



U74HCT4066

CMOS IC

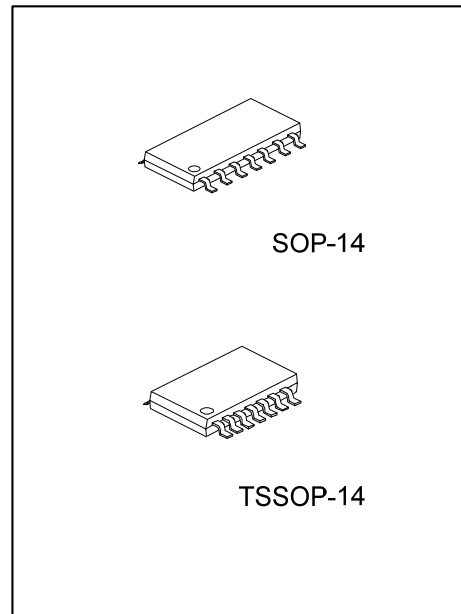
QUAD BILATERAL SWITCH

DESCRIPTION

The UTC **U74HCT4066** consists of four independent analog switches. Each switch has an Enable input (nE) which is active HIGH to decide the switch status.

FEATURES

- *Operation voltage range: 4.5V~5.5V
- *Very low "ON" resistance: 50Ω(Typ.)@V_{CC}=4.5V

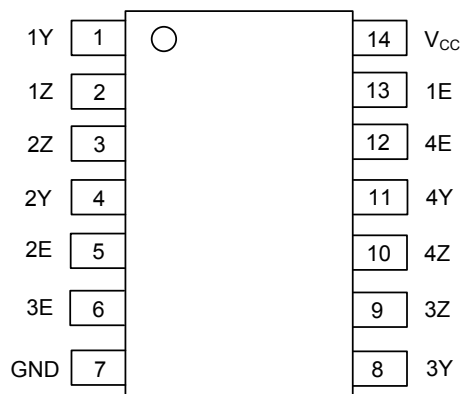


ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT4066L-P14-R	U74HCT4066G-P14-R	TSSOP-14	Tape Reel
U74HCT4066L-S14-R	U74HCT4066G-S14-R	SOP-14	Tape Reel

<p>U74HCT4066L-P14-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) R: Tape Reel (2) P14: TSSOP-14, S14: SOP-14 (3) G: Halogen Free, L: Lead Free</p>
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■ PIN CONFIGURATION

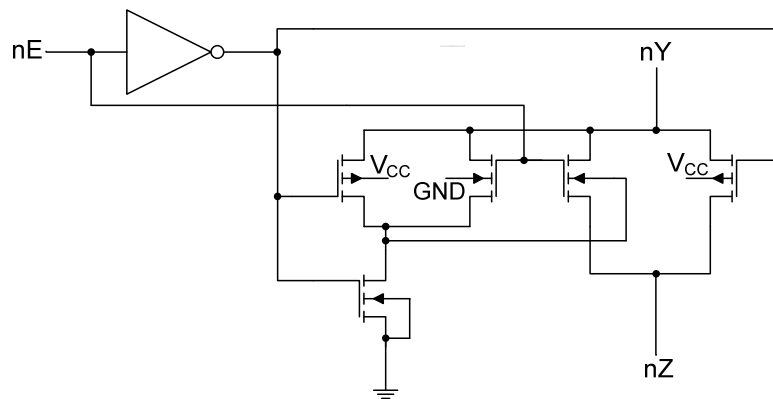


■ FUNCTION TABLE

INPUTS(nE)	SWITCH
H	ON
L	OFF

Note: H: High voltage level; L: Low voltage level.

■ LOGIC DIAGRAM



■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	-0.5 ~ +11	V
Input Diode Current		I_{IK}	±20	mA
Switch Diode Current		I_{SK}	±20	mA
Switch Current		I_S	±25	mA
VCC or GND Current		I_{CC}	±50	mA
Power Dissipation		P_D	500	mW
Derate above 60°C	TSSOP-14		5.5	mW/°C
Derate above 70°C	SOP-14		8	mW/°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.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		4.5	5.0	5.5	V
Input Voltage	V_{IN}		GND		V_{CC}	V
Switch Voltage	V_S		GND		V_{CC}	V
Input Transition Rise or Fall Rate	t_R, t_F	$V_{CC}=2V$		6	500	ns
Operating Temperature	T_A		-40		85	°C

■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
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	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND			±1.0	µA	
current per channel	OFF-state ON-state	$V_{CC}=5.5V, V_{IN}=V_{IH}$ or $V_{IL}, V_S=V_{CC}-GND$			±1.0	µA	
					±1.0	µA	
Quiescent Supply Current	I_Q	$V_{CC}=4.5V$ to $5.5V, V_{IN}=V_{IS}=V_{OS}=V_{CC}$ or GND			20	µA	
Additional Quiescent Supply Current	ΔI_Q	$V_{CC}=4.5V$ to $5.5V, V_{IN}=V_{CC}-2.1V,$ Other inputs at V_{CC} or GND		100	450	µA	
ON-resistance	Peak	R_{ON}	$V_{IN}=V_{IH}$ or $V_{IL}, V_{IS}=V_{CC}$ to GND, $V_{CC}=4.5V, I_S=1mA$		54	118	Ω
	Rail	R_{ON}	$V_{IN}=V_{IH}$ or $V_{IL}, V_{IS}=GND$ $V_{CC}=4.5V, I_S=1mA$		35	95	Ω
			$V_{IS}=V_{CC}$		42	106	Ω
Maximum variation of ON-resistance between any two channels	ΔR_{ON}	$V_{IN}=V_{IH}$ or $V_{IL}, V_{IS}=V_{CC}$ to GND, $V_{CC}=4.5V$		5		Ω	

■ DYNAMIC CHARACTERISTICS ($T_a=25^\circ C, GND=0V, t_R=t_F=6ns, C_L=50pF$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay From V_{IS} to V_{OS}	t_{PHL}/t_{PLH}	$V_{CC}=4.5V, R_L=\infty$		3	15	ns
Turn-ON Time from nE to V_{OS}	t_{PZH}/t_{PZL}	$V_{CC}=4.5V, R_L=1K\Omega$		12	30	ns
Turn-OFF Time from nE to V_{OS}	t_{PHZ}/t_{PLZ}	$V_{CC}=4.5V, R_L=1K\Omega$		20	44	ns
Sine-Wave Distortion	THD	$V_{CC}=4.5V, V_{IS(P-P)}=4V, f=1kHz, R_L=10k$		0.04		%
Switch OFF Signal Feed-Through (Note 1)	α_{OFF}	$V_{CC}=4.5V, R_L=600\Omega, f=1MHz$		-50		dB
Crosstalk Between any two Switches (Note 1)	$\alpha_{CT(S)}$	$V_{CC}=4.5V, R_L=600\Omega, f=1MHz$		-60		dB
Crosstalk Voltage between any input to any Switch (Peak-to-Peak Value)	$V_{(P-P)}$	$V_{CC}=4.5V, R_L=600\Omega, f=1MHz$		110		mV

■ DYNAMIC CHARACTERISTICS(Cont.)

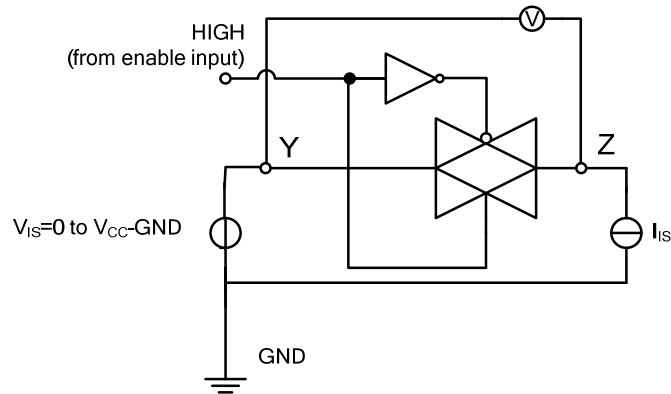
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Minimum Frequency Response(-3dB) (Note 2)	f_{MAX}	$V_{CC}=4.5V, R_L=50\Omega, C_L=10pF$		180		MHz
maximum switch capacitance	C_S			8		pF

Note 1. Adjust input voltage V_{IS} is 0dbm level (0dbm=1mW into 600 Ω)

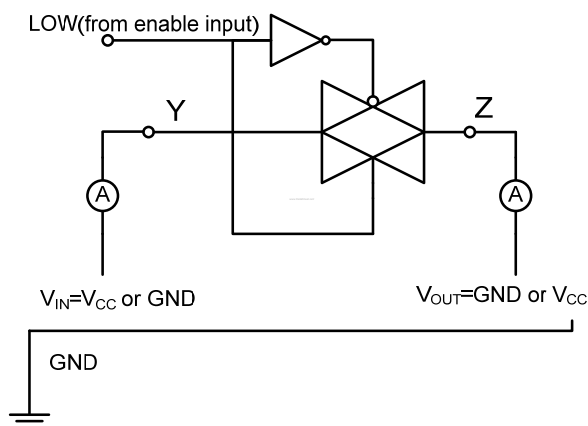
2. Adjust input voltage V_{IS} is 0dbm level at V_{OS} for 1MHz (0dbm=1mW into 50 Ω)

■ TEST CIRCUIT AND WAVEFORMS

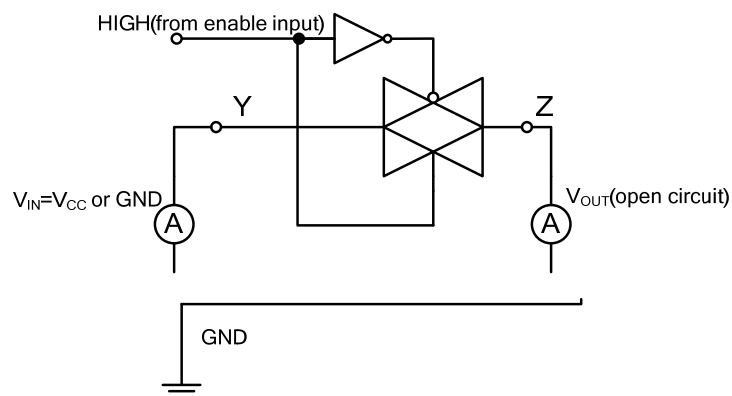
Test circuit for measuring ON-resistance (Ron)



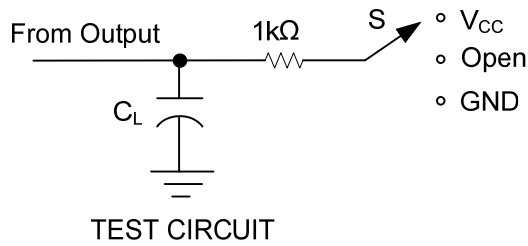
Test circuit for measuring OFF-state current



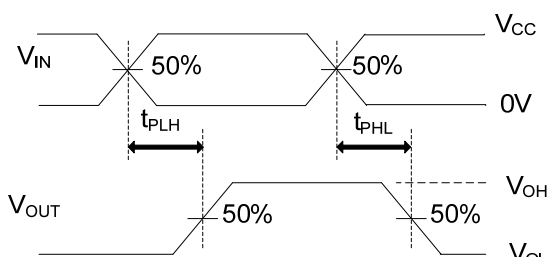
Test circuit for measuring ON-state current



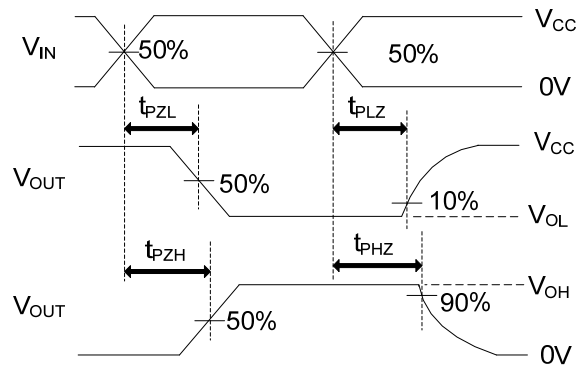
■ TEST CIRCUIT AND WAVEFORMS(Cont.)



	S	V _{IN}
t _{PLH} /t _{PHL}	OPEN	V _{IN}
t _{PHZ} /t _{PZH}	GND	V _{CC}
t _{PLZ} /t _{PZL}	V _{CC}	GND



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

Note: 1. C_L includes probe and jig capacitance.
 2. PRR ≤ 1MHz, Z_o = 50Ω, t_r ≤ 6ns, t_f ≤ 6ns.

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