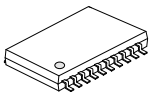
OCTAL BUFFER/DRIVER WITH 3-STATE OUTPUTS



SSOP-20

■ DESCRIPTION

This octal buffer/driver is operational at 0.8V to 2.7V V_{CC}, but is designed specifically for 1.65V to 1.95V V_{CC} operation.

The **U74AUC244** is organized as two 4-bit line drivers with separate output-enable ($\overline{OE}$) inputs. When $\overline{OE}$ is low, the device passes data from the A inputs to the Y outputs. When $\overline{OE}$ is high, the outputs are in the high-impedance state.

To ensure the high-impedance state during power up or power down, $\overline{OE}$ should be tied to V_{CC} through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

This device is fully specified for partial-power-down applications using I_{OFF}. The I_{OFF} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

■ FEATURES

* Optimized for 1.8V Operation and is 3.6V I/O Tolerant to Support Mixed-Mode Signal Operation
* Partial-Power-Down Mode Operation
* Low Power Consumption, 20μA Max. I_{CC}
* ±8mA Output Drive at 1.8V

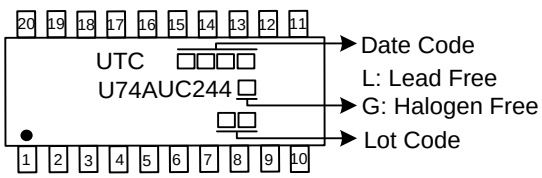
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AUC244L-S20-R	U74AUC244G-S20-R	SOP-20	Tape Reel

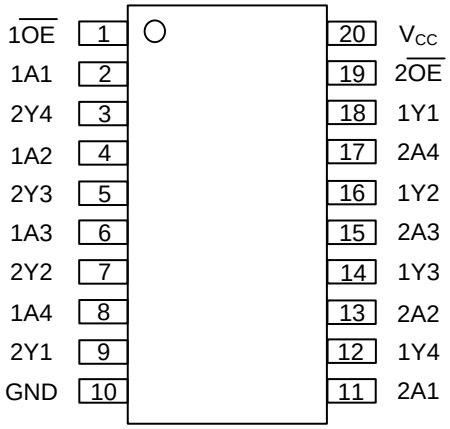
U74AUC244G-S20-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) R20: SSOP-20
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



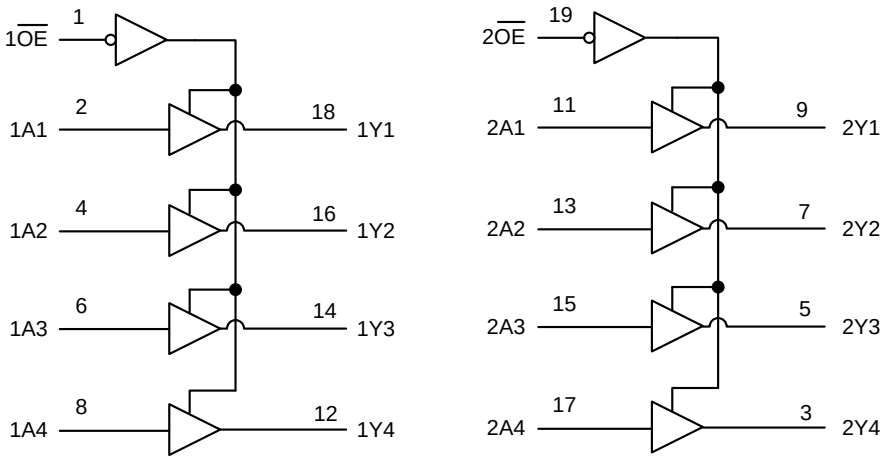
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (Positive Logic)



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

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V_{CC}		-0.5 ~ 3.6	V
Input Voltage	V_{IN}		-0.5 ~ 3.6	V
Output Voltage	V_{OUT}	Output in high-impedance or power-off state	-0.5 ~ 3.6	V
		Output in high or low state	-0.5 ~ V_{CC}+0.5	V
Input Clamp Current	I_{IK}	V_I<0	-50	mA
Output Clamp Current	I_{OK}	V_O<0	-50	mA
Output Current	I_{OUT}		±20	mA
Continuous current through V_{CC} or GND	I_{CC}		±100	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 CONDITIONS (T_A=25°C , unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	0.8		2.7	V
Input Voltage	V_{IN}		0		3.6	V
Output Voltage	V_{OUT}	Active state	0		V_{CC}	V
		3-state	0		3.6	
High-Level Input Voltage	V_{IH}	V_{CC}=0.8V	V_{CC}			V
		V_{CC}=1.1V~1.95V	0.65×V_{CC}			V
		V_{CC}=2.3V~2.7V	1.7			V
Low-Level Input Voltage	V_{IL}	V_{CC}=0.8V			0	V
		V_{CC}=1.1V~1.95V			0.35×V_{CC}	V
		V_{CC}=2.3V~2.7V			0.7	V
High-Level Output Current	I_{OH}	V_{CC}=0.8V			-0.7	mA
		V_{CC}=1.1V			-3	mA
		V_{CC}=1.4V			-5	mA
		V_{CC}=1.65V			-8	mA
		V_{CC}=2.3V			-9	mA
Low-Level Output Current	I_{OL}	V_{CC}=0.8V			0.7	mA
		V_{CC}=1.1V			3	mA
		V_{CC}=1.4V			5	mA
		V_{CC}=1.65V			8	mA
		V_{CC}=2.3V			9	mA
Operating Temperature (Note)	T_A		-40		+125	°C
Input Transition Rise or Fall Rate	Δt/Δv				20	ns/V

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Output Voltage	V_{OH}	V_{CC}=0.8V~2.7V, I_{OH}=-100uA	V_{CC}-0.1			V
		V_{CC}=0.8V, I_{OH}=-0.7mA		0.55		V
		V_{CC}=1.1V, I_{OH}=-3mA	0.8			V
		V_{CC}=1.4V, I_{OH}=-5mA	1			V
		V_{CC}=1.65V, I_{OH}=-8mA	1.2			V
		V_{CC}=2.3V, I_{OH}=-9mA	1.8			V
Low-Level Output Voltage	V_{OL}	V_{CC}=0.8V to 2.7V, I_{OL}=100uA			0.2	V
		V_{CC}=0.8V, I_{OL}=0.7mA		0.25		V
		V_{CC}=1.1V, I_{OL}=3mA			0.3	V
		V_{CC}=1.4V, I_{OL}=5mA			0.4	V
		V_{CC}=1.65V, I_{OL}=8mA			0.45	V
		V_{CC}=2.3V, I_{OL}=9mA			0.6	V
Input Leakage Current (A and $\overline{OE}$ Inputs)	$I_{I(LEAK)}$	V_{CC}=0~2.7V, V_{IN}=V_{CC} or GND			±5	μA
Power OFF Leakage Current	I_{OFF}	V_{CC}=0V, V_{IN} or V_{OUT}=2.7V			±10	μA
Output OFF-State Current	I_{OZ}	V_{CC}=2.7V, V_{OUT}=0 or VCC			±10	μA
Quiescent Supply Current	I_{CC}	V_{CC}=0.8V to 2.7V, V_{IN}=V_{CC} or GND, I_{OUT}=0A			20	μA
Input Capacitance	C_I	V_{CC}=2.5V, V_{IN}=V_{CC} or GND		2	3	pF
Output Capacitance	C_O	V_{CC}=2.5V, V_{OUT}=V_{CC} or GND		5.5	6	pF

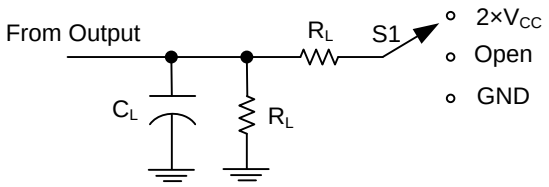
■ SWITCHING CHARACTERISTICS (T_A=25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
From Input(A) to Output(Y)	t_{pd}	V_{CC}=0.8V	C_L=15pF		6.5		ns
		V_{CC}=1.2V±0.1V		1.1		3.7	ns
		V_{CC}=1.5V±0.1V		0.6		2.3	ns
		V_{CC}=1.8V±0.15V		0.5	1.1	1.9	ns
			C_L=30pF	0.8	1.5	2.5	ns
		V_{CC}=2.5V±0.2V	C_L=15pF	0.4		1.5	ns
			C_L=30pF	0.7		1.9	ns
From Input($\overline{OE}$) to Output(Y)	t_{en}	V_{CC}=0.8V	C_L=15pF		8		ns
		V_{CC}=1.2V±0.1V		1.2		4.5	ns
		V_{CC}=1.5V±0.1V		0.7		2.8	ns
		V_{CC}=1.8V±0.15V		0.6	1.2	2.3	ns
			C_L=30pF	0.8	1.7	3.1	ns
		V_{CC}=2.5V±0.2V	C_L=15pF	0.5		1.7	ns
			C_L=30pF	0.7		2.3	ns
From Input($\overline{OE}$) to Output(Y)	t_{dis}	V_{CC}=0.8V	C_L=15pF		10.4		ns
		V_{CC}=1.2V±0.1V		1.7		6	ns
		V_{CC}=1.5V±0.1V		1.1		4	ns
		V_{CC}=1.8V±0.15V		1.7	2.4	4.2	ns
			C_L=30pF	1.7	2.4	4.2	ns
		V_{CC}=2.5V±0.2V	C_L=15pF	0.6		3.8	ns
			C_L=30pF	0.5		2.3	ns

■ OPERATING CHARACTERISTICS (f=10MHz, T_A=25°C , unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	Outputs Enabled	C_{PD}	V_{CC}=0.8V		21		pF
			V_{CC}=1.2V		21		pF
			V_{CC}=1.5V		22		pF
			V_{CC}=1.8V		23		pF
			V_{CC}=2.5V		30		pF
	Outputs Disabled		V_{CC}=0.8V		3		pF
			V_{CC}=1.2V		3		pF
			V_{CC}=1.5V		3		pF
			V_{CC}=1.8V		3.5		pF
			V_{CC}=2.5V		4.5		pF

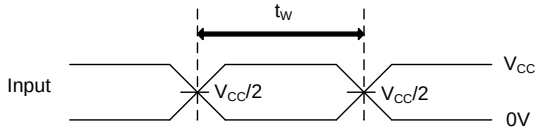
■ TEST CIRCUIT AND WAVEFORMS



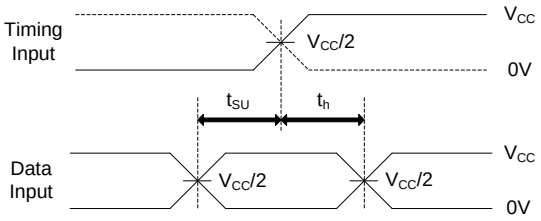
TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	$2\times V_{CC}$
t_{PHZ}/t_{PZH}	GND

TEST CIRCUIT

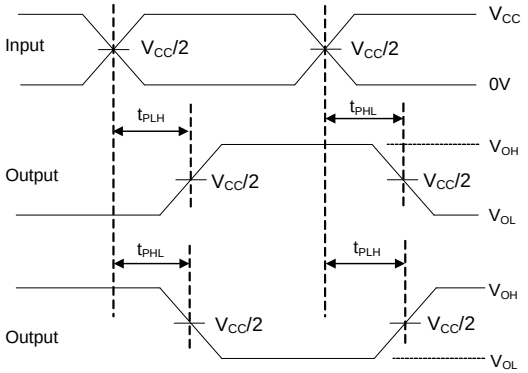
V_{CC}	C_L	R_L	V_Δ
V_{CC}=0.8V	15pF	2KΩ	0.1V
V_{CC}=1.2V±0.1V	15pF	2KΩ	0.1V
V_{CC}=1.5V±0.1V	15pF	2KΩ	0.1V
V_{CC}=1.8V±0.15V	15pF	2KΩ	0.15V
V_{CC}=2.5V±0.2V	15pF	2KΩ	0.15V
V_{CC}=1.8V±0.15V	30pF	1KΩ	0.15V
V_{CC}=2.5V±0.2V	30pF	500Ω	0.15V



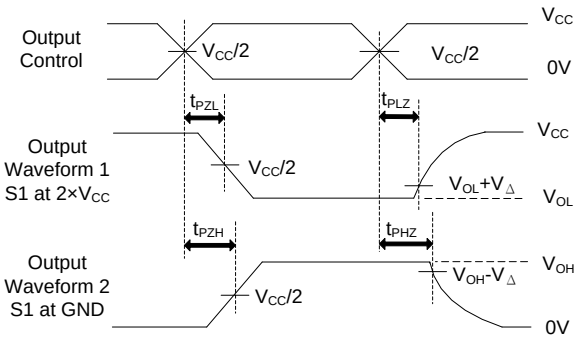
PULSE DURATION



SETUP AND HOLD TIMES



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 ≤10MHz, Z_O = 50Ω.