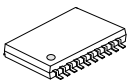
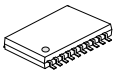
U74ACT244

CMOS IC

OCTAL BUFFERS AND DRIVERS WITH 3-STATE OUTPUTS



SOP-20



SSOP-20

TSSOP-20

■ DESCRIPTION

The **U74ACT244** is a octal buffers and drivers are designed specifically to improve the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters.

The **U74ACT244** devices are organized as two 4-bit buffers and drivers with separate output-enable ($\overline{OE}$) inputs. When $\overline{OE}$ is low, the device passes non-inverted data from the A inputs to the Y outputs. When $\overline{OE}$ is high, the outputs are in the high-impedance state.

■ FEATURES

* 4.5V to 5.5V V_{CC} operation
* Inputs accept voltages to 5.5V
* Low power consumption, I_{CC} = 4μA (Max.) at 5.5V
* TTL compatible
* ±24mA output driver at 5.5V

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74ACT244L-S20-R	U74ACT244G-S20-R	SOP-20	Tape Reel
U74ACT244L-R20-R	U74ACT244G-R20-R	SSOP-20	Tape Reel
U74ACT244L-P20-R	U74ACT244G-P20-R	TSSOP-20	Tape Reel

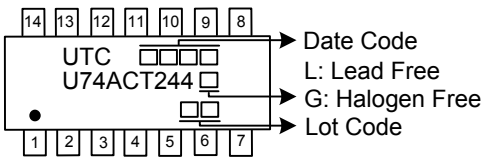
U74ACT244G-S20-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel

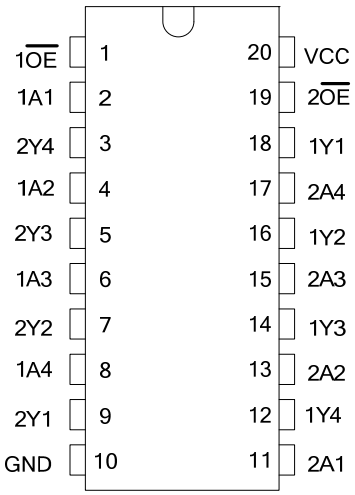
(2) S20: SOP-20, R20: SSOP-20, P20: TSSOP-20

(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



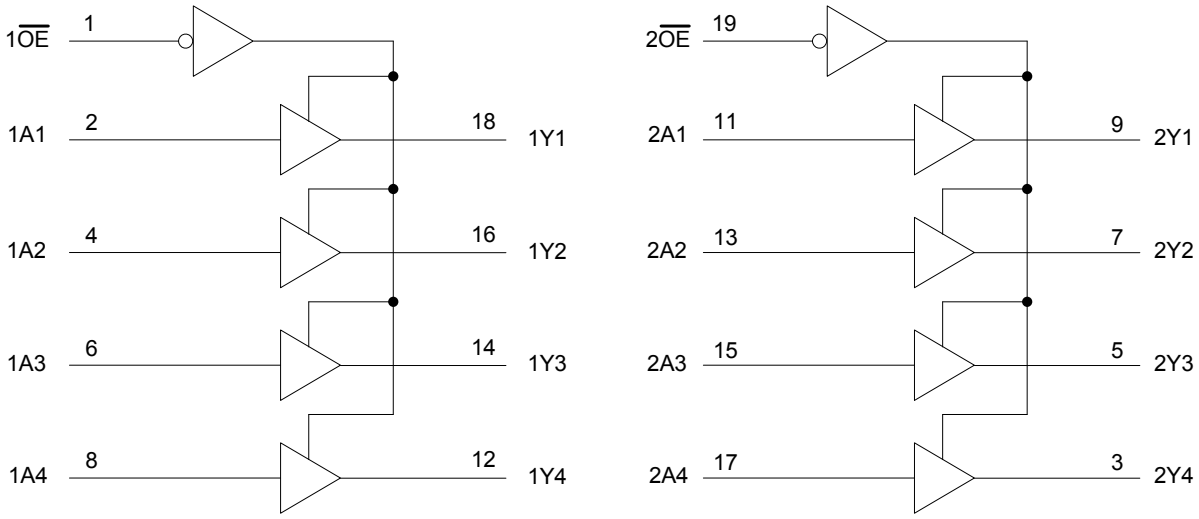
■ PIN CONFIGURATION



■ FUNCTION TABLE (each buffer)

INPUTS		OUTPUT
$\overline{OE}$	A	Y
L	H	H
L	L	L
H	X	Hi-Z

■ LOGIC SYMBOL (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

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 (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V_{IH}	V_{CC}=4.5V~5.5V	2			2			V
Low-Level Input Voltage	V_{IL}	V_{CC}=4.5V~5.5V			0.8			0.8	V
High-Level Output Voltage	V_{OH}	V_{CC}=4.5V, I_{OH}=-50μA	4.4	4.49		4.4			V
		V_{CC}=5.5V, I_{OH}=-50μA	5.4	5.49		5.4			V
		V_{CC}=4.5V, I_{OH}=-24mA	3.86			3.76			V
		V_{CC}=5.5V, I_{OH}=-24mA	4.86			4.76			V
		V_{CC}=5.5V, I_{OH}=-75mA (Note)	3.85			3.75			V
Low-Level Output Voltage	V_{OL}	V_{CC}=4.5V, I_{OL}=50μA		0.001	0.1			0.1	V
		V_{CC}=5.5V, I_{OL}=50μA		0.001	0.1			0.1	V
		V_{CC}=4.5V, I_{OL}=24mA			0.36			0.44	V
		V_{CC}=5.5V, I_{OL}=24mA			0.36			0.44	V
		V_{CC}=5.5V, I_{OL}=75mA (Note)			1.65			1.75	V
Input Leakage Current (A or $\overline{OE}$ inputs)	$I_{I(LEAK)}$	V_{CC}=5.5V, V_{IN}=V_{CC} or GND			±0.1			±1	μA
High-impedance state Current	I_{OZ}	V_{CC}=5.5V, V_O=V_{CC} or GND, $V_{I(OE)}$= V_{IL} or V_{IH}			±0.25			±2.5	μA
Quiescent Supply Current	I_Q	V_{CC}=5.5V, V_{IN}=V_{CC} or GND, I_{OUT}=0			4			40	μA
Additional quiescent Supply Current	ΔI_Q	V_{CC}=5.5V, One input at 3.4V; other inputs at V_{CC} or GND		0.6	1.5			1.5	mA

Note: Not more than one output should be tested at a time, and the duration of the test should not exceed 2 ms.

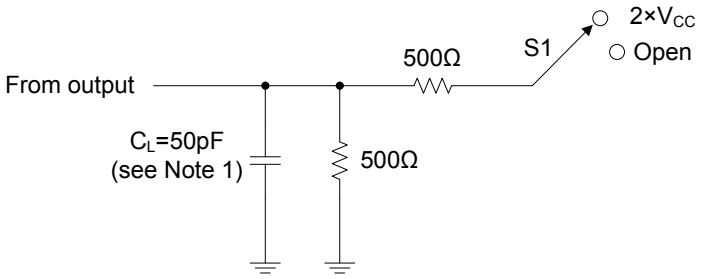
■ SWITCHING CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay from input A to output Y, t_{PD}	t_{PLH}	V_{CC}=5±0.5V, C_L=50pF, R_L=500Ω	2	6.5	9	1		11	ns
	t_{PHL}	V_{CC}=5±0.5V, C_L=50pF, R_L=500Ω	2	7	9	1		11	ns
Propagation delay from input $\overline{OE}$ to output Y, t_{en}	t_{PZH}	V_{CC}=5±0.5V, C_L=50pF, R_L=500Ω	1.5	7	8.5	1		10.5	ns
	t_{PZL}	V_{CC}=5±0.5V, C_L=50pF, R_L=500Ω	2	7	9.5	1		11.5	ns
Propagation delay from input $\overline{OE}$ to output Y, t_{dis}	t_{PHZ}	V_{CC}=5±0.5V, C_L=50pF, R_L=500Ω	2	8	9.5	1		11.5	ns
	t_{PLZ}	V_{CC}=5±0.5V, C_L=50pF, R_L=500Ω	2.5	7.5	10	1		12	ns

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

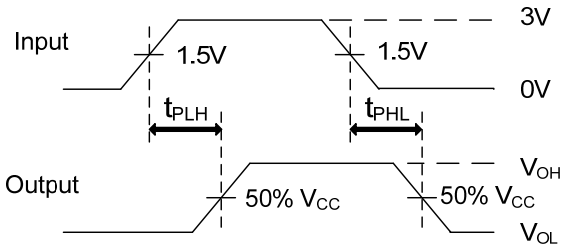
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_{IN}	V_{CC}=5.5V, V_{IN} = V_{CC} or GND		2.5		pF
Output Capacitance	C_{OUT}	V_{CC}=5.5V, V_{IN} = V_{CC} or GND		8		pF
Power Dissipation Capacitance (Notes 1, 2)	C_{PD}	V_{CC}=5V, C_L=50pF, f=1MHz		45		pF

■ TEST CIRCUIT AND WAVEFORMS

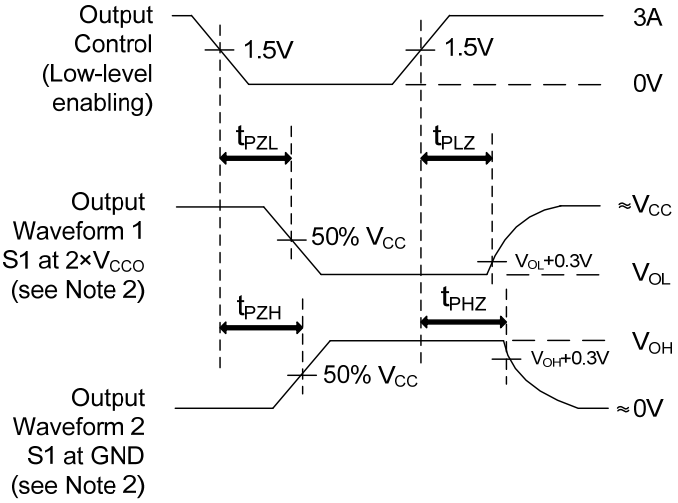


TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	$2\times V_{CC}$
t_{PHZ}/t_{PZH}	Open

TEST CIRCUIT



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

Notes: 1. C_L includes probe and jig capacitance.
2. All input pulses are supplied by generators having the following characteristics: PRR ≤1MHz, Z_O = 50Ω.
3. The outputs are measured one at a time with one input transition per measurement.