



U74HCT4066

CMOS IC

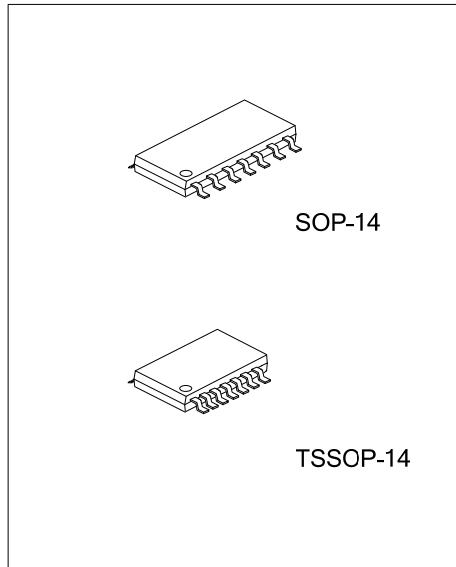
QUAD BILATERAL SWITCH

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

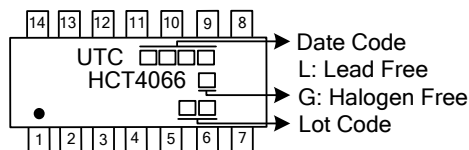


ORDERING INFORMATION

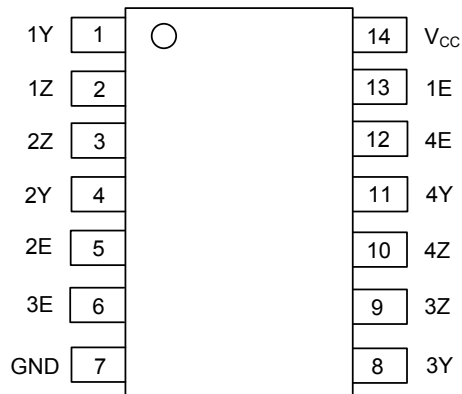
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT4066L-P14-R	U74HCT4066G-P14-R	SOP-14	Tape Reel
U74HCT4066L-S14-R	U74HCT4066G-S14-R	TSSOP-14	Tape Reel

U74HCT4066G-S14-R	(1) Packing Type	(1) R: Tape Reel
	(2) Package Type	(2) S14: SOP-14, P14: TSSOP-14
	(3) Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



■ PIN CONFIGURATION

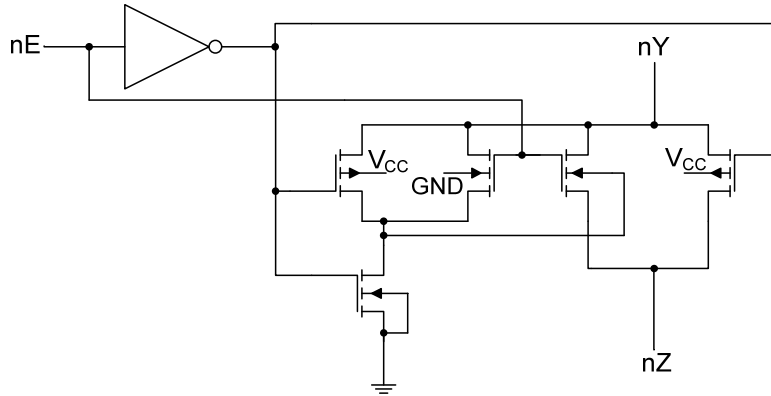


■ FUNCTION TABLE

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 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 (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 Transition Rise or Fall Rate	t _R , t _F	V _{CC} =2V		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	I _S	V _{CC} =5.5V, V _{IN} =V _{IH} or V _{IL} , V _S =V _{CC} -GND			±1.0	μA
OFF-state						±1.0
ON-state					±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	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, V _{CC} =4.5V, I _S =1mA	35	95	Ω
Maximum variation of ON-resistance between any two channels	Δ 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°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 =∞		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)	α _{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.)

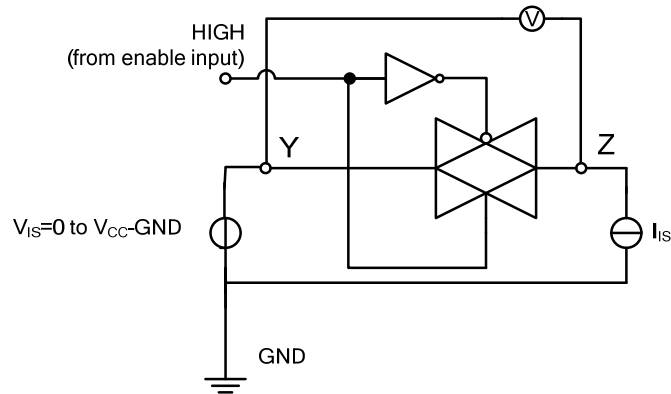
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Minimum Frequency Response(-3dB) (Note 2)	f_{MAX}	$V_{CC}=4.5V, R_L=50\Omega, C_L=10pF$		180		MHz
maximum switch capacitance	C_S			8		pF

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

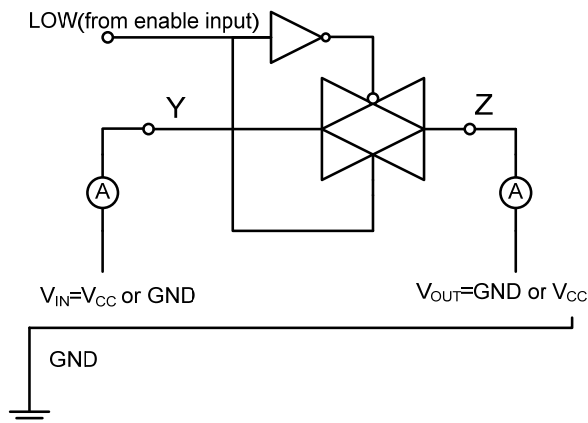
2. Adjust input voltage V_{IS} is 0dbm level at V_{OS} for 1MHz (0dbm=1mW into 50 Ω)

■ TEST CIRCUIT AND WAVEFORMS

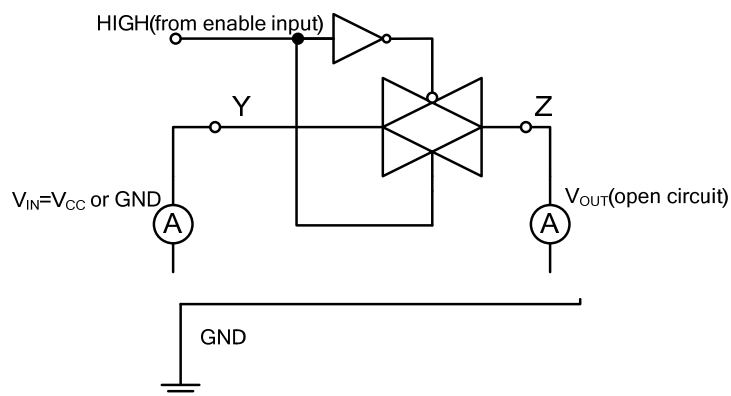
Test circuit for measuring ON-resistance (Ron)



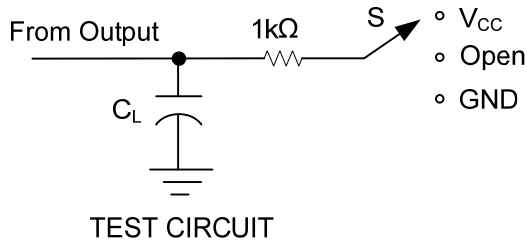
Test circuit for measuring OFF-state current



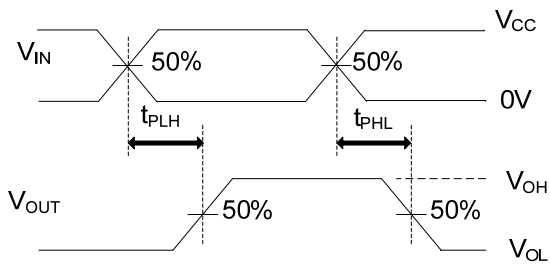
Test circuit for measuring ON-state current



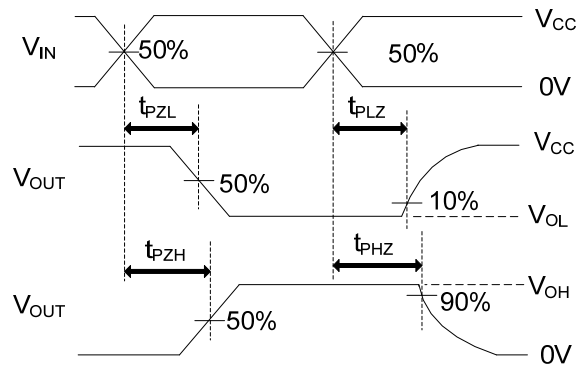
■ TEST CIRCUIT AND WAVEFORMS(Cont.)



	S	V _{IN}
t _{PLH} /t _{PHL}	OPEN	
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, Z_o = 50Ω, t_R ≤ 6ns, t_F ≤ 6ns.

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