



## U74HCT367

Preliminary

CMOS IC

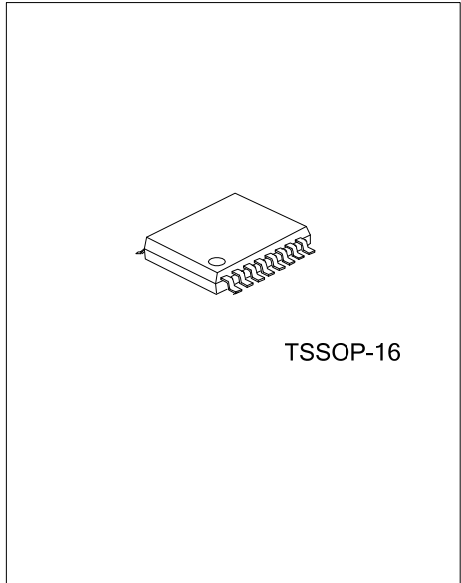
### HEX BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS

#### DESCRIPTION

The **U74HCT367** is a hex buffer with 3-state outputs. The device is configured into two banks, one with four drivers and one with two drivers, each controlled by its own output enable pin.

#### FEATURES

- \* Operation Voltage Range: 4.5 ~ 5.5V
- \*  $\pm 6\text{mA}$  output drive at 5V
- \* Low input current of  $1\mu\text{A}$  max
- \* Low power consumption,  $80\mu\text{A}$  max  $I_{CC}$

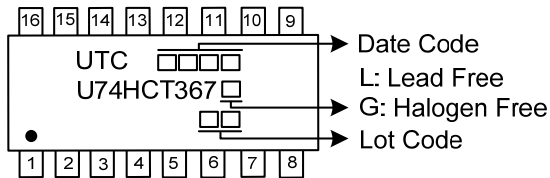


#### ORDERING INFORMATION

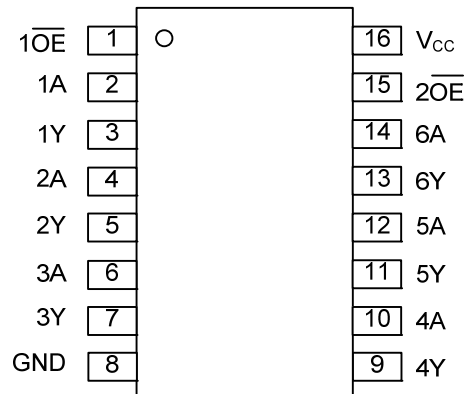
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT367L-P16-R	U74HCT367G-P16-R	TSSOP-16	Tape Reel

<p>U74HCT367G-P16-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) P16: TSSOP-16</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



### ■ PIN CONFIGURATION

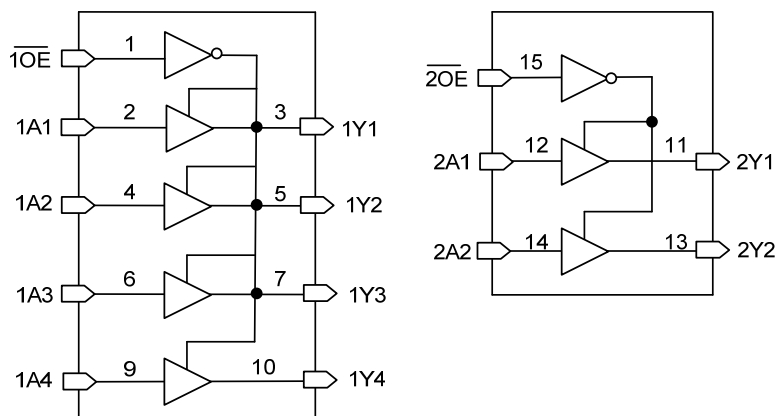


### ■ FUNCTION TABLE

INPUT( $\overline{OE}$ )	INPUT(A)	OUTPUT(Y)
L	L	L
L	H	H
H	X	Z

Note: H: HIGH voltage level; L: LOW voltage level; X=don't care; Z=high-impedance OFF-state.

### ■ LOGIC DIAGRAM (Positive Logic)



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
DC Supply Voltage		$V_{CC}$	-0.5 ~ 7	V
Input Clamp Current	$V_{IN} < -0.5V$ or $V_{IN} > V_{CC}+0.5V$	$I_{IK}$	$\pm 20$	mA
Output Clamp Current	$V_{OUT} < -0.5V$ or $V_{OUT} > V_{CC}+0.5V$	$I_{OK}$	$\pm 20$	mA
Continuous Output Current	$-0.5V < V_{OUT} < V_{CC}+0.5V$	$I_{OUT}$	$\pm 35$	mA
$V_{CC}$ or Ground Current		$I_{CC} / I_{GND}$	$\pm 70$	mA
Power Dissipation		$P_D$	500	mW
Storage Temperature		$T_{STG}$	-65 ~ +150	°C

Notes: 1. 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.  
 2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

### ■ RECOMMENDED OPERATING CONDITIONS

PARAMETER		SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage		$V_{CC}$	4.5	5	5.5	V
Input Voltage		$V_{IN}$	0		$V_{CC}$	V
Output Voltage		$V_{OUT}$	0		$V_{CC}$	V
Input Transition Rise or Fall Time	$V_{CC}=4.5V$	$t_R / t_F$			500	ns
Operating Temperature		$T_A$	-40		+125	°C

### ■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25^\circ C$			$T_A=-40^\circ C \sim +125^\circ C$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	$V_{IH}$	$V_{CC}=4.5V \sim 5.5V$	2.0	1.6		2.0			V
Low-Level Output Voltage	$V_{IL}$	$V_{CC}=4.5V \sim 5.5V$		1.2	0.8			0.8	V
High-Level Output Voltage	$V_{OH}$	$V_{CC}=4.5V, I_{OH}=-20\mu A$	4.4	4.5		4.4			V
		$V_{CC}=4.5V, I_{OH}=-6.0mA$	3.98	4.32		3.7			V
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=4.5V, I_{OH}=20\mu A$		0	0.1			0.1	V
		$V_{CC}=4.5V, I_{OH}=6.0mA$		0.16	0.26			0.4	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND			$\pm 0.1$			$\pm 1$	$\mu A$
Output OFF -state current	$I_{OZ}$	$V_{CC}=5.5V, V_{OUT}=V_{CC}$ or GND			$\pm 0.5$			$\pm 10$	$\mu A$
Quiescent Supply Current	$I_{CC}$	$V_{CC}=5.5V, V_{OUT}=V_{CC}$ or GND, $I_{OUT}=0$			8			160	$\mu A$
Additional Quiescent Supply Current Per Input Pin	$\overline{10E}$ , nA Inputs 20E Inp uts	$\Delta I_{CC}$	Per Input Pin, $V_{IN}=V_{CC}-2.1V$					490	$\mu A$
			Other Inputs at $V_{CC}$ or GND, $V_{CC}=4.5V$ or $5.5V, I_{OUT}=0$					441	$\mu A$

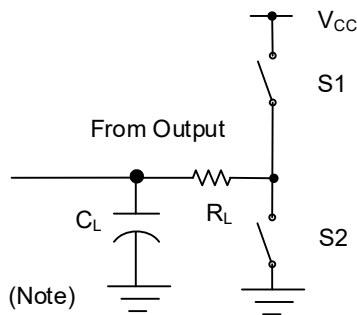
■ DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	T <sub>A</sub> =25°C			T <sub>A</sub> =-40°C~+125°C			UNIT	
			MIN	TYP	MAX	MIN	TYP	MAX		
Propagation Delay From Input (A) To Output (Y)	t <sub>PD</sub>	C <sub>L</sub> =15pF	V <sub>CC</sub> =4.5V		8	25			38	ns
			V <sub>CC</sub> =5V		5					ns
Enable Time From Input ( $\overline{OE}$ ) To Output (Y)	t <sub>en</sub>	V <sub>CC</sub> =4.5V		9	35			53	ns	
Disable Time From Input ( $\overline{OE}$ ) To Output (Y)	t <sub>dis</sub>	V <sub>CC</sub> =4.5V		11	35			53	ns	
Transition Time To Output (Any)	t <sub>t</sub>	V <sub>IN</sub> = GND or V <sub>CC</sub> -1.5v		5	12			18	ns	

■ OPERATING CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C <sub>IN</sub>			3.5		pF
Power Dissipation Capacitance	C <sub>PD</sub>	V <sub>I</sub> = GND to V <sub>CC</sub> - 1.5 V		32		pF

■ TEST CIRCUIT AND WAVEFORMS

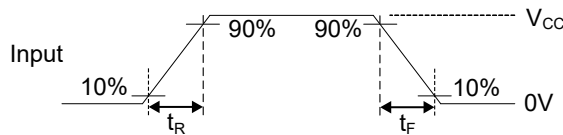


TEST	S1	S2
$t_{PLH}/t_{PHL}$	Open	Open
$t_{PHZ}/t_{PZH}$	Open	Close
$t_{PLZ}/t_{PZL}$	Close	Open

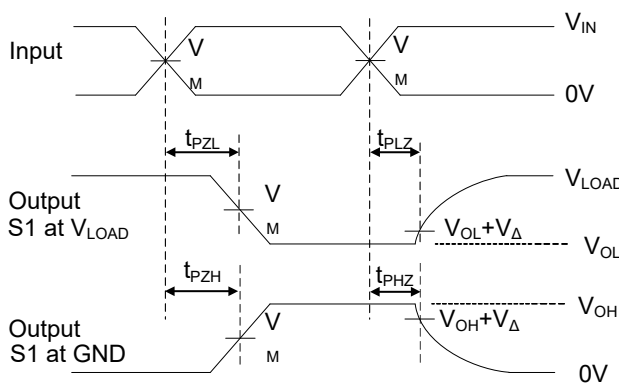
$t_{PD}$  is the same as  $t_{PHL}$  and  $t_{PLH}$ .  
 $t_{en}$  is the same as  $t_{PZL}$  and  $t_{PZH}$ .  
 $t_{dis}$  is the same as  $t_{PLZ}$  and  $t_{PZL}$ .

Note:  $C_L$  includes probe and jig capacitance.  $C_L=50pF$ ,  $R_L=1K\Omega$

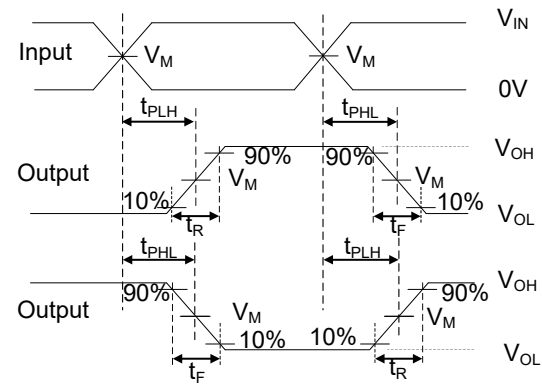
Input	Output			Input		Load		S1 Position		
$V_M$	$V_M$	$V_X$	$V_Y$	$V_i$	$t_r, t_f$	$C_L$	$R_L$	$t_{PLH}, t_{PHL}$	$t_{PZH}, t_{PHZ}$	$t_{PZL}, t_{PLZ}$
1.3V	1.3V	$0.1 \times V_{CC}$	$0.9 \times V_{CC}$	3V	6ns	15pF, 50pF	1KΩ	OPEN	GND	$V_{CC}$



Voltage Waveforms Input Rise and Fall Times



Voltage Waveforms Enable and Disable Times



Voltage Waveforms Propagation Delay and Output Transition Times

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