

54AC11244, 74AC11244 OCTAL BUFFERS/DRIVERS WITH 3-STATE OUTPUTS

SCAS171 – D3465, MARCH 1987 – REVISED APRIL 1993

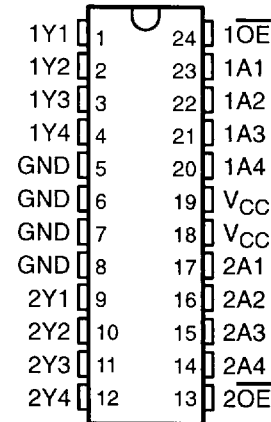
- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- Flow-Through Architecture Optimizes PCB Layout
- Center-Pin V_{CC} and GND Pin Configurations Minimize High-Speed Switching Noise
- **EPIC™** (Enhanced-Performance Implanted CMOS) 1- μ m Process
- 500-mA Typical Latch-Up Immunity at 125°C
- Package Options Include Plastic Small-Outline Packages, Plastic Shrink Small-Outline Packages, Plastic Thin Shrink Small-Outline Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs

description

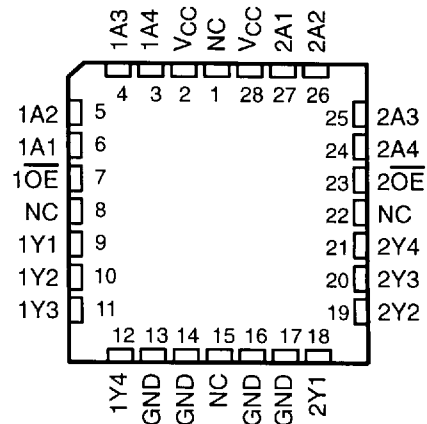
The 'AC11244 is an octal buffer or line driver designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters. The device can be used as two 4-bit buffers or one 8-bit buffer. This device provides true outputs and symmetrical active-low output-enable ($\overline{OE}$) inputs.

The 54AC11244 is characterized for operation over the full military temperature range of -55°C to 125°C . The 74AC11244 is characterized for operation from -40°C to 85°C .

54AC11244 . . . JT PACKAGE
74AC11244 . . . DB, DW, NT, OR PW PACKAGE
(TOP VIEW)



54AC11244 . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection

FUNCTION TABLE
(each driver)

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

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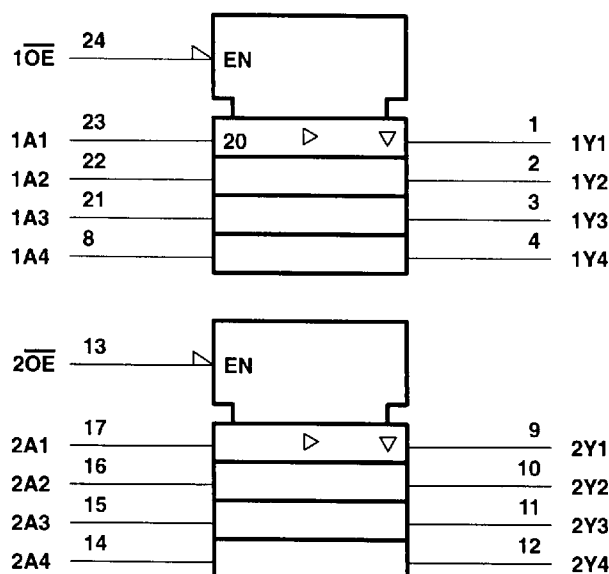
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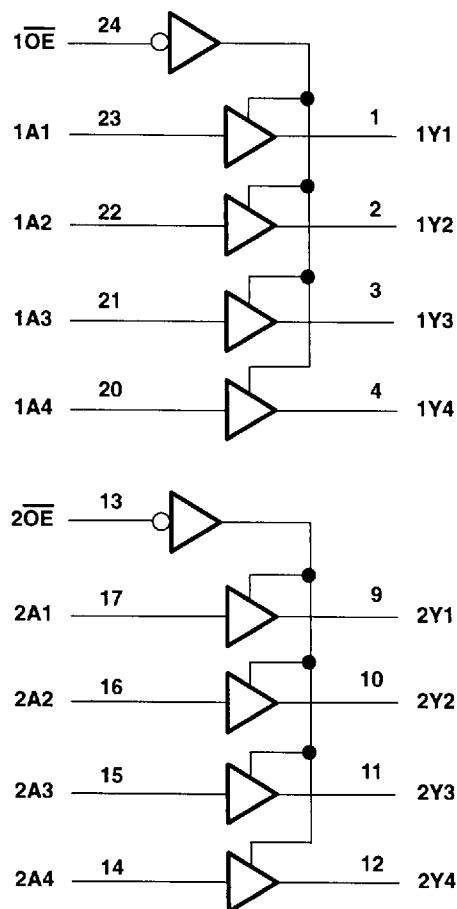
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logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagram (positive logic)



Pin numbers shown are for the DW, JT, and NT packages.

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)‡

Supply voltage range, V_{CC}	-0.5 V to 7 V
Input voltage range, V_I (see Note 1)	-0.5 V to $V_{CC} + 0.5$ V
Output voltage range, V_O (see Note 1)	-0.5 V to $V_{CC} + 0.5$ V
Input clamp current, I_{IK} ($V_I < 0$ or $V_I > V_{CC}$)	± 20 mA
Output clamp current, I_{OK} ($V_O < 0$ or $V_O > V_{CC}$)	± 50 mA
Continuous output current, I_O ($V_O = 0$ to V_{CC})	± 50 mA
Continuous current through V_{CC} or GND	± 200 mA
Storage temperature range	-65°C to 150°C

‡ Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTE 1: The input and output voltage ratings may be exceeded if the input and output clamp-current ratings are observed.

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recommended operating conditions (see Note 2)

			54AC11244			74AC11244			UNIT
			MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC}	Supply voltage		3	5	5.5	3	5	5.5	V
V _{IH}	High-level input voltage	V _{CC} = 3 V	2.1			2.1			V
		V _{CC} = 4.5 V	3.15			3.15			
		V _{CC} = 5.5 V	3.85			3.85			
V _{IL}	Low-level input voltage	V _{CC} = 3 V	0.9			0.9			V
		V _{CC} = 4.5 V	1.35			1.35			
		V _{CC} = 5.5 V	1.65			1.65			
V _I	Input voltage		0	V _{CC}		0	V _{CC}		V
V _O	Output voltage		0	V _{CC}		0	V _{CC}		V
I _{OH}	High-level output current	V _{CC} = 3 V	-4			-4			mA
		V _{CC} = 4.5 V	-24			-24			
		V _{CC} = 5.5 V	-24			-24			
I _{OL}	Low-level output current	V _{CC} = 3 V	12			12			mA
		V _{CC} = 4.5 V	24			24			
		V _{CC} = 5.5 V	24			24			
Δt/Δv	Input transition rise or fall rate		0	10		0	10		ns/V
T _A	Operating free-air temperature		-55	125		-40	85		°C

NOTE 2: Unused or floating inputs must be held high or low.

PRODUCT PREVIEW information concerns products in the formative or design phase of development. Characteristic data and other specifications are design goals. Texas Instruments reserves the right to change or discontinue these products without notice.



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electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	V _{CC}	T _A = 25°C			54AC11244		74AC11244		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V _{OH}	I _{OH} = – 50 µA	3 V	2.9			2.9		2.9		V
		4.5 V	4.4			4.4		4.4		
		5.5 V	5.4			5.4		5.4		
	I _{OH} = – 4 mA	3 V	2.58			2.4		2.48		
		4.5 V	3.94			3.7		3.8		
		5.5 V	4.94			4.7		4.8		
	I _{OH} = – 50 mA†	5.5 V				3.85				
		5.5 V						3.85		
V _{OL}	I _{OL} = 50 µA	3 V			0.1		0.1		0.1	V
		4.5 V			0.1		0.1		0.1	
		5.5 V			0.1		0.1		0.1	
	I _{OL} = 12 mA	3 V			0.36		0.5		0.44	
		4.5 V			0.36		0.5		0.44	
		5.5 V			0.36		0.5		0.44	
	I _{OL} = 50 mA†	5.5 V					1.65			
	I _{OL} = 75 mA†	5.5 V							1.65	
I _I	V _I = V _{CC} or GND	5.5 V			±0.1		±1		±1	µA
I _{OZ}	V _O = V _{CC} or GND	5.5 V			±0.5		±10		±5	µA
I _{CC}	V _I = V _{CC} or GND, I _O = 0	5.5 V			8		160		80	µA
C _i	V _I = V _{CC} or GND	5 V		4						pF
C _o	V _O = V _{CC} or GND	5 V		10						pF

† Not more than one output should be tested at a time, and the duration of the test should not exceed 10 ms.

switching characteristics over recommended operating free-air temperature range,
V_{CC} = 3.3 V ± 0.3 V (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	T _A = 25°C			54AC11244		74AC11244		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t _{PLH}	A	Y	1.5	7.1	9.3	1.5	10.8	1.5	10.2	ns
t _{PHL}			1.5	6.3	8.6	1.5	10.5	1.5	9.5	
t _{PZH}	$\overline{\text{OE}}$	Y	1.5	8	10.7	1.5	12.9	1.5	11.8	ns
t _{PZL}			1.5	7.9	10.6	1.5	12.9	1.5	11.9	
t _{PHZ}	$\overline{\text{OE}}$	Y	1.5	5.9	7.9	1.5	8.7	1.5	8.3	ns
t _{PLZ}			1.5	7.2	9.4	1.5	10.4	1.5	9.9	

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PARAMETER	FROM (INPUT)	TO (OUTPUT)	T _A = 25°C			54AC11244		74AC11244		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t _{PLH}	A	Y	1.5	4.9	6.7	1.5	7.7	1.5	7.3	ns
t _{PHL}			1.5	4.5	6.4	1.5	7.4	1.5	6.9	
t _{PZH}	$\overline{\text{OE}}$	Y	1.5	5.4	7.7	1.5	9.3	1.5	8.5	ns
t _{PZL}			1.5	5.4	7.6	1.5	9.1	1.5	8.5	
t _{PHZ}	$\overline{\text{OE}}$	Y	1.5	5.2	7	1.5	7.6	1.5	7.3	ns
t _{PLZ}			1.5	5.8	7.8	1.5	8.6	1.5	8.2	

PARAMETER		TEST CONDITIONS	TYP	UNIT
C _{pd}	Power dissipation capacitance per buffer/driver	C _L = 50 pF, f = 1 MHz	27	pF
			9	

NOTES: A. C_L includes probe and jig capacitance.
 B. All input pulses are supplied by generators having the following characteristics: PRR ≤ 10 MHz, $Z_0 = 50\ \Omega$, $t_r = 3$ ns, $t_f = 3$ ns.
 C. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control.
 Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
 D. The outputs are measured one at a time with one input transition per measurement.

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