

SN74HC4066 Quadruple Bilateral Analog Switch

1 Features

- Wide operating voltage range of 1V to 6V
- Typical switch enable time of 18ns
- Low power consumption, 20µA maximum I_{CC}
- Low input current of 1µA maximum
- High degree of linearity
- High on-off output-voltage ratio
- Low crosstalk between switches
- Low on-state impedance: 50Ω typical at $V_{CC} = 6V$
- Individual switch controls

2 Applications

- Analog signal switching or multiplexing:
 - Signal gating, modulator, squelch control, demodulator, chopper, commutating switch
- Digital signal switching and multiplexing:
 - [Audio and video signal routing](#)
- Transmission-gate logic implementation
- Analog-to-digital and digital-to-analog conversion
- Digital control of frequency, impedance, phase, and analog-signal gain
- Motor speed control
- [Battery chargers](#)
- [DC-DC converter](#)

3 Description

The SN74HC4066 device is a silicon-gate CMOS quadruple analog switch 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.

Each switch section has its own enable input control (C). A high-level voltage applied to C turns on the associated switch section.

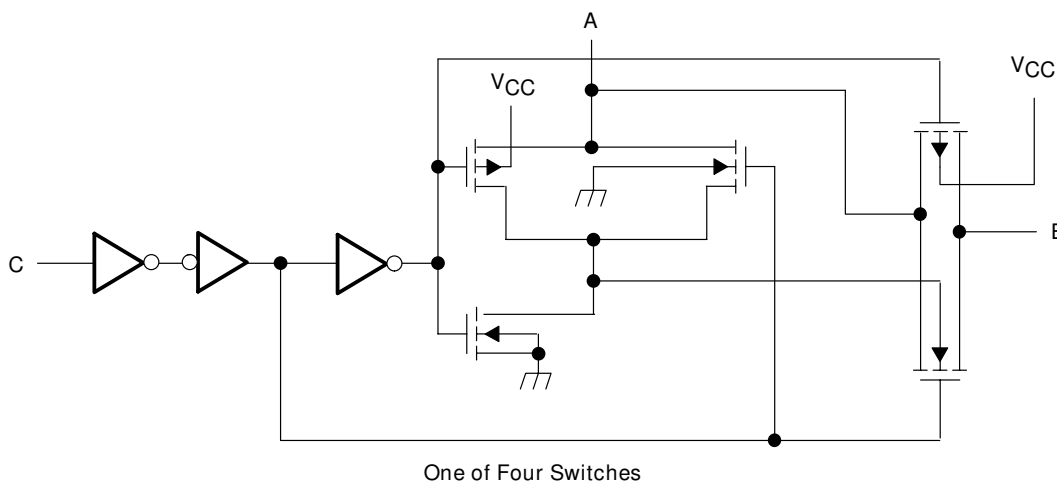
Applications include signal gating, chopping, modulation or demodulation (modem), and signal multiplexing for analog-to-digital and digital-to-analog conversion systems.

Package Information

PART NUMBER	PACKAGE ⁽¹⁾	PACKAGE SIZE ⁽²⁾
SN74HC4066	D (SOIC, 14)	8.65mm × 6mm
	PW (TSSOP, 14)	5mm × 6.4mm

(1) For more information, see [Section 11](#).

(2) The package size (length × width) is a nominal value and includes pins, where applicable.



Copyright © 2016, Texas Instruments Incorporated

Logic Diagram, Each Switch (Positive Logic)



Table of Contents

1 Features	1	7.3 Feature Description.....	13
2 Applications	1	7.4 Device Functional Modes.....	13
3 Description	1	8 Application and Implementation	14
4 Pin Configuration and Functions	3	8.1 Application Information.....	14
5 Specifications	4	8.2 Typical Application.....	14
5.1 Absolute Maximum Ratings.....	4	8.3 Power Supply Recommendations.....	15
5.2 ESD Ratings.....	4	8.4 Layout.....	15
5.3 Recommended Operating Conditions.....	4	9 Device and Documentation Support	17
5.4 Thermal Information.....	5	9.1 Documentation Support.....	17
5.5 Electrical Characteristics.....	5	9.2 Receiving Notification of Documentation Updates....	17
5.6 Switching Characteristics.....	6	9.3 Support Resources.....	17
5.7 Operating Characteristics.....	6	9.4 Trademarks.....	17
5.8 Typical Characteristics.....	7	9.5 Electrostatic Discharge Caution.....	17
6 Parameter Measurement Information	8	9.6 Glossary.....	17
7 Detailed Description	13	10 Revision History	17
7.1 Overview.....	13	11 Mechanical, Packaging, and Orderable Information	18
7.2 Functional Block Diagram.....	13		

4 Pin Configuration and Functions

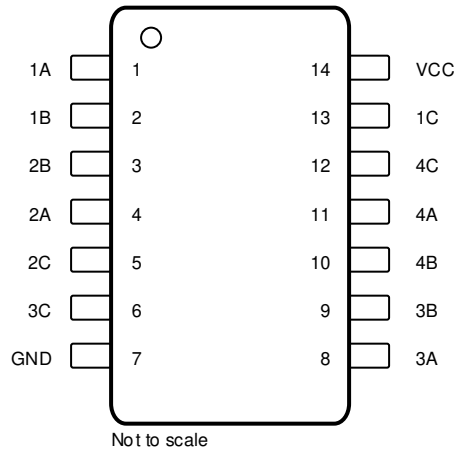


Figure 4-1. D or PW Package, 14-Pin SOIC or TSSOP (Top View)

Table 4-1. Pin Functions

PIN		TYPE ⁽¹⁾	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 _{CC}	14	—	Power

(1) I = input, O = output

5 Specifications

5.1 Absolute Maximum Ratings

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

			MIN	MAX	UNIT
V _{CC}	Supply voltage ⁽²⁾		-0.5	7	V
I _I	Control-input diode current	V _I < 0 or V _I > V _{CC}		±20	mA
I _I	I/O port diode current	V _I < 0 or V _{I/O} > V _{CC}		±20	mA
	On-state switch current	V _{I/O} = 0 to V _{CC}		±25	mA
	Continuous current through V _{CC} or GND			±50	mA
T _J	Junction temperature			150	°C
T _{stg}	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 _(ESD)	Electrostatic discharge	Human-body model (HBM), per ANSI/ESDA/JEDEC JS-001 ⁽¹⁾	±1000	V
		Charged-device model (CDM), per JEDEC specification JESD22-C101 ⁽²⁾	±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)⁽¹⁾

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

(1) All unused inputs of the device must be held at V_{CC} 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 ⁽¹⁾		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
Ψ_{JT}	Junction-to-top characterization parameter	39.5	24.6	°C/W
Ψ_{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 Figure 6-1)	$T_A = 25^\circ\text{C}$	2V	150		Ω
			$T_A = 25^\circ\text{C}$	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		Ω
			$T_A = 25^\circ\text{C}$	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	± 0.1	± 100	nA
			$T_A = -40$ to $+85$		± 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 Figure 6-2)	$T_A = -40$ to $+85$	6V	± 5		μA
			$T_A = 25^\circ\text{C}$		± 0.1		
I_{son}	On-state switch leakage current	$V_I = V_{CC}$ or 0, $V_C = V_{IH}$ (see Figure 6-3)	$T_A = -40$ to $+85$	6V	± 5		μA
			$T_A = 25^\circ\text{C}$		± 0.1		
I_{CC}	Supply current	$V_I = 0$ or V_{CC} , $I_O = 0$	$T_A = -40$ to $+85$	6V	20		μA
			$T_A = 25^\circ\text{C}$		2		
C_i	Input capacitance	A or B	5V	8		pF	
		C		$T_A = -40$ to $+85$	10		
				$T_A = 25^\circ\text{C}$	3		10
C_f	Feed-through capacitance	A to B		0.5		pF	
C_o	Output capacitance	A or B	5V	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 Figure 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 Figure 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 Figure 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 Figure 6-6)	2V		$T_A = 25^\circ\text{C}$	15	MHz	
					4.5V		$T_A = 25^\circ\text{C}$	30		
					6V		$T_A = 25^\circ\text{C}$	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 Figure 6-7)	4.5V		$T_A = 25^\circ\text{C}$	15	mV (rms)	
					6V		$T_A = 25^\circ\text{C}$	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 ⁽¹⁾ $[20 \log (V_O / V_I)] = -3$ dB	$C_L = 50\text{pF}$, $V_C = V_{CC}$	$R_L = 600\ \Omega$, (see Figure 6-8)	100	MHz
	Crosstalk between any switches ⁽²⁾	$C_L = 10\text{pF}$, $f_{in} = 1\text{MHz}$	$R_L = 50\ \Omega$, (see Figure 6-9)	-45	dB
	Feed through, switch off, A to B or B to A ⁽²⁾	$C_L = 50\text{pF}$, $f_{in} = 1\text{MHz}$	$R_L = 600\ \Omega$, (see Figure 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 Figure 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

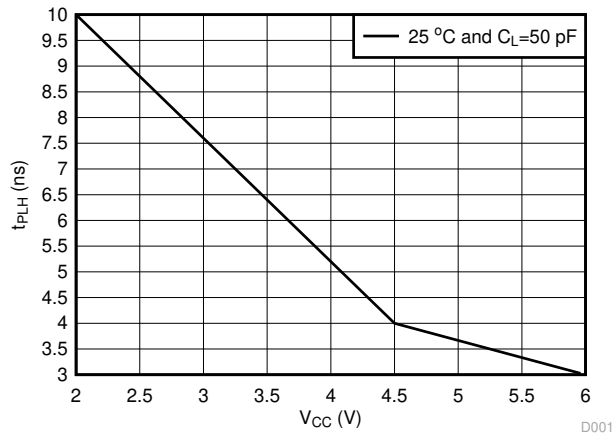


Figure 5-1. t_{PLH} vs V_{CC}

6 Parameter Measurement Information

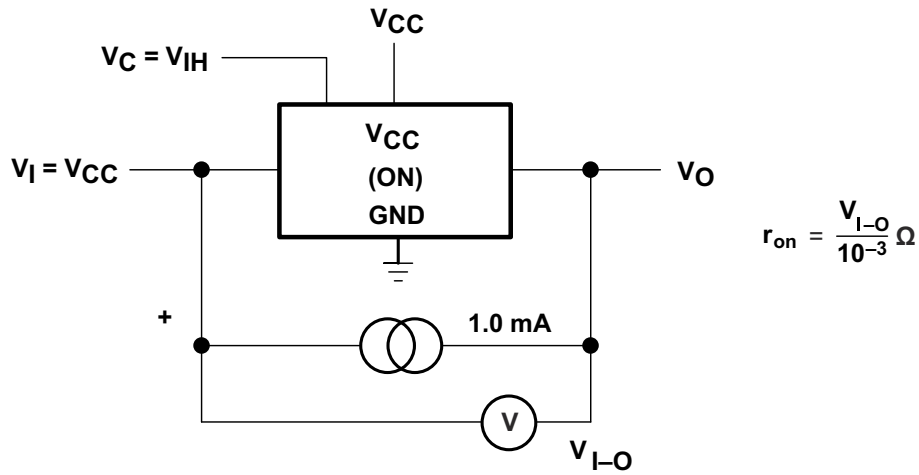
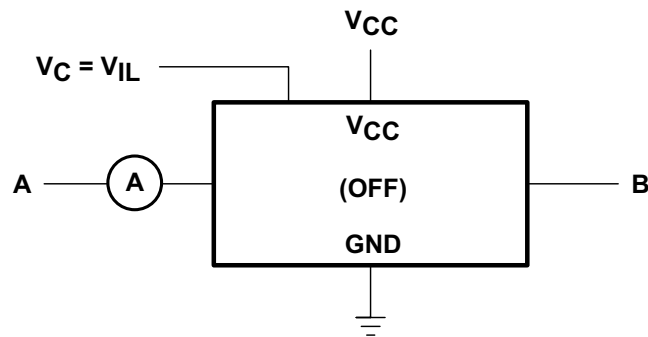


Figure 6-1. ON-State Resistance Test Circuit



$V_S = V_A - V_B$
 CONDITION 1: $V_A = 0, V_B = V_{CC}$
 CONDITION 2: $V_A = V_{CC}, V_B = 0$

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

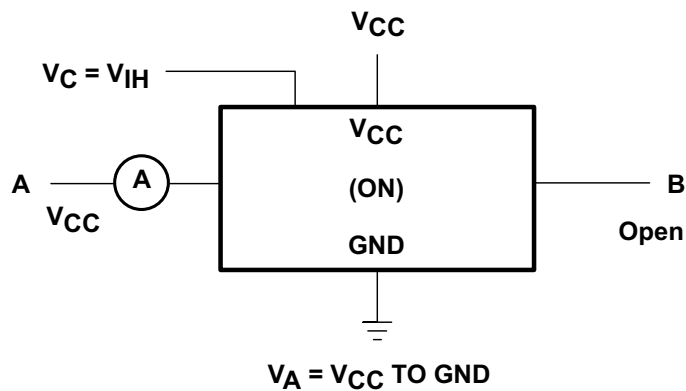


Figure 6-3. ON-State Leakage-Current Test Circuit

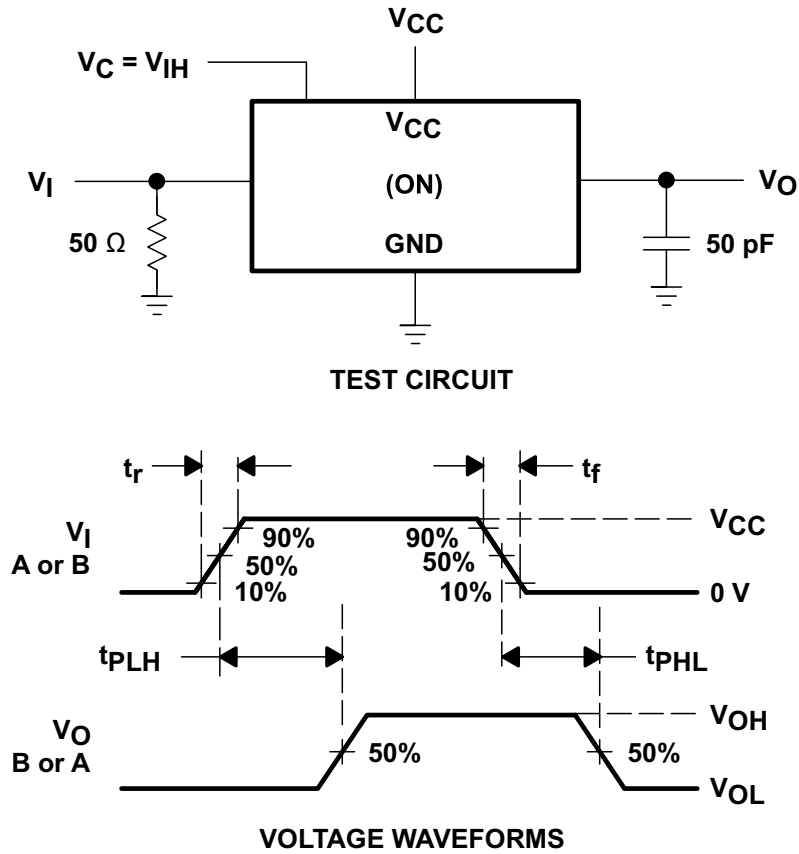
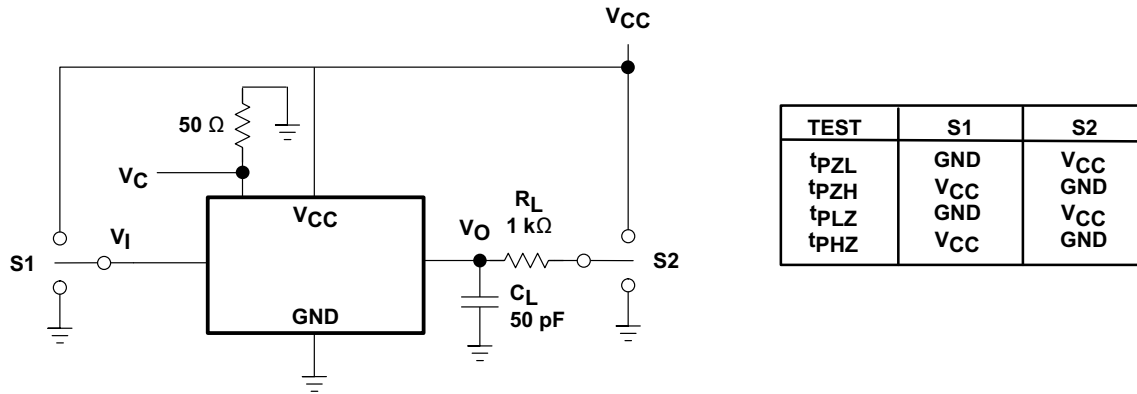
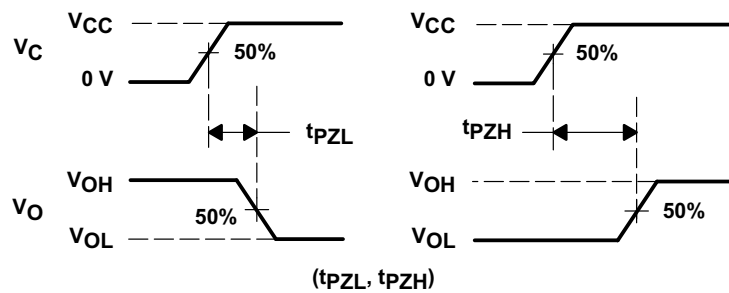


Figure 6-4. Propagation Delay Time, Signal Input to Signal Output

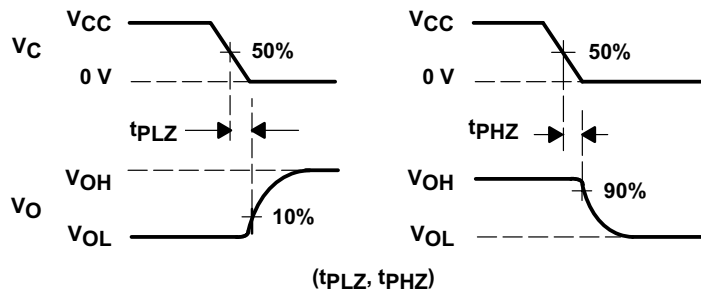


TEST	S1	S2
t _{PZL}	GND	V _{CC}
t _{PZH}	V _{CC}	GND
t _{PLZ}	GND	V _{CC}
t _{PHZ}	V _{CC}	GND

TEST CIRCUIT



(t_{PZL}, t_{PZH})



(t_{PLZ}, t_{PHZ})

VOLTAGE WAVEFORMS

Figure 6-5. Switching Time (t_{PZL}, t_{PLZ}, t_{PZH}, t_{PHZ}), Control to Signal Output

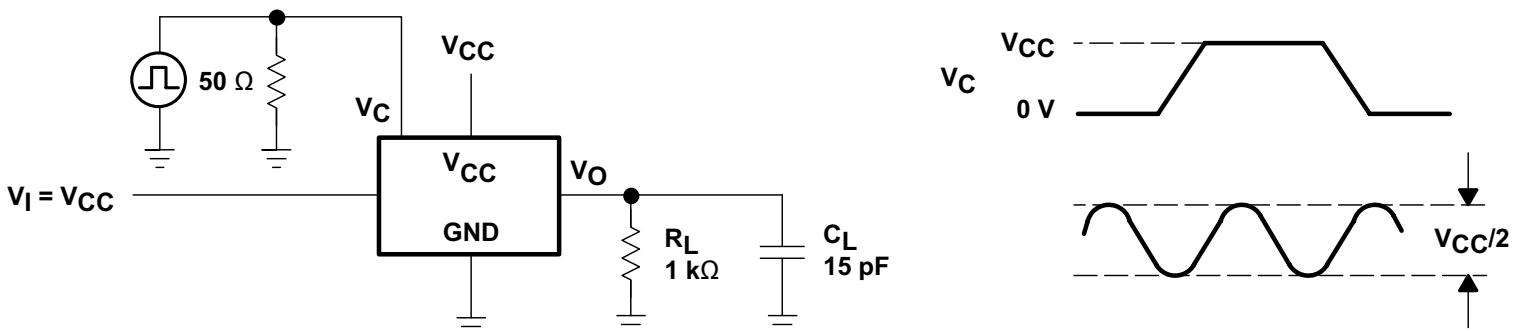


Figure 6-6. Control-Input Frequency

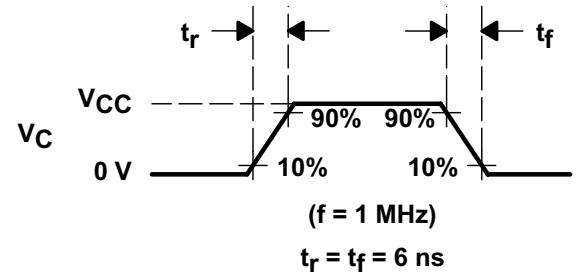
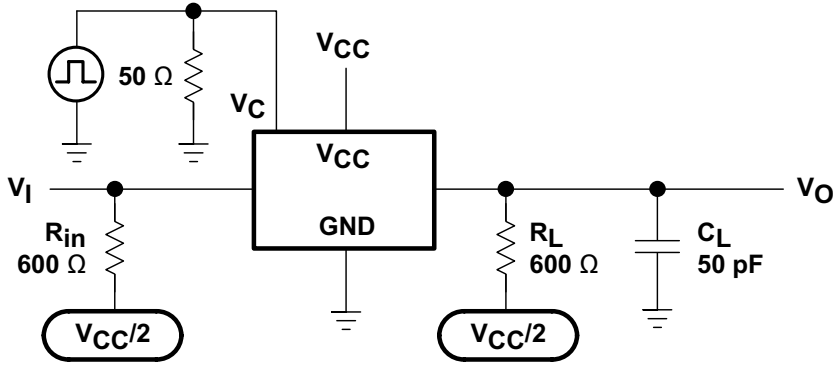


Figure 6-7. Control Feed-Through Noise

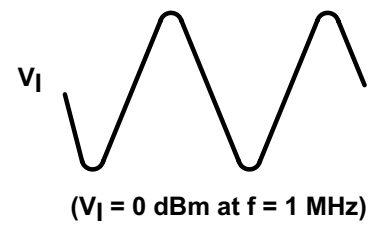
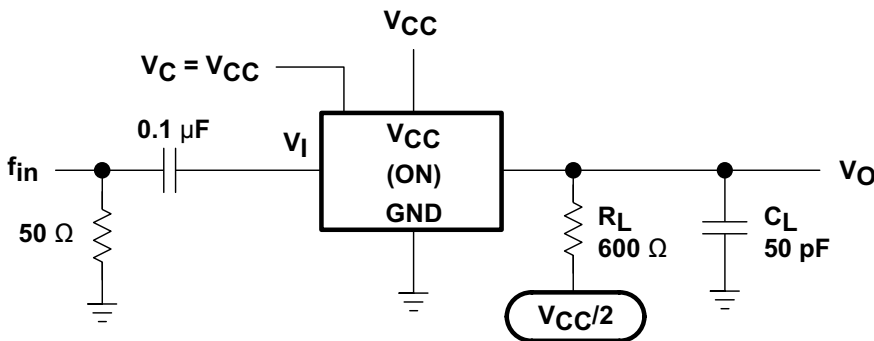


Figure 6-8. Minimum Through Bandwidth

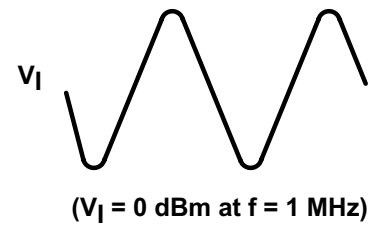
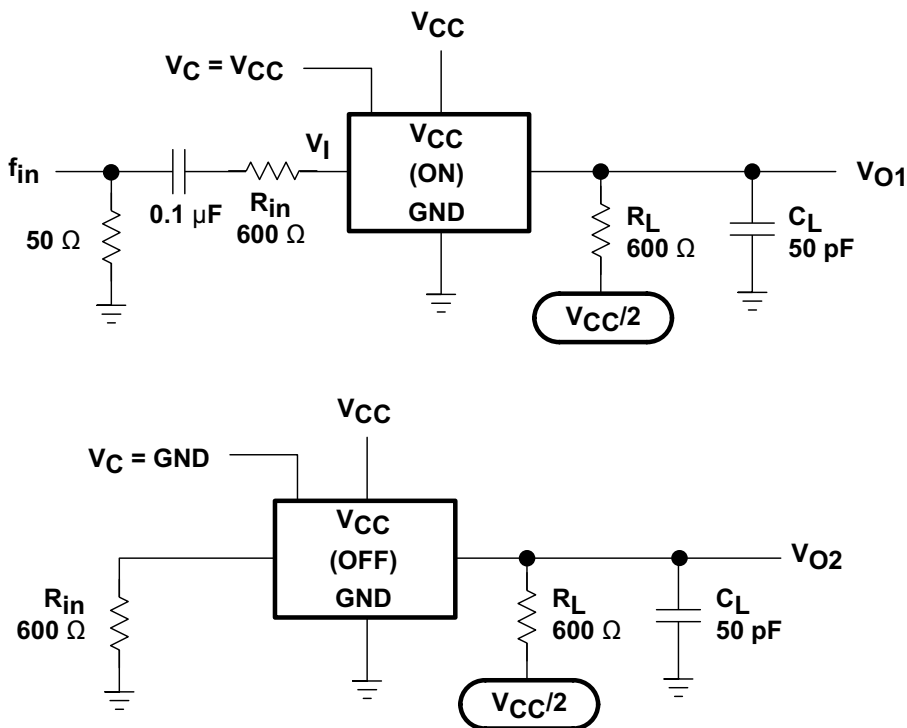


Figure 6-9. Crosstalk Between Any Two Switches

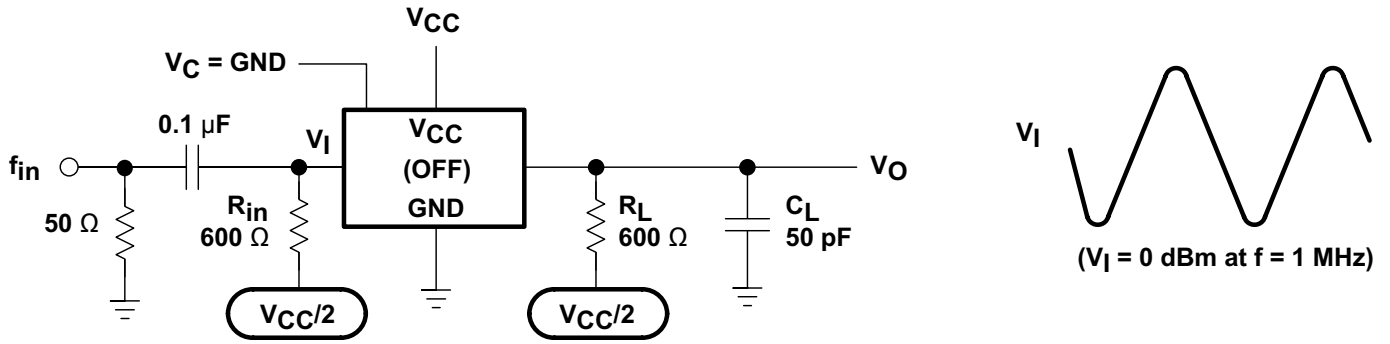


Figure 6-10. Feed Through, Switch OFF

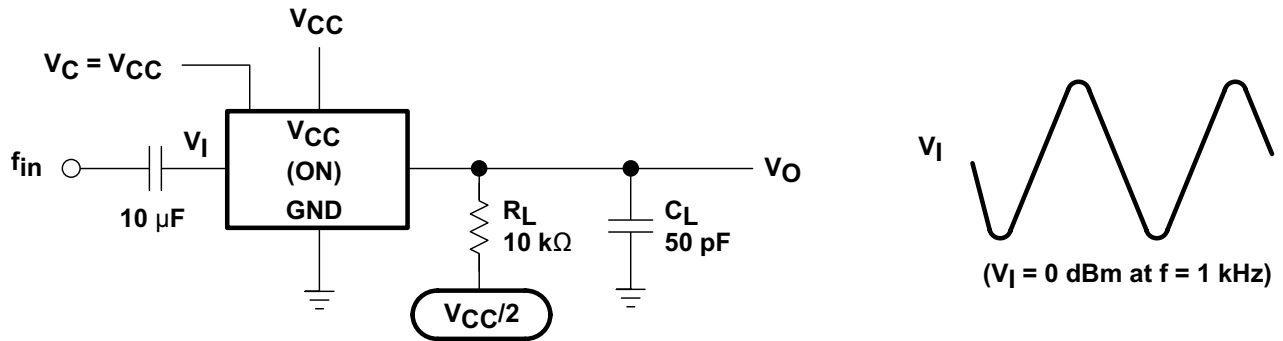


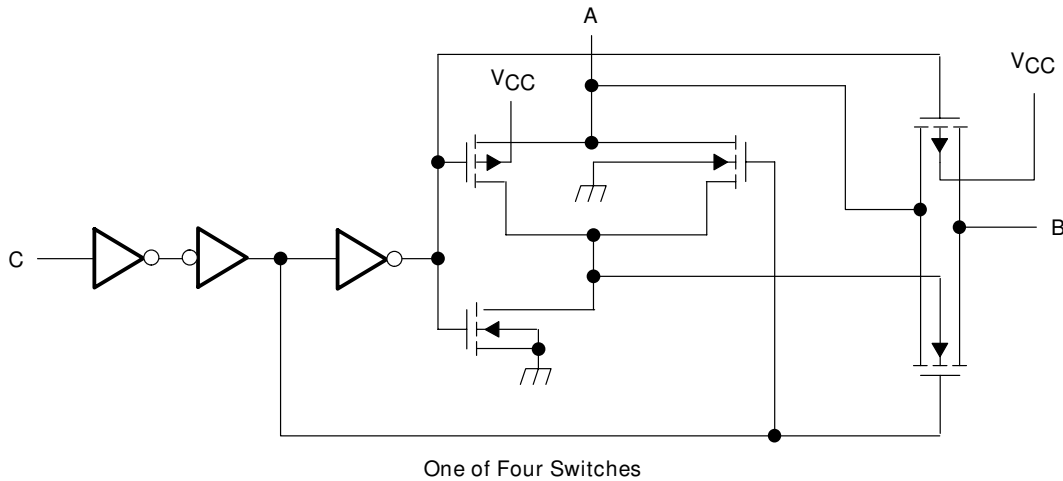
Figure 6-11. Amplitude-Distortion Rate

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



Copyright © 2016, Texas Instruments Incorporated

Figure 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 μ A maximum I_{CC} and a low on-state impedance of 50 Ω . It also has low crosstalk between switches to minimize noise.

7.4 Device Functional Modes

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

**Table 7-1. Function Table
(Each Switch)**

INPUT CONTROL (C)	SWITCH
L	OFF
H	ON

8 Application and Implementation

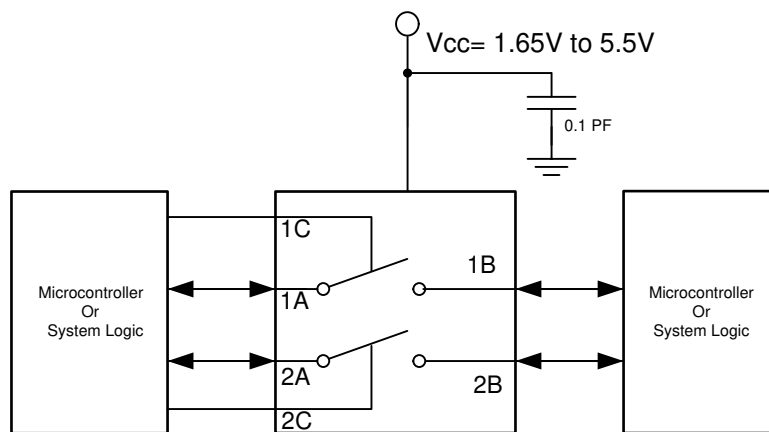
Note

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

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



Copyright © 2016, Texas Instruments Incorporated

Figure 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 [Section 5.3](#).
 - For specified high and low levels, see V_{IH} and V_{IL} in [Section 5.3](#).
- Recommended Output Conditions:
 - On-state switch current should not exceed $\pm 25\text{mA}$.

8.2.3 Application Curve

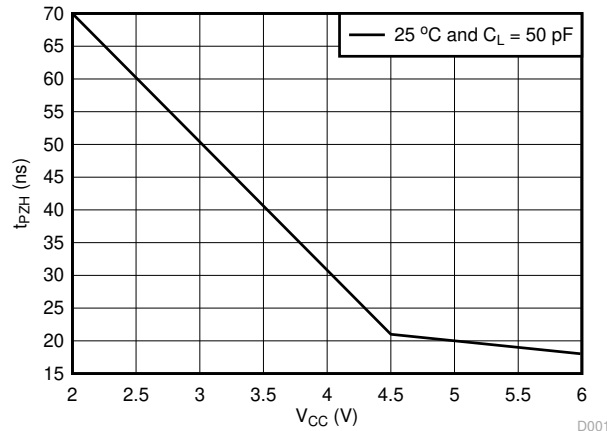


Figure 8-2. t_{pZH} vs V_{CC}

8.3 Power Supply Recommendations

The power supply can be any voltage between the minimum and maximum supply voltage rating located in the [Section 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 μ F bypass capacitor. If there are multiple pins labeled V_{CC} , then a 0.01 μ F or 0.022 μ 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 μ F bypass capacitor for each supply pin. It is acceptable to parallel multiple bypass capacitors to reject different frequencies of noise. 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.

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° 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.

Note

Not all PCB traces can be straight, and so they will have to turn corners. [Figure 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

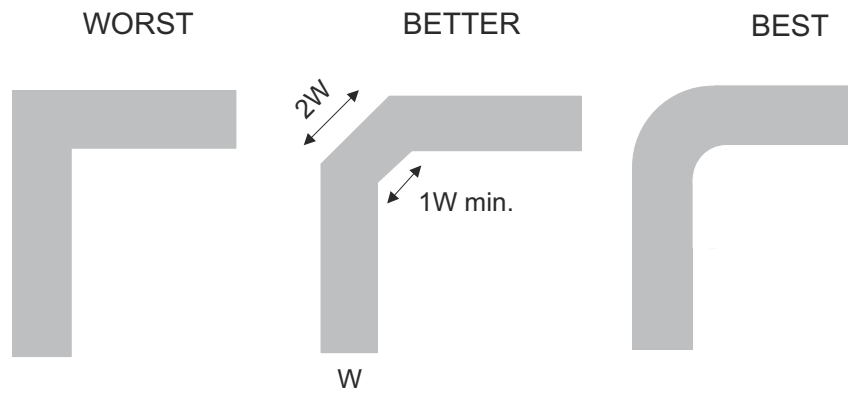


Figure 8-3. Trace Example

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 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on ti.com. Click on *Notifications* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

9.3 Support Resources

[TI E2E™ support forums](#) are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

Linked content is provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

9.4 Trademarks

TI E2E™ is a trademark of Texas Instruments.
All trademarks are the property of their respective owners.

9.5 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.

9.6 Glossary

[TI Glossary](#) This glossary lists and explains terms, acronyms, and definitions.

10 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Revision J (November 2021) to Revision K (February 2024)	Page
• Updated the <i>Package Information</i> table to include package lead size.....	1
• Updated data sheet to only include <i>D (SOIC, 14)</i> or <i>PW (TSSOP, 14)</i> packages.....	1
• Updated <i>Thermal Information</i> section.....	5
• Updated V _{CC} 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 _{soff} , I _{son} , and I _{CC} in the <i>Electrical Characteristics</i> table.....	5

Changes from Revision H (August 2016) to Revision I (January 2019)	Page
• Updated the numbering format for tables, figures, and cross-references throughout the document.....	1
• Changed the Description of pins 8 through 12 in the <i>Pin Functions</i> table.....	3

Changes from Revision G (July 2003) to Revision H (August 2016)	Page
• Added <i>ESD Ratings</i> table, <i>Feature Description</i> section, <i>Device Functional Modes, Application and Implementation</i> section, <i>Power Supply Recommendations</i> section, <i>Layout</i> section, <i>Device and Documentation Support</i> section, and <i>Mechanical, Packaging, and Orderable Information</i> section	1
• Removed the <i>Ordering Information</i> table, see POA at the end of the data sheet.....	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.

⁽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.

TAPE AND REEL INFORMATION

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE

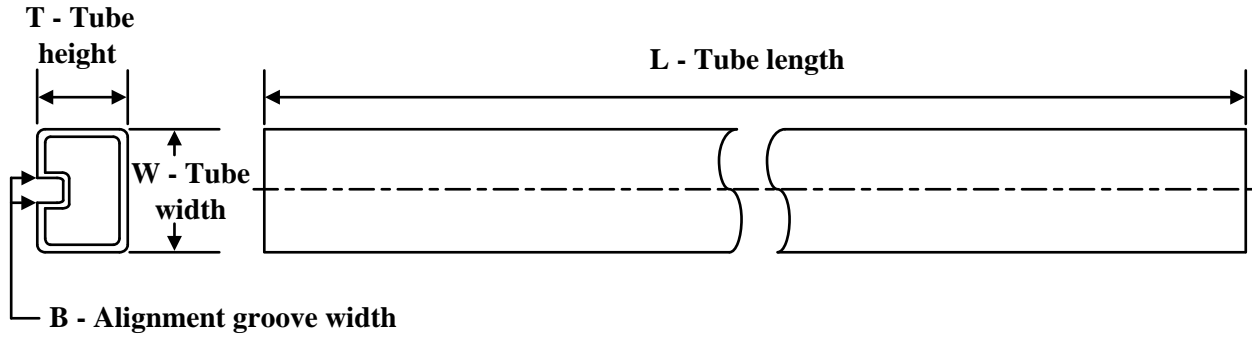

*All dimensions are nominal

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	353.0	353.0	32.0
SN74HC4066DR	SOIC	D	14	2500	356.0	356.0	35.0
SN74HC4066NSR	SOP	NS	14	2000	356.0	356.0	35.0
SN74HC4066PWR	TSSOP	PW	14	2000	356.0	356.0	35.0
SN74HC4066PWR	TSSOP	PW	14	2000	353.0	353.0	32.0

TUBE


*All dimensions are nominal

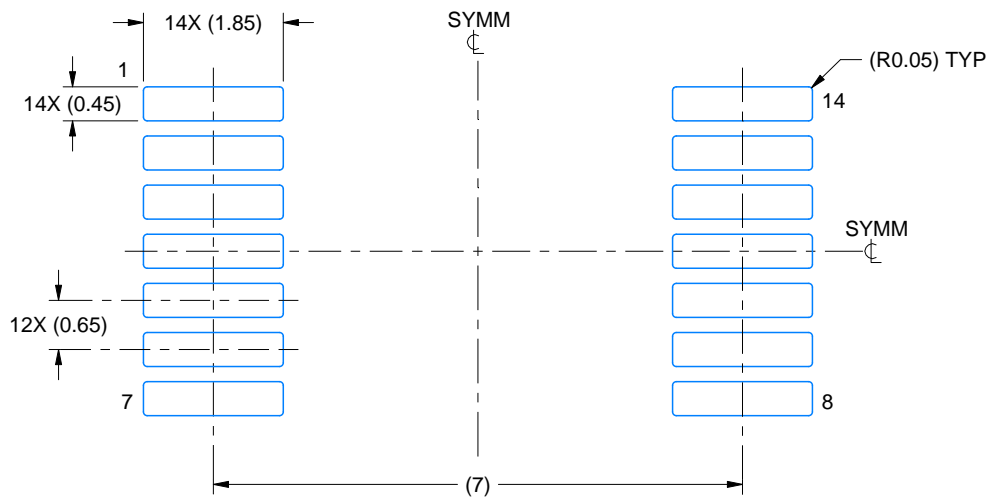
Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
SN74HC4066N	N	PDIP	14	25	506	13.97	11230	4.32
SN74HC4066N	N	PDIP	14	25	506	13.97	11230	4.32

EXAMPLE BOARD LAYOUT

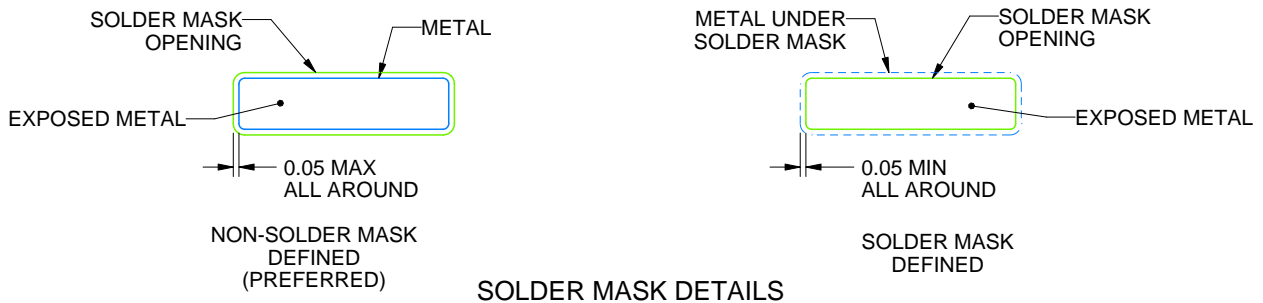
DB0014A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 10X



4220762/A 05/2024

NOTES: (continued)

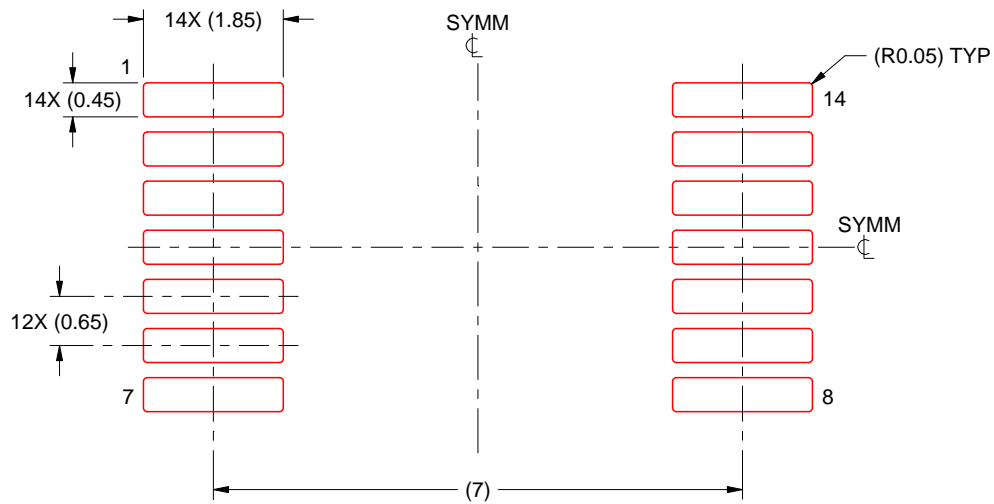
- 5. Publication IPC-7351 may have alternate designs.
- 6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

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.

N (R-PDIP-T**)

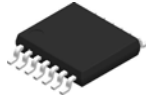
PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - (C) Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
 - (D) 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:

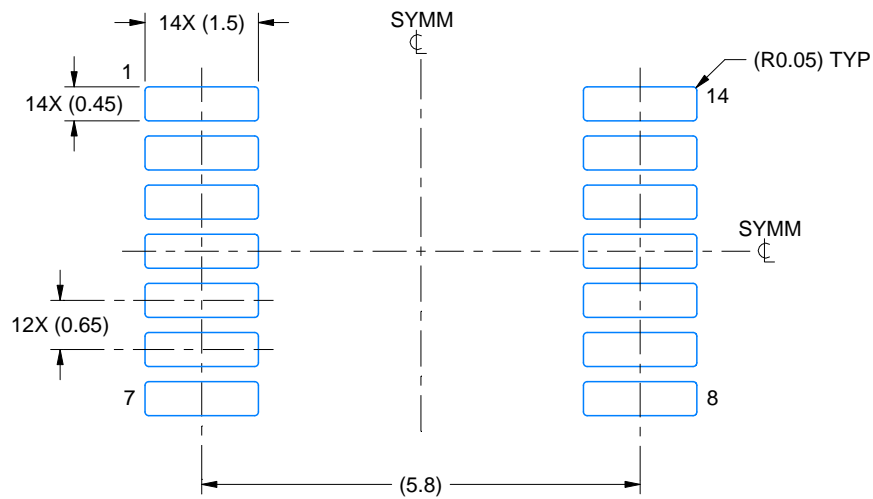
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or 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

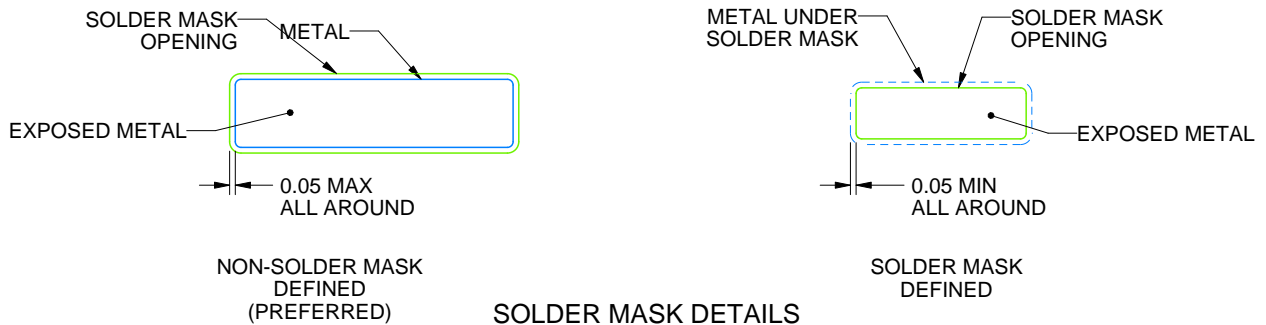
PW0014A

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



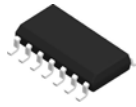
SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE: 10X

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.

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to [TI's Terms of Sale](#) or other applicable terms available either on [ti.com](#) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265

Copyright © 2025, Texas Instruments Incorporated