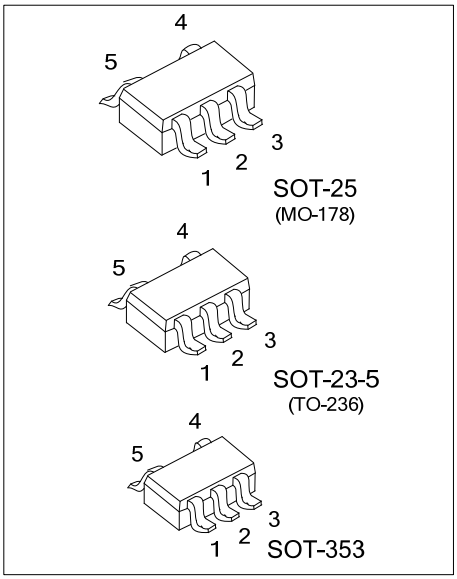
U74AHCT1G125

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: 4.5~5.5V
* Low Power Current: I_{CC}=1μA (Max)
* Inputs are TTL-Voltage Compatible

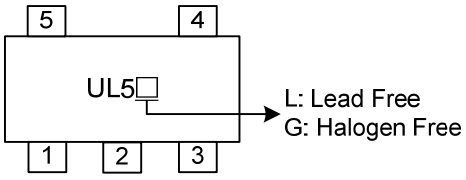
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT1G125L-AF5-R	U74AHCT1G125G-AF5-R	SOT-25	Tape Reel
U74AHCT1G125L-AE5-R	U74AHCT1G125G-AE5-R	SOT-23-5	Tape Reel
U74AHCT1G125L-AL5-R	U74AHCT1G125G-AL5-R	SOT-353	Tape Reel

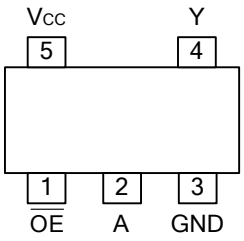
U74AHCT1G125L-AF5-R
(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) R: Tape Reel
(2) AF5: SOT-25, AE5: SOT-23-5, AL5: SOT-353
(3) G: Halogen Free, L: Lead Free

■ MARKING



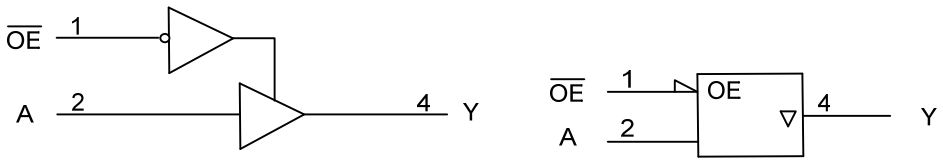
■ PIN CONFIGURATION



■ 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 1)

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

Note 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.
2. 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 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		85	°C

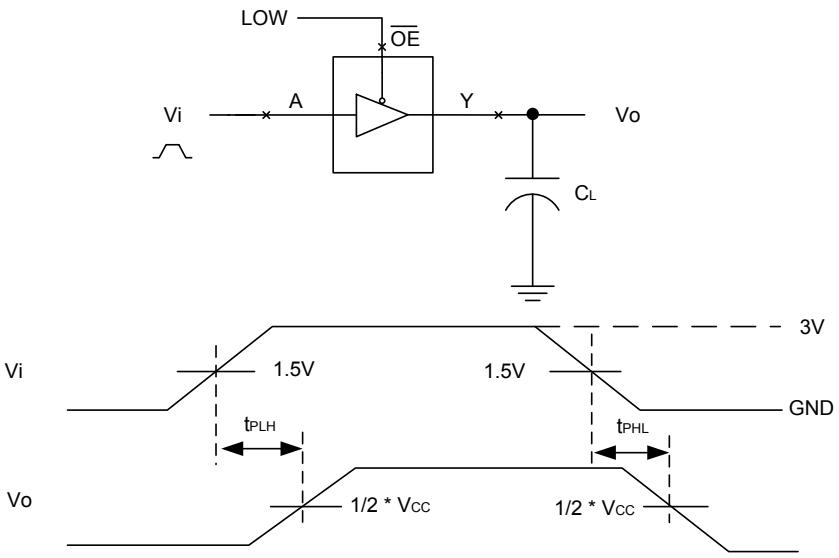
■ STATIC CHARACTERISTICS (T_A=25℃)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	High-Level	V_{IH}	V_{CC}=4.5V~5.5V	2			V
	Low-Level	V_{IL}	V_{CC}=4.5V~5.5V			0.8	V
Output Voltage	High-Level	V_{OH}	V_{CC}=4.5V, I_{OH}=-50μA	4.4	4.5		V
			V_{CC}=4.5V, I_{OH}=-8mA	3.94			
	Low-Level	V_{OL}	V_{CC}=4.5V, I_{OL}=50μA			0.1	V
			V_{CC}=4.5V, I_{OH}=8mA			0.36	
Input Leakage Current		$I_{I(LEAK)}$	V_{CC}=0V~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_{CC}	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℃, Input: t_R, t_F≤3ns; PRR≤1MHz)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay From A to Y	t_{PLH}	V_{CC} =5V±0.5V, C_L=15pF		3.8	5.5	ns
	t_{PHL}			3.8	5.5	
Turn-On Time $\overline{OE}$ to Y	t_{PZH}	V_{CC} =5V±0.5V, C_L=15pF		3.6	5.1	ns
	t_{PZL}			3.6	5.1	
Turn-Off Time $\overline{OE}$ to Y	t_{PHZ}	V_{CC} =5V±0.5V, C_L=15pF		4.6	6.8	ns
	t_{PLZ}			4.6	6.8	
Propagation Delay From A to Y	t_{PLH}	V_{CC} =5V±0.5V, C_L=50pF		5.3	7.5	ns
	t_{PHL}			5.3	7.5	
Turn-On Time $\overline{OE}$ to Y	t_{PZH}	V_{CC} =5V±0.5V, C_L=50pF		5.1	7.1	ns
	t_{PZL}			5.1	7.1	
Turn-Off Time $\overline{OE}$ to Y	t_{PHZ}	V_{CC} =5V±0.5V, C_L=50pF		6.1	8.8	ns
	t_{PLZ}			6.1	8.8	
OPERATING CHARACTERISTICS						
Power Dissipation Capacitance	C_{PD}	No load, f=1MHz, V_{CC}=5		14		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

Fig-1 Propagation delay from A to Y

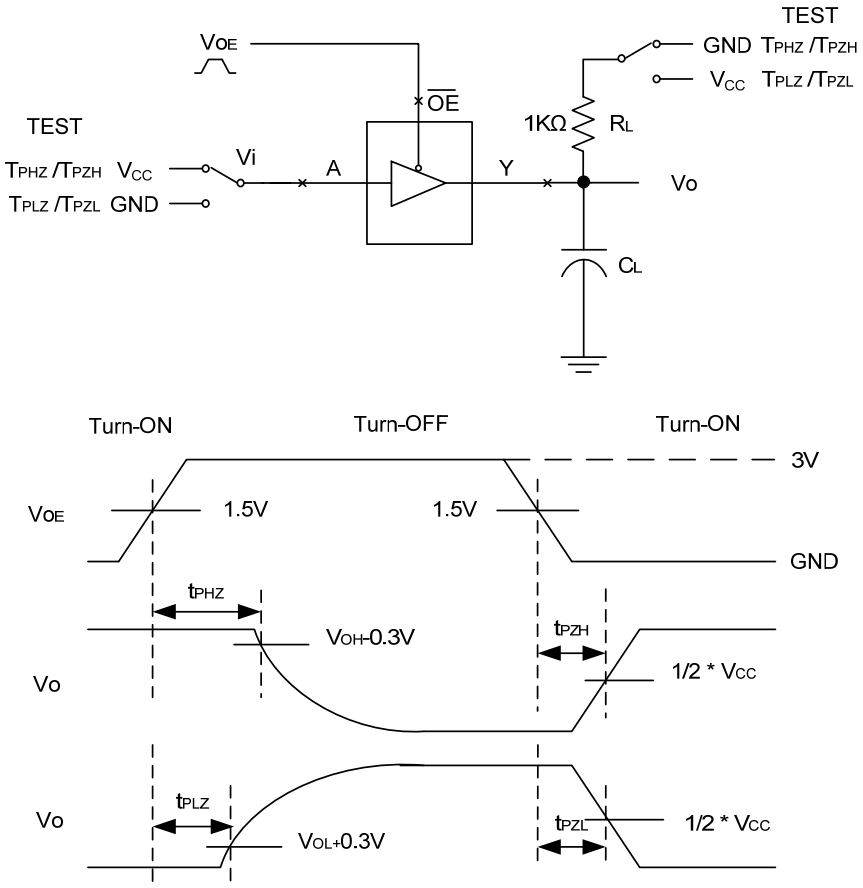


Fig-2 The turn-on and turn-off times.