



## U74HCT1G66

CMOS IC

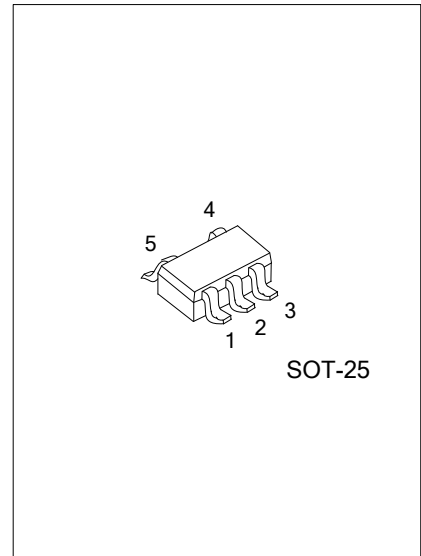
### BILATERAL SWITCH

#### DESCRIPTION

The **U74HCT1G66** is a high-speed Si-gate CMOS device that provides an analog switch. The switch has two input/output pins (Y and Z) and an active high enable input pin (E). When pin E is low, the analog switch is turned off.

#### FEATURES

- \* Operation voltage range: 2V~9V
- \* Very low ON-resistance
- \* Low power dissipation
- \* Very small 5 pins package

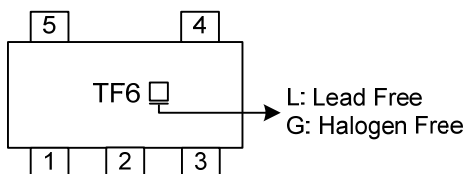


#### ORDERING INFORMATION

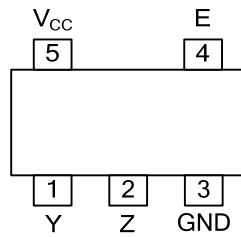
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT1G66L-AF5-R	U74HCT1G66G-AF5-R	SOT-25	Tape Reel

<p>U74HCT1G66G-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



■ PIN CONFIGURATION

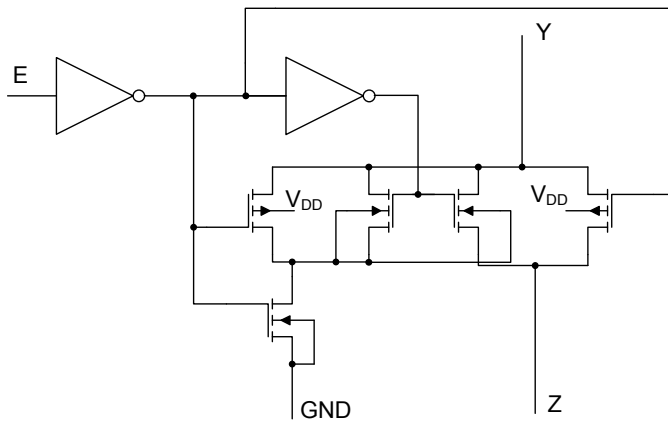


■ FUNCTION TABLE

INPUT(EN)	OUTPUT(Y/Z)
H	ON
L	OFF

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

■ LOGIC DIAGRAM



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### ■ ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	-0.5~11	V
$V_{CC}$ or GND Current	$I_{CC}$	±50	mA
Input Clamp Current	$I_{IK}$	±20	mA
Switch Diode Current	$I_{SK}$	±20	mA
Switch Current	$I_S$	±25	mA
Power Dissipation	$P_D$	200	mW
Derate above $T_A > 55^\circ\text{C}$		2.5	mW/K
Operating Temperature	$T_{OPR}$	-40 ~ +125	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-65 ~ +150	$^\circ\text{C}$

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	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	$t_R, t_F$	$V_{CC}=2.0\text{V}$				ns
		$V_{CC}=4.5\text{V}$		6	500	ns
		$V_{CC}=6.0\text{V}$				ns
		$V_{CC}=10.0\text{V}$				ns

### ■ STATIC CHARACTERISTICS ( $T_A=25^\circ\text{C}$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
High-Level Input Voltage	$V_{IH}$	$V_{CC}=4.5\text{V}\sim 5.5\text{V}$	2.0			V	
Low-Level Input Voltage	$V_{IL}$	$V_{CC}=4.5\text{V}\sim 5.5\text{V}$			0.8	V	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=5.5\text{V}, V_{IN}=V_{CC}$ or GND		0.1	1.0	$\mu\text{A}$	
Quiescent Supply Current	$I_Q$	$V_{CC}=4.5\text{V}\sim 5.5\text{V}, V_{IN}=V_{CC}$ or GND, $V_{IS}=\text{GND}$ or $V_{CC}, V_{OS}=V_{CC}$ or GND		1	10	$\mu\text{A}$	
Additional supply current per input	$\Delta I_Q$	$V_{CC}=4.5$ to $5.5\text{V}, V_{IN}=V_{CC}-2.1\text{V}$			500	$\mu\text{A}$	
Analog Switch Current	OFF-state	$I_S$		0.1	1	$\mu\text{A}$	
	ON-state			0.1	1		
ON-Resistance	PEAK	$R_{ON(PEAK)}$	$V_{CC}=4.5\text{V}, I_S=1\text{mA}, V_{IS}=V_{CC}$ to GND; $V_{IN}=V_{IH}$ or $V_{IL}$ ;		42	118	$\Omega$
	RAIL	$R_{ON(RAIL)}$	$V_{CC}=4.5\text{V}, I_S=1\text{mA}, V_{IS}=\text{GND}; V_{IN}=V_{IH}$ or $V_{IL}$ ;		29	95	
			$V_{CC}=4.5\text{V}, I_S=1\text{mA}, V_{IS}=V_{CC}; V_{IN}=V_{IH}$ or $V_{IL}$ ;		35	106	

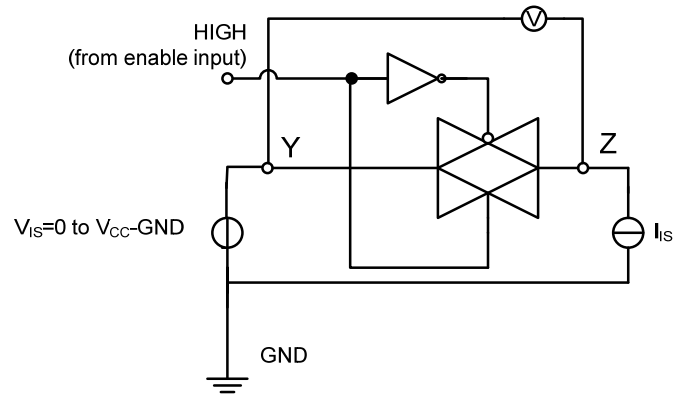
### ■ DYNAMIC CHARACTERISTICS ( $T_A=25^\circ\text{C}, C_L=50\text{pF}$ , Input: $t_R=t_F=6\text{ns}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note)	MAX	UNIT
Propagation Delay $V_{IS}$ to $V_{OS}$	$t_{PHL}/t_{PLH}$	$V_{CC}=4.5\text{V}, R_L=\infty$		3	15	ns
Turn-ON Time E to $V_{OS}$	$t_{PZH}/t_{PZL}$	$V_{CC}=4.5\text{V}, R_L=1\text{K}\Omega$		15	30	ns
Turn-OFF Time E to $V_{OS}$	$t_{PHZ}/t_{PLZ}$	$V_{CC}=4.5\text{V}, R_L=1\text{K}\Omega$		13	44	ns

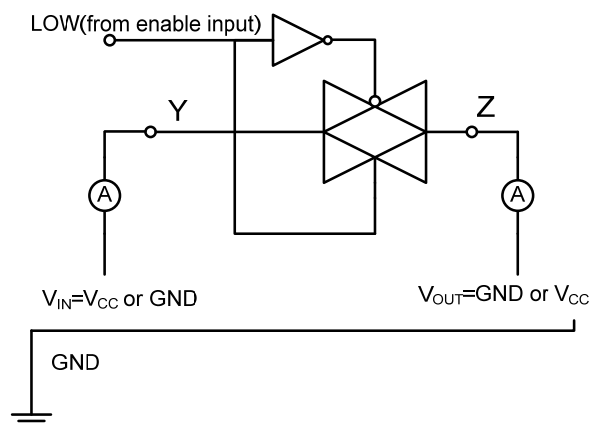
Note : All typical values are measured at  $T_A=25^\circ\text{C}$

## ■ TEST CIRCUIT AND WAVEFORMS

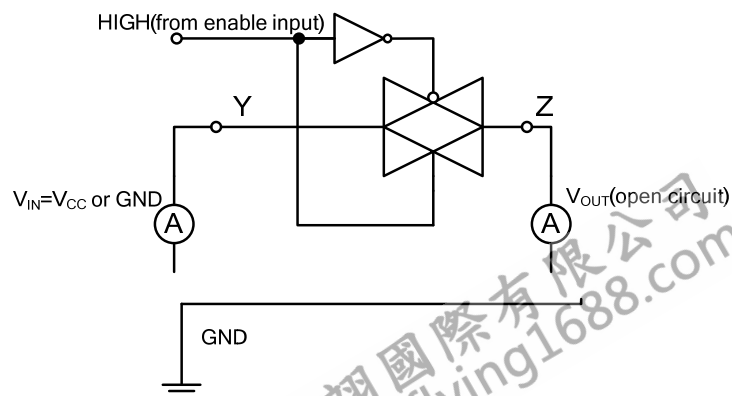
### Test circuit for measuring ON-resistance (Ron)



### Test circuit for measuring OFF-state current

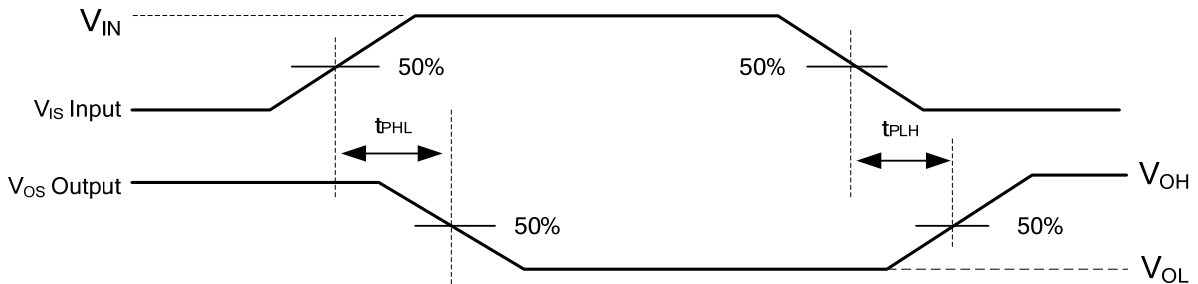


### Test circuit for measuring ON-state current

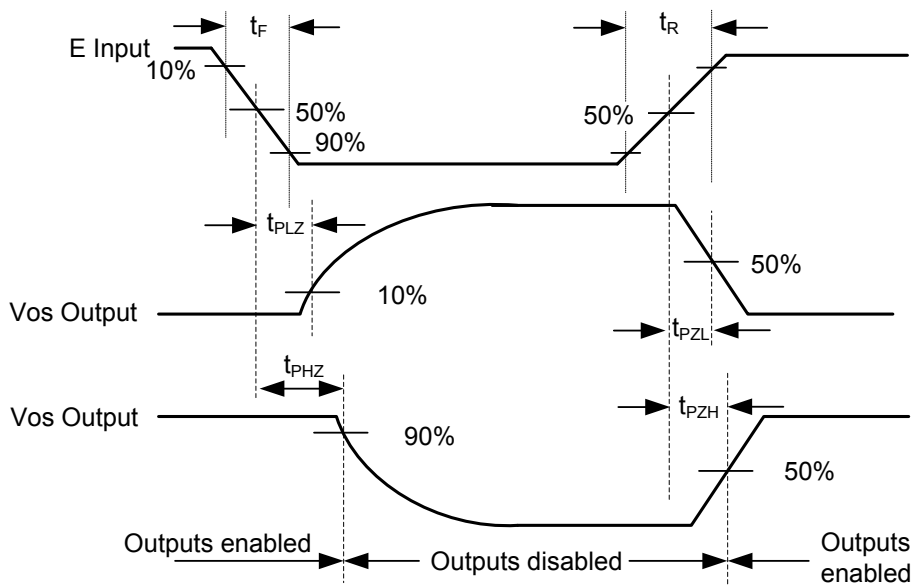


■ TEST CIRCUIT AND WAVEFORMS(Cont.)

Waveforms showing the Input ( $V_{IS}$ ) to Output ( $V_{OS}$ ) propagation delays



Waveforms showing the turn-on and turn-off times.



Note:  $V_{IN} = \text{GND to } V_{CC}$

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