

# HD74UH4066

Analog Switch

# HITACHI

ADE-205-022A (Z)  
2nd. Edition  
Aug. 1993

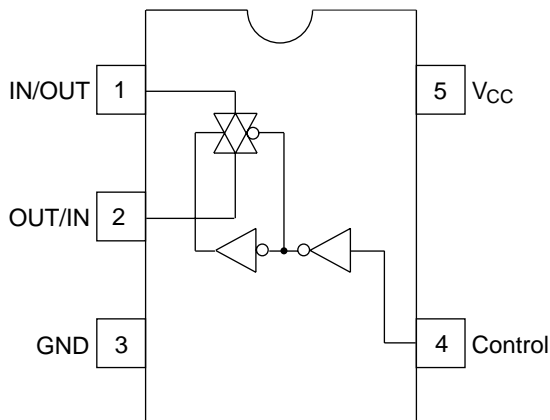
## Description

The HD74UH4066 is high speed CMOS analog switch using silicon gate CMOS process. With CMOS low power dissipation, it provides high speed. The device has low ON resistance for good transfer characteristics and can take wide range of input voltage.

## Features

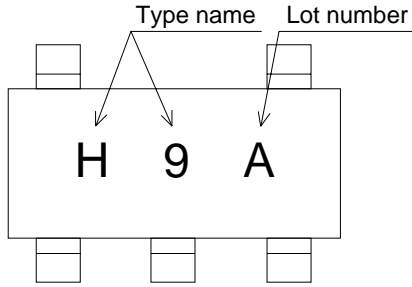
- Encapsulated in very small 5pins package of  $2.9 \times 1.6 \times 1.1$  mm, the efficiency to mount on substrate is significantly improved.
- The basic gate function is lined up as hitachi uni logic series.
- Supplied on embos taping for high speed automatic mounting.
- Electrical characteristics equivalent to the HD74HC4066  
Supply voltage range: 2 to 6 V  
Operating temperature range:  $-40$  to  $+85^{\circ}\text{C}$
- $|I_{OH}| = I_{OL} = 2$  mA (min)

## Pin Arrangement



(Top view)

## Article Indication



## Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	$V_{CC}$	-0.5 to +7.0	V
Input voltage	$V_{IN}$	-0.5 to $V_{CC} + 0.5$	V
Output voltage	$V_{OUT}$	-0.5 to $V_{CC} + 0.5$	V
Input diode current	$I_{IK}$	$\pm 20$	mA
Output diode current	$I_{OK}$	$\pm 20$	mA
Output current	$I_{OUT}$	$\pm 25$	mA
$V_{CC}/GND$ current	$I_{CC}, I_{GND}$	$\pm 25$	mA
Power dissipation	$P_T$	200	mW
Storage temperature	Tstg	-65 to +150	°C

## Recommended Operating Conditions

Item	Symbol	Ratings	Unit
Supply voltage	$V_{CC}$	2 to 6	V
Input voltage	$V_{IN}$	0 to $V_{CC}$	V
Output voltage	$V_{OUT}$	0 to $V_{CC}$	V
Operating temperature	Topr	-40 to +85	°C
Input rise/fall time	$t_r, t_f$	0 to 1000 ( $V_{CC} = 2.0$ V)	ns
		0 to 500 ( $V_{CC} = 4.5$ V)	
		0 to 400 ( $V_{CC} = 6.0$ V)	

## Electrical Characteristics

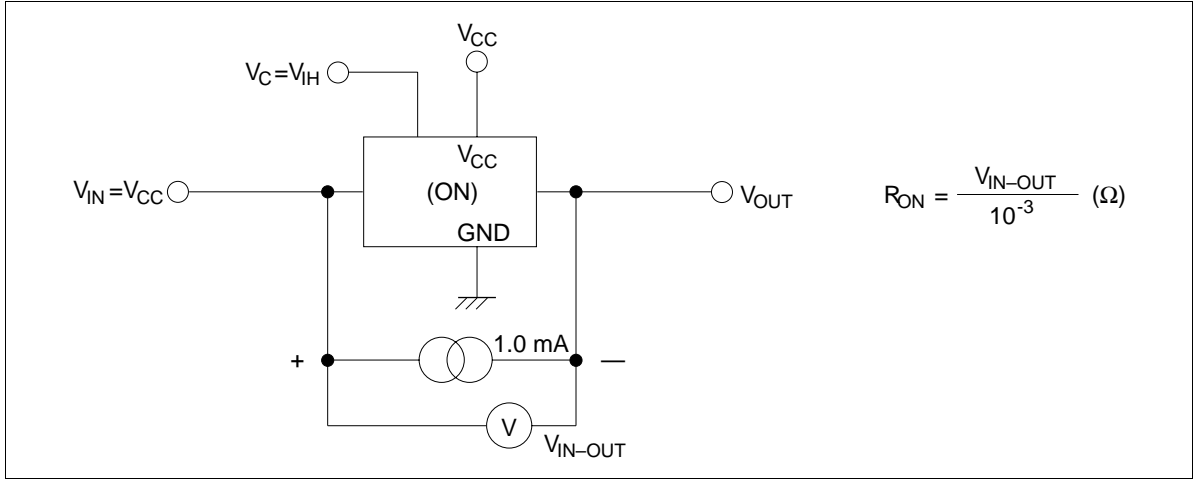
Item	Symbol	Ta = 25°C			Ta = -40 to 85°C		Unit	Test Conditions	
		Min	Typ	Max	Min	Max		V <sub>CC</sub>	
Input voltage	V <sub>IH</sub>	1.5	—	—	1.5	—	V	2.0	
		3.15	—	—	3.15	—		4.5	
		4.2	—	—	4.2	—		6.0	
	V <sub>IL</sub>	—	—	0.5	—	0.5	V	2.0	
		—	—	1.35	—	1.35		4.5	
		—	—	1.8	—	1.8		6.0	
On resistance	R <sub>ON</sub>	—	2000	5000	—	6250	Ω	2.0	V <sub>C</sub> = V <sub>IH</sub>
		—	100	200	—	250		4.5	V <sub>IN</sub> = 0 to V <sub>CC</sub>
		—	60	170	—	210		6.0	I <sub>IN/OUT</sub> = 1 mA
Leak current	I <sub>S</sub> (off)	—	—	±0.1	—	±1.0	μA	6.0	V <sub>C</sub> = V <sub>IL</sub> V <sub>IN</sub> = V <sub>CC</sub> , V <sub>OUT</sub> = GND or V <sub>IN</sub> = GND, V <sub>OUT</sub> = V <sub>CC</sub>
	I <sub>S</sub> (on)	—	—	±0.1	—	±1.0		6.0	V <sub>C</sub> = V <sub>IH</sub> V <sub>IN</sub> = V <sub>CC</sub> or GND
Input current	I <sub>IN</sub>	—	—	±0.1	—	±1.0	μA	6.0	V <sub>IN</sub> = V <sub>CC</sub> or GND
Operating current	I <sub>CC</sub>	—	—	1.0	—	10.0	μA	6.0	V <sub>IN</sub> = V <sub>CC</sub> or GND

## Switching Characteristics

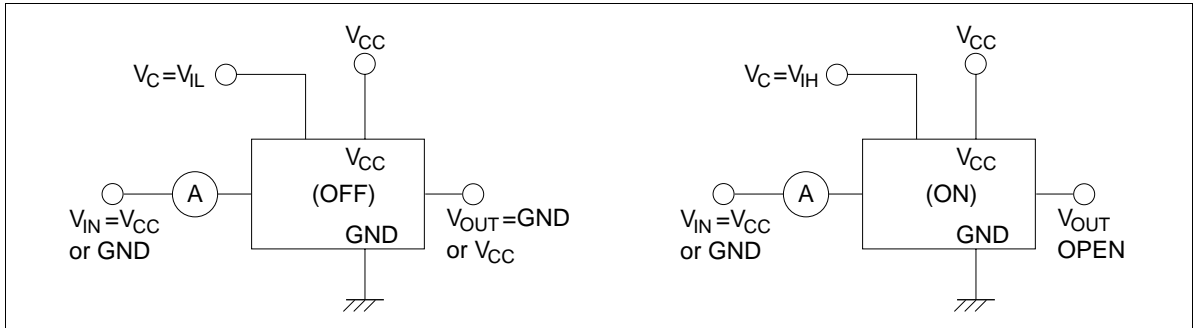
Item	Symbol	Ta = 25°C			Ta = -40 to 85°C		Unit	Test Conditions		
		Min	Typ	Max	Min	Max		V <sub>CC</sub>		
Propagation delay time	t <sub>PLH</sub>	—	—	50	—	65	ns	2.0	R <sub>L</sub> = 10 KΩ	
	t <sub>PHL</sub>	—	4	10	—	13				4.5
		—	—	9	—	11				6.0
Output enable time	t <sub>PZL</sub>	—	—	115	—	145	ns	2.0	R <sub>L</sub> = 1 KΩ	
	t <sub>PZH</sub>	—	10	23	—	29				4.5
		—	—	20	—	25				6.0
Output disable time	t <sub>LZ</sub>	—	—	115	—	145	ns	2.0	R <sub>L</sub> = 1 KΩ	
	t <sub>HZ</sub>	—	14	23	—	29				4.5
		—	—	20	—	25				6.0
Maximum control frequency	t <sub>max</sub>	—	20	—	—	—	MHz	2.0		
		—	30	—	—	—		4.5		
		—	30	—	—	—		6.0		
Control input capacitance	C <sub>IN</sub>	—	5	10	—	10	pF			
Switch I/O capacitance	C <sub>IN/OUT</sub>	—	6	—	—	—	pF			
Feed through capacitance	C <sub>IN-OUT</sub>	—	0.5	—	—	—	pF			
Power dissipation capacitance	C <sub>PD</sub>	—	13	—	—	—	pF			

Test Circuit

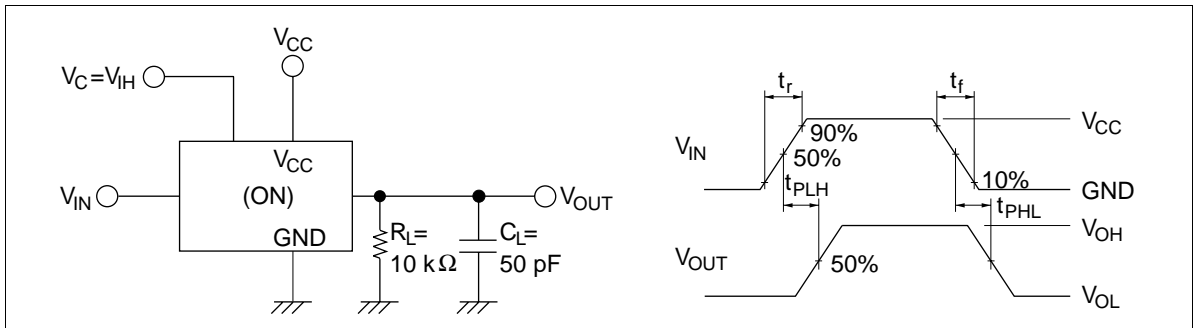
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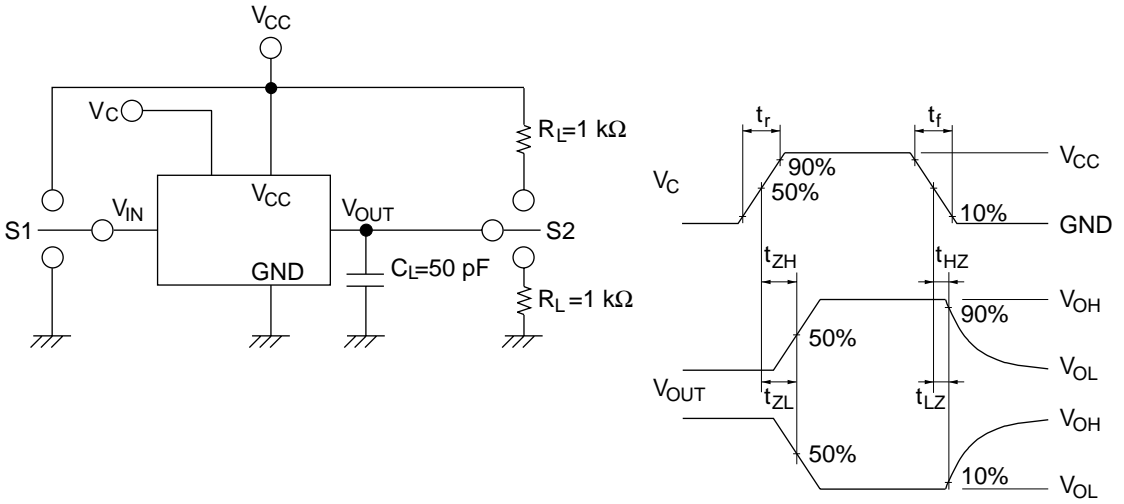
I<sub>S(OFF)</sub>, I<sub>S(ON)</sub>



t<sub>PLH</sub>, t<sub>PHL</sub>

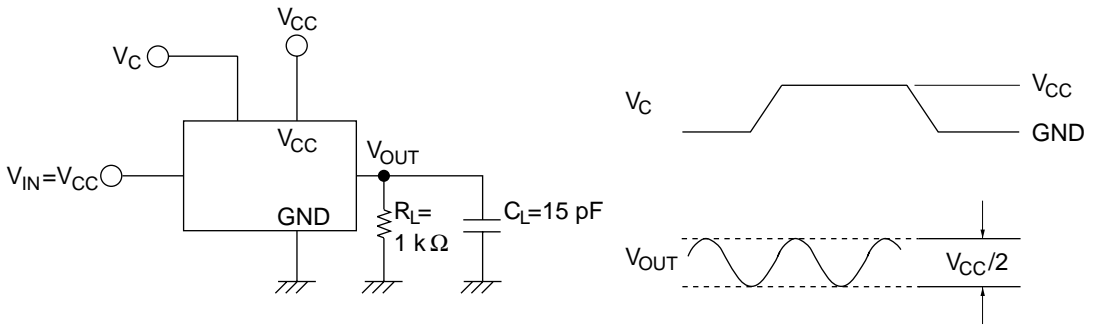


$t_{ZH}$ ,  $t_{ZL}$  /  $t_{HZ}$ ,  $t_{LZ}$

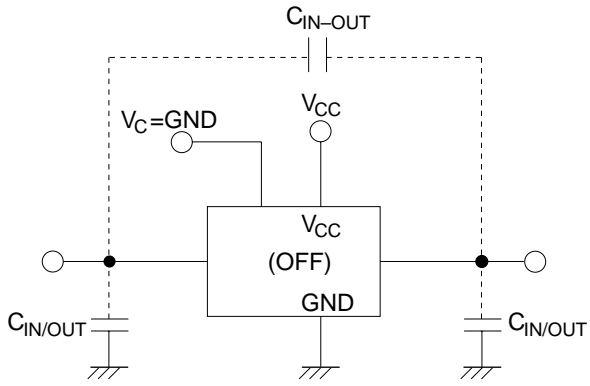


Item	S1	S2
$t_{ZH}$	$V_{CC}$	GND
$t_{ZL}$	GND	$V_{CC}$
$t_{HZ}$	$V_{CC}$	GND
$t_{LZ}$	GND	$V_{CC}$

## Maximum control frequency

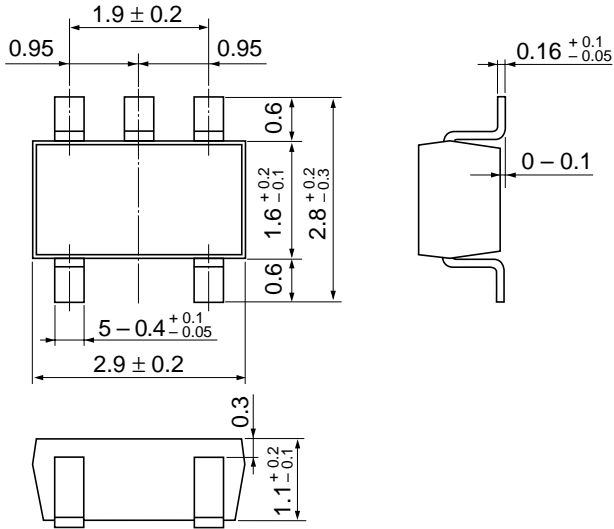


$C_{IN/OUT}$ ,  $C_{IN-OUT}$



## Package Dimensions

Unit: mm



Hitachi Code	MPAK-5
JEDEC	—
EIAJ	—
Mass (reference value)	0.015 g



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