



U74AHCT1G125

CMOS IC

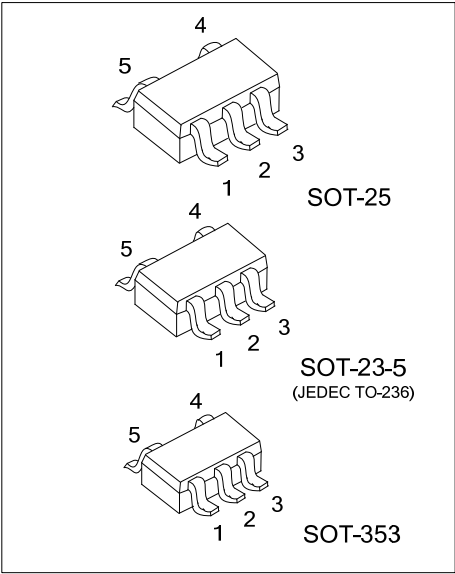
SINGLE BUS BUFFER GATE WITH 3-STATE OUTPUT

DESCRIPTION

The UTC **U74AHCT1G125** is a single bus buffer gate with 3-state output controlled by enable input (\overline{OE}). When \overline{OE} is HIGH, the output is disabled.

FEATURES

- * Operation voltage range: 4.5V ~5.5V
- * Low Power Current: $I_{CC}=1\mu A$ (Max.)
- * $\pm 8mA$ Output Drive at 5V
- * Inputs are TTL-Voltage Compatible

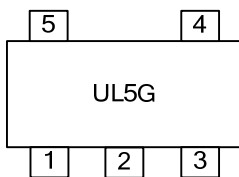


ORDERING INFORMATION

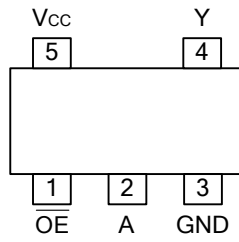
Ordering Number	Package	Packing
U74AHCT1G125G-AE5-R	SOT-23-5	Tape Reel
U74AHCT1G125G-AF5-R	SOT-25	Tape Reel
U74AHCT1G125G-AL5-R	SOT-353	Tape Reel

<p>U74AHCT1G125G-AE5-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free and Lead Free</p>
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MARKING



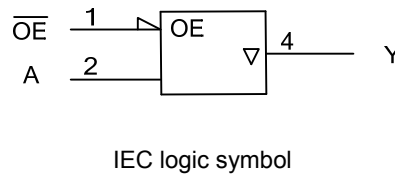
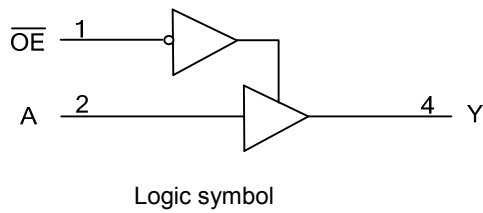
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)(Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ 7	V
Input Voltage	V_{IN}	-0.5 ~ 7	V
Output Voltage	V_{OUT}	-0.5 ~ $V_{CC}+0.5$	V
Input Clamp Current	I_{IK}	-20	mA
Output Clamp Current	I_{OK}	±20	mA
Output Current	I_{OUT}	±25	mA
V_{CC} or GND Current	I_{CC}	±50	mA
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 COMDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		4.5		5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	$V_{CC}=5.0+0.5V$			20	ns/V
Operating Temperature	T_A		-40		125	°C

■ STATIC CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Input Voltage	High-Level	V_{IH}	$V_{CC}=4.5V\sim 5.5V$		2	V	
	Low-Level	V_{IL}	$V_{CC}=4.5V\sim 5.5V$			0.8	
Output Voltage	High-Level	V_{OH}	$V_{CC}=4.5V$	$I_{OH}=-50\mu A$	4.4	4.5	V
				$I_{OH}=-8mA$	3.94		
	Low-Level	V_{OL}	$V_{CC}=4.5V$	$I_{OL}=50\mu A$		0.1	V
				$I_{OH}=8mA$		0.36	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0V\sim 5.5V, V_{IN}=V_{CC}$ or GND			±0.1	μA	
Output Current, OFF-state	I_{OZ}	$V_{CC}=5.5V, V_{OUT}=V_{CC}$ or GND			±0.25	μA	
Quiescent Supply Current	I_Q	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			1	μA	
Additional Quiescent Supply Current	ΔI_Q	$V_{CC}=5.5V$, One input at 3.4V, Other input at V_{CC} or GND			1.35	mA	
Input Capacitance	C_{IN}	$V_{CC}=5V, V_{IN}=V_{CC}$ or GND		4	10	pF	
Output Capacitance	C_{OUT}	$V_{CC}=5V, V_{OUT}=V_{CC}$ or GND		10		pF	

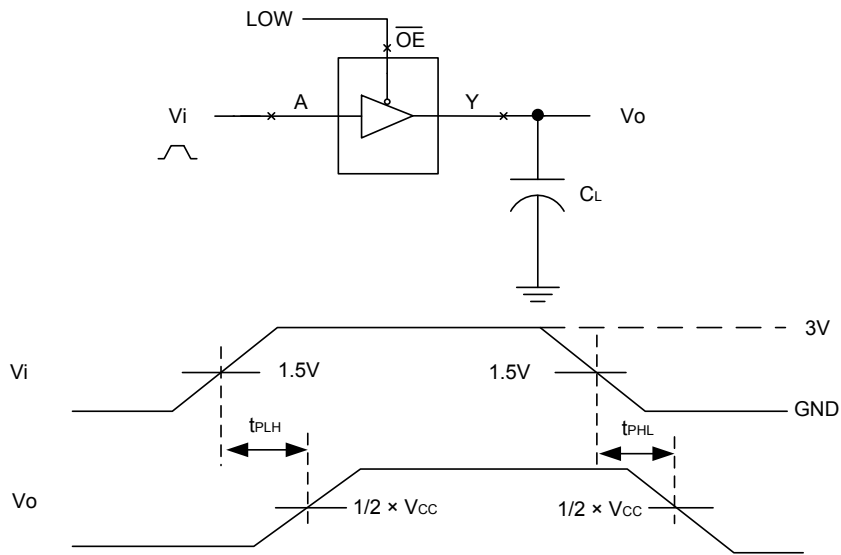
■ DYNAMIC CHARACTERISTICS ($T_A=25^\circ\text{C}$, Input: $t_R, t_F\leq 3ns$; $PRR\leq 1MHz$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation Delay From A to Y	t_{PLH}	$C_L=15pF, V_{CC}=5V\pm 0.5V$		3.8	5.5	ns	
	t_{PHL}			3.8	5.5		
Turn-On Time \overline{OE} to Y	t_{PZH}			3.6	5.1	ns	
	t_{PZL}			3.6	5.1		
Turn-Off Time \overline{OE} to Y	t_{PHZ}			4.6	6.8	ns	
	t_{PLZ}			4.6	6.8		
Propagation Delay From A to Y	t_{PLH}		$C_L=50pF, V_{CC}=5V\pm 0.5V$		5.3	7.5	ns
	t_{PHL}				5.3	7.5	
Turn-On Time \overline{OE} to Y	t_{PZH}			5.1	7.1	ns	
	t_{PZL}			5.1	7.1		
Turn-Off Time \overline{OE} to Y	t_{PHZ}			6.1	8.8	ns	
	t_{PLZ}			6.1	8.8		

■ OPERATING CHARACTERISTICS ($V_{CC}=5V$, $T_A=25^{\circ}C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	$V_{CC}=5V$, $f=1MHz$, No load		14		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: CL includes probe and jig capacitance.

Fig-1 Propagation delay from A to Y

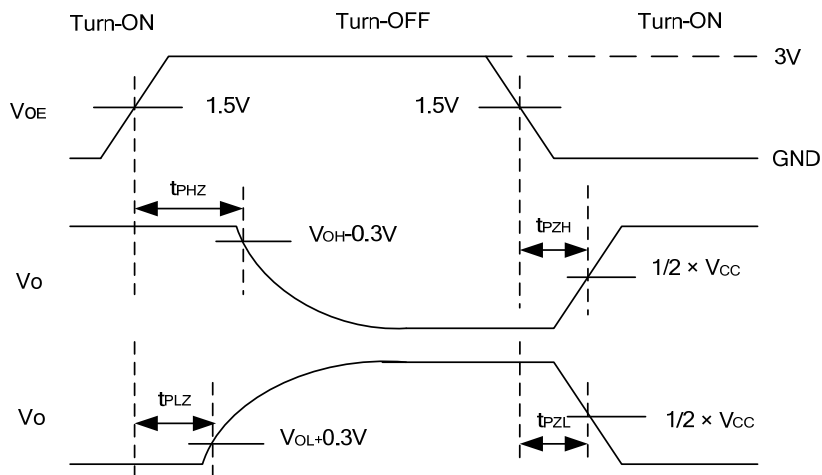
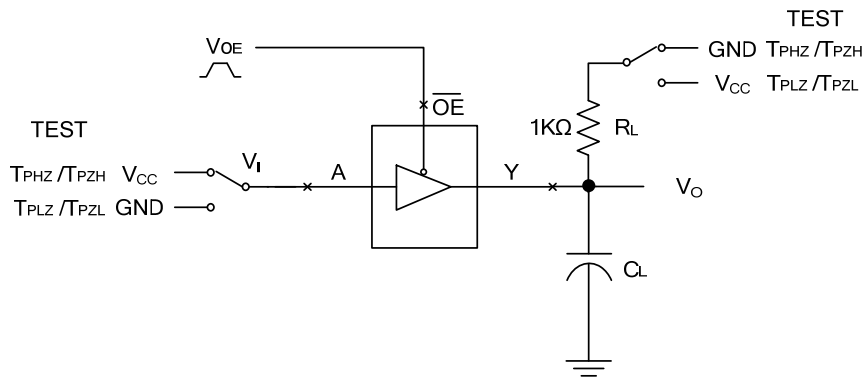


Fig-2 The turn-on and turn-off times.

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