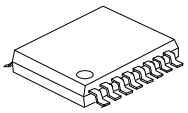
U74HCT367 **Preliminary** ***CMOS IC***

HEX BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS



TSSOP-16

■ 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
*±6mA output drive at 5V
* Low input current of 1μA max
* Low power consumption, 80μA max I_{CC}

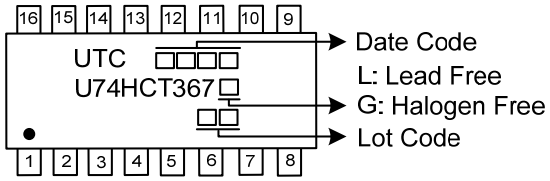
■ ORDERING INFORMATION

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

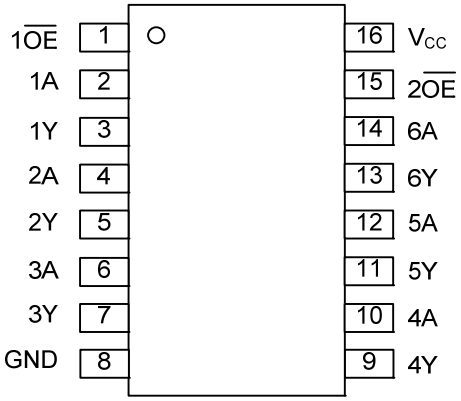
U74HCT367G-P16-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) P16: TSSOP-16
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION

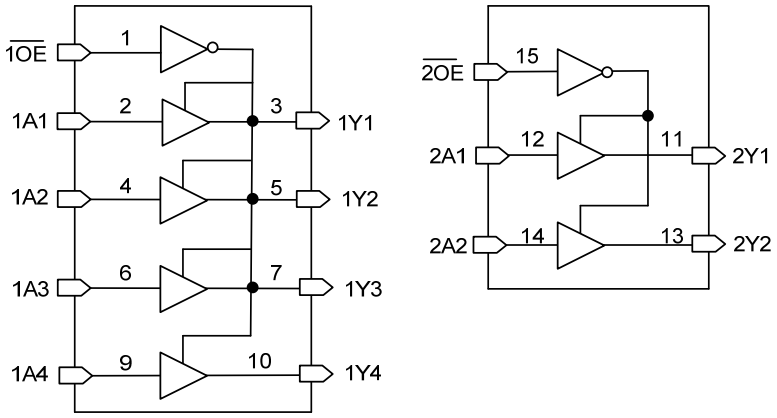


■ FUNCTION TABLE

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}	±20	mA
Output Clamp Current	V_{OUT} < -0.5V or V_{OUT} > V_{CC}+0.5V	I_{OK}	±20	mA
Continuous Output Current	-0.5V < V_{OUT} < V_{CC}+0.5V	I_{OUT}	±35	mA
V_{CC} or Ground Current		I_{CC} / I_{GND}	±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°C			T_A=-40°C~+125°C			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage		V_{IH}	V_{CC}=4.5V~5.5V	2.0	1.6		2.0			V
Low-Lever Output Voltage		V_{IL}	V_{CC}=4.5V~5.5V		1.2	0.8			0.8	V
High-Level Output Voltage		V_{OH}	V_{CC}=4.5V, I_{OH}=-20μA	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}=20μA		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			±0.1			±1	μA
Output OFF -state current		I_{OZ}	V_{CC}=5.5V, V_{OUT}=V_{CC} or GND			±0.5			±10	μA
Quiescent Supply Current		I_{CC}	V_{CC}=5.5V, V_{OUT}=V_{CC} or GND, I_{OUT}=0			8			160	μA
Additional Quiescent Supply Current Per Input Pin	$\overline{1OE}$, nA Inputs	ΔI_{CC}	Per Input Pin, V_{IN}=V_{CC}-2.1V Other Inputs at V_{CC} or GND, V_{CC}=4.5V or 5.5V, I_{OUT}=0		100	360			490	μA
	$\overline{2OE}$ Inputs				90	324			441	μA

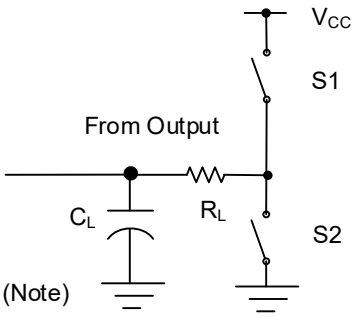
■ DYNAMIC CHARACTERISTICS

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

■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_{IN}			3.5		pF
Power Dissipation Capacitance	C_{PD}	V_I = GND to V_{CC} - 1.5 V		32		pF

■ TEST CIRCUIT AND WAVEFORMS

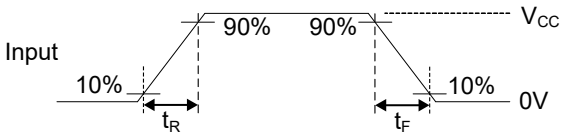


TEST	S1	S2
t_{PLH}/t_{PHL}	Open	Open
t_{PHZ}/t_{PZH}	Open	Close
t_{PLZ}/t_{PZL}	Close	Open

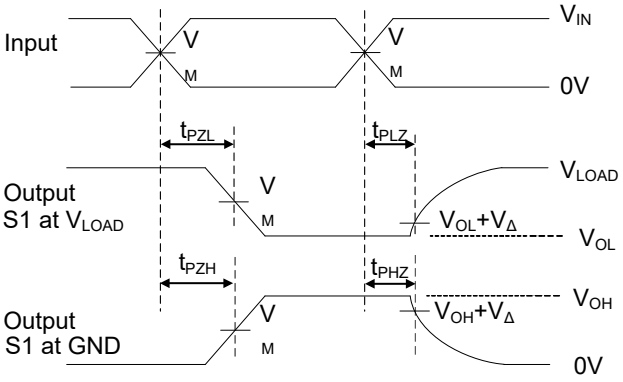
t_{PD} is the same as t_{PHL} and t_{PLH}.
t_{en} is the same as t_{PZL} and t_{PZH}.
t_{dis} is the same as t_{PLZ} and t_{PZL}.

Note: C_L includes probe and jig capacitance. C_L=50pF, R_L=1KΩ

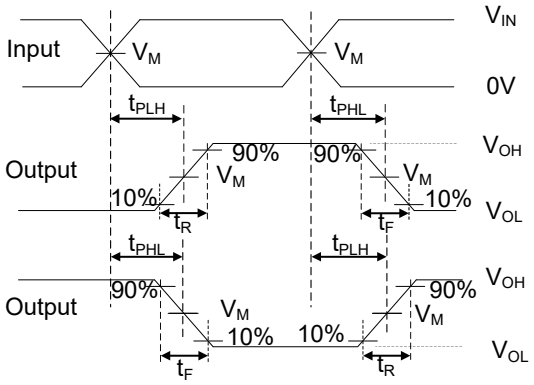
Input	Output			Input		Load		S1 Position		
V_M	V_M	V_X	V_Y	V_I	t_r, t_f	C_L	R_L	t_{PLH}, t_{PHL}	t_{PZH}, t_{PHZ}	t_{PZL}, t_{PLZ}
1.3V	1.3V	0.1×V_{CC}	0.9×V_{CC}	3V	6ns	15pF, 50pF	1KΩ	OPEN	GND	V_{CC}



Voltage Waveforms Input Rise and Fall Times



Voltage Waveforms Enable and Disable Times



Voltage Waveforms Propagation Delay and Output Transition Times