封装 ⁽¹⁾	封装尺寸 ⁽²⁾	本体尺寸 ⁽³⁾
SNx4AC32	DB (SSOP , 14)	6.2mm x 7.8mm	6.2mm x 5.3mm
	D (SOIC , 14)	8.65mm x 6mm	8.65mm x 3.9mm
	N (PDIP , 14)	19.3mm x 9.4mm	19.3mm x 6.35mm
	NS (SO , 14)	10.2mm x 7.8mm	10.3mm x 5.3mm
	PW (TSSOP , 14)	5mm x 6.4mm	5mm x 4.4mm

- (1) 如需了解更多信息, 请参阅第 10 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。



逻辑图, 每个逻辑门 (正逻辑)



Table of Contents

1 特性	1	6.2 Device Functional Modes.....	8
2 说明	1	7 Application and Implementation	9
3 Pin Configuration and Functions	3	7.1 Power Supply Recommendations.....	9
4 Specifications	4	7.2 Layout.....	9
4.1 Absolute Maximum Ratings.....	4	8 Device and Documentation Support	10
4.2 Recommended Operating Conditions.....	4	8.1 Documentation Support (Analog).....	10
4.3 Thermal Information.....	5	8.2 接收文档更新通知.....	10
4.4 Electrical Characteristics.....	5	8.3 支持资源.....	10
4.5 Switching Characteristics, $V_{CC} = 3.3\text{ V} \pm 0.3\text{ V}$	5	8.4 Trademarks.....	10
4.6 Switching Characteristics, $V_{CC} = 5\text{ V} \pm 0.5\text{ V}$	6	8.5 静电放电警告.....	10
4.7 Operating Characteristics.....	6	8.6 术语表.....	10
5 Parameter Measurement Information	7	9 Revision History	10
6 Detailed Description	8	10 Mechanical, Packaging, and Orderable Information	11
6.1 Functional Block Diagram.....	8		

3 Pin Configuration and Functions

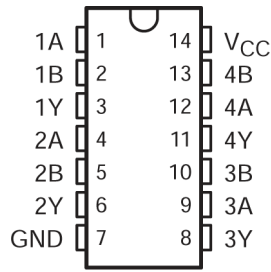
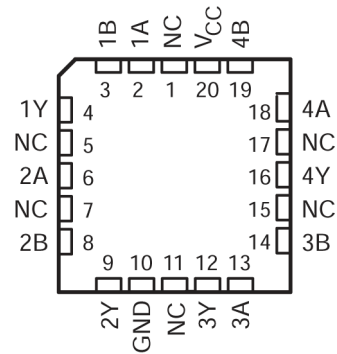


图 3-1. SN54AC32 J 或 W 封装; SN74AC32 D, DB, N, NS, 或 PW 封装 (顶视图)



NC - No internal connection

图 3-2. SN54AC32 FK 封装 (顶视图)

表 3-1. Pin Functions

NAME	PIN		TYPE ⁽¹⁾	DESCRIPTION
	SN74AC32 D, DB, DGV, N, NS, PW, RGY, BQA	SN54AC32 J, W FK		
1A	1	1 2	I	1A Input
1B	2	23 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
3A	9	9 13	I	3A Input
3B	10	10 14	I	3B Input
3Y	8	8 12	O	3Y Output
4A	12	12 18	I	4A Input
4B	13	13 19	I	4B Input
4Y	11	11 16	O	4Y Output
GND	7	7 10	—	Ground Pin
NC	—	— 1, 5, 7, 11, 15, 17	—	No Connection
V _{CC}	14	14 20	—	Power Pin
Thermal Pad ⁽²⁾	-	- -	-	Thermal Pad

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

(2) RGY and BQA Package Only

4 Specifications

4.1 Absolute Maximum Ratings

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

		MIN	MAX	UNIT
V_{CC}	Supply voltage range	-0.5	7	V
V_I ⁽²⁾	Input voltage range	-0.5	$V_{CC} + 0.5$	V
V_O ⁽²⁾	Output voltage range	-0.5	+ 0.5	V
I_{IK}	Input clamp current ($V_I < 0$ or $V_I > V_{CC}$)		±20	mA
I_{OK}	Output clamp current ($V_O < 0$ or $V_O > V_{CC}$)		±20	mA
I_O	Continuous output current ($V_O = 0$ to V_{CC})		±50	mA
I_o	Continuous current through V_{CC} or GND		±200	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.

4.2 Recommended Operating Conditions

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

		SN54AC32		SN74AC32		UNIT
		MIN	MAX	MIN	MAX	
V_{CC}	Supply voltage	2	6	2	6	V
V_{IH}	High-level input voltage	$V_{CC} = 3$ V		2.1		V
		$V_{CC} = 4.5$ V		1.15		
		$V_{CC} = 5.5$ V		1.85		
V_{IL}	Low-level input voltage	$V_{CC} = 3$ V		0.9		V
		$V_{CC} = 4.5$ V		1.35		
		$V_{CC} = 5.5$ V		1.65		
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		mA
		$V_{CC} = 4.5$ V		-24		
		$V_{CC} = 5.5$ V		-24		
I_{OL}	Low-level output current	$V_{CC} = 3$ V		12		mA
		$V_{CC} = 4.5$ V		24		
		$V_{CC} = 5.5$ V		24		
$\Delta t/\Delta v$	Input transition rise or fall rate		8		8	ns/V
T_A	Operating free-air temperature	-55	125	-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.

4.3 Thermal Information

THERMAL METRIC ⁽¹⁾		SNx4AC32					UNIT
		D	DB	N	NS	PW	
		14	14	14	14	14	
$R_{\theta JA}$	Junction-to-ambient thermal resistance	119.9	96	80	76	145.7	°C/W

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

4.4 Electrical Characteristics

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

PARAMETER	TEST CONDITIONS	V_{CC}	$T_A = 25^\circ\text{C}$			SN54AC32		SN74AC32		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V_{OH}	$I_{OH} = -50 \mu\text{A}$	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			
	$I_{OH} = -12 \text{ mA}$	3 V	2.56			2.4	2.46			
		4.5 V	3.86			3.7	3.76			
	$I_{OH} = -24 \text{ mA}$	5.5 V	4.86			4.7	4.76			
		$I_{OH} = -50 \text{ mA}^{(1)}$	5.5 V				3.85			
$I_{OH} = -75 \text{ mA}^{(1)}$	5.5 V					3.85				
V_{OL}	$I_{OL} = 50 \mu\text{A}$	3 V	0.002		0.1	0.1	0.1		V	
		4.5 V	0.001		0.1	0.1	0.1			
		5.5 V	0.001		0.1	0.1	0.1			
	$I_{OL} = 12 \text{ mA}$	3 V			0.36	0.5	0.44			
		4.5 V			0.36	0.5	0.44			
	$I_{OL} = 24 \text{ mA}$	5.5 V			0.36	0.5	0.44			
		$I_{OL} = 50 \text{ mA}^{(1)}$	5.5 V				1.65			
$I_{OL} = 75 \text{ mA}^{(1)}$	5.5 V					1.65				
I_I	A or B ports	$V_I = V_{CC}$ or GND	5.5 V	± 0.1		± 1	± 1		μA	
I_{CC}		$V_I = V_{CC}$ or GND, $I_O = 0$	5.5 V			2	40	20	μA	
C_i		$V_I = V_{CC}$ or GND	5 V	2.6					pF	

(1) Not more than one output should be tested at a time, and the duration of the test should not exceed 2 ms.

4.5 Switching Characteristics, $V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$

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

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$T_A = 25^\circ\text{C}$			SN54AC32		SN74AC32		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A or B	Y	1.5	7	9	1	12	1.5	10	ns
t_{PHL}			1.5	7	8.5	1	11.5	1	9	

4.6 Switching Characteristics, $V_{CC} = 5\text{ V} \pm 0.5\text{ V}$

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

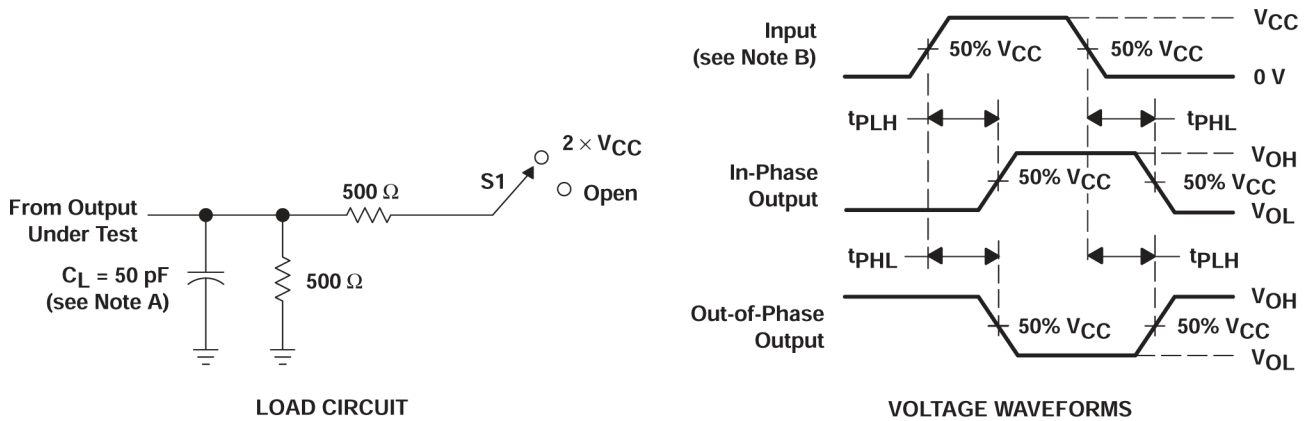
PARAMETER	FROM (INPUT)	TO (OUTPUT)	$T_A = 25^\circ\text{C}$			SN54AC32		SN74AC32		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A or B	Y	1.5	5.5	7.5	1	9	1	8.5	ns
t_{PHL}			1.5	5	7	1	8.5	1	7.5	

4.7 Operating Characteristics

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

PARAMETER		TEST CONDITIONS		TYP	UNIT
C_{pd}	Power dissipation capacitance	$C_L = 50\text{ pF}$,	$f = 1\text{ MHz}$	40	pF

5 Parameter Measurement Information



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

图 5-1. Load Circuit and Voltage Waveforms

TEST	S1
t_{PLH}/t_{PHL}	Open

6 Detailed Description

6.1 Functional Block Diagram



图 6-1. Logic Diagram, Each Gate (Positive Logic)

6.2 Device Functional Modes

表 6-1. Function Table (Each Gate)

INPUTS		OUTPUT Y
A	B	
H	X	H
X	H	H
L	L	L

7 Application and Implementation

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。

7.1 Power Supply Recommendations

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- μ F capacitor is recommended for this device. It is acceptable to parallel multiple bypass capacitors to reject different frequencies of noise. The 0.1- μ F and 1- μ 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*.

7.2 Layout

7.2.1 Layout Guidelines

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

In many cases, functions or parts of functions of digital logic devices are unused, for example, when only two inputs of a triple-input AND gate are used or only three of the four buffer gates are used. Such input pins should not be left unconnected because the undefined voltages at the outside connections result in undefined operational states. Specified below are the 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 make more sense or is more convenient. Floating outputs is generally acceptable, unless the part is a transceiver. If the transceiver has an output enable pin it will disable the outputs section of the part when asserted. This will not disable the input section of the I.O's so they also cannot float when disabled.

7.2.2 Layout Example

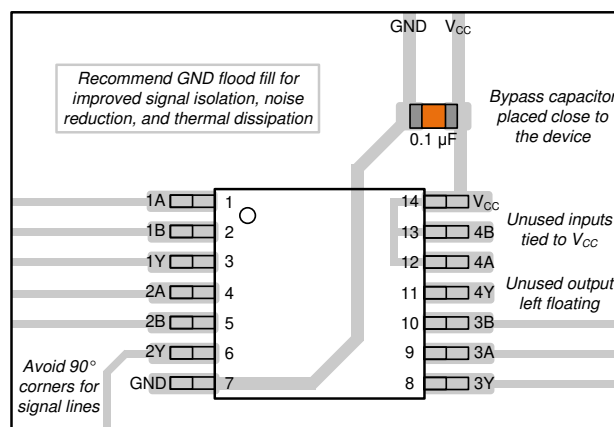


图 7-1. Layout Example for the SNx4AC32

8 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.

8.1 Documentation Support (Analog)

8.1.1 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 8-1. Related Links

PARTS	PRODUCT FOLDER	SAMPLE & BUY	TECHNICAL DOCUMENTS	TOOLS & SOFTWARE	SUPPORT & COMMUNITY
SN54AC32	Click here	Click here	Click here	Click here	Click here
SN74AC32	Click here	Click here	Click here	Click here	Click here

8.2 接收文档更新通知

要接收文档更新通知，请导航至 [ti.com](https://www.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。

8.3 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](#)。

8.4 Trademarks

TI E2E™ is a trademark of Texas Instruments.

所有商标均为其各自所有者的财产。

8.5 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。

8.6 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。

9 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 D (October 2023) to Revision E (July 2024)	Page
• 添加了 器件信息表 、 引脚功能表 、 热性能信息表 、 器件功能模式 、“应用和实施”部分、 器件和文档支持部分 以及 机械、封装和订购信息部分	1
• Updated R ^θ JA values: D = 86 to 119.9, PW = 113 to 145.7, all values in °C/W.....	5

10 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
5962-87614012A	ACTIVE	LCCC	FK	20	55	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-87614012A SNJ54AC32FK	Samples
5962-8761401CA	ACTIVE	CDIP	J	14	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8761401CA SNJ54AC32J	Samples
5962-8761401DA	ACTIVE	CFP	W	14	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8761401DA SNJ54AC32W	Samples
SN74AC32D	OBSOLETE	SOIC	D	14		TBD	Call TI	Call TI	-40 to 85	AC32	
SN74AC32DBR	ACTIVE	SSOP	DB	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC32	Samples
SN74AC32DR	ACTIVE	SOIC	D	14	2500	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC32	Samples
SN74AC32N	ACTIVE	PDIP	N	14	25	RoHS & Green	NIPDAU	N / A for Pkg Type	-40 to 85	SN74AC32N	Samples
SN74AC32NSR	ACTIVE	SO	NS	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC32	Samples
SN74AC32PW	OBSOLETE	TSSOP	PW	14		TBD	Call TI	Call TI	-40 to 85	AC32	
SN74AC32PWR	ACTIVE	TSSOP	PW	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AC32	Samples
SNJ54AC32FK	ACTIVE	LCCC	FK	20	55	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-87614012A SNJ54AC32FK	Samples
SNJ54AC32J	ACTIVE	CDIP	J	14	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8761401CA SNJ54AC32J	Samples
SNJ54AC32W	ACTIVE	CFP	W	14	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8761401DA SNJ54AC32W	Samples

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

ACTIVE: Product device recommended for new designs.

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

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

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

OBSOLETE: TI has discontinued the production of the device.

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

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

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

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 SN54AC32, SN74AC32 :

- Catalog : [SN74AC32](#)

- Enhanced Product : [SN74AC32-EP](#), [SN74AC32-EP](#)

- Military : [SN54AC32](#)

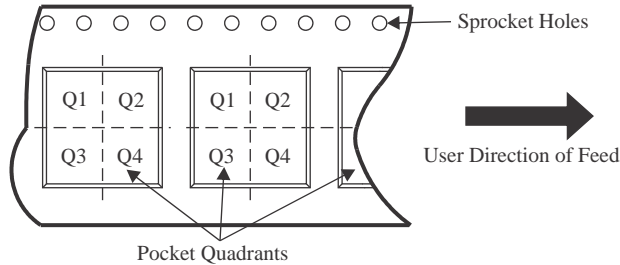
NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product

- Enhanced Product - Supports Defense, Aerospace and Medical Applications

- Military - QML certified for Military and Defense Applications

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
SN74AC32DBR	SSOP	DB	14	2000	330.0	16.4	8.35	6.6	2.4	12.0	16.0	Q1
SN74AC32DR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
SN74AC32DR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
SN74AC32DR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
SN74AC32NSR	SO	NS	14	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74AC32PWR	TSSOP	PW	14	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74AC32PWR	TSSOP	PW	14	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1

TAPE AND REEL BOX DIMENSIONS

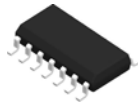

*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74AC32DBR	SSOP	DB	14	2000	356.0	356.0	35.0
SN74AC32DR	SOIC	D	14	2500	356.0	356.0	35.0
SN74AC32DR	SOIC	D	14	2500	353.0	353.0	32.0
SN74AC32DR	SOIC	D	14	2500	353.0	353.0	32.0
SN74AC32NSR	SO	NS	14	2000	367.0	367.0	38.0
SN74AC32PWR	TSSOP	PW	14	2000	353.0	353.0	32.0
SN74AC32PWR	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)
5962-87614012A	FK	LCCC	20	55	506.98	12.06	2030	NA
5962-8761401DA	W	CFP	14	25	506.98	26.16	6220	NA
SN74AC32N	N	PDIP	14	25	506	13.97	11230	4.32
SN74AC32N	N	PDIP	14	25	506	13.97	11230	4.32
SNJ54AC32FK	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54AC32W	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.

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

DB0014A



PACKAGE OUTLINE

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



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



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



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

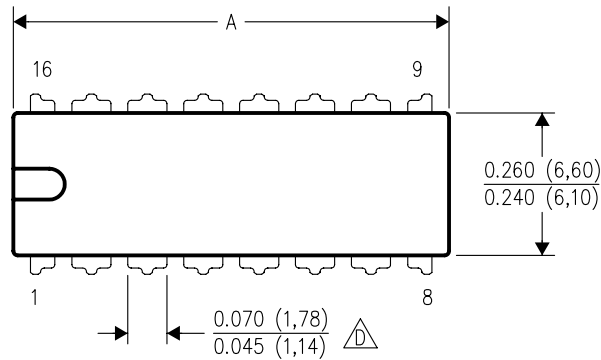


4214771/A 05/2017

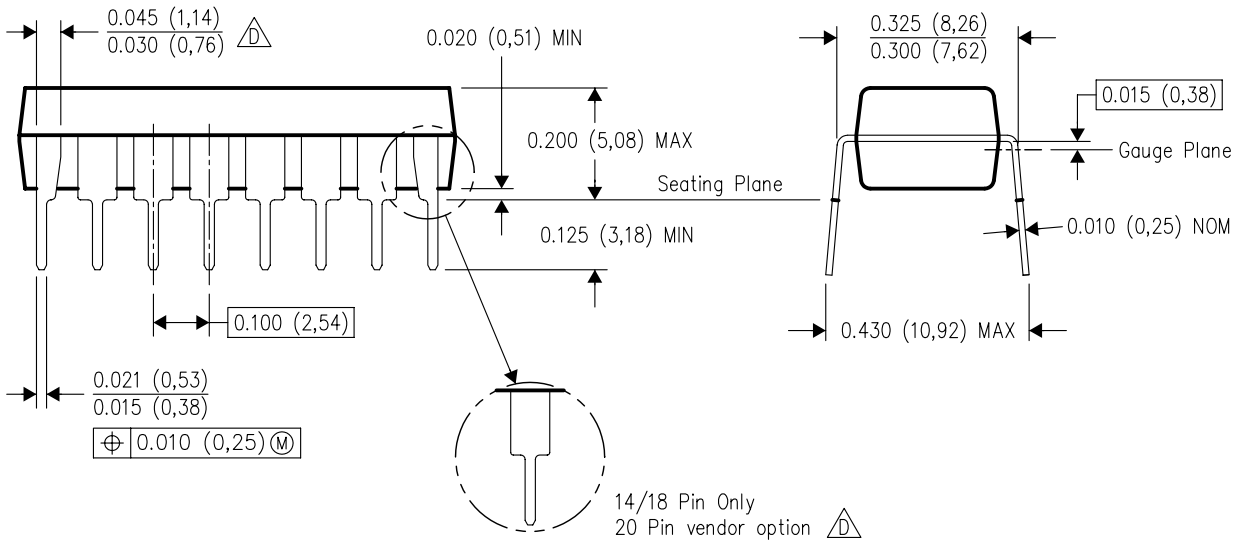
N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



DIM \ PINS **	14	16	18	20
	A MAX	0.775 (19,69)	0.775 (19,69)	0.920 (23,37)
A MIN	0.745 (18,92)	0.745 (18,92)	0.850 (21,59)	0.940 (23,88)
MS-001 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.
 - Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
 - 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.

EXAMPLE BOARD LAYOUT

PW0014A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 10X



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.

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