

## SN74HC4066 四路双边模拟开关

### 1 特性

- 1V 至 6V 的宽工作电压范围
- 18ns 的典型开关启用时间
- 低功耗， $I_{CC}$  最大值为 20 $\mu$ A
- 低输入电流，最大值 1 $\mu$ A
- 高度线性
- 高开关输出电压比
- 低开关间串扰
- 低导通状态阻抗： $V_{CC} = 6V$  时典型值为 50 $\Omega$
- 单独的开关控制

### 2 应用

- 模拟信号开关或多路复用：
  - 信号门控、调制器、静噪控制、解调器、斩波器、换向开关
- 数字信号开关和多路复用：
  - [音频和视频信号路由](#)
- [传输门逻辑实施](#)
- [模数和数模转换](#)
- [频率、阻抗、相位和模拟信号增益的数字控制](#)
- [电机转速控制](#)
- [电池充电器](#)
- [直流/直流转换器](#)

### 3 说明

SN74HC4066 器件是一种设计用于处理模拟和数字信号的硅栅 CMOS 四路模拟开关。每个开关允许在任意方向传输振幅高达 6V (峰值) 的信号。

每个开关部分都有自己的启用输入控制 (C)。应用到 C 上的一个高电平电压开启相关开关部分。

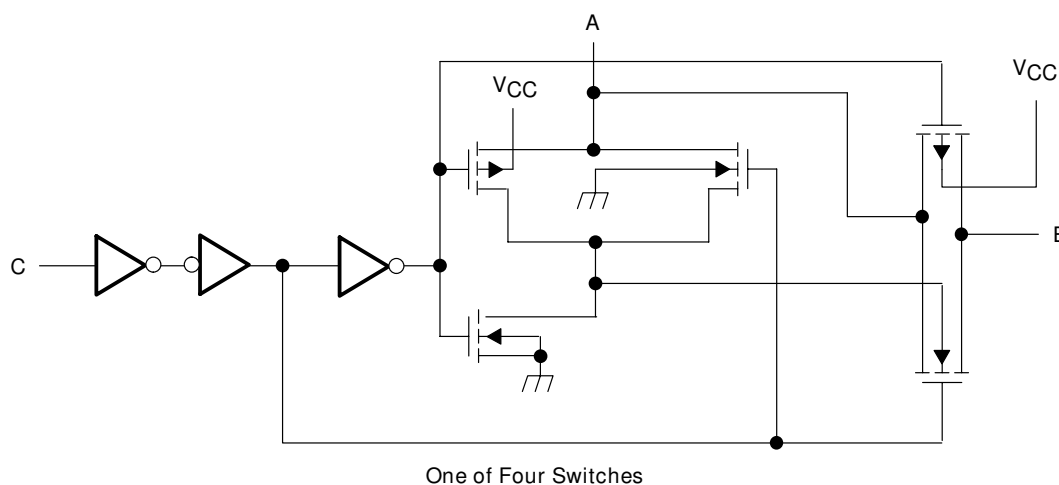
应用包括用于模数和数模转换系统的信号选通、斩波、调制或者解调 (modem)，以及信号复用。

#### 封装信息

器件型号	封装 <sup>(1)</sup>	封装尺寸 <sup>(2)</sup>
SN74HC4066	D (SOIC, 14)	8.65mm x 6mm
	PW (TSSOP, 14)	5mm x 6.4mm

(1) 有关更多信息，请参阅节 11。

(2) 封装尺寸 (长 × 宽) 为标称值，并包括引脚 (如适用)。



One of Four Switches

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逻辑图、每次转换 (正逻辑)



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## 4 Pin Configuration and Functions

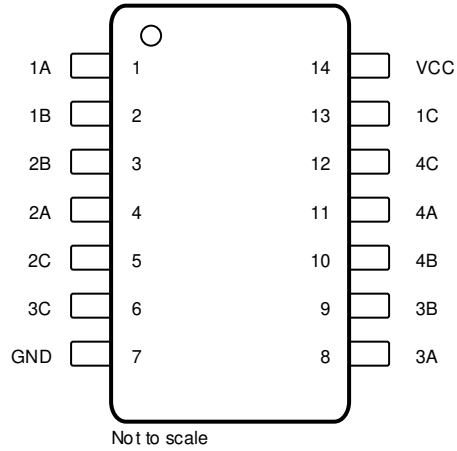


图 4-1. D or PW Package, 14-Pin SOIC or TSSOP (Top View)

表 4-1. Pin Functions

PIN		TYPE <sup>(1)</sup>	DESCRIPTION
NAME	NO.		
1A	1	I/O	Switch 1 input/output
1B	2	I/O	Switch 1 output/input
2B	3	I/O	Switch 2 output/input
2A	4	I/O	Switch 2 input/output
2C	5	I	Switch 2 control
3C	6	I	Switch 3 control
GND	7	—	Ground
3A	8	I/O	Switch 3 input/output
3B	9	I/O	Switch 3 output/input
4B	10	I/O	Switch 4 output/input
4A	11	I/O	Switch 4 input/output
4C	12	I	Switch 4 control
1C	13	I	Switch 1 control
V <sub>CC</sub>	14	—	Power

(1) I = input, O = output

## 5 Specifications

### 5.1 Absolute Maximum Ratings

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

			MIN	MAX	UNIT
V <sub>CC</sub>	Supply voltage <sup>(2)</sup>		- 0.5	7	V
I <sub>I</sub>	Control-input diode current	V <sub>I</sub> < 0 or V <sub>I</sub> > V <sub>CC</sub>		±20	mA
I <sub>I</sub>	I/O port diode current	V <sub>I</sub> < 0 or V <sub>I/O</sub> > V <sub>CC</sub>		±20	mA
	On-state switch current	V <sub>I/O</sub> = 0 to V <sub>CC</sub>		±25	mA
	Continuous current through V <sub>CC</sub> or GND			±50	mA
T <sub>J</sub>	Junction temperature			150	°C
T <sub>stg</sub>	Storage temperature		- 60	150	°C

- (1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions*. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
- (2) All voltages are with respect to ground unless otherwise specified.

### 5.2 ESD Ratings

			VALUE	UNIT
V <sub>(ESD)</sub>	Electrostatic discharge	Human-body model (HBM), per ANSI/ESDA/JEDEC JS-001 <sup>(1)</sup>	±1000	V
		Charged-device model (CDM), per JEDEC specification JESD22-C101 <sup>(2)</sup>	±1000	

- (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. CDM value for N package only.

### 5.3 Recommended Operating Conditions

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

			MIN	NOM	MAX	UNIT
V <sub>CC</sub>	Supply voltage		1 (2)	5	6	V
V <sub>I/O</sub>	I/O port voltage		0		V <sub>CC</sub>	V
V <sub>IH</sub>	High-level input voltage, control inputs	V <sub>CC</sub> = 2V	1.5		V <sub>CC</sub>	V
		V <sub>CC</sub> = 4.5V	3.15		V <sub>CC</sub>	
		V <sub>CC</sub> = 6V	4.2		V <sub>CC</sub>	
V <sub>IL</sub>	Low-level input voltage, control inputs	V <sub>CC</sub> = 2V	0		0.3	V
		V <sub>CC</sub> = 4.5V	0		0.9	
		V <sub>CC</sub> = 6V	0		1.2	
V <sub>I</sub>	Logic control input voltage		0		V <sub>CC</sub>	V
Δt/Δv	Input transition rise and fall time	V <sub>CC</sub> = 2V			1000	ns
		V <sub>CC</sub> = 4.5V			500	
		V <sub>CC</sub> = 6V			400	
T <sub>A</sub>	Operating free-air temperature		- 40		85	°C

- (1) All unused inputs of the device must be held at V<sub>CC</sub> or GND for proper device operation. See the TI application report, [Implications of Slow or Floating CMOS Inputs](#) (SCBA004).
- (2) With supply voltages at or below 2V, the analog switch on-state resistance becomes very nonlinear. It is recommended that only digital signals be transmitted at these low supply voltages.

## 5.4 Thermal Information

THERMAL METRIC <sup>(1)</sup>		SN74HC4066		UNIT
		D (SOIC)	PW (TSSOP)	
		14 PINS	14 PINS	
$R_{\theta JA}$	Junction-to-ambient thermal resistance	127.8	150.6	°C/W
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	81.8	78.2	°C/W
$R_{\theta JB}$	Junction-to-board thermal resistance	84.2	93.7	°C/W
$\psi_{JT}$	Junction-to-top characterization parameter	39.5	24.6	°C/W
$\psi_{JB}$	Junction-to-board characterization parameter	83.7	93.1	°C/W

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

## 5.5 Electrical Characteristics

$T_A = -40$  to  $+85$  °C unless otherwise specified.

PARAMETER		TEST CONDITIONS	$V_{CC}$	MIN	TYP	MAX	UNIT
$r_{on}$	On-state switch resistance	$I_T = -1\text{mA}$ , $V_I = 0$ to $V_{CC}$ , $V_C = V_{IH}$ (see 图 6-1)	$T_A = 25^\circ\text{C}$	2V	150		$\Omega$
			$T_A = 25^\circ\text{C}$	4.5V	50 85		
			$T_A = -40$ to $+85$		106		
			$T_A = 25^\circ\text{C}$	6V	30		
$r_{on(p)}$	Peak on-state resistance	$V_I = V_{CC}$ or GND, $V_C = V_{IH}$ , $I_T = -1\text{mA}$	$T_A = 25^\circ\text{C}$	2V	320		$\Omega$
			$T_A = 25^\circ\text{C}$	4.5V	70 170		
			$T_A = -40$ to $+85$		215		
			$T_A = 25^\circ\text{C}$	6V	50		
$I_{IH}$ $I_{IL}$	Control input current	$V_C = 0$ or $V_{CC}$	$T_A = 25^\circ\text{C}$	6V	$\pm 0.1$	$\pm 100$	nA
			$T_A = -40$ to $+85$		$\pm 1000$		
$I_{soff}$	Off-state switch leakage current	$V_I = V_{CC}$ or 0, $V_O = V_{CC}$ or 0, $V_C = V_{IL}$ (see 图 6-2)	$T_A = -40$ to $+85$	6V	$\pm 5$		$\mu\text{A}$
			$T_A = 25^\circ\text{C}$		$\pm 0.1$		
$I_{son}$	On-state switch leakage current	$V_I = V_{CC}$ or 0, $V_C = V_{IH}$ (see 图 6-3)	$T_A = -40$ to $+85$	6V	$\pm 5$		$\mu\text{A}$
			$T_A = 25^\circ\text{C}$		$\pm 0.1$		
$I_{CC}$	Supply current	$V_I = 0$ or $V_{CC}$ , $I_O = 0$	$T_A = -40$ to $+85$	6V	20		$\mu\text{A}$
			$T_A = 25^\circ\text{C}$		2		
$C_i$	Input capacitance	A or B	5V	$T_A = 25^\circ\text{C}$		8	pF
		C		$T_A = -40$ to $+85$			
				$T_A = 25^\circ\text{C}$			
$C_f$	Feed-through capacitance	A to B	5V	$V_I = 0$		0.5	pF
$C_o$	Output capacitance	A or B				9	pF

## 5.6 Switching Characteristics

$T_A = -40$  to  $+85$  °C unless otherwise specified.

PARAMETER		FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	$V_{CC}$	MIN	TYP	MAX	UNIT			
$t_{PLH}$ , $t_{PHL}$	Propagation delay time	A or B	B or A	$C_L = 50\text{pF}$ (see 图 6-4)	2V		$T_A = 25^\circ\text{C}$	10	60	ns		
							$T_A = -40$ to $+85$		75			
					4.5V		$T_A = 25^\circ\text{C}$		4		12	
							$T_A = -40$ to $+85$				15	
					6V		$T_A = 25^\circ\text{C}$				3	10
							$T_A = -40$ to $+85$					13
$t_{PZH}$ , $t_{PZL}$	Switch turn-on time	C	A or B	$R_L = 1\text{k}\Omega$ , $C_L = 50\text{pF}$ (see 图 6-5)	2V		$T_A = 25^\circ\text{C}$	70	180	ns		
							$T_A = -40$ to $+85$				225	
					4.5V		$T_A = 25^\circ\text{C}$		21		36	
							$T_A = -40$ to $+85$				45	
					6V		$T_A = 25^\circ\text{C}$				18	31
							$T_A = -40$ to $+85$					38
$t_{PLZ}$ , $t_{PHZ}$	Switch turn-off time	C	A or B	$R_L = 1\text{k}\Omega$ , $C_L = 50\text{pF}$ (see 图 6-5)	2V		$T_A = 25^\circ\text{C}$	50	200	ns		
							$T_A = -40$ to $+85$				250	
					4.5V		$T_A = 25^\circ\text{C}$		25		40	
							$T_A = -40$ to $+85$				50	
					6V		$T_A = 25^\circ\text{C}$				22	34
							$T_A = -40$ to $+85$					43
$f_i$	Control input frequency	C	A or B	$C_L = 15\text{pF}$ , $R_L = 1\text{k}\Omega$ , $V_C = V_{CC}$ or GND, $V_O = V_{CC} / 2$ (see 图 6-6)	$T_A = 25^\circ\text{C}$	2V		15	MHz			
					$T_A = 25^\circ\text{C}$	4.5V		30				
					$T_A = 25^\circ\text{C}$	6V		30				
	Control feed-through noise	C	A or B	$C_L = 50\text{pF}$ , $R_{in} = R_L = 600\Omega$ , $V_C = V_{CC}$ or GND, $f_{in} = 1\text{MHz}$ (see 图 6-7)	$T_A = 25^\circ\text{C}$	4.5V		15	mV (rms)			
					$T_A = 25^\circ\text{C}$	6V		20				

## 5.7 Operating Characteristics

$V_{CC} = 4.5\text{V}$ ,  $T_A = 25^\circ\text{C}$

PARAMETER		TEST CONDITIONS		TYP	UNIT
$C_{pd}$	Power dissipation capacitance per gate	$C_L = 50\text{pF}$ ,	$f = 1\text{MHz}$	45	pF
	Minimum through bandwidth, A to B or B to A <sup>(1)</sup> $[20 \log (V_O / V_I)] = -3$ dB	$C_L = 50\text{pF}$ , $V_C = V_{CC}$	$R_L = 600\Omega$ , (see 图 6-8)	100	MHz
	Crosstalk between any switches <sup>(2)</sup>	$C_L = 10\text{pF}$ , $f_{in} = 1\text{MHz}$	$R_L = 50\Omega$ , (see 图 6-9)	-45	dB
	Feed through, switch off, A to B or B to A <sup>(2)</sup>	$C_L = 50\text{pF}$ , $f_{in} = 1\text{MHz}$	$R_L = 600\Omega$ , (see 图 6-10)	-42	dB
	Amplitude distortion rate, A to B or B to A	$C_L = 50\text{pF}$ , $f_{in} = 1\text{kHz}$	$R_L = 10\text{k}\Omega$ , (see 图 6-11)	0.05%	

(1) Adjust the input amplitude for output = 0 dBm at  $f = 1\text{MHz}$ . Input signal must be a sine wave.

(2) Adjust the input amplitude for input = 0 dBm at  $f = 1\text{MHz}$ . Input signal must be a sine wave.

### 5.8 Typical Characteristics

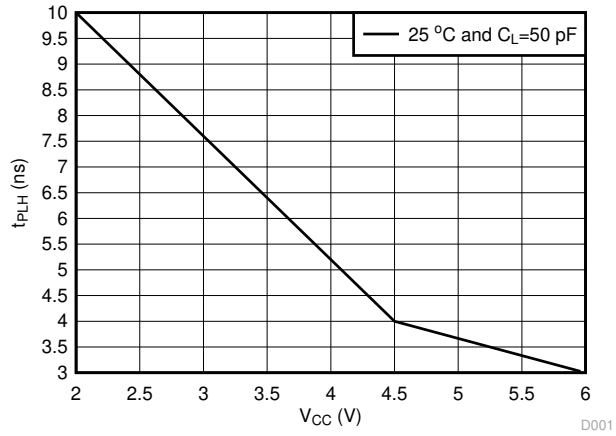


图 5-1.  $t_{PLH}$  vs  $V_{CC}$

## 6 Parameter Measurement Information

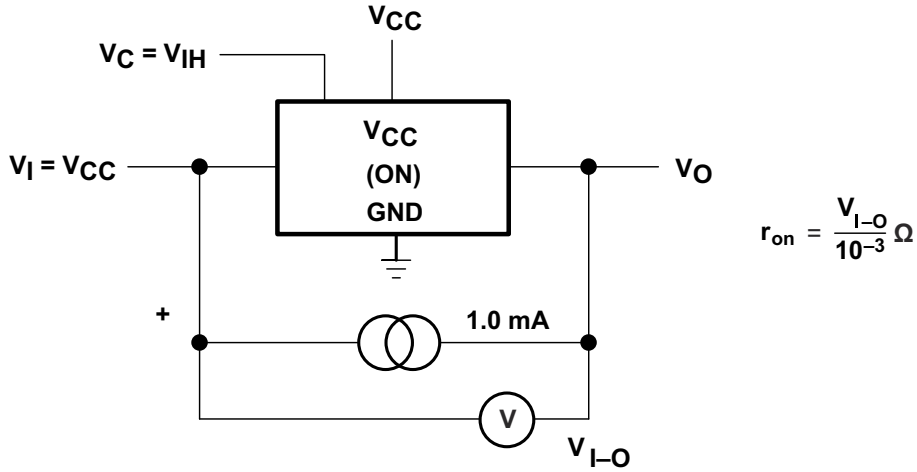


图 6-1. ON-State Resistance Test Circuit

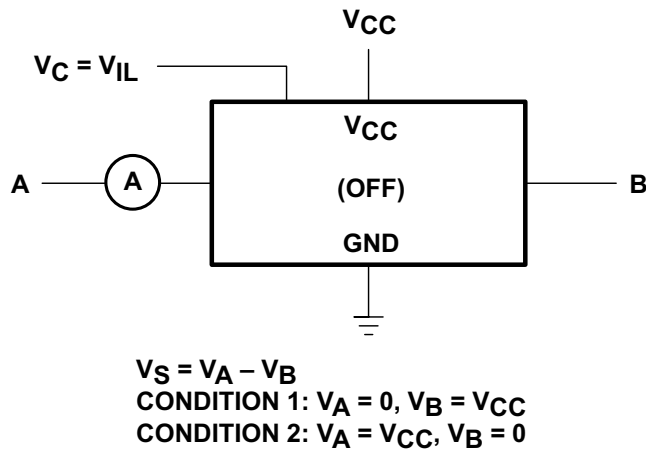


图 6-2. OFF-State Switch Leakage-Current Test Circuit

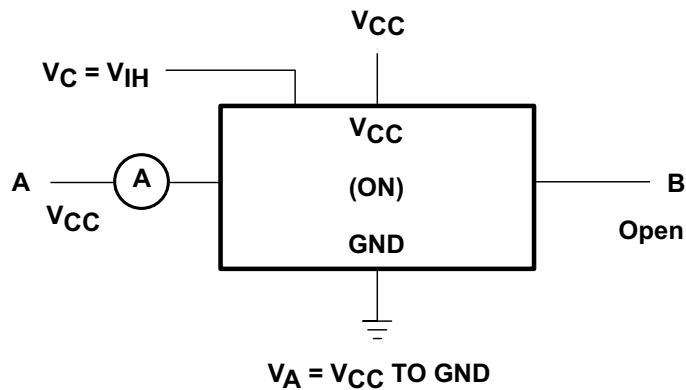


图 6-3. ON-State Leakage-Current Test Circuit



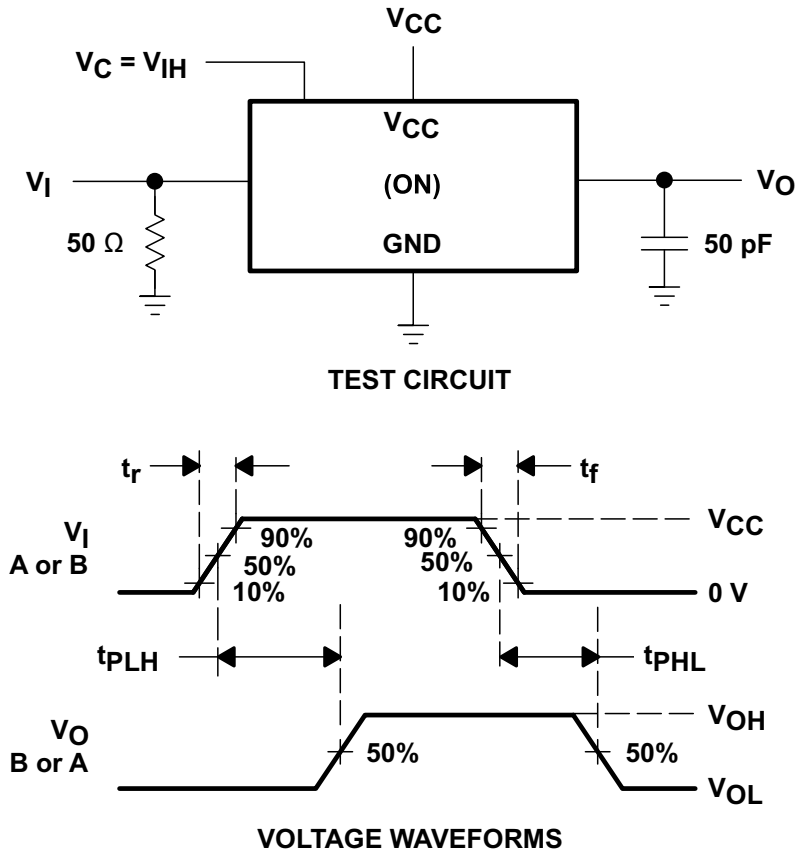
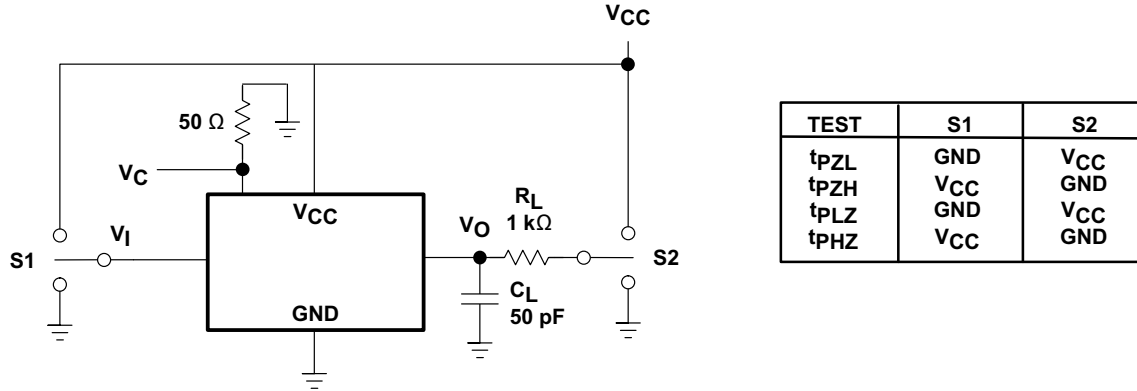
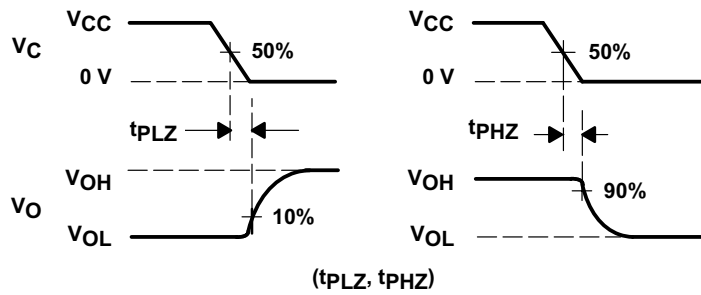
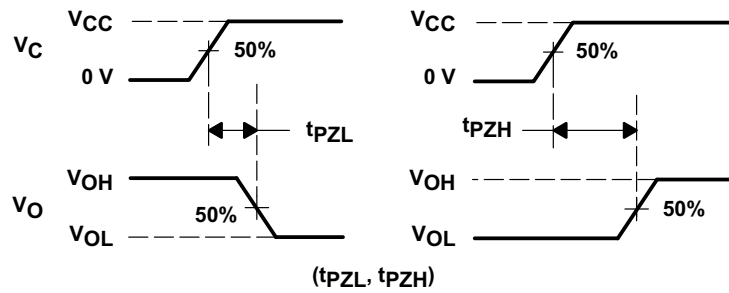


图 6-4. Propagation Delay Time, Signal Input to Signal Output



TEST CIRCUIT



VOLTAGE WAVEFORMS

图 6-5. Switching Time (t<sub>PZL</sub>, t<sub>PLZ</sub>, t<sub>PZH</sub>, t<sub>PHZ</sub>), Control to Signal Output

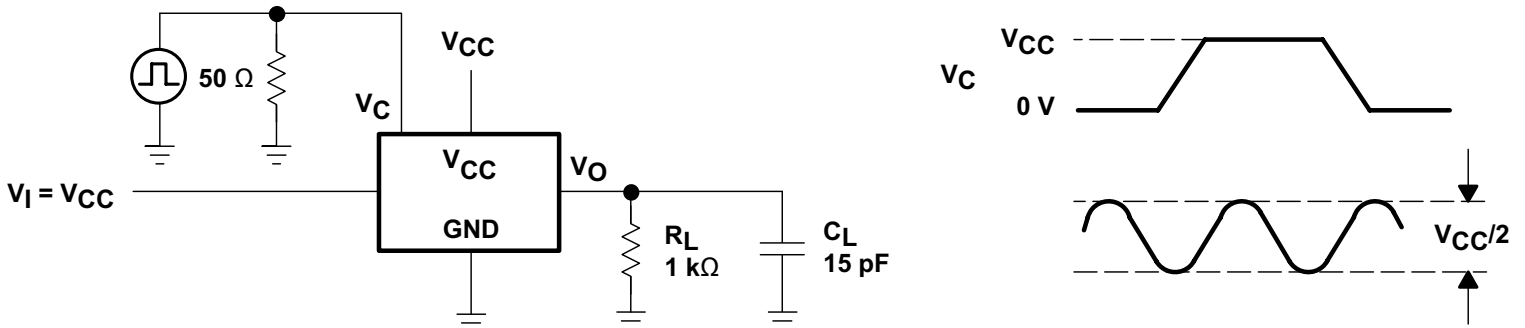


图 6-6. Control-Input Frequency

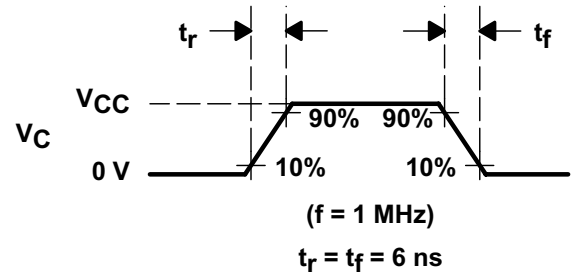
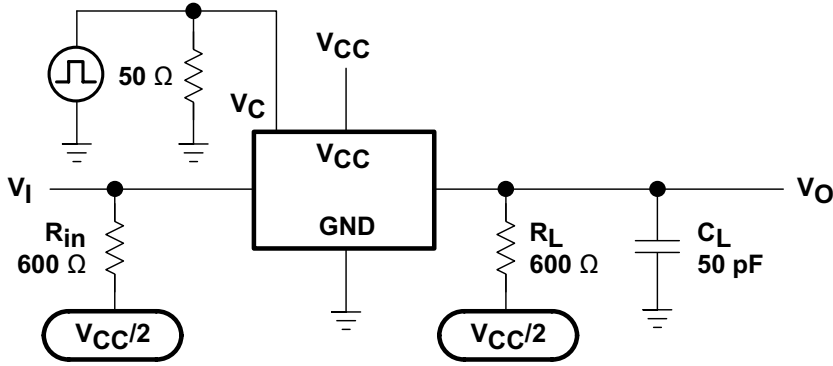


图 6-7. Control Feed-Through Noise

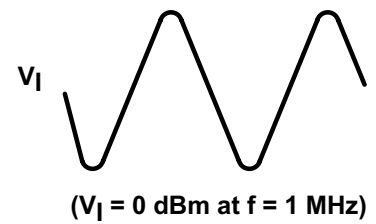
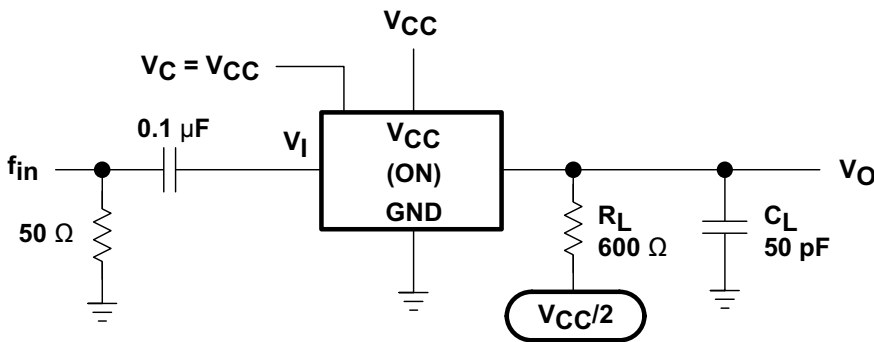


图 6-8. Minimum Through Bandwidth

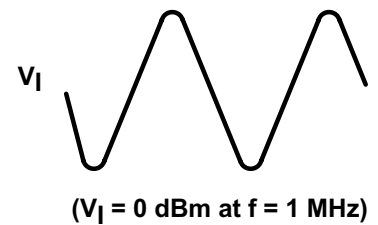
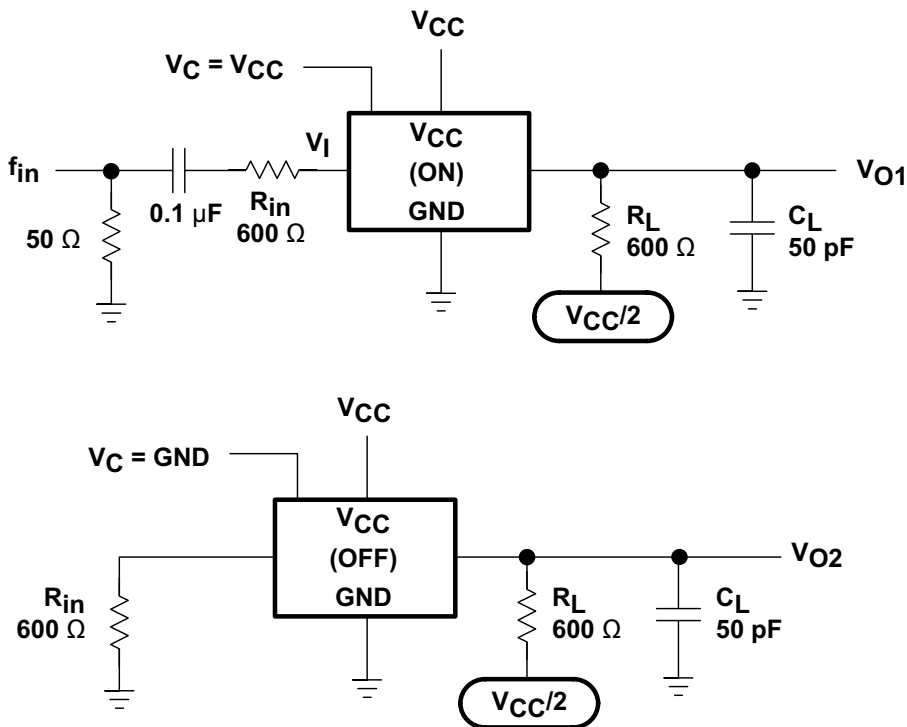


图 6-9. Crosstalk Between Any Two Switches

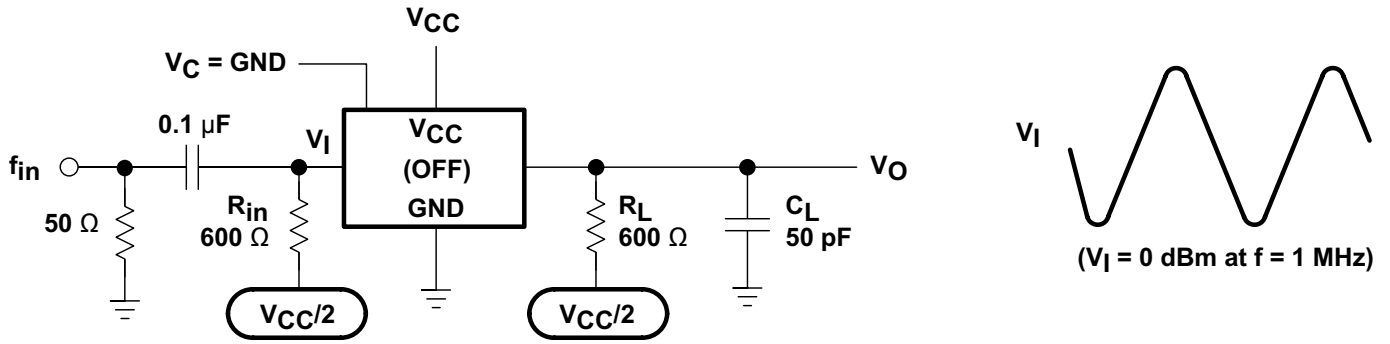


图 6-10. Feed Through, Switch OFF

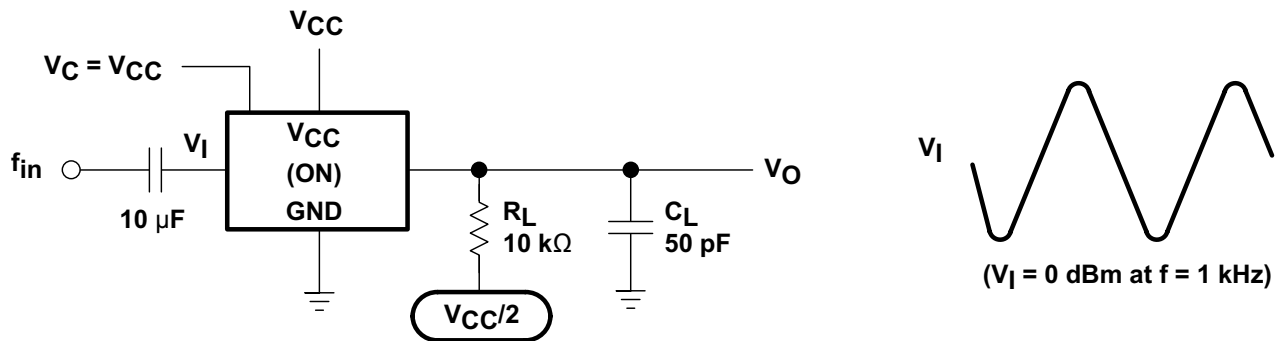


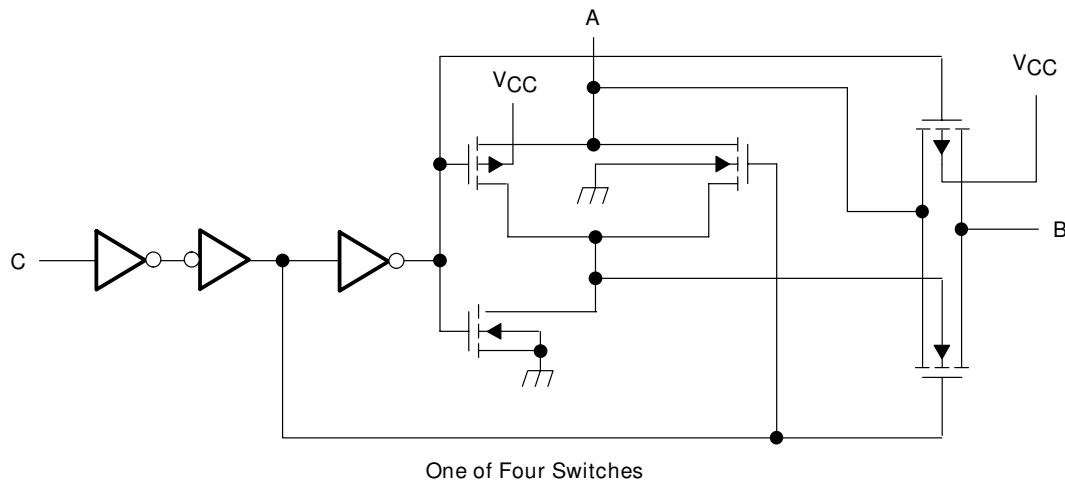
图 6-11. Amplitude-Distortion Rate

## 7 Detailed Description

### 7.1 Overview

The SN74HC4066 device is a silicon-gate CMOS quadruple analog switch designed for 2-V to 6-V VCC operation. It is designed to handle both analog and digital signals. Each switch permits signals with amplitudes of up to 6V (peak) to be transmitted in either direction. A high-level voltage applied to the control pin C enables the respective switch to begin propagating signals across the device.

### 7.2 Functional Block Diagram



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图 7-1. Logic Diagram, Each Switch (Positive Logic)

### 7.3 Feature Description

Each switch section has its own enable-input control (C). A high-level voltage applied to C turns on the associated switch section, with typically 18ns of switch enable time. The SN74HC4066 has a wide operating voltage range of 2V to 6V. It has low power consumption, with 20 $\mu$ A maximum I<sub>CC</sub> and a low on-state impedance of 50  $\Omega$ . It also has low crosstalk between switches to minimize noise.

### 7.4 Device Functional Modes

表 7-1 lists the functions for the SN74HC4066 device.

表 7-1. Function Table  
(Each Switch)

INPUT CONTROL (C)	SWITCH
L	OFF
H	ON

## 8 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。

### 8.1 Application Information

The SN74HC4066 can be used in any situation where a dual SPST switch is used and a solid-state voltage controlled version is preferred.

### 8.2 Typical Application

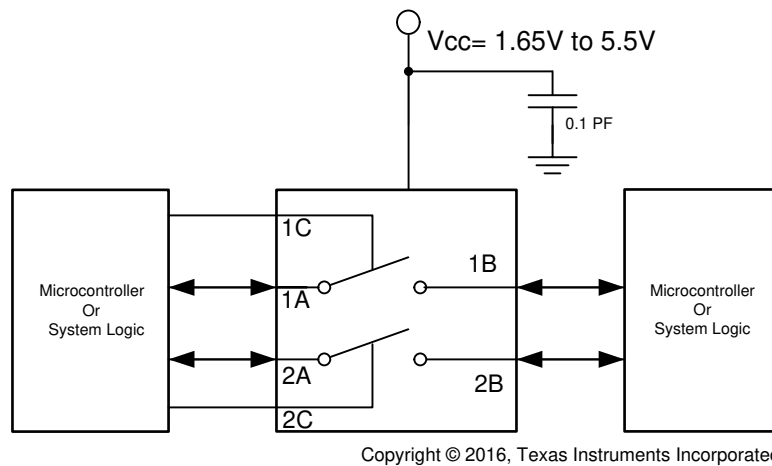


图 8-1.  $t_{PZH}$  vs  $V_{CC}$

#### 8.2.1 Design Requirements

The SN74HC4066 allows ON/OFF control of analog and digital signals with a digital control signal. All input signals should remain between 0V and  $V_{CC}$  for optimal operation.

#### 8.2.2 Detailed Design Procedure

- Recommended Input Conditions:
  - For rise time and fall time specifications, see  $\Delta t / \Delta v$  in [节 5.3](#).
  - For specified high and low levels, see  $V_{IH}$  and  $V_{IL}$  in [节 5.3](#).
- Recommended Output Conditions:
  - On-state switch current should not exceed  $\pm 25\text{mA}$ .

### 8.2.3 Application Curve

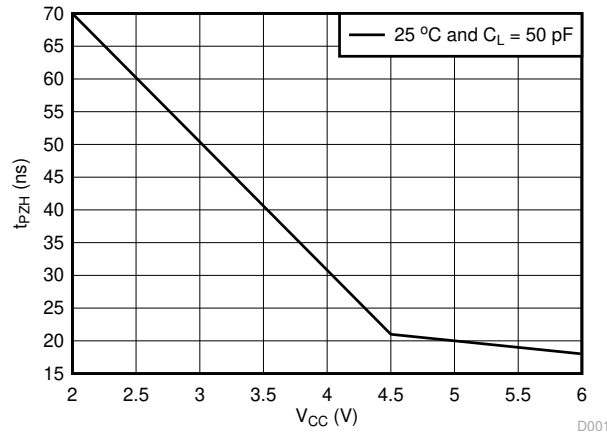


图 8-2.  $t_{pZH}$  vs  $V_{CC}$

### 8.3 Power Supply Recommendations

The power supply can be any voltage between the minimum and maximum supply voltage rating located in the [节 5.3](#).

Each  $V_{CC}$  terminal should have a good bypass capacitor to prevent power disturbance. For devices with a single supply, TI recommends a  $0.1\mu\text{F}$  bypass capacitor. If there are multiple pins labeled  $V_{CC}$ , then a  $0.01\mu\text{F}$  or  $0.022\mu\text{F}$  capacitor is recommended for each  $V_{CC}$  because the VCC pins will be tied together internally. For devices with dual-supply pins operating at different voltages, for example  $V_{CC}$  and  $V_{DD}$ , TI recommends a  $0.1\mu\text{F}$  bypass capacitor for each supply pin. It is acceptable to parallel multiple bypass capacitors to reject different frequencies of noise.  $0.1\mu\text{F}$  and  $1\mu\text{F}$  capacitors are commonly used in parallel. The bypass capacitor should be installed as close to the power terminal as possible for best results.

### 8.4 Layout

#### 8.4.1 Layout Guidelines

Reflections and matching are closely related to loop antenna theory, but different enough to warrant their own discussion. When a PCB trace turns a corner at a  $90^\circ$  angle, a reflection can occur. This is primarily due to the change of width of the trace. At the apex of the turn, the trace width is increased to 1.414 times its width. This upsets the transmission line characteristics, especially the distributed capacitance and self-inductance of the trace — resulting in the reflection.

#### 备注

Not all PCB traces can be straight, and so they will have to turn corners. [图 8-3](#) shows progressively better techniques of rounding corners. Only the last example maintains constant trace width and minimizes reflections.

### 8.4.2 Layout Example

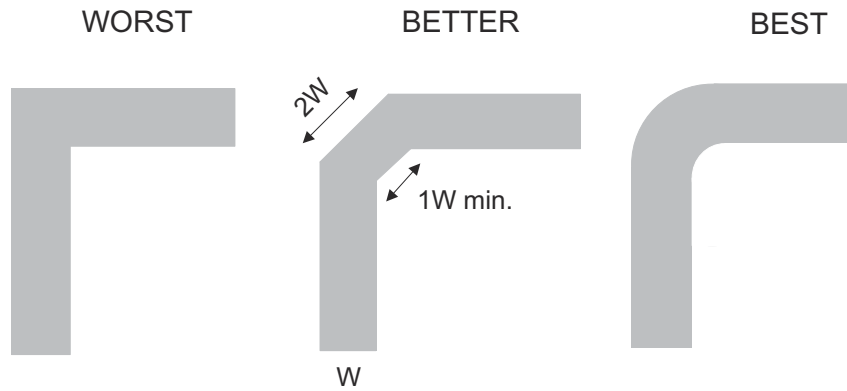


图 8-3. Trace Example



## 9 Device and Documentation Support

### 9.1 Documentation Support

#### 9.1.1 Related Documentation

For related documentation, see the following:

- Texas Instruments, [Implications of Slow or Floating CMOS Inputs application notes](#)

### 9.2 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 [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。

### 9.3 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](#)。

### 9.4 Trademarks

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### 9.5 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。

### 9.6 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。

## 10 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 J (November 2021) to Revision K (February 2024) Page

• 更新了 <a href="#">封装信息</a> 表以包含封装引线尺寸.....	1
• 将数据表更新为仅包含 <i>D</i> (SOIC、14 ) 或 <i>PW</i> (TSSOP、14 ) 封装.....	1
• Updated <i>Thermal Information</i> section.....	5
• Updated V <sub>CC</sub> operation from: 2V - 6V to: 1V - 6V.....	5

#### Changes from Revision I (January 2019) to Revision J (November 2021) Page

• Changed the MAX values for I <sub>soff</sub> , I <sub>son</sub> , and I <sub>CC</sub> in the <i>Electrical Characteristics</i> table.....	5
---	---

#### Changes from Revision H (August 2016) to Revision I (January 2019) Page

• 更新了整个文档中的表格、图和交叉参考的编号格式.....	1
• Changed the Description of pins 8 through 12 in the <i>Pin Functions</i> table.....	3

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**Changes from Revision G (July 2003) to Revision H (August 2016)** **Page**

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- 添加了 ESD 等级表、特性说明部分、器件功能模式、应用和实现部分、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
  - 删除了订购信息表，请参阅数据表末尾的 POA.....1
- 

## 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
SN74HC4066D	OBSOLETE	SOIC	D	14		TBD	Call TI	Call TI	-40 to 85	HC4066	
SN74HC4066DBR	NRND	SSOP	DB	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HC4066	
SN74HC4066DR	ACTIVE	SOIC	D	14	2500	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HC4066	Samples
SN74HC4066DT	OBSOLETE	SOIC	D	14		TBD	Call TI	Call TI	-40 to 85	HC4066	
SN74HC4066N	NRND	PDIP	N	14	25	RoHS & Green	NIPDAU	N / A for Pkg Type	-40 to 85	SN74HC4066N	
SN74HC4066NSR	NRND	SOP	NS	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HC4066	
SN74HC4066PW	OBSOLETE	TSSOP	PW	14		TBD	Call TI	Call TI	-40 to 85	HC4066	
SN74HC4066PWR	ACTIVE	TSSOP	PW	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HC4066	Samples
SN74HC4066PWT	OBSOLETE	TSSOP	PW	14		TBD	Call TI	Call TI	-40 to 85	HC4066	

(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.

<sup>(6)</sup> 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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**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
SN74HC4066DBR	SSOP	DB	14	2000	330.0	16.4	8.35	6.6	2.4	12.0	16.0	Q1
SN74HC4066DR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
SN74HC4066DR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
SN74HC4066NSR	SOP	NS	14	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74HC4066PWR	TSSOP	PW	14	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74HC4066PWR	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)
SN74HC4066DBR	SSOP	DB	14	2000	356.0	356.0	35.0
SN74HC4066DR	SOIC	D	14	2500	356.0	356.0	35.0
SN74HC4066DR	SOIC	D	14	2500	353.0	353.0	32.0
SN74HC4066NSR	SOP	NS	14	2000	356.0	356.0	35.0
SN74HC4066PWR	TSSOP	PW	14	2000	353.0	353.0	32.0
SN74HC4066PWR	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)
SN74HC4066N	N	PDIP	14	25	506	13.97	11230	4.32
SN74HC4066N	N	PDIP	14	25	506	13.97	11230	4.32

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.



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.



# 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.

# 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.

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