

## SNx4HC112 具有清零和预设功能的双路 J-K 负边沿触发式触发器

### 1 特性

- 2V 至 6V 的宽工作电压范围
- 输出可驱动多达 10 个 LSTTL 负载
- 低功耗， $I_{CC}$  最大值为 40  $\mu$ A
- $t_{pd}$  典型值 = 13ns
- $\pm 4$ mA 输出驱动 (在 5V 时)
- 低输出电流，最大值 1 $\mu$ A

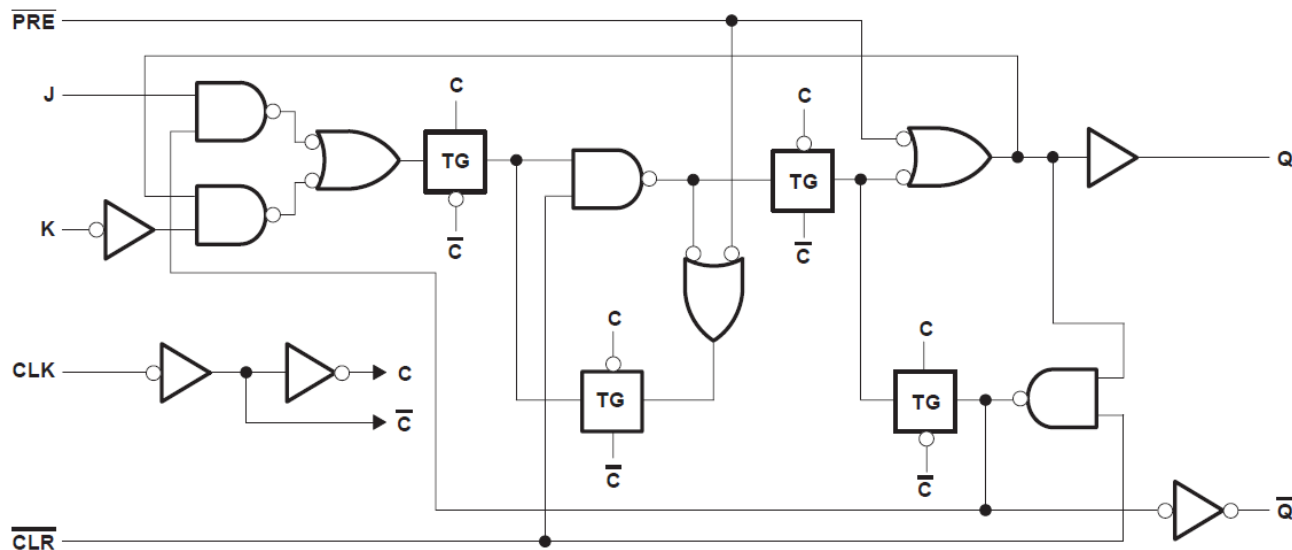
### 2 说明

HC112 器件包含两个独立的 J-K 负边沿触发式触发器。预设 ( $\overline{PRE}$ ) 或清零 ( $\overline{CLR}$ ) 输入端的低电平会设置或复位输出，不受其他输入端的电平的影响。当  $\overline{PRE}$  和  $\overline{CLR}$  处于非有效状态 (高电平) 时，满足设置时间要求的 J 和 K 输入端数据将在时钟 (CLK) 脉冲的负向边沿传输到输出端。时钟触发在一定电压电平下发生，与 CLK 脉冲的下降时间没有直接关系。经过保持时间间隔后，可以更改 J 和 K 输入端的数据而不影响输出端的电平。这些多功能触发器通过将 J 和 K 连接到高电平来作为切换触发器运行。

#### 器件信息

器件型号	封装 <sup>(1)</sup>	封装尺寸 (标称值)
SN54HC112J	陶瓷双列直插封装 (CDIP) (16)	24.38mm × 6.92mm
SN74HC112D	SOIC (16)	9.90mm × 3.90mm
SN74HC112N	PDIP (16)	19.31mm × 6.35mm
SN54HC112FK	LCCC (20)	8.89mm × 8.45mm
SN54HC112W	CFP (16)	10.16mm × 6.73mm

(1) 如需了解所有可用封装，请参阅数据表末尾的可订购产品附录。



功能方框图



## Table of Contents

<b>1 特性</b> .....	1	7.1 Overview.....	9
<b>2 说明</b> .....	1	7.2 Functional Block Diagram.....	9
<b>3 Revision History</b> .....	2	7.3 Device Functional Modes.....	9
<b>4 Pin Configuration and Functions</b> .....	3	<b>8 Power Supply Recommendations</b> .....	10
<b>5 Specifications</b> .....	4	<b>9 Layout</b> .....	10
5.1 Absolute Maximum Ratings.....	4	9.1 Layout Guidelines.....	10
5.2 Recommended Operating Conditions <sup>(2)</sup> .....	4	<b>10 Device and Documentation Support</b> .....	11
5.3 Thermal Information.....	4	10.1 接收文档更新通知.....	11
5.4 Electrical Characteristics.....	6	10.2 支持资源.....	11
5.5 Timing Requirements.....	6	10.3 Trademarks.....	11
5.6 Switching Characteristics.....	7	10.4 Electrostatic Discharge Caution.....	11
5.7 Operating Characteristics.....	7	10.5 术语表.....	11
<b>6 Parameter Measurement Information</b> .....	8	<b>11 Mechanical, Packaging, and Orderable Information</b> .....	11
<b>7 Detailed Description</b> .....	9		

### 3 Revision History

注：以前版本的页码可能与当前版本的页码不同

<b>Changes from Revision G (February 2022) to Revision H (June 2022)</b>	<b>Page</b>
• Junction-to-ambient thermal resistance values increased. D was 73 is now 117.2, N was 67 is now 89.1.....	4

<b>Changes from Revision F (September 2003) to Revision G (February 2022)</b>	<b>Page</b>
• 更新了整个文档中的编号、格式、表格、图和交叉参考，以反映现代数据表标准.....	1



## 5 Specifications

### 5.1 Absolute Maximum Ratings

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

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

- (1) Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
- (2) The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

### 5.2 Recommended Operating Conditions<sup>(2)</sup>

		SN54HC112			SN74HC112			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
$V_{CC}$	Supply voltage	2	5	6	2	5	6	V
$V_{IH}$	High-level input voltage	$V_{CC} = 2\text{ V}$	1.5		1.5			V
		$V_{CC} = 4.5\text{ V}$	3.15		3.15			
		$V_{CC} = 6\text{ V}$	4.2		4.2			
$V_{IL}$	Low-level input voltage	$V_{CC} = 2\text{ V}$		0.5		0.5		V
		$V_{CC} = 4.5\text{ V}$		1.35		1.35		
		$V_{CC} = 6\text{ V}$		1.8		1.8		
$V_I$	Input voltage	0		$V_{CC}$	0		$V_{CC}$	V
$V_O$	Output voltage	0		$V_{CC}$	0		$V_{CC}$	V
$t_t$ <sup>(1)</sup>	Input transition (rise and fall) time	$V_{CC} = 2\text{ V}$		1000			1000	ns
		$V_{CC} = 4.5\text{ V}$		500		500		
		$V_{CC} = 6\text{ V}$		400		400		
$T_A$	Operating free-air temperature	-55		125	-40		85	$^{\circ}\text{C}$

- (1) If this device is used in the threshold region (from  $V_{IL,max} = 0.5\text{ V}$  to  $V_{IH,min} = 1.5\text{ V}$ ), there is a potential to go into the wrong state from induced grounding, causing double clocking. Operating with the inputs at  $t_t = 1000\text{ ns}$  and  $V_{CC} = 2\text{ V}$  does not damage the device; however, functionally, the CLK inputs are not ensured while in the shift, count, or toggle operating modes.
- (2) 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](#).

### 5.3 Thermal Information

THERMAL METRIC		D (SOIC)	N (PDIP)	UNIT
		16 PINS	16 PINS	
$R_{\theta JA}$	Junction-to-ambient thermal resistance <sup>(1)</sup>	117.2	89.1	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	77.2	46.9	$^{\circ}\text{C}/\text{W}$
$R_{\theta JB}$	Junction-to-board thermal resistance	75.6	47.4	$^{\circ}\text{C}/\text{W}$
$\psi_{JT}$	Junction-to-top characterization parameter	38.1	11.8	$^{\circ}\text{C}/\text{W}$
$\psi_{JB}$	Junction-to-board characterization parameter	75.3	47	$^{\circ}\text{C}/\text{W}$

### 5.3 Thermal Information (continued)

THERMAL METRIC		D (SOIC)	N (PDIP)	UNIT
		16 PINS	16 PINS	
$R_{\theta JC(bot)}$	Junction-to-case (bottom) thermal resistance	N/A	N/A	°C/W

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

### 5.4 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			SN54HC112		SN74HC112		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V <sub>OH</sub>	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OH</sub> = -20 μA	2 V	1.9	1.998		1.9		1.9	V	
			4.5 V	4.4	4.499		4.4		4.4		
			6 V	5.9	5.999		5.9		5.9		
		I <sub>OH</sub> = -4 mA	4.5 V	3.98	4.3		3.7		3.84		
		I <sub>OH</sub> = -5.2 mA	6 V	5.48	5.8		5.2		5.34		
V <sub>OL</sub>	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OL</sub> = 20 μA	2 V		0.002	0.1		0.1		0.1	V
			4.5 V		0.001	0.1		0.1		0.1	
			6 V		0.001	0.1		0.1		0.1	
		I <sub>OL</sub> = 4 mA	4.5 V		0.17	0.26		0.4		0.33	
		I <sub>OL</sub> = 5.2 mA	6 V		0.15	0.26		0.4		0.33	
I <sub>I</sub>	V <sub>I</sub> = V <sub>CC</sub> or 0		6 V		±0.1	±100		±1000		±1000	nA
I <sub>CC</sub>	V <sub>I</sub> = V <sub>CC</sub> or 0,	I <sub>O</sub> = 0	6 V					80		40	μA
C <sub>I</sub>			2 V to 6 V		3	10		10		10	pF

### 5.5 Timing Requirements

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

		V <sub>CC</sub>	T <sub>A</sub> = 25°C		SN54HC112		SN74HC112		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	
f <sub>clock</sub>	Clock frequency	2 V		5		3.4		4	MHz
		4.5 V		25		17		20	
		6 V		29		20		24	
t <sub>w</sub>	Pulse duration	PRE or CLR low	2 V	100		150		125	ns
			4.5 V	20		30		25	
			6 V	17		25		21	
		CLK high or low	2 V	100		150		125	
			4.5 V	20		30		25	
			6 V	17		25		21	
t <sub>su</sub>	Setup time before CLK ↓	Data (J, K)	2 V	100		150		125	ns
			4.5 V	20		30		25	
			6 V	17		25		21	
		PRE or CLR inactive	2 V	100		150		125	
			4.5 V	20		30		25	
			6 V	17		25		21	
t <sub>h</sub>	Hold time, data after CLK ↓	2 V	0		0		0	ns	
		4.5 V	0		0		0		
		6 V	0		0		0		

## 5.6 Switching Characteristics

over recommended operating free-air temperature range,  $C_L = 50$  pF (unless otherwise noted) (see [Parameter Measurement Information](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC}$	$T_A = 25^\circ\text{C}$			SN54HC112		SN74HC112		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
$f_{max}$			2 V	5	10		3.4		4	MHz	
			4.5 V	25	50		17		20		
			6 V	29	60		20		24		
$t_{pd}$	PRE or $\overline{\text{CLR}}$	Q or $\overline{Q}$	2 V		54	165		245		205	ns
			4.5 V		16	33		49		41	
			6 V		13	28		42		35	
	CLK	Q or $\overline{Q}$	2 V		56	125		185		155	
			4.5 V		16	25		37		31	
			6 V		13	21		31		26	
$t_t$		Q or $\overline{Q}$	2 V		29	75		110		95	ns
			4.5 V		9	15		22		19	
			6 V		8	13		19		16	

## 5.7 Operating Characteristics

$T_A = 25^\circ\text{C}$

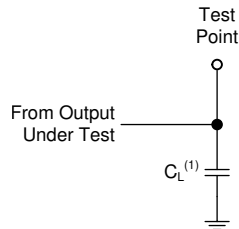
PARAMETER		TEST CONDITIONS	TYP	UNIT
$C_{pd}$	Power dissipation capacitance	No load	35	pF

## 6 Parameter Measurement Information

Phase relationships between waveforms were chosen arbitrarily. All input pulses are supplied by generators having the following characteristics:  $PRR \leq 1 \text{ MHz}$ ,  $Z_O = 50 \Omega$ ,  $t_t < 6 \text{ ns}$ .

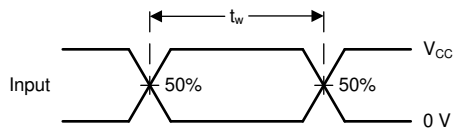
For clock inputs,  $f_{\text{max}}$  is measured when the input duty cycle is 50%.

The outputs are measured one at a time with one input transition per measurement.

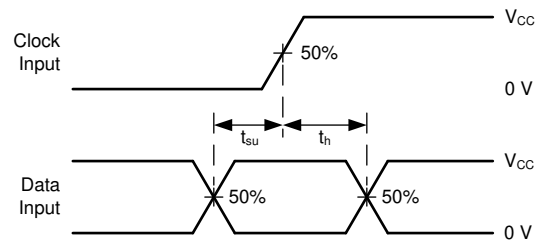


(1)  $C_L$  includes probe and test-fixture capacitance.

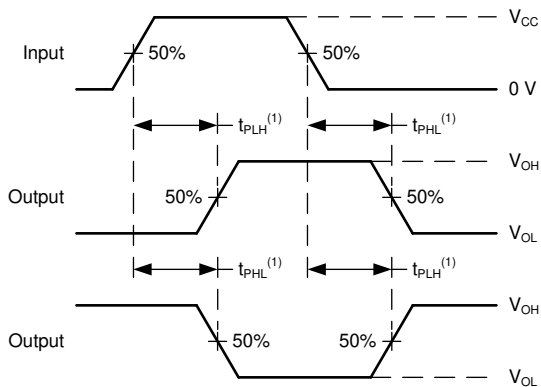
**图 6-1. Load Circuit for Push-Pull Outputs**



**图 6-2. Voltage Waveforms, Standard CMOS Inputs Pulse Duration**

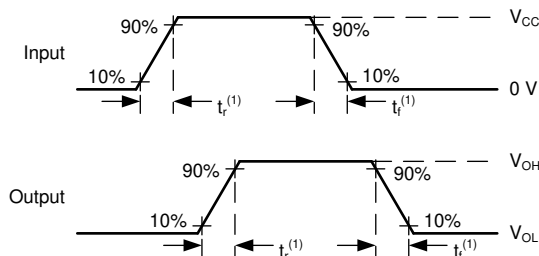


**图 6-3. Voltage Waveforms, Standard CMOS Inputs Setup and Hold Times**



(1) The greater between  $t_{PLH}$  and  $t_{PHL}$  is the same as  $t_{pd}$ .

**图 6-4. Voltage Waveforms, Propagation Delays for Standard CMOS Inputs**



(1) The greater between  $t_r$  and  $t_f$  is the same as  $t_t$ .

**图 6-5. Voltage Waveforms, Input and Output Transition Times for Standard CMOS Inputs**

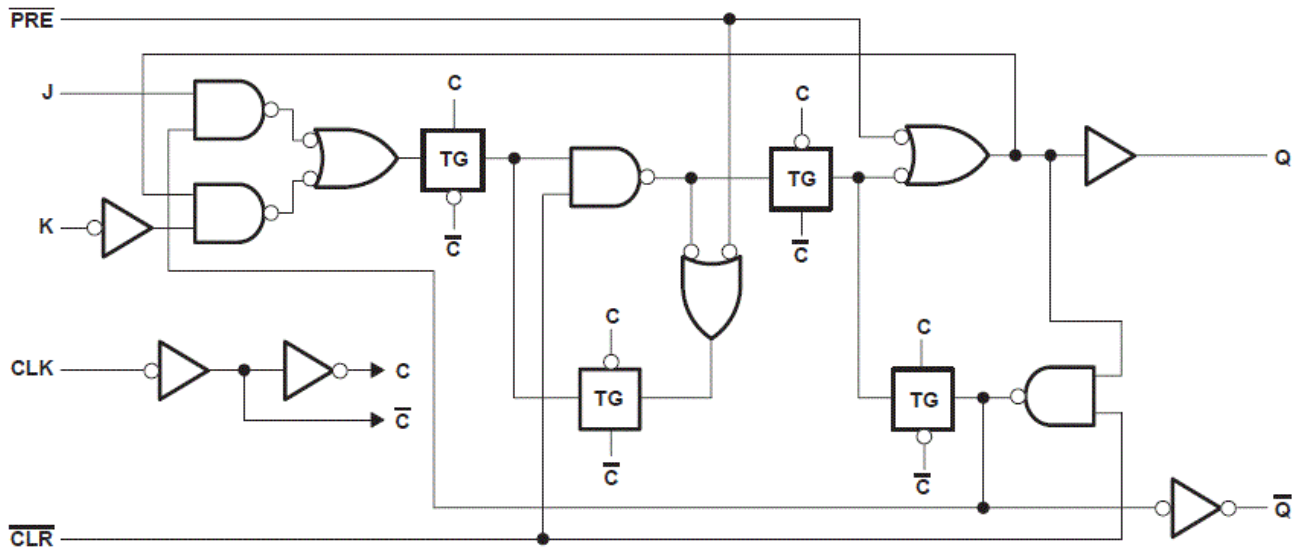


## 7 Detailed Description

### 7.1 Overview

The ' HC112 devices contain two independent J-K negative-edge-triggered flip-flops. A low level at the preset ( $\overline{\text{PRE}}$ ) or clear ( $\overline{\text{CLR}}$ ) inputs sets or resets the outputs, regardless of the levels of the other inputs. When  $\overline{\text{PRE}}$  and  $\overline{\text{CLR}}$  are inactive (high), data at the J and K inputs meeting the setup time requirements are transferred to the outputs on the negative-going edge of the clock (CLK) pulse. Clock triggering occurs at a voltage level and is not directly related to the fall time of the CLK pulse. Following the hold-time interval, data at the J and K inputs may be changed without affecting the levels at the outputs. These versatile flip-flops perform as toggle flip-flops by tying J and K high.

### 7.2 Functional Block Diagram



### 7.3 Device Functional Modes

表 7-1. Function Table

INPUTS					OUTPUTS	
PRE	CLR	CLK	J	K	Q	$\overline{Q}$
L	H	X	X	X	H	H
H	L	X	X	X	L	H
L	L	X	X	X	H <sup>(1)</sup>	H <sup>(1)</sup>
H	H	↓	L	L	Q <sub>0</sub>	$\overline{Q}_0$
H	H	↓	H	L	H	L
H	H	↓	L	H	L	H
H	H	↓	H	H	Toggle	
H	H	H	X	X	Q <sub>0</sub>	$\overline{Q}_0$

- (1) This configuration is nonstable; that is, it does not persist when either  $\overline{\text{PRE}}$  or  $\overline{\text{CLR}}$  returns to its inactive (high) level.

## 8 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- $\mu$ F capacitor is recommended for this device. It is acceptable to parallel multiple bypass caps to reject different frequencies of noise. The 0.1- $\mu$ F and 1- $\mu$ F capacitors are commonly used in parallel. The bypass capacitor should be installed as close to the power terminal as possible for best results.

## 9 Layout

### 9.1 Layout Guidelines

When using multiple-input and multiple-channel logic devices inputs must not ever be left floating. In many cases, functions or parts of functions of digital logic devices are unused; for example, when only two inputs of a triple-input AND gate are used or only 3 of the 4 buffer gates are used. Such unused input pins must not be left unconnected because the undefined voltages at the outside connections result in undefined operational states. All unused inputs of digital logic devices must be connected to a logic high or logic low voltage, as defined by the input voltage specifications, to prevent them from floating. The logic level that must be applied to any particular unused input depends on the function of the device. Generally, the inputs are tied to GND or  $V_{CC}$ , whichever makes more sense for the logic function or is more convenient.

## 10 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.

### 10.1 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。

### 10.2 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》](#)。

### 10.3 Trademarks

TI E2E™ is a trademark of Texas Instruments.

所有商标均为其各自所有者的财产。

### 10.4 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

### 10.5 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
84088012A	ACTIVE	LCCC	FK	20	55	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	84088012A SNJ54HC 112FK	<a href="#">Samples</a>
8408801EA	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	8408801EA SNJ54HC112J	<a href="#">Samples</a>
8408801FA	ACTIVE	CFP	W	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	8408801FA SNJ54HC112W	<a href="#">Samples</a>
JM38510/65305BEA	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 65305BEA	<a href="#">Samples</a>
M38510/65305BEA	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 65305BEA	<a href="#">Samples</a>
SN54HC112J	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	SN54HC112J	<a href="#">Samples</a>
SN74HC112DR	ACTIVE	SOIC	D	16	2500	RoHS & Green	NIPDAU   SN	Level-1-260C-UNLIM	-40 to 85	HC112	<a href="#">Samples</a>
SN74HC112N	ACTIVE	PDIP	N	16	25	RoHS & Green	NIPDAU	N / A for Pkg Type	-40 to 85	SN74HC112N	<a href="#">Samples</a>
SNJ54HC112FK	ACTIVE	LCCC	FK	20	55	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	84088012A SNJ54HC 112FK	<a href="#">Samples</a>
SNJ54HC112J	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	8408801EA SNJ54HC112J	<a href="#">Samples</a>
SNJ54HC112W	ACTIVE	CFP	W	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	8408801FA SNJ54HC112W	<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.

**OBSELETE:** 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  $\leq 1000$ ppm threshold. Antimony trioxide based flame retardants must also meet the  $\leq 1000$ 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 SN54HC112, SN74HC112 :**

- Catalog : [SN74HC112](#)
- Military : [SN54HC112](#)

NOTE: Qualified Version Definitions:

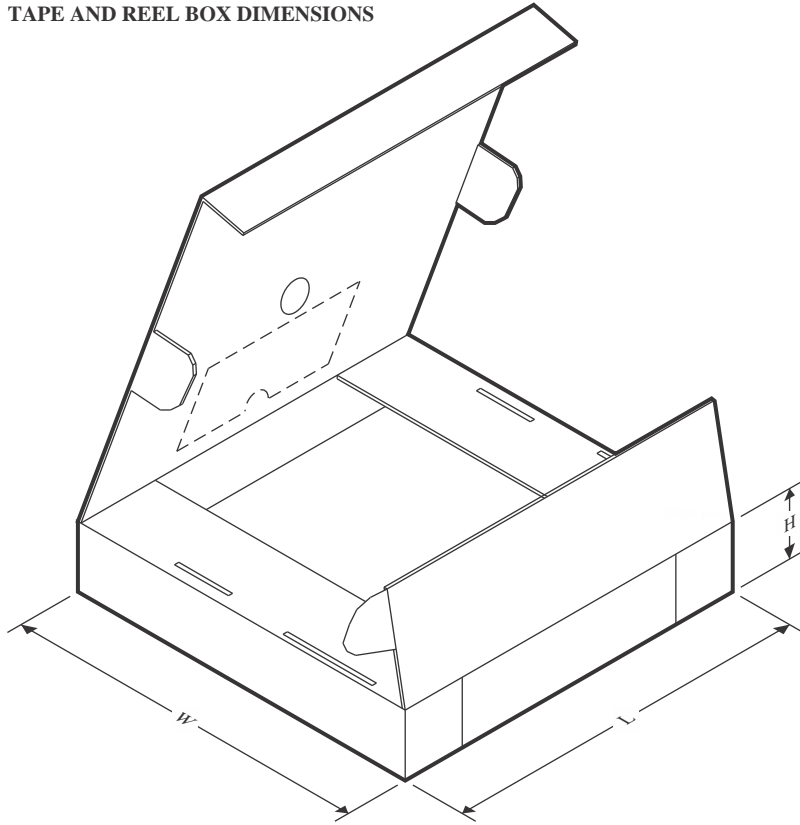
- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

**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
SN74HC112DR	SOIC	D	16	2500	330.0	16.4	6.6	9.3	2.1	8.0	16.0	Q1
SN74HC112DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1

**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74HC112DR	SOIC	D	16	2500	366.0	364.0	50.0
SN74HC112DR	SOIC	D	16	2500	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)
84088012A	FK	LCCC	20	55	506.98	12.06	2030	NA
8408801FA	W	CFP	16	25	506.98	26.16	6220	NA
SN74HC112N	N	PDIP	16	25	506	13.97	11230	4.32
SN74HC112N	N	PDIP	16	25	506	13.97	11230	4.32
SNJ54HC112FK	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54HC112W	W	CFP	16	25	506.98	26.16	6220	NA





D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



4040047-6/M 06/11

- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  -  C. 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.
  -  D. Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
  - E. Reference JEDEC MS-012 variation AC.

W (R-GDFP-F16)

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 GDFP2-F16

## 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 (R-GDIP-T\*\*)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



DIM \ PINS **	14	16	18	20
A	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC
B MAX	0.785 (19,94)	.840 (21,34)	0.960 (24,38)	1.060 (26,92)
B MIN	—	—	—	—
C MAX	0.300 (7,62)	0.300 (7,62)	0.310 (7,87)	0.300 (7,62)
C MIN	0.245 (6,22)	0.245 (6,22)	0.220 (5,59)	0.245 (6,22)



4040083/F 03/03

- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - This package is hermetically sealed with a ceramic lid using glass frit.
  - Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
  - Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

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.
  - 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.

## 重要声明和免责声明

TI“按原样”提供技术和可靠性数据（包括数据表）、设计资源（包括参考设计）、应用或其他设计建议、网络工具、安全信息和其他资源，不保证没有瑕疵且不做任何明示或暗示的担保，包括但不限于对适销性、某特定用途方面的适用性或不侵犯任何第三方知识产权的暗示担保。

这些资源可供使用 TI 产品进行设计的熟练开发人员使用。您将自行承担以下全部责任：(1) 针对您的应用选择合适的 TI 产品，(2) 设计、验证并测试您的应用，(3) 确保您的应用满足相应标准以及任何其他功能安全、信息安全、监管或其他要求。

这些资源如有变更，恕不另行通知。TI 授权您仅可将这些资源用于研发本资源所述的 TI 产品的应用。严禁对这些资源进行其他复制或展示。您无权使用任何其他 TI 知识产权或任何第三方知识产权。您应全额赔偿因在这些资源的使用中对 TI 及其代表造成的任何索赔、损害、成本、损失和债务，TI 对此概不负责。

TI 提供的产品受 [TI 的销售条款](#) 或 [ti.com](#) 上其他适用条款/TI 产品随附的其他适用条款的约束。TI 提供这些资源并不会扩展或以其他方式更改 TI 针对 TI 产品发布的适用的担保或担保免责声明。

TI 反对并拒绝您可能提出的任何其他或不同的条款。

邮寄地址：Texas Instruments, Post Office Box 655303, Dallas, Texas 75265

Copyright © 2023，德州仪器 (TI) 公司