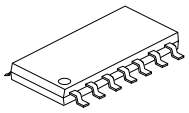
U74AHCT4066

CMOS IC

QUADRUPLE BILATERAL ANALOG SWITCH



SOP-14

■ DESCRIPTION

The **U74AHCT4066** is a quadruple bilateral analog switch which has 4 channels.

■ FEATURES

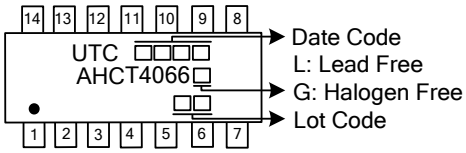
* Inputs Are TTL-Voltage Compatible
* Max t_{PD} of 6ns at 5 V
* Low Power Dissipation: I_{CC}=2μA(Max)
* Low Input Current: I_{IN}=1μA(Max)

■ ORDERING INFORMATION

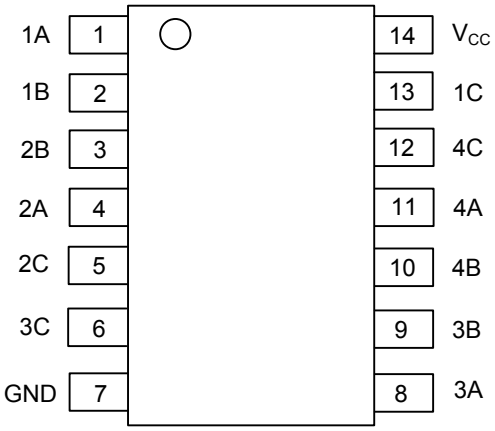
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT4066L-S14-R	U74AHCT4066G-S14-R	SOP-14	Tape Reel

U74AHCT4066G-S14-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) S14: SOP-14 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION

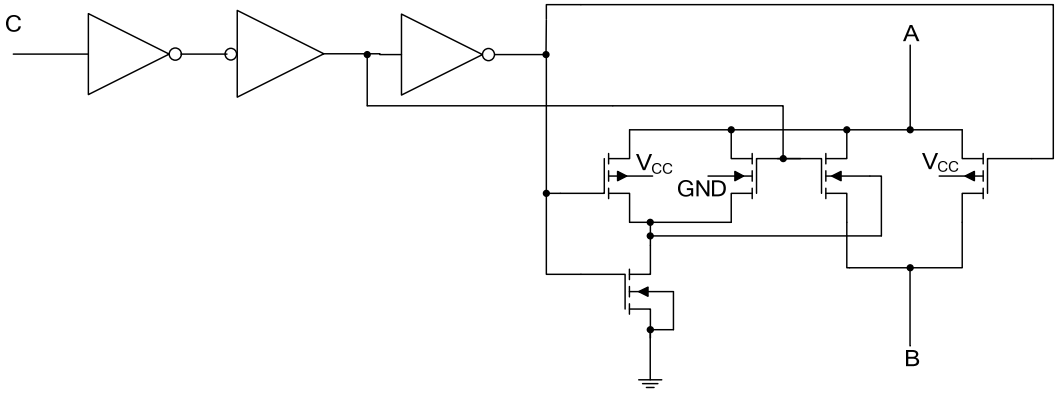


■ FUNCTION TABLE

INPUTS CONTROL (C)	SWITCH
H	ON
L	OFF

Note: H: HIGH voltage level; L: LOW voltage level.

■ LOGIC DIAGRAM



One Of Four Switches

■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage Range	V_{CC}	-0.5 ~ +7	V
Input Voltage Range	V_C	-0.5 ~ +7	V
Switch I/O Voltage Range	V_{IO}	-0.5 ~ V_{CC} +0.5	V
V_{CC} or GND Current	I_{CC}	±50	mA
I/O Diode Current	I_{IOK}	±50	mA
Control Input Clamp Current	I_{IK}	-20	mA
On-state Switch Current	I_T	±25	mA
Operating Temperature	T_{OPR}	-40 ~ + 85	°C
Storage Temperature	T_{STG}	-65 ~ + 150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	86	°C/W

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		4.5		5.5	V
High-Level Input Voltage	V_{IH}	V_{CC}=4.5V to 5.5V	2			V
Low-Level Input Voltage	V_{IL}	V_{CC}=4.5V to 5.5V			0.8	V
Control Input Voltage	V_C		0		5.5	V
Input/Output Voltage	V_{IO}		0		V_{CC}	V
Input Transition Rise or Fall Rate	t_R / t_F	V_{CC}=4.5V to 5.5V	0		20	ns/V

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
On-state Switch Resistance	R_{ON}	V_{CC}=4.5V, IT=-1mA, V_{IN}=GND or V_{CC}, V_{CC}= V_{IH}		21	75	Ω
Peak On-state Resistance	$R_{ON(P)}$			31	100	Ω
Difference In On-state Resistance Between Switches	ΔR_{ON}			2	15	Ω
Control Input Current	$I_{I(CTL)}$	V_{CC}=5.5V, V_C= 5.5V or GND			±0.1	μA
On-state Switch Leakage Current	$I_{S(ON)}$	V_{CC}=5.5V, V_I= V_{CC} or GND, V_C= V_{IH}			±0.1	μA
Off-state Switch Leakage Current	$I_{S(OFF)}$	V_{CC}=5.5V, V_I= V_{CC} and V_O=GND, or V_I=GND and V_O= V_{CC}, V_C= V_{IL}			±0.1	μA
Quiescent Supply Current	I_Q	V_{CC}=5.5V, V_C=V_{CC} or GND			2	μA
Control Input Capacitance	C_{IC}			1.5		pF
Feed-through Capacitance	C_F			0.5		pF
Switch Input/Output Capacitance	C_{IO}			5.5		pF

■ SWITCHING CHARACTERISTICS (T_A=25°C, SEE TEST CIRCUIT AND WAVEFORMS)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay Time, From (A) to (B) Or (B) to (A)	t_{PLH}/t_{PHL}	V_{CC}=5V±0.5V	C_L =15pF		0.3	4	ns
			C_L =50pF		0.6	6	ns
Switch Turn-on Time, From (C) to (A) or (B)	t_{PZL}/t_{PZH}		C_L =15pF		1.6	7	ns
			C_L =50pF		2.1	12	ns
Switch Turn-off Time, From (C) to (A) or (B)	t_{PLZ}/t_{PHZ}		C_L =15pF		3.2	7	ns
			C_L =50pF		5.1	12	ns

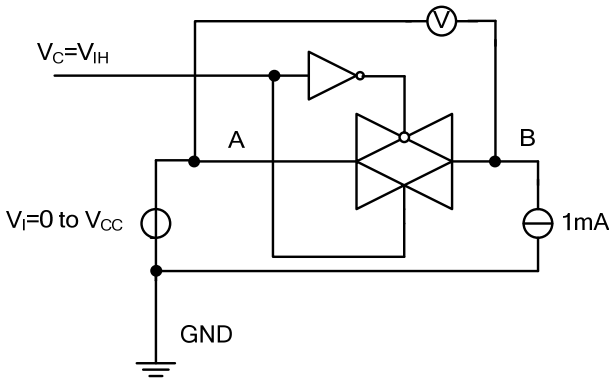
■ ANALOG SWITCHING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Frequency Response(Switch On), From A to B Or B to A		C_L=50pF, R_L=600Ω, f_{in}=1MHz, $20\log_{10}(V_O/V_I)$=-3dB	V_{CC}=4.5V		50		MHz
Crosstalk(Between Any Switches), From A to B Or B to A		C_L=50pF, R_L=600Ω, f_{in}=1MHz			-45		dB
Crosstalk(Control Input To Signal Output), From C to A or B					50		mV
Feed-Through Attenuation (Switch Off), From A to B Or B to A					-40		dB
Sine-Wave Distortion		C_L=50pF, R_L=10KΩ, f_{in}=1KHz	V_{CC}=4.5V, V_I=4 V_{P-P}		0.1		%

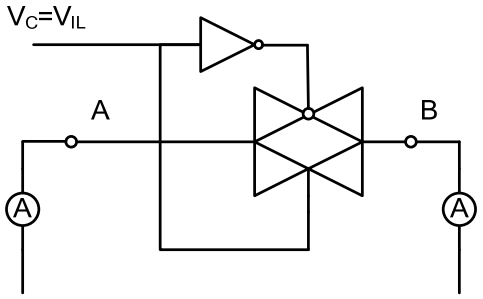
■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	C_L =50pF,f=1MHz		4.5		pF

■ TEST CIRCUIT AND WAVEFORMS

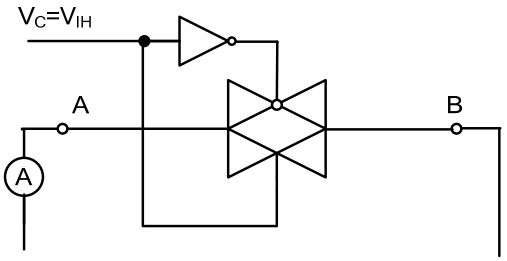


Test circuit for measuring ON-state resistance R_{ON}



V_I=V_{CC} or GND V_O=GND or V_{CC}

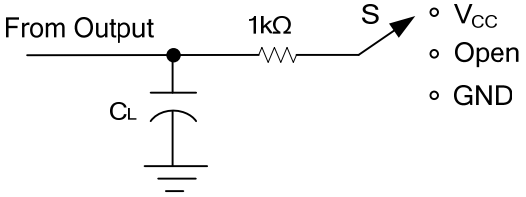
Test circuit for measuring OFF-state current



V_I=0 to V_{CC} V_O(open)

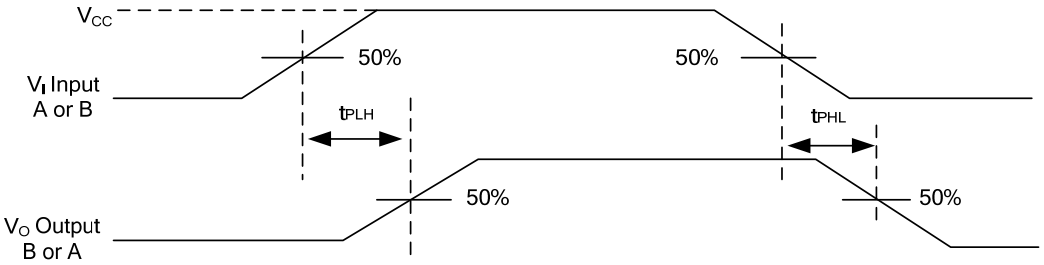
Test circuit for measuring ON-state current

■ TEST CIRCUIT AND WAVEFORMS(Cont.)

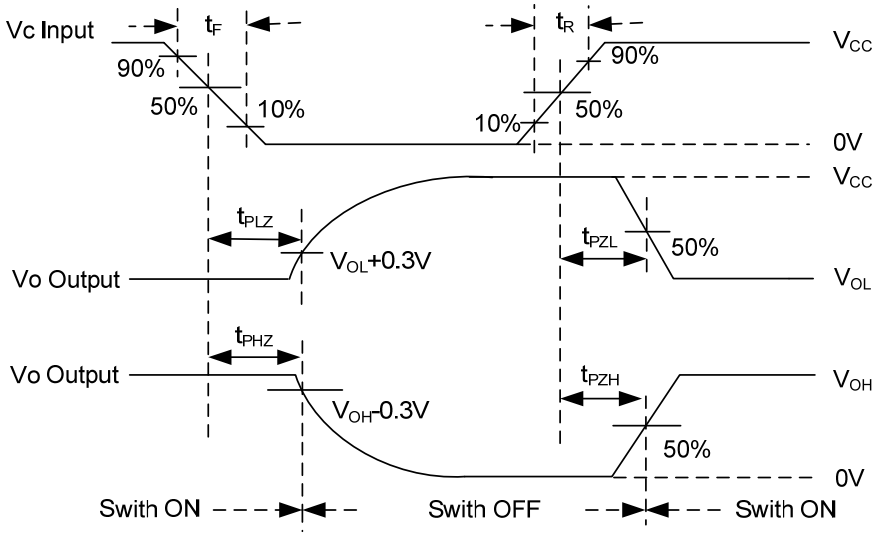


TEST	S	V_I
t_{PLH}/t_{PHL}	Open	Pulse
t_{PHZ}/t_{PZH}	GND	V_{CC}
t_{PLZ}/t_{PZL}	V_{CC}	GND

Test circuit for measuring propagation delay time, switching time



Waveforms showing the Input(V_I) to Output(V_O) propagation delays



Waveforms showing the turn-on and turn-off times

Note: C_L includes probe and jig capacitance.
All input pulses are supplied by generators having the following characteristics: PRR ≤1MHz, Zo = 50Ω, tr ⩽3ns, tf ⩽3ns.