



U74HCT1G66

CMOS IC

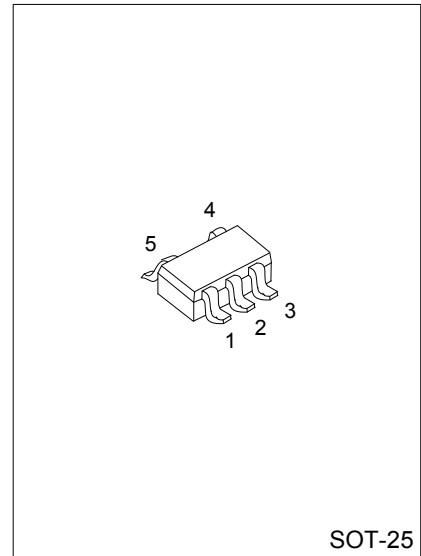
BILATERAL SWITCH

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

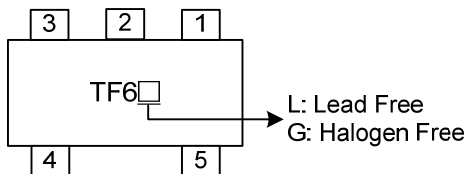


ORDERING INFORMATION

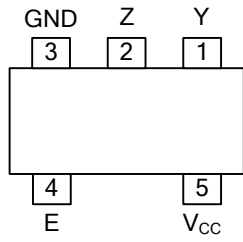
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT1G66L-AF5-R	U74HCT1G66G-AF5-R	SOT-25	Tape Reel

<p>U74HCT1G66L-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25 (3) G: Halogen Free, L: Lead Free</p>
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MARKING



■ PIN CONFIGURATION

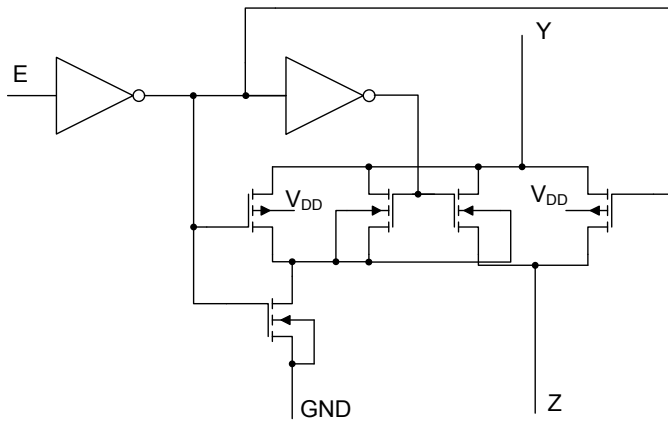


■ FUNCTION TABLE

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

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

■ LOGIC DIAGRAM



■ 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	
		$V_{CC}=6.0\text{V}$				
		$V_{CC}=10.0\text{V}$				

■ 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	μA
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	μA
Additional supply current per input	ΔI_Q	$V_{CC}=4.5$ to $5.5\text{V}, V_{IN}=V_{CC}-2.1\text{V}$			500	μA
Analog Switch Current	OFF-state	I_S	$V_{CC}=5.5, V_{IN}=V_{IH}$ or $V_{IL}; V_S =V_{CC}-\text{GND}$	0.1	1	μA
	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	Ω
	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	

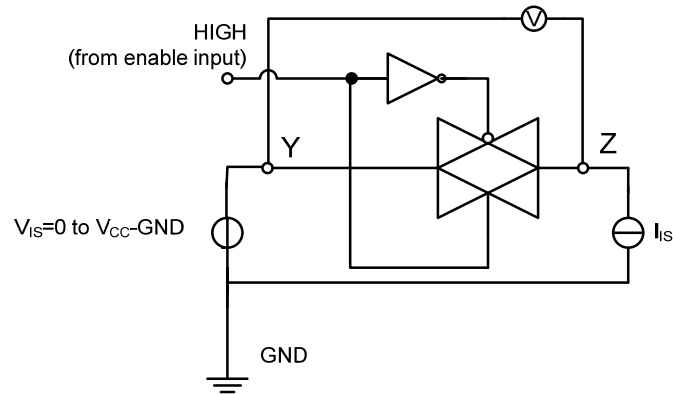
■ DYNAMIC CHARACTERISTICS ($T_a=25^\circ\text{C}, C_L=50\text{pF}, \text{Input: } t_R=t_F=6\text{ns}$, unless otherwise specified)

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

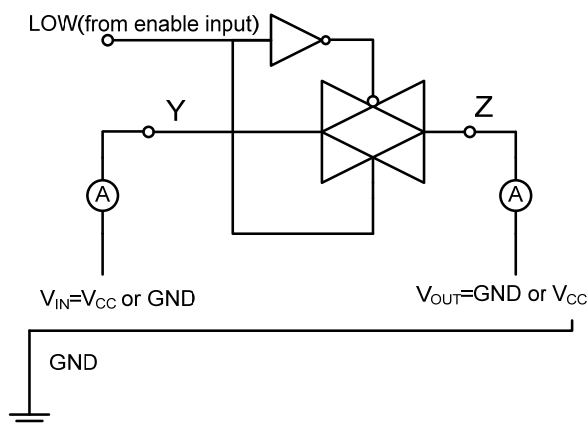
Note : All typical values are measured at $T_a=25^\circ\text{C}$

■ TEST CIRCUIT AND WAVEFORMS

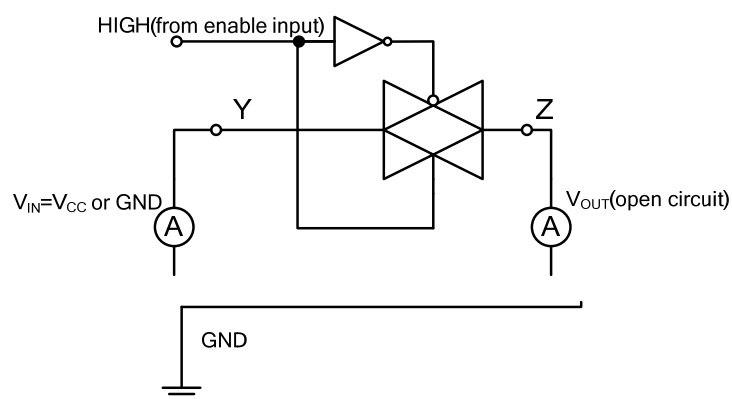
Test circuit for measuring ON-resistance (Ron)



Test circuit for measuring OFF-state current

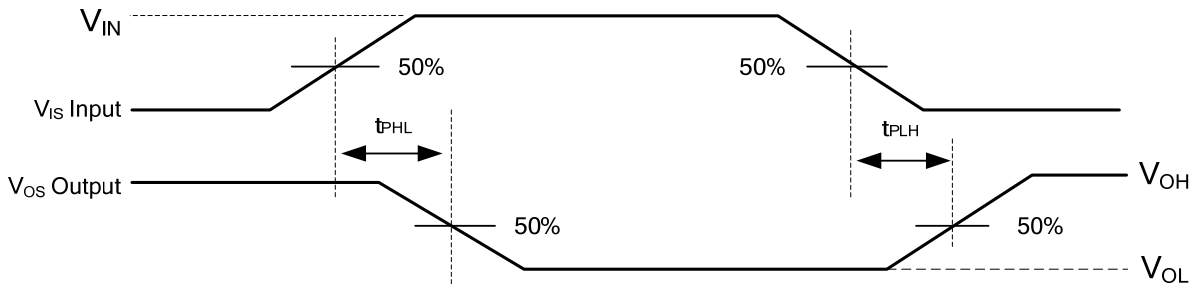


Test circuit for measuring ON-state current

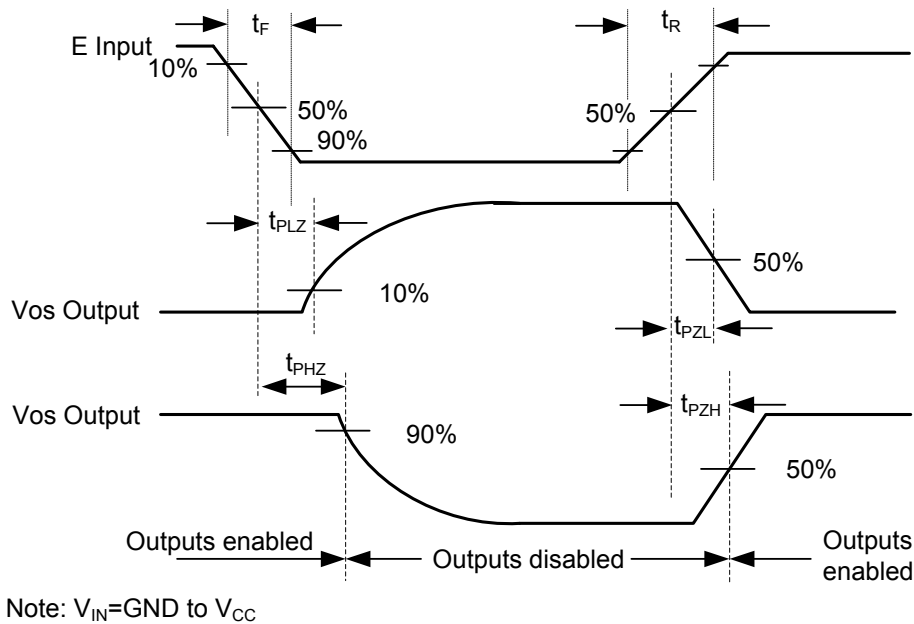


■ TEST CIRCUIT AND WAVEFORMS(Cont.)

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



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



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