

**SN54ALS1244A, SN74ALS1244A  
OCTAL BUFFERS AND DRIVERS  
WITH 3-STATE OUTPUTS**

D3581, JULY 1990

T-52-07

- Low-Power Version of SN74ALS244A-1 and SN54ALS244A
- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- P-N-P Inputs Reduce DC Loading
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs

**description**

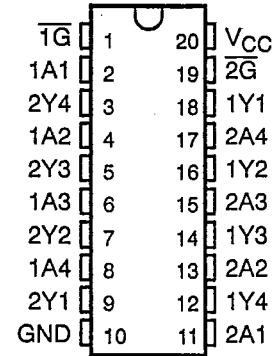
These octal buffers and line drivers are designed specifically to improve both the performance and density of 3-state memory drivers, clock drivers, and bus-oriented receivers and transmitters.

Taken together with the 'ALS1240, these devices provide the choice of inverting and noninverting outputs. The -1 version of the SN74ALS1244A is identical to the standard version except the recommended maximum  $I_{OL}$  is increased to 24 mA.

The SN54ALS1244A is characterized over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74ALS1244A is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

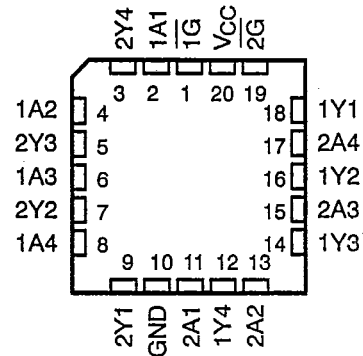
SN54ALS1244A . . . J PACKAGE  
SN74ALS1244A . . . DW OR N PACKAGE

(TOP VIEW)



SN54ALS1244A . . . FK PACKAGE

(TOP VIEW)

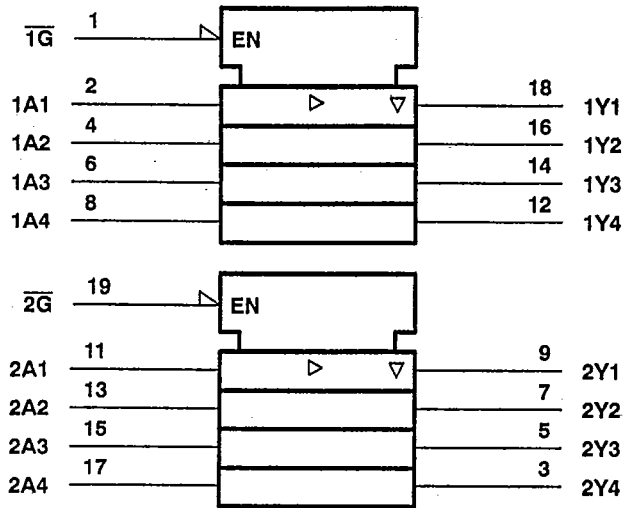


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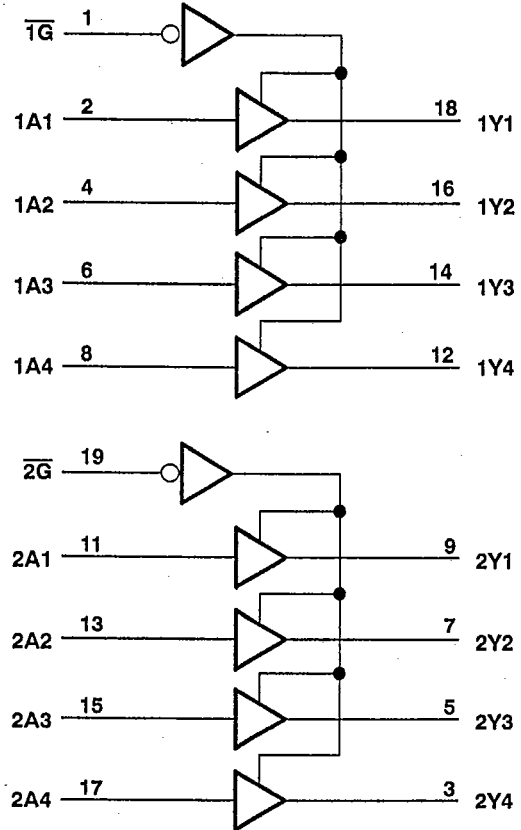
**SN54ALS1244A, SN74ALS1244A  
OCTAL BUFFERS AND DRIVERS  
WITH 3-STATE OUTPUTS**

logic symbol†



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

logic diagram (positive logic)



**SN54ALS1244A, SN74ALS1244A**  
**OCTAL BUFFERS AND DRIVERS**  
**WITH 3-STATE OUTPUTS**
**absolute maximum ratings over operating free-air temperature range (unless otherwise noted)**

Supply voltage, $V_{CC}$	7 V
Input voltage, $V_I$	7 V
Voltage applied to a disabled 3-state output	5.5 V
Operating free-air temperature range: SN54ALS1244A	-55°C to 125°C
SN74ALS1244A	0°C to 70°C
Storage temperature range	-55°C to 150°C

**recommended operating conditions**

		SN54ALS1244A			SN74ALS1244A			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
$V_{CC}$	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
$V_{IH}$	High-level input voltage	2			2			V
$V_{IL}$	Low-level input voltage			0.7			0.8	V
$I_{OH}$	High-level output current			-12			-15	mA
$I_{OL}$	Low-level output current			8			16 24†	mA
$T_A$	Operating free-air temperature	-55		125	0		70	°C

† The 24-mA limit applies only for the SN74ALS1244A-1 and only if  $V_{CC}$  is maintained between 4.75 V and 5.25 V.

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

PARAMETER	TEST CONDITIONS	SN54ALS1244A			SN74ALS1244A			UNIT
		MIN	TYP‡	MAX	MIN	TYP‡	MAX	
$V_{IK}$	$V_{CC} = 4.5$ V, $I_I = -18$ mA			-1.5			-1.5	V
$V_{OH}$	$V_{CC} = 4.5$ V to 5.5 V, $I_{OH} = -0.4$ mA	$V_{CC} - 2$			$V_{CC} - 2$			V
	$V_{CC} = 4.5$ V, $I_{OH} = -3$ mA	2.4	3.2		2.4	3.2		
	$V_{CC} = 4.5$ V, $I_{OH} = -12$ mA	2						
	$V_{CC} = 4.5$ V, $I_{OH} = -15$ mA				2			
$V_{OL}$	$V_{CC} = 4.5$ V, $I_{OL} = 8$ mA		0.25	0.4		0.25	0.4	V
	$V_{CC} = 4.5$ V, $I_{OL} = 16$ mA ( $I_{OL} = 24$ mA for -1 version)					0.35	0.5	
$I_{OZH}$	$V_{CC} = 5.5$ V, $V_O = 2.7$ V			20			20	μA
$I_{OZL}$	$V_{CC} = 5.5$ V, $V_O = 0.4$ V			-20			-20	μA
$I_I$	$V_{CC} = 5.5$ V, $V_I = 7$ V			0.1			0.1	mA
$I_{IH}$	$V_{CC} = 5.5$ V, $V_I = 2.7$ V			20			20	μA
$I_{IL}$	$V_{CC} = 5.5$ V, $V_I = 0.4$ V			-0.1			-0.1	mA
$I_O^§$	$V_{CC} = 5.5$ V, $V_O = 2.25$ V	-30		-112	-30		-112	mA
$I_{CC}$	$V_{CC} = 5.5$ V	Outputs high	6	15	6	11	mA	
		Outputs low	10	20	10	17		
		Outputs disabled	11	25	11	20		

‡ All typical values are at  $V_{CC} = 5$  V,  $T_A = 25^\circ\text{C}$ .

§ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit current  $I_{OS}$ .

# SN54ALS1244A, SN74ALS1244A

## OCTAL BUFFERS AND DRIVERS

### WITH 3-STATE OUTPUTS

#### switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V},$ $C_L = 50 \text{ pF},$ $R_1 = 500 \Omega,$ $R_2 = 500 \Omega,$ $T_A = \text{MIN to MAX}^\dagger$				UNIT
			SN54ALS1244A		SN74ALS1244B		
			MIN	MAX	MIN	MAX	
$t_{PLH}$	A	Y	3	21	3	14	ns
$t_{PHL}$			3	16	3	14	
$t_{PZH}$	$\bar{G}$	Y	6	28	6	22	ns
$t_{PZL}$			6	26	6	22	
$t_{PHZ}$	$\bar{G}$	Y	2	15	2	13	ns
$t_{PLZ}$			3	25	3	16	

<sup>†</sup> For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

NOTE 1: Load circuit and voltage waveforms are shown in Section 1 of the *ALS/AS Logic Data Book, 1986*.