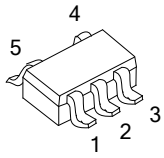
U74HCT1G66

CMOS IC

BILATERAL SWITCH



SOT-25

■ 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

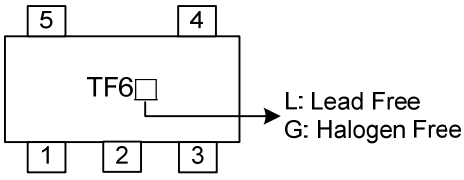
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT1G66L-AF5-R	U74HCT1G66G-AF5-R	SOT-25	Tape Reel

U74HCT1G66L-AF5-R

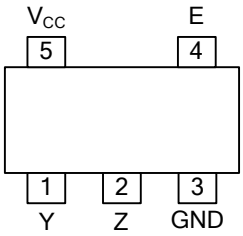
(1)Packing Type
(2)Package Type
(3)Lead Free

(1) R: Tape Reel
(2) AF5: SOT-25
(3) G: Halogen Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION

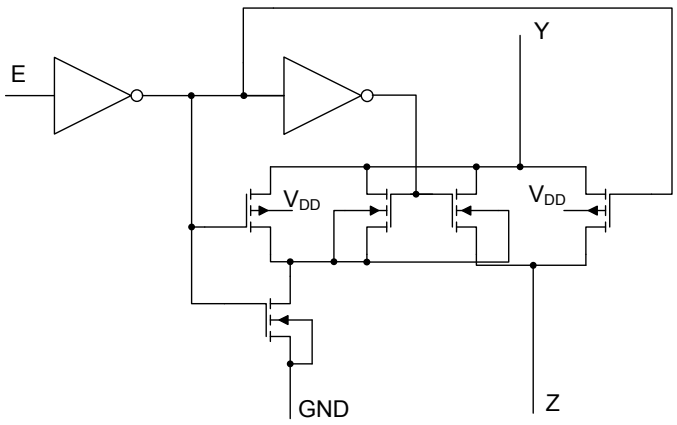


■ FUNCTION TABLE

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°C		2.5	mW/K
Operating Temperature	T_{OPR}	-40 ~ + 125	℃
Storage Temperature	T_{STG}	-65 ~ +150	℃

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}=2.0V				ns
		V_{CC}=4.5V		6	500	
		V_{CC}=6.0V				
		V_{CC}=10.0V				

■ STATIC CHARACTERISTICS (T_A=25°C)

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

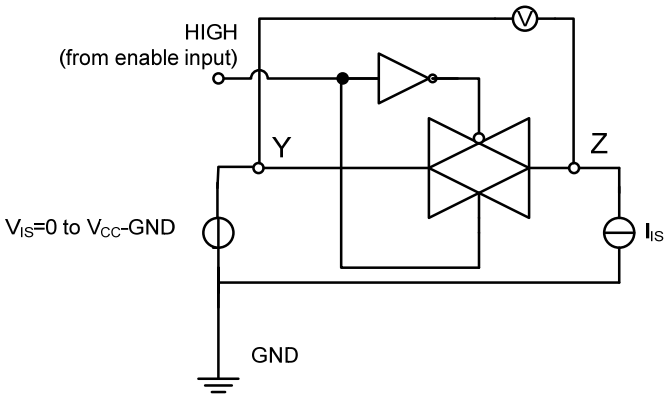
■ DYNAMIC CHARACTERISTICS (T_A=25°C, C_L=50pF, Input: t_R=t_F=6ns, unless otherwise specified)

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

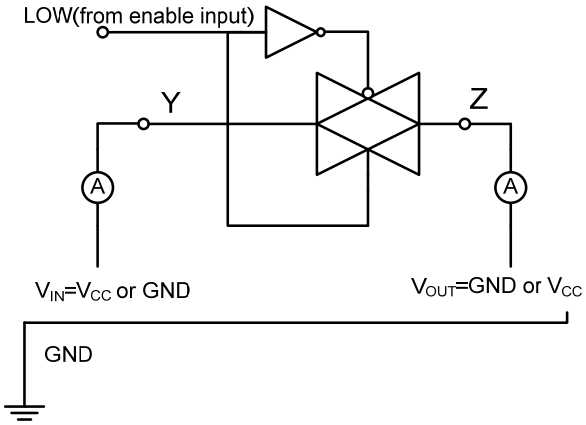
Note : All typical values are measured at T_A=25°C

■ TEST CIRCUIT AND WAVEFORMS

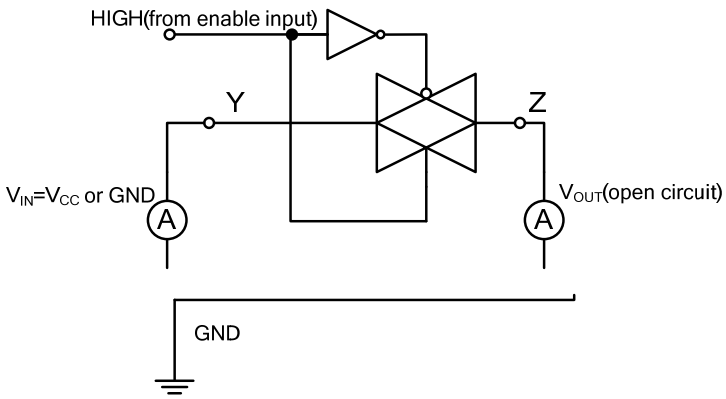
Test circuit for measuring ON-resistance (Ron)



Test circuit for measuring OFF-state current

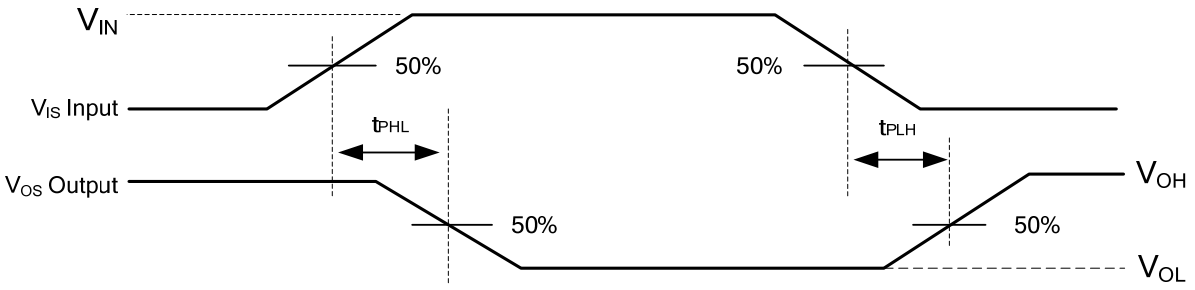


Test circuit for measuring ON-state current

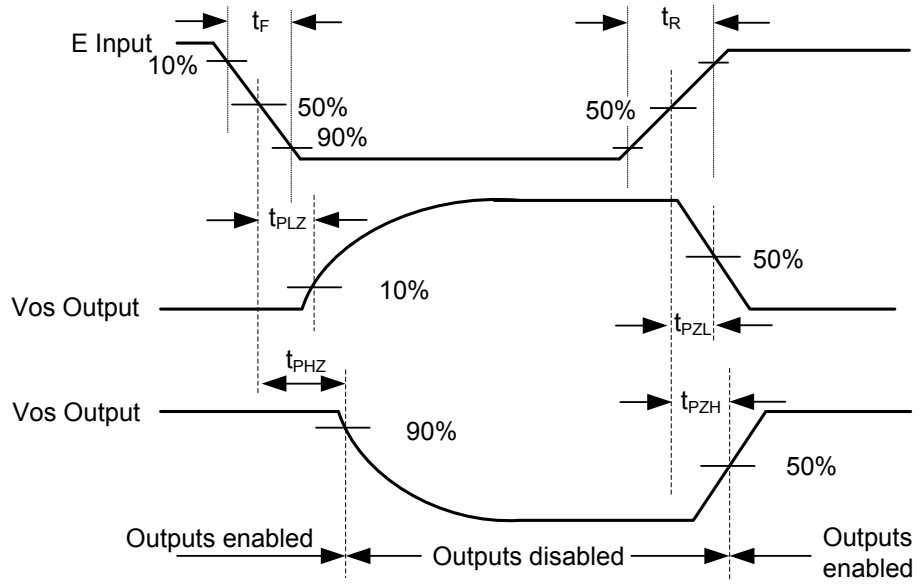


■ TEST CIRCUIT AND WAVEFORMS(Cont.)

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



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



Note: V_{IN}=GND to V_{CC}