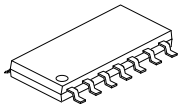
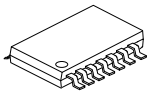
U74HCT4066

CMOS IC

QUAD BILATERAL SWITCH



SOP-14



TSSOP-14

■ 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

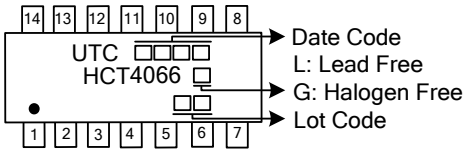
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT4066L-S14-R	U74HCT4066G-S14-R	SOP-14	Tape Reel
U74HCT4066L-P14-R	U74HCT4066G-P14-R	TSSOP-14	Tape Reel

U74HCT4066G-S14-R

(1)Packing Type
(2)Package Type
(3)Green Package

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

■ MARKING



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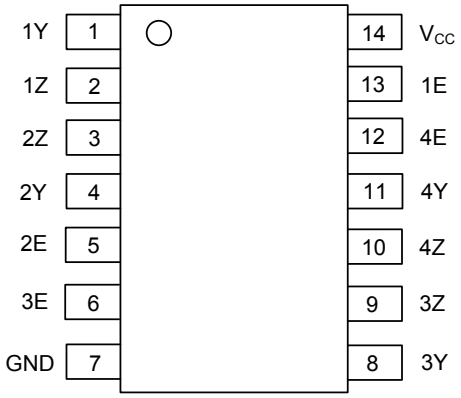
■ PIN CONFIGURATION

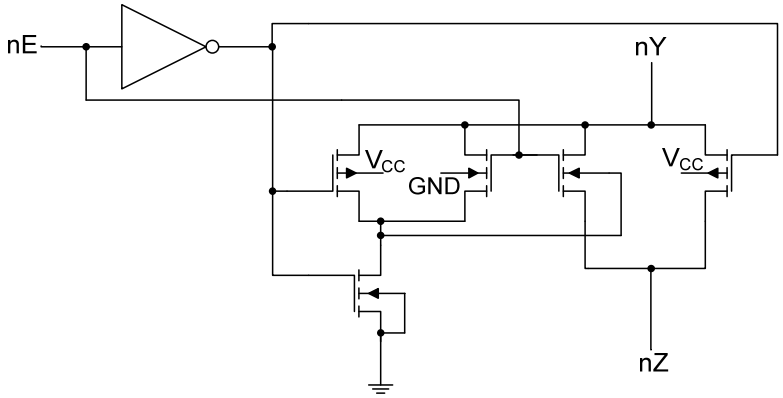


■ FUNCTION TABLE

INPUTS(nE)	SWITCH
H	ON
L	OFF

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

■ LOGIC DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C,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 above70°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 (T_A=25°C,unless otherwise specified)

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 Rise and Fall Times	t_R, t_F	V_{CC} =4.5V		6	500	ns
Operating Temperature	T_A		-40		+85	°C

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

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},				±1.0	μA
	ON-state		V_S=V_{CC}-GND				±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		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		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		$\triangle R_{ON}$	V_{IN}= V_{IH} or V_{IL} ,V_{IS}= V_{CC} to GND, V_{CC} =4.5V			5		Ω

■ DYNAMIC CHARACTERISTICS (T_A=25℃, 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=∞		3	15	ns
Turn-ON Time from nE to V_{OS}	t_{PZH}/t_{PZL}	V_{CC}=4.5V, R_L=1KΩ		12	30	ns
Turn-OFF Time from nE to V_{OS}	t_{PHZ}/t_{PLZ}	V_{CC}=4.5V, R_L=1KΩ		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=600Ω, f=1MHz		-50		dB
Crosstalk Between any two Switches (Note 1)	$\alpha_{CT(S)}$	V_{CC}=4.5V, R_L=600Ω, 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=600Ω, f=1MHz		110		mV

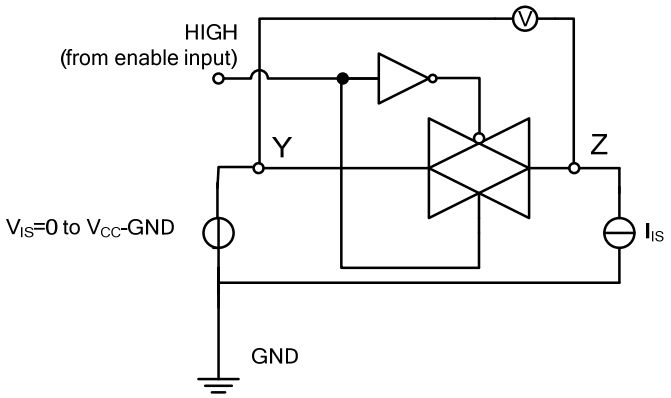
■ DYNAMIC CHARACTERISTICS(Cont.)

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

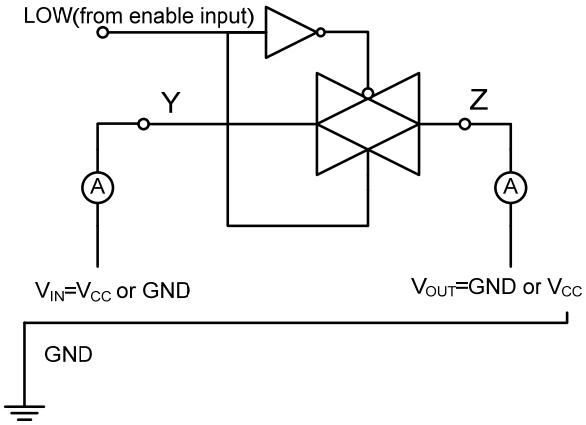
Notes: 1. Adjust input voltage V_{IS} is 0dbm level (0dbm=1mW into 600Ω)
2. Adjust input voltage V_{IS} is 0dbm level at V_{OS} for 1MHz (0dbm=1mW into 50Ω)

■ TEST CIRCUIT AND WAVEFORMS

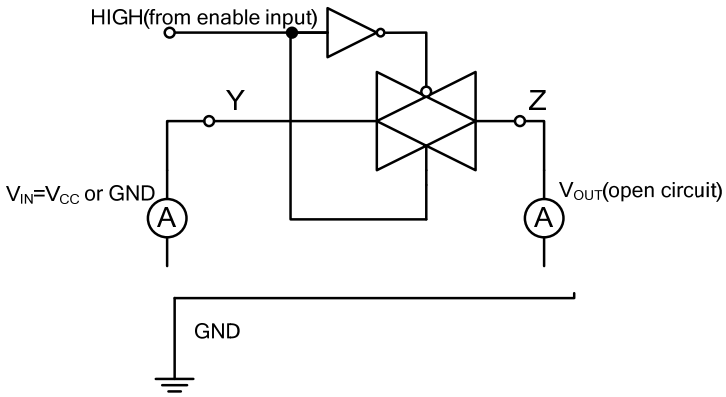
Test circuit for measuring ON-resistance (Ron)



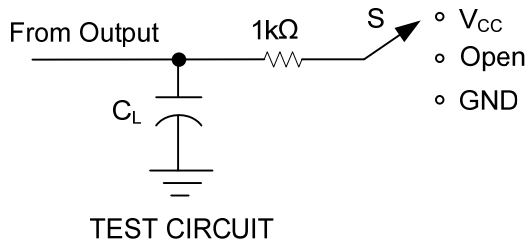
Test circuit for measuring OFF-state current



Test circuit for measuring ON-state current

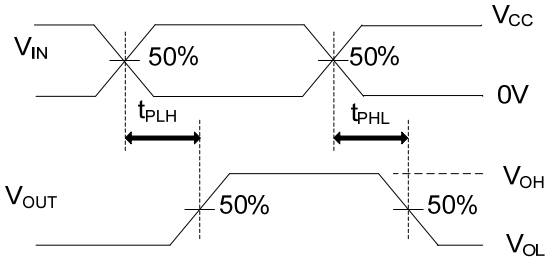


■ TEST CIRCUIT AND WAVEFORMS(Cont.)

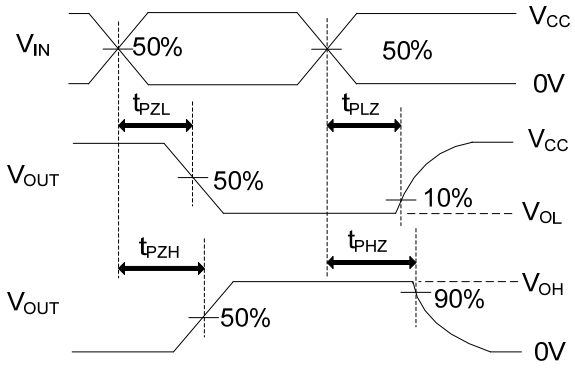


TEST CIRCUIT

	S	VIN
t_{PLH}/t_{PHL}	OPEN	
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.
Note: 2.PRR ≤1MHz, Zo = 50Ω, t_R ≤6ns, t_F ≤6ns.

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