



U74HCT4066

CMOS IC

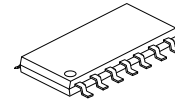
QUAD BILATERAL SWITCH

DESCRIPTION

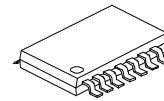
The UTC **U74HCT4066** consists of four independent analog switches. Each switch has an Enable input (nE) which is active HIGH to decide the switch status.

FEATURES

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



SOP-14



TSSOP-14

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

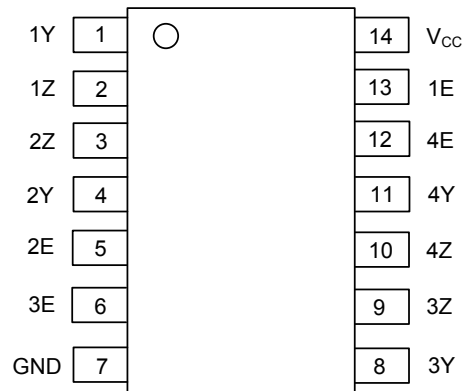
U74HCT4066L-P14-R



- (1)Packing Type
- (2)Package Type
- (3)Lead Plating

- (1) R: Tape Reel
- (2) P14: TSSOP-14, S14: SOP-14
- (3) G: Halogen Free, L: Lead Free

■ PIN CONFIGURATION

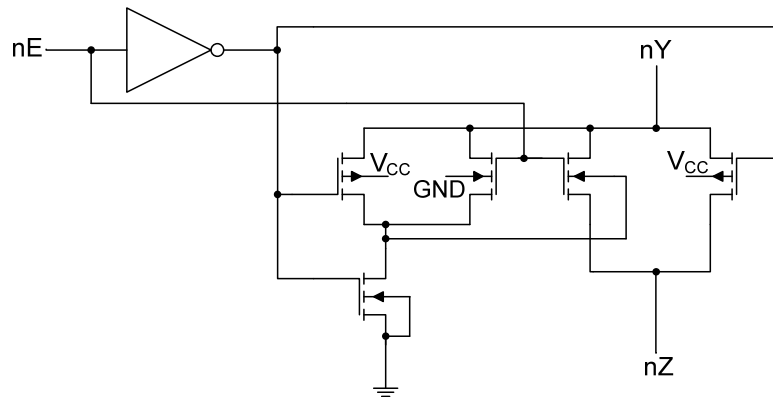


■ FUNCTION TABLE

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	I _S	V _{CC} =5.5V, V _{IN} =V _{IH} or V _{IL} , V _S =V _{CC} -GND				±1.0	μA
	ON-state						±1.0	
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		Δ I _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		35	95	Ω
V _{CC} =4.5V, I _S =1mA			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.)

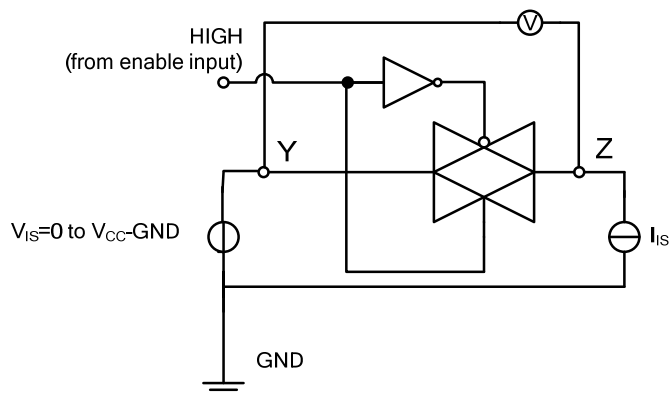
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Minimum Frequency Response(-3dB) (Note 2)	f_{MAX}	$V_{CC}=4.5V$, $R_L=50\Omega$, $C_L=10pF$		180		MHz
maximum switch capacitance	C_S			8		pF

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

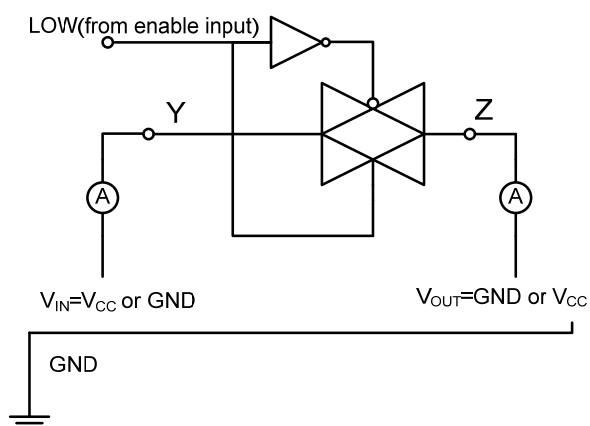
2. Adjust input voltage V_{IS} is 0dbm level at V_{OS} for 1MHz (0dbm=1mW into 50 Ω)

■ TEST CIRCUIT AND WAVEFORMS

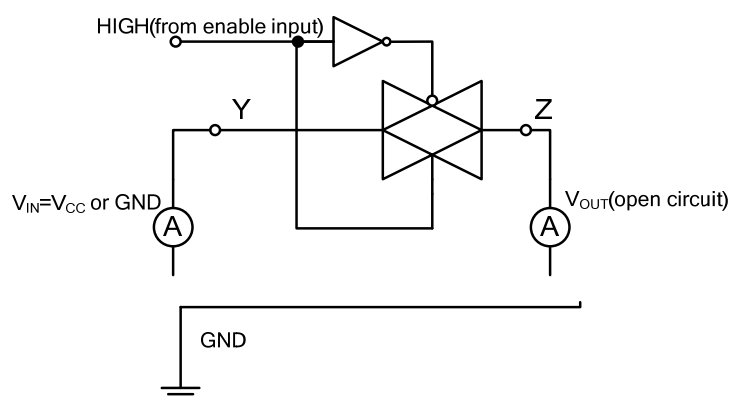
Test circuit for measuring ON-resistance (R_{on})



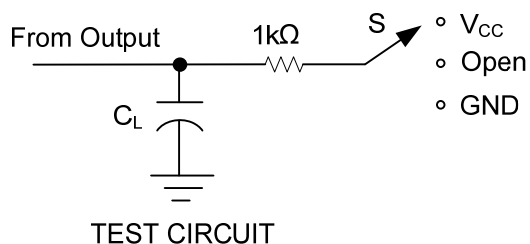
Test circuit for measuring OFF-state current



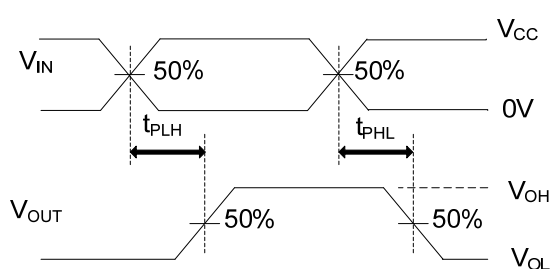
Test circuit for measuring ON-state current



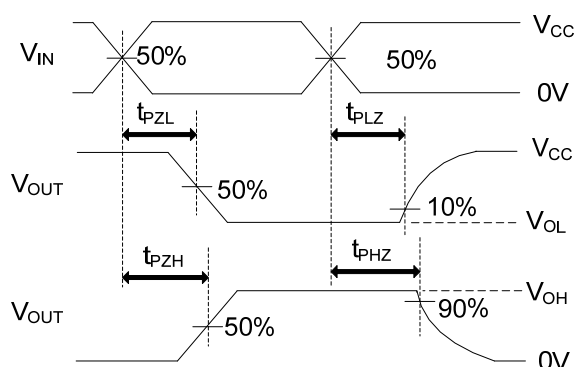
■ TEST CIRCUIT AND WAVEFORMS(Cont.)



	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. $PRR \leq 1\text{MHz}$, $Z_o = 50\Omega$, $t_R \leq 6\text{ns}$, $t_F \leq 6\text{ns}$.

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