

HD74UH4066

Analog Switch

REJ03D0204-0400Z
(Previous ADE-205-022B (Z))
Rev.4.00
Feb.02.2004

Description

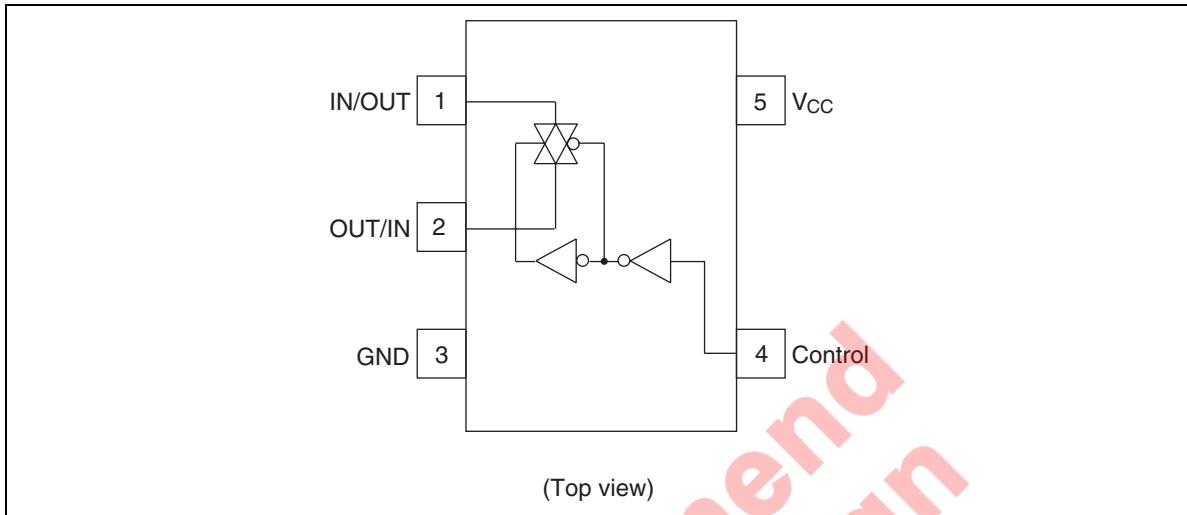
The HD74UH4066 is high-speed CMOS analog switch using silicon gate CMOS process. With CMOS low power dissipation, it provides high speed. The device has low ON resistance for good transfer characteristics and can take wide range of input voltage.

Features

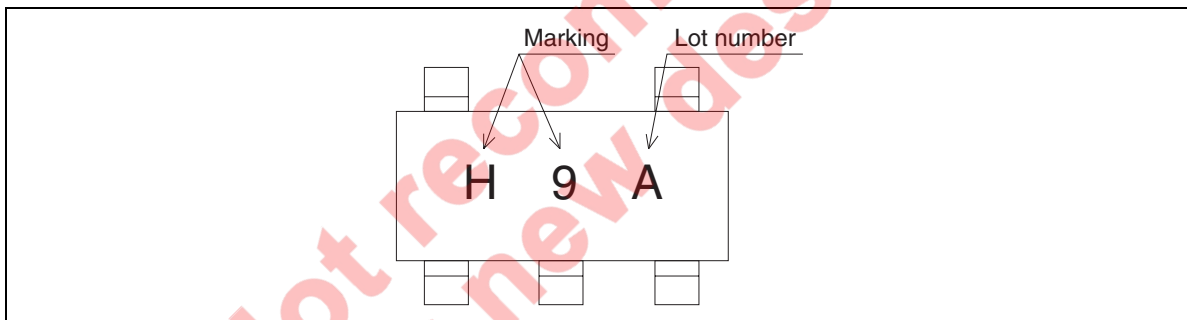
- Encapsulated in very small 5pins package of $2.9 \times 1.6 \times 1.1$ mm, the efficiency to mount on substrate is significantly improved.
- The basic gate function is lined up as Renesas uni logic series.
- Supplied on emboss taping for high-speed automatic mounting.
- Electrical characteristics 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)
- Ordering Information

Part Name	Package Type	Package Code	Package Abbreviation	Taping Abbreviation (Quantity)
HD74UH4066EL	MPAK-5 pin	MPAK-5V	–	EL (3,000 pcs/reel)

Pin Arrangement



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	T_{stg}	-65 to +150	$^{\circ}C$

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	T_{opr}	-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	V_{CC} (V)	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	Test Conditions
			Min	Typ	Max	Min	Max		
Input voltage	V_{IH}	2.0	1.5	—	—	1.5	—	V	
		4.5	3.15	—	—	3.15	—		
		6.0	4.2	—	—	4.2	—		
	V_{IL}	2.0	—	—	0.5	—	0.5	V	
		4.5	—	—	1.35	—	1.35		
		6.0	—	—	1.8	—	1.8		
On resistance	R_{ON}	2.0	—	2000	5000	—	6250	Ω	$V_C = V_{IH}$
		4.5	—	100	200	—	250		$V_{IN} = 0 \text{ to } V_{CC}$
		6.0	—	60	170	—	210		$I_{IN/OUT} = 1 \text{ mA}$
Leak current	I_S (off)	6.0	—	—	± 0.1	—	± 1.0	μA	$V_C = V_{IL}$ $V_{IN} = V_{CC}, V_{OUT} = \text{GND}$ or $V_{IN} = \text{GND}, V_{OUT} = V_{CC}$
	I_S (on)	6.0	—	—	± 0.1	—	± 1.0		$V_C = V_{IH}$ $V_{IN} = V_{CC} \text{ or } \text{GND}$
Input current	I_{IN}	6.0	—	—	± 0.1	—	± 1.0	μA	$V_{IN} = V_{CC} \text{ or } \text{GND}$
Operating current	I_{CC}	6.0	—	—	1.0	—	10.0	μA	$V_{IN} = V_{CC} \text{ or } \text{GND}$

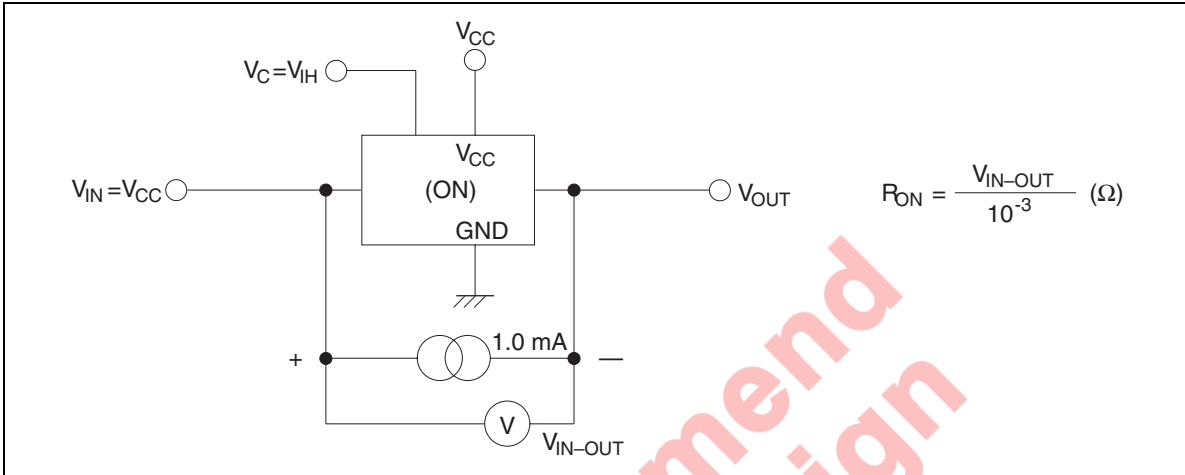
Switching Characteristics

Item	Symbol	V _{CC}	Ta = 25°C			Ta = -40 to 85°C		Unit	Test Conditions
			Min	Typ	Max	Min	Max		
Propagation delay time	t _{PLH}	2.0	—	—	50	—	65	ns	R _L = 10 KΩ
	t _{PHL}	4.5	—	4	10	—	13		
		6.0	—	—	9	—	11		
Output enable time	t _{PZL}	2.0	—	—	115	—	145	ns	R _L = 1 KΩ
	t _{PZH}	4.5	—	10	23	—	29		
		6.0	—	—	20	—	25		
Output disable time	t _{LZ}	2.0	—	—	115	—	145	ns	R _L = 1 KΩ
	t _{HZ}	4.5	—	14	23	—	29		
		6.0	—	—	20	—	25		
Maximum control frequency	t _{max}	2.0	—	20	—	—	—	MHz	
		4.5	—	30	—	—	—		
		6.0	—	30	—	—	—		
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	

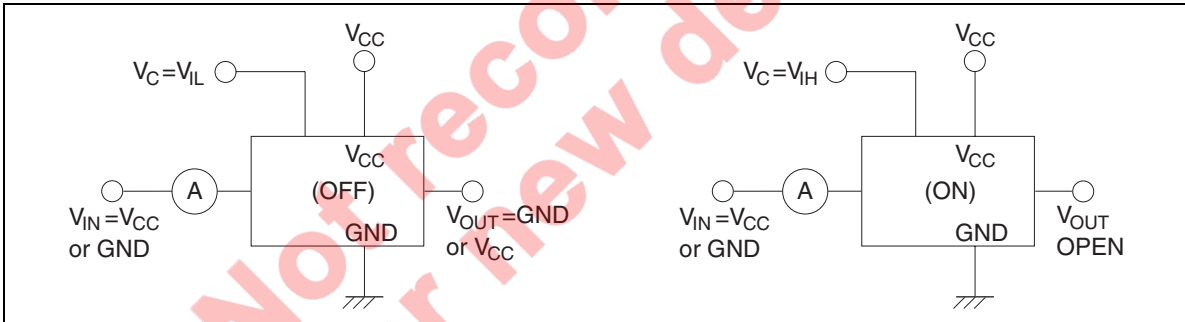
Not recommended for new design

Test Circuit

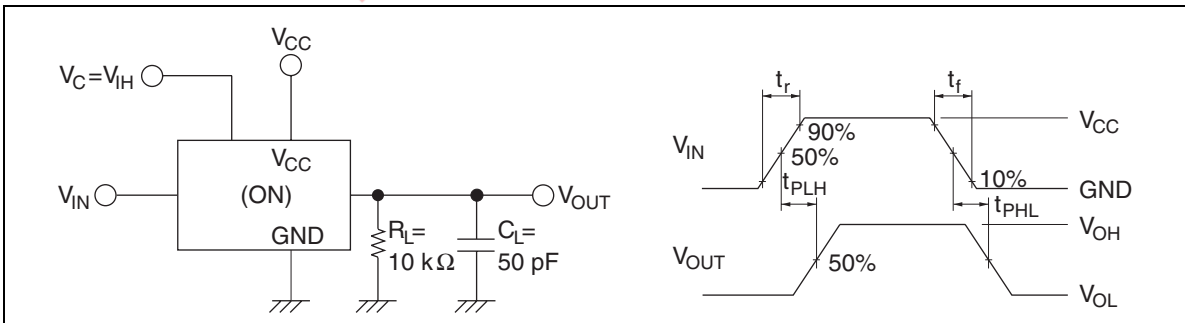
RON



I_S (OFF), I_S (ON)

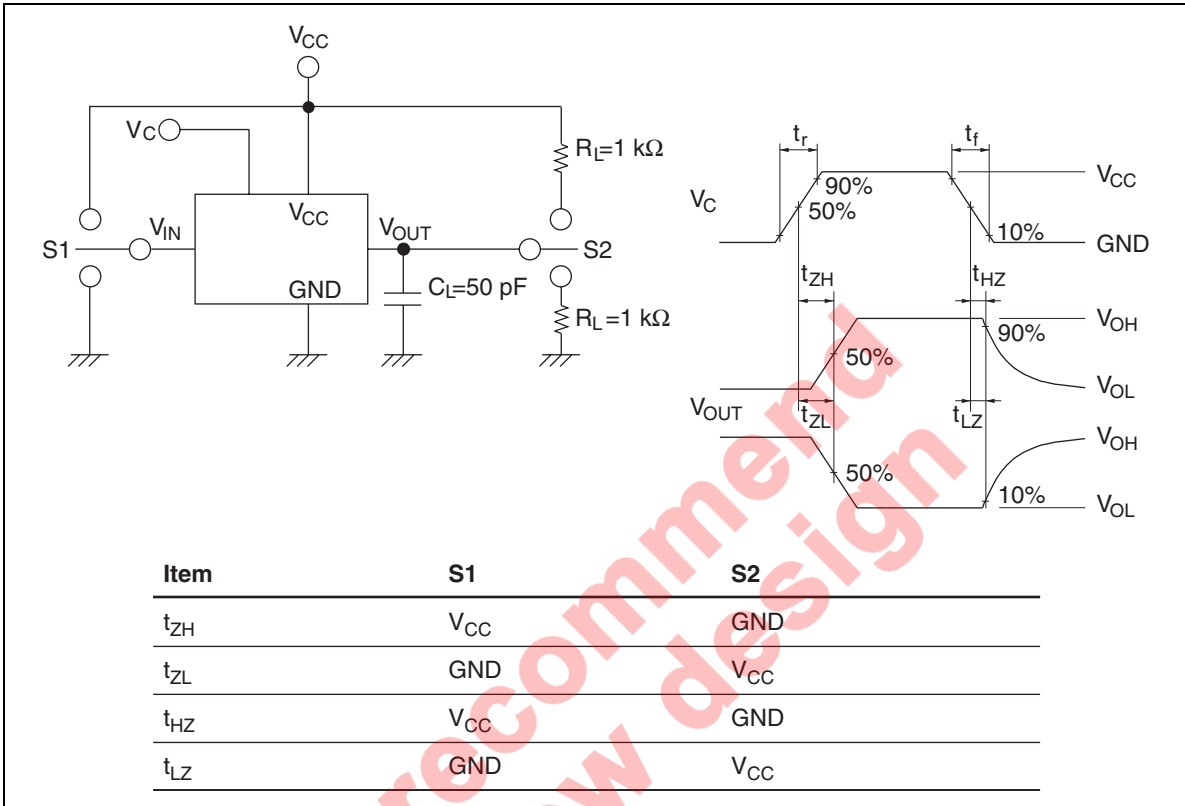


t_{PLH}, t_{PHL}

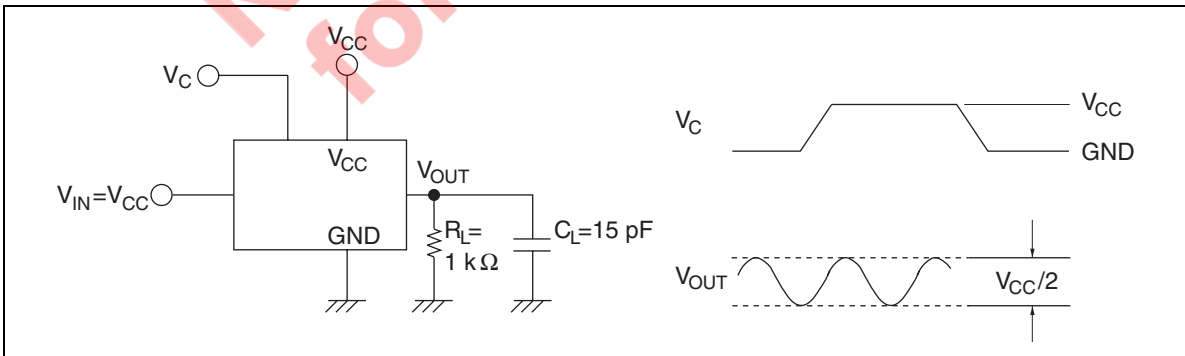


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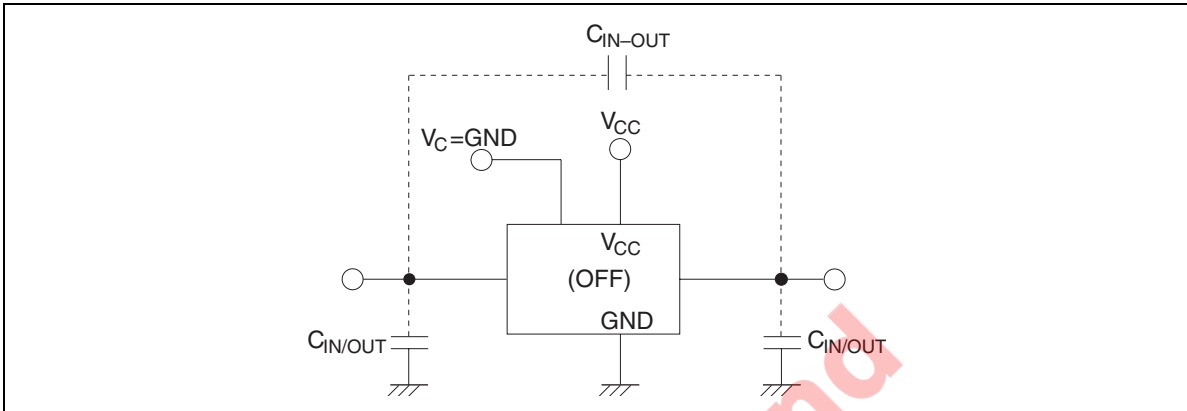
t_{ZH} , t_{ZL} / t_{HZ} , t_{LZ}



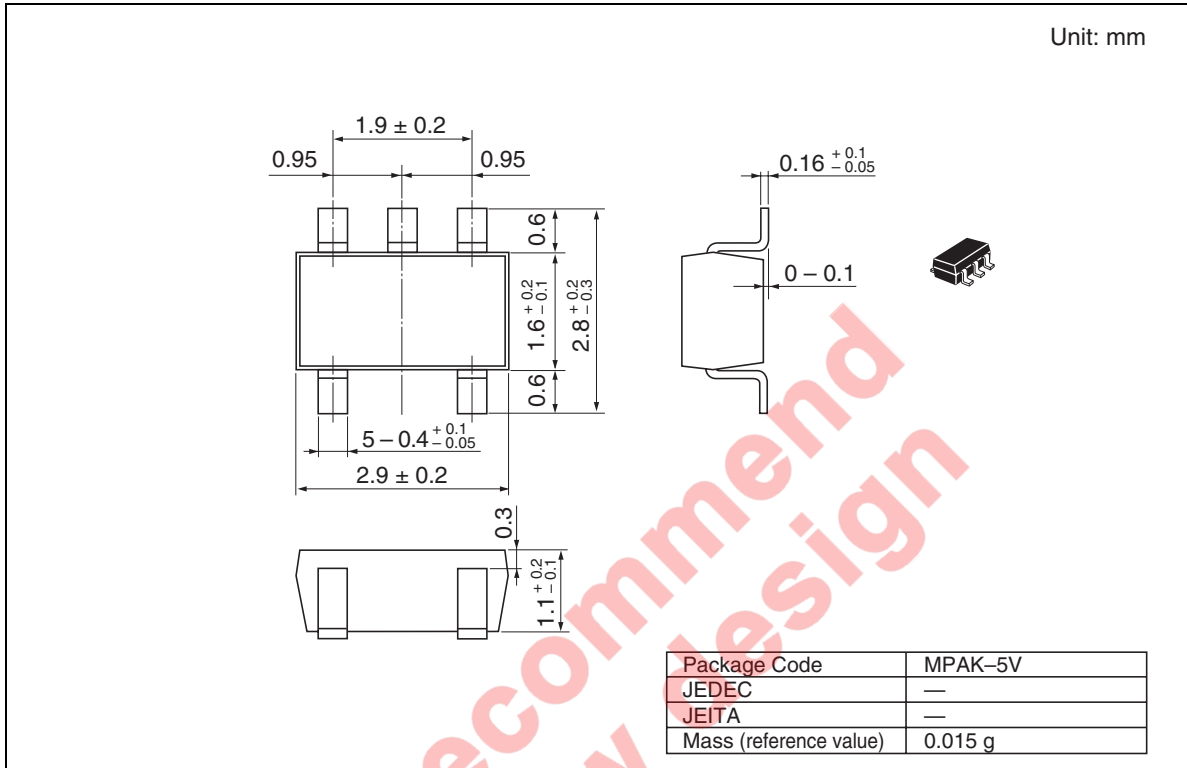
Maximum control frequency



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



Package Dimensions



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