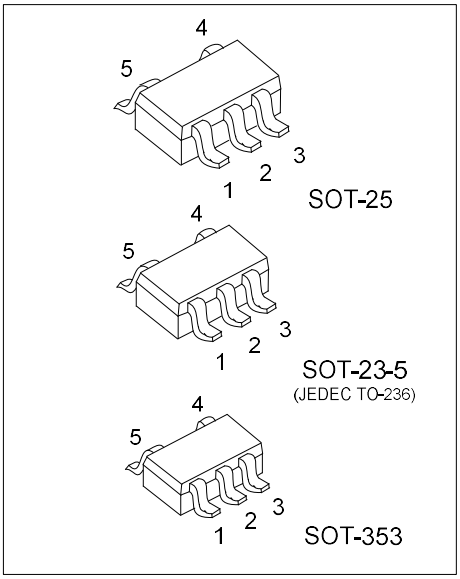
U74AHCT1G125

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}=1μA (Max.)
* ±8mA output drive at 5V
* Inputs are TTL-voltage compatible

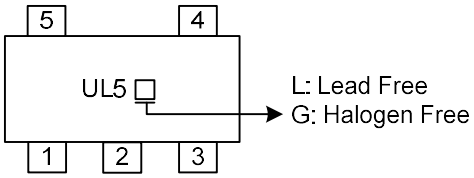
■ ORDERING INFORMATION

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

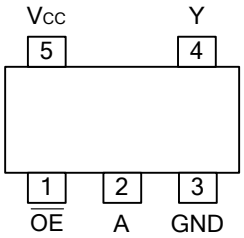
U74AHCT1G125G-AE5-R
(1)Packing Type
(2)Package Type
(3)Green Package

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

■ MARKING



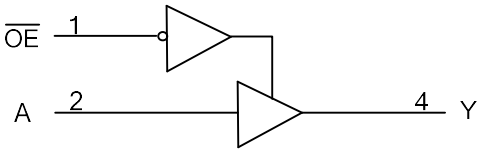
■ PIN CONFIGURATION



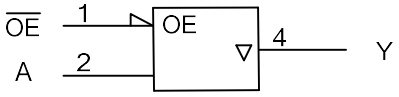
■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



Logic symbol



IEC logic symbol

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, 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 (T_A=25°C, unless otherwise specified)

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 (Unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS		T_A=25°C			T_A=-40°C~+125°C			UNIT
					MIN	TYP	MAX	MIN	TYP	MAX	
Input Voltage	High-Level	V_{IH}	V_{CC}=4.5V~5.5V		2			2			V
	Low-Level	V_{IL}	V_{CC}=4.5V~5.5V				0.8			0.8	V
Output Voltage	High-Level	V_{OH}	V_{CC}=4.5V	I_{OH}=-50μA	4.4	4.5		4.4			V
				I_{OH}=-8mA	3.94			3.7			V
	Low-Level	V_{OL}	V_{CC}=4.5V	I_{OL}=50μA			0.1			0.1	V
				I_{OL}=8mA			0.36			0.55	V
Input Leakage Current		$I_{I(LEAK)}$	V_{CC}=0V~5.5V, V_{IN}=V_{CC} or GND				±0.1			±2.0	μA
Output Current, OFF-state		I_{OZ}	V_{CC}=5.5V, V_{OUT}=V_{CC} or GND				±0.25			±10	μA
Quiescent Supply Current		I_Q	V_{CC}=5.5V, V_{IN}=V_{CC} or GND, I_{OUT}=0				1			40	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			1.5	mA

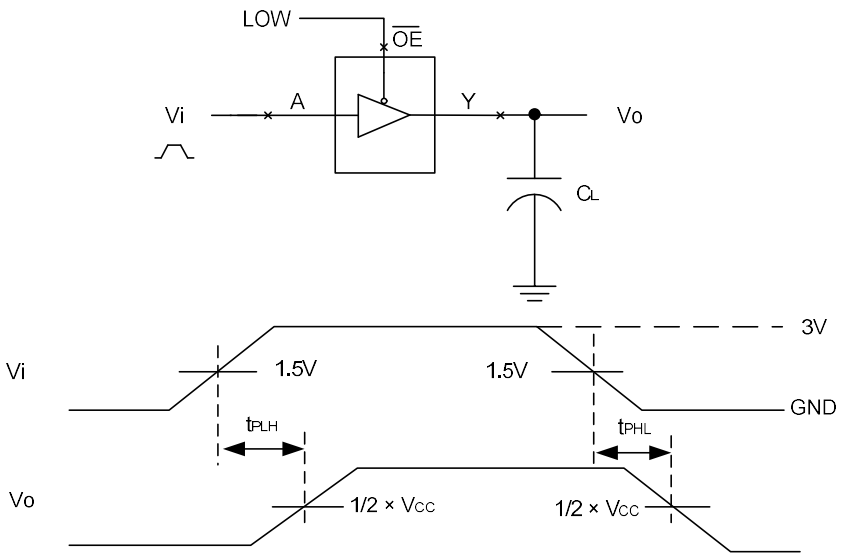
■ DYNAMIC CHARACTERISTICS (Input: t_R, t_F≤3ns; P_{RR}≤1MHz, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay From A to Y	t_{PLH}	C_L=15pF, V_{CC}=5V±0.5V		4.8	7	1		9	ns
	t_{PHL}			4.8	7	1		9	ns
Turn-On Time $\overline{OE}$ to Y	t_{PZH}			5.1	7.5	1		9	ns
	t_{PZL}			5.1	7.5	1		9	ns
Turn-Off Time $\overline{OE}$ to Y	t_{PHZ}			4.1	6.8	1		8.5	ns
	t_{PLZ}			4.1	6.8	1		8.5	ns
Propagation Delay From A to Y	t_{PLH}	C_L=50pF, V_{CC}=5V±0.5V		6.1	9	1		10	ns
	t_{PHL}			6.1	9	1		10	ns
Turn-On Time $\overline{OE}$ to Y	t_{PZH}			6.2	9	1		10	ns
	t_{PZL}			6.2	9	1		10	ns
Turn-Off Time $\overline{OE}$ to Y	t_{PHZ}			5.8	8.8	1		11	ns
	t_{PLZ}			5.8	8.8	1		11	ns

■ OPERATING CHARACTERISTICS (V_{CC}=5V, T_A=25°C, unless otherwise specified)

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

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

Fig-1 Propagation delay from A to Y

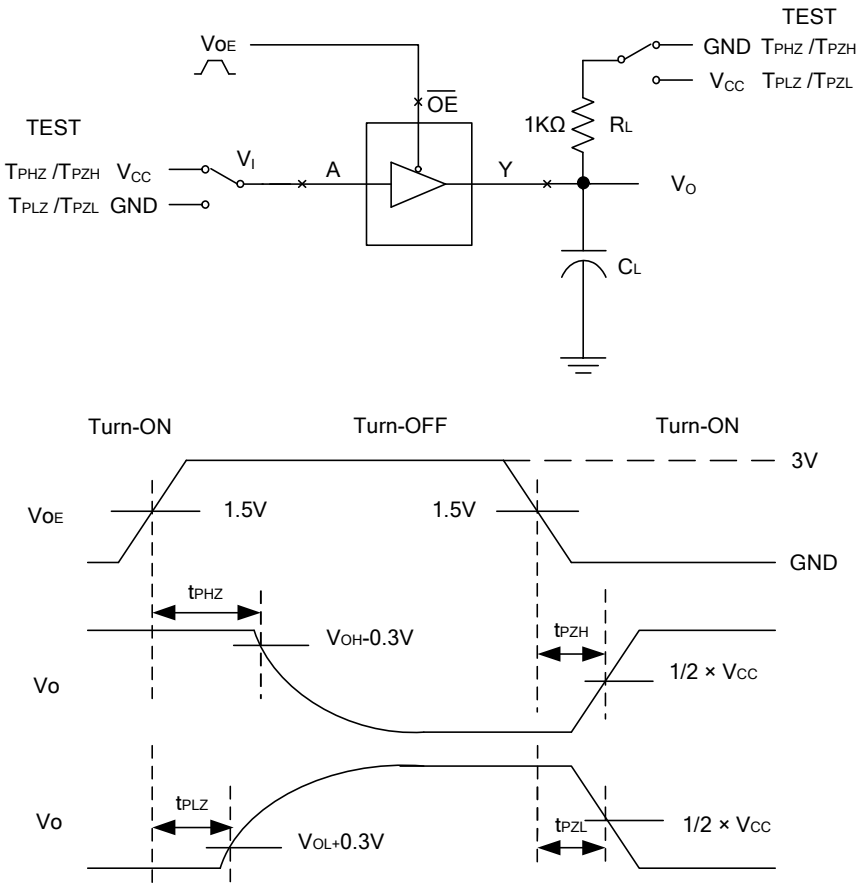


Fig-2 The turn-on and turn-off times.