

HD74UH4066

Analog Switch

HITACHI

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

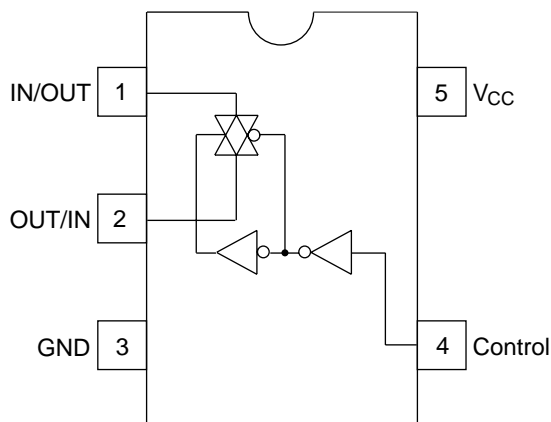
Description

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

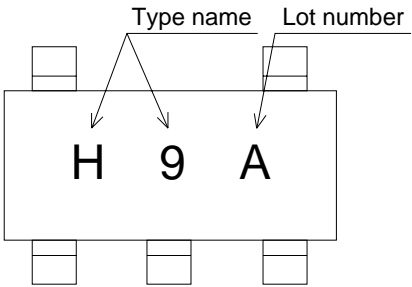
- Encapsulated in very small 5pins package of $2.9 \times 1.6 \times 1.1$ mm, the efficiency to mount on substrate is significantly improved.
- The basic gate function is lined up as hitachi uni logic series.
- Supplied on embos taping for high speed automatic mounting.
- Electrical characteristics equivalent 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}	±20	mA
Output diode current	I_{OK}	±20	mA
Output current	I_{OUT}	±25	mA
V_{CC} /GND current	I_{CC}, I_{GND}	±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

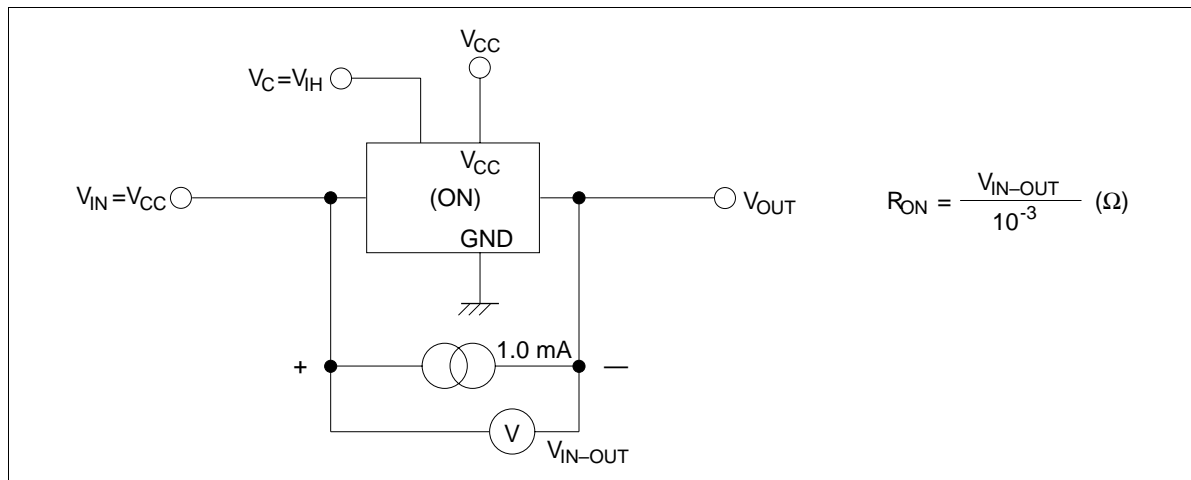
Item	Symbol	Ta = 25°C			Ta = -40 to 85°C		Unit	Test Conditions	
		Min	Typ	Max	Min	Max		V _{CC}	
Input voltage	V _{IH}	1.5	—	—	1.5	—	V	2.0	
		3.15	—	—	3.15	—		4.5	
		4.2	—	—	4.2	—		6.0	
	V _{IL}	—	—	0.5	—	0.5	V	2.0	
		—	—	1.35	—	1.35		4.5	
		—	—	1.8	—	1.8		6.0	
On resistance	R _{ON}	—	2000	5000	—	6250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

Switching Characteristics

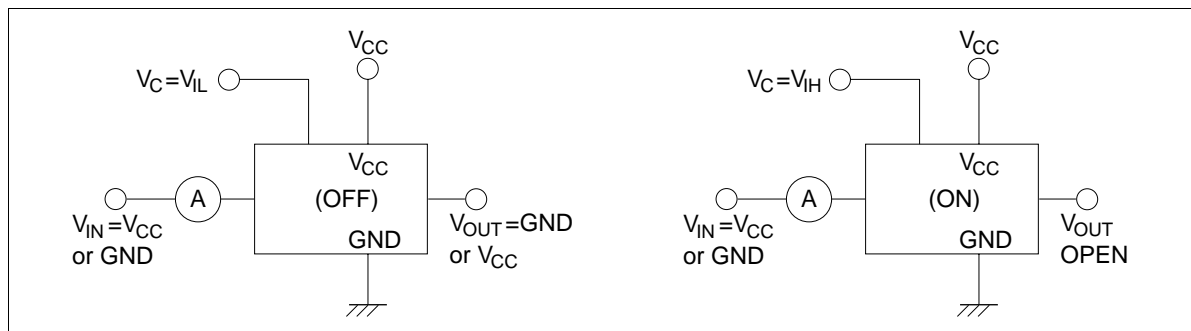
Item	Symbol	Ta = 25°C			Ta = -40 to 85°C		Unit	Test Conditions	
		Min	Typ	Max	Min	Max		V _{CC}	
Propagation delay time	t _{PLH}	—	—	50	—	65	ns	2.0	R _L = 10 KΩ
	t _{PHL}	—	4	10	—	13		4.5	
		—	—	9	—	11		6.0	
Output enable time	t _{PZL}	—	—	115	—	145	ns	2.0	R _L = 1 KΩ
	t _{PZH}	—	10	23	—	29		4.5	
		—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

Test Circuit

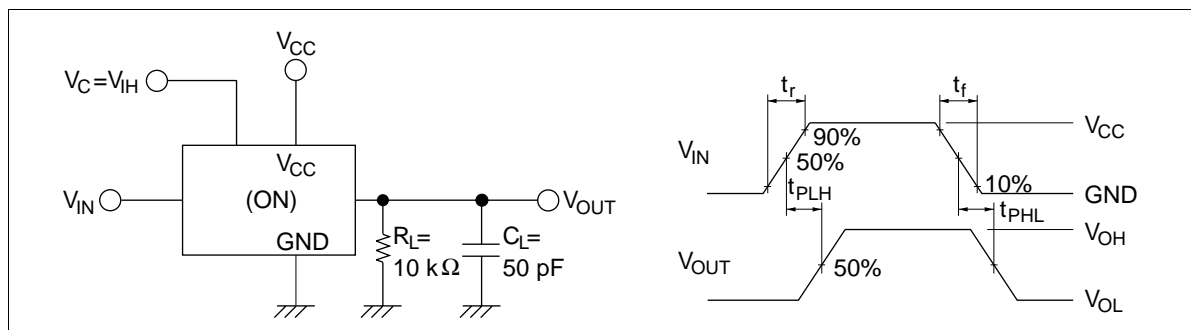
R_{ON}



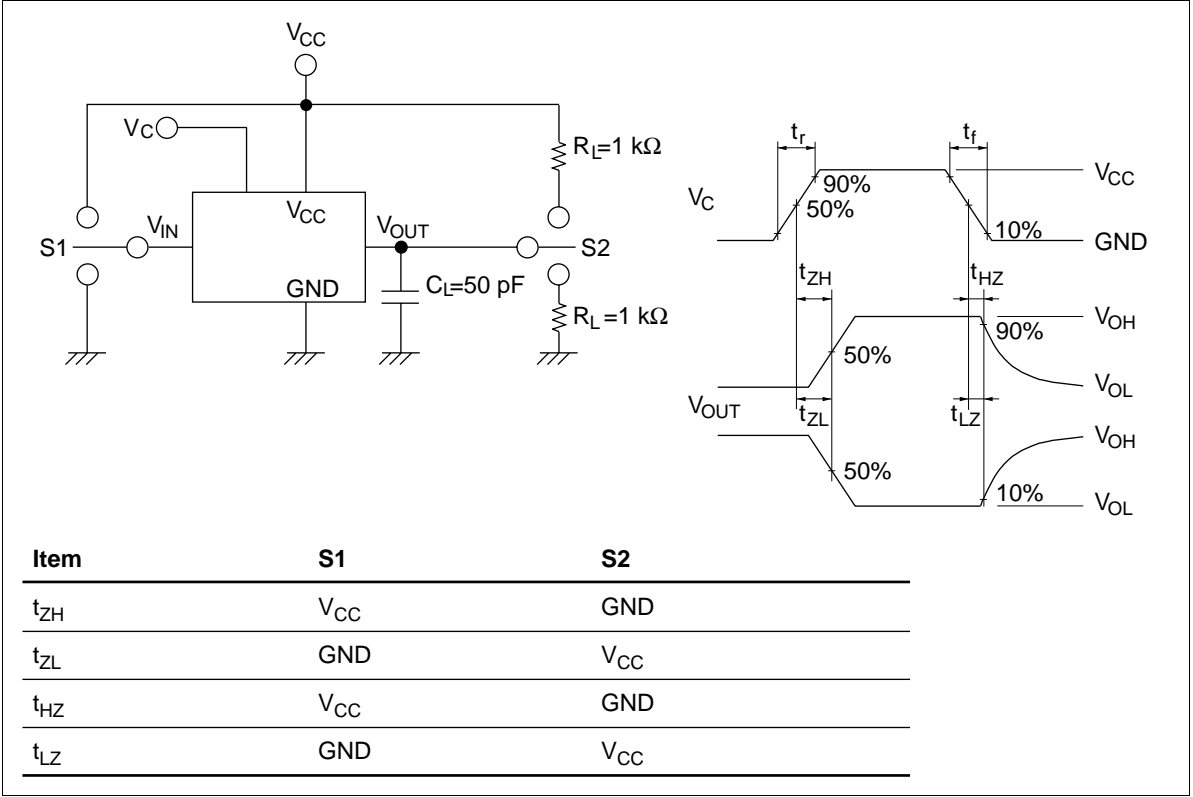
I_S (OFF), I_S (ON)



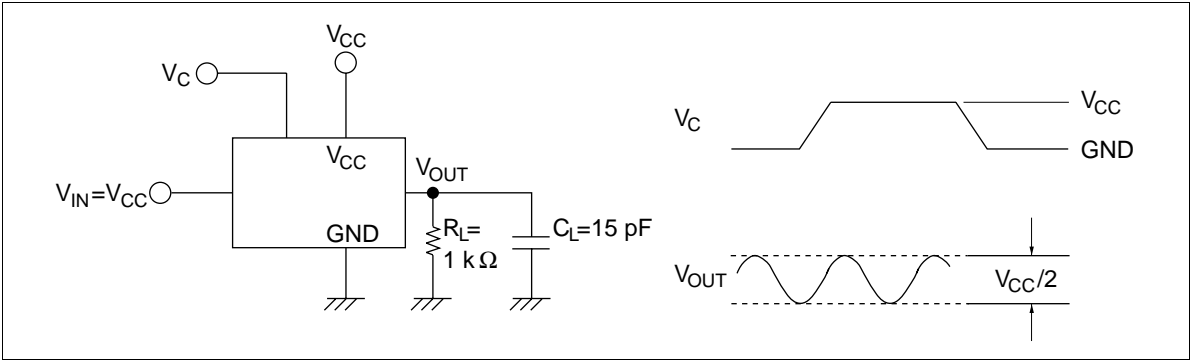
t_{PLH}, t_{PHL}



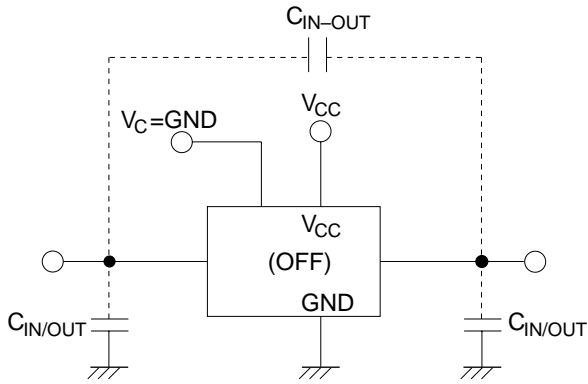
$t_{ZH}, t_{ZL} / t_{HZ}, t_{LZ}$



Maximum control frequency

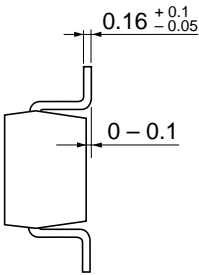
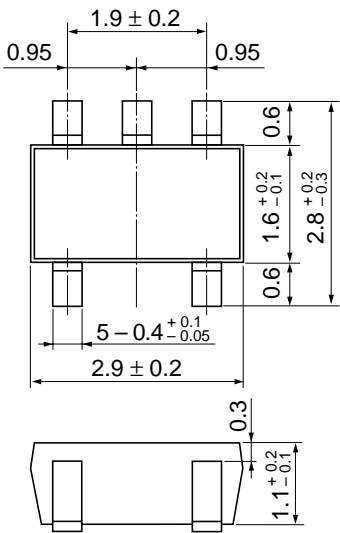


$C_{IN/OUT}$, C_{IN-OUT}



Package Dimensions

Unit: mm



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

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