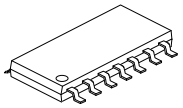
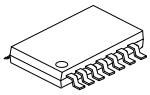
U74ACT125

CMOS IC

QUAD BUFFER WITH 3-STATE OUTPUTS



SOP-14



TSSOP-14

■ DESCRIPTION

The **U74ACT125** contains four independent non-inverting buffers with 3-STATE outputs.

■ FEATURES

* Outputs source/sink 24mA
*ACT125 has TTL-compatible outputs

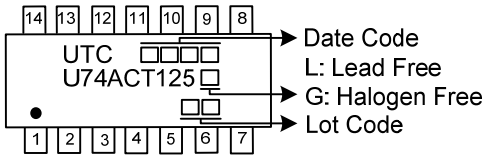
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74ACT125L-UEA-R	U74ACT125G-UEA-R	SOP-14U	Tape Reel
U74ACT125L-UEB-R	U74ACT125G-UEB-R	TSSOP-14U	Tape Reel

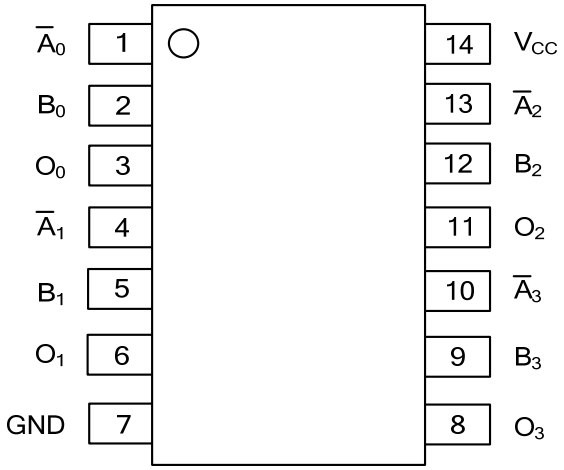
U74ACT125G-UEA-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) UEA: SOP-14U, UEB: TSSOP-14U
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION

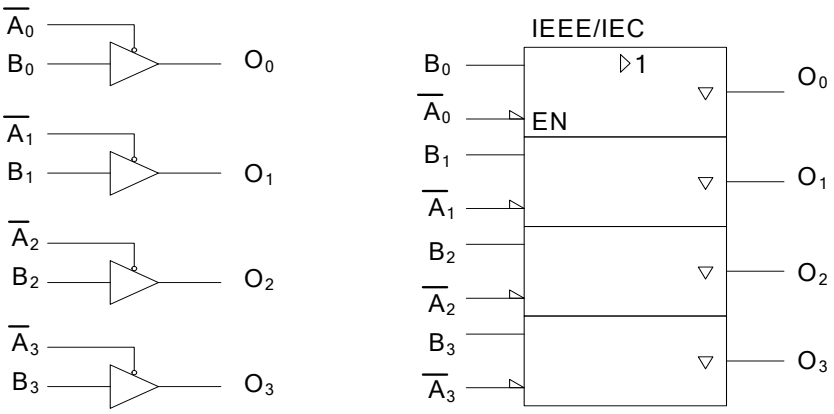


■ FUNCTION TABLE (each gate)

INPUTS		OUTPUT
A_n	B_n	O_n
L	L	L
L	H	H
H	X	Z

H=HIGH Voltage Level; L=LOW Voltage Level
Z=HIGH Impedance; X=Immaterial

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified) (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5 ~ 7.0	V
Input Voltage	V_{IN}	-0.5 ~ V_{CC} +0.5	V
Output Voltage	V_{OUT}	-0.5 ~ V_{CC} +0.5	V
Input Clamp Current (V_{IN} < 0 or V_{IN} > V_{CC})	I_{IK}	±20	mA
Output Clamp Current (V_{OUT} < 0 or V_{OUT} > V_{CC})	I_{OK}	±20	mA
Output Current	I_{OUT}	±50	mA
V_{CC} or GND Current	I_{CC}	±200	mA
Storage Temperature	T_{STG}	-65 ~ +150	°C

Note: 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 CONDITIONS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	4.5 ~ 5.5	V
Input Voltage	V_{IN}	0 ~ V_{CC}	V
Output Voltage	V_{OUT}	0 ~ V_{CC}	V
Input Transition Rise or Fall Rate	Δt/Δv	8	ns/V
Operating Temperature	T_A	-40 ~ +125	°C

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

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	V_{CC}=4.5V~5.5V		2			V
Low-Level Input Voltage	V_{IL}	V_{CC}=4.5V~5.5V				0.8	V
High-Level Output Voltage	V_{OH}	V_{CC}=4.5V	I_{OH}=-24mA	3.86			V
			I_{OH}=-50μA	4.4	4.49		V
		V_{CC}=5.5V	I_{OH}=-24mA	4.86			V
			I_{OH}=-50μA	5.4	5.49		V
Low-Level Output Voltage	V_{OL}	V_{CC}=4.5V	I_{OL}=24mA			0.36	V
			I_{OL}=50μA		0.001	0.1	V
		V_{CC}=5.5V	I_{OL}=24mA			0.36	V
			I_{OL}=50μA		0.001	0.1	V
Input Leakage Current	$I_{I(LEAK)}$	V_{CC} = 5.5V, V_{IN}=V_{CC} or GND				±0.1	μA
Quiescent Supply Current	I_Q	V_{CC} = 5.5V, V_{IN}=5.5V or GND, I_{OUT}=0				4	μA
Additional Quiescent Supply Current	ΔI_Q	V_{CC} = 5.5V, V_I=V_{CC}-2.1V			0.6		mA
Input Capacitance	C_{IN}	V_{CC} =OPEN			4.5		pF
3-STATE Current	I_{OZ}	V_{CC}=5.5V, V_I=V_{IL}, V_{IH} V_O=V_{CC}, GND				±0.5	μA

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

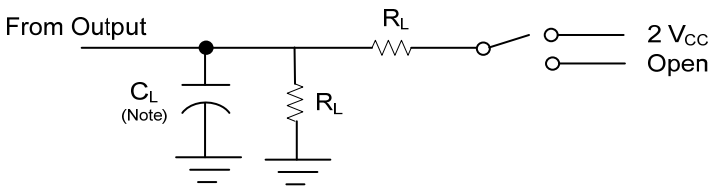
See Fig. 1 and Fig. 2 for test circuit and waveforms.

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Data to Output	t_{PLH}	V_{CC}=5V, t_r = t_f =3ns, C_L=50pF, R_L=500Ω, f=1MHz	1	6.5	9	ns
	t_{PHL}		1	7	9	ns
Output Enable Time	t_{PZH}		1	6.0	8.5	ns
	t_{PZL}		1	7.0	9.5	ns
Output disable Time	t_{PHZ}		1	7.0	9.5	ns
	t_{PLZ}		1	7.5	10	ns

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	V_{CC}=5V		45		pF

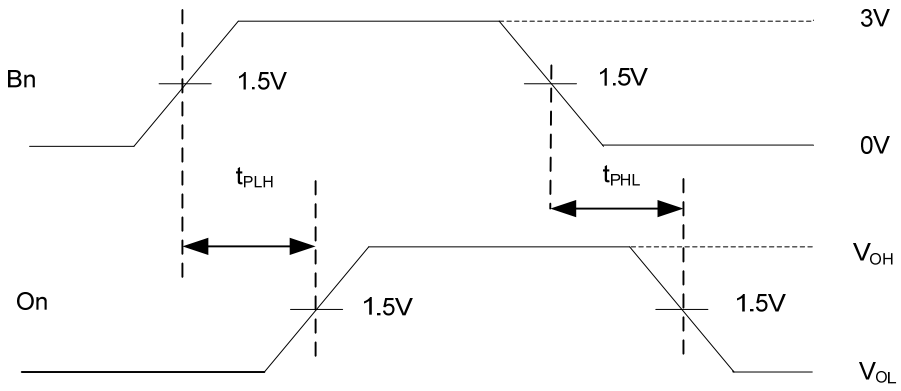
■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

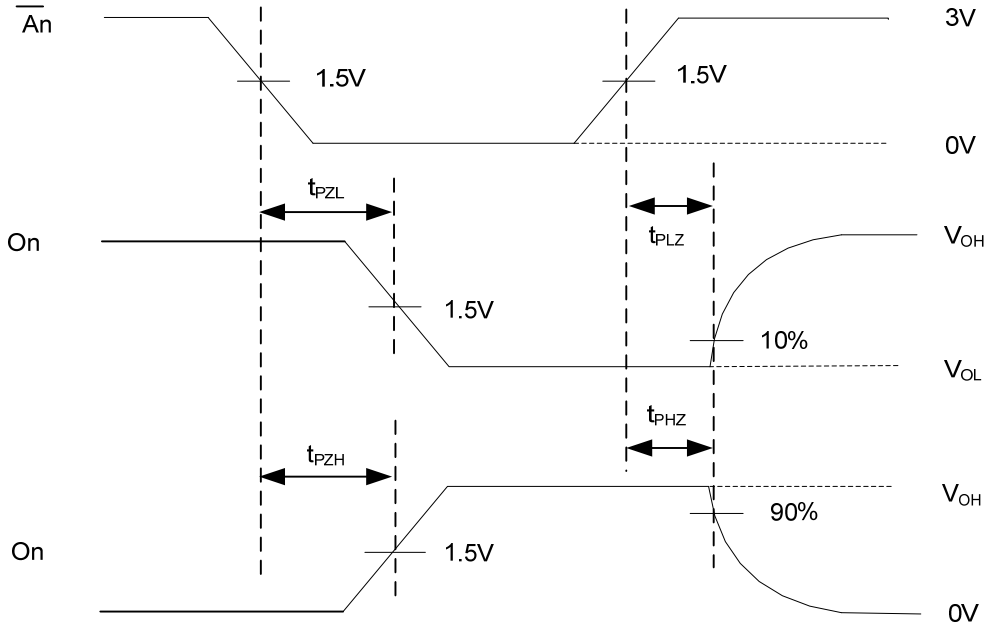
TEST	SWITCH
t_{PLH}, t_{PHL}	Open
t_{PLZ}, t_{PZL}	$2V_{CC}$
t_{PZH}, t_{PHZ}	Open

Fig. 1 Load circuitry for switching times.



PROPAGATION DELAY TIMES

■ TEST CIRCUIT AND WAVEFORMS (Cont.)



ENABLE AND DISABLE TIMES

Fig. 2 Propagation delay from input to output and Output transition time