

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

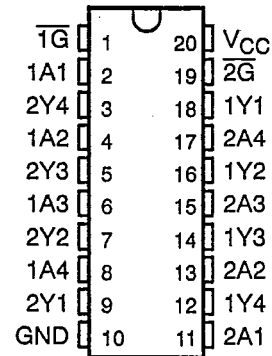
These octal buffers and line drivers are designed specifically to improve both the performance and density of 3-state memory drivers, clock drivers, and bus-oriented receivers and transmitters.

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°C to 125°C . The SN74ALS1244A is characterized for operation from 0°C to 70°C .

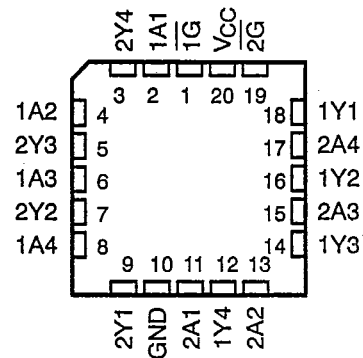
SN54ALS1244A . . . J PACKAGE
SN74ALS1244A . . . DW OR N PACKAGE

(TOP VIEW)



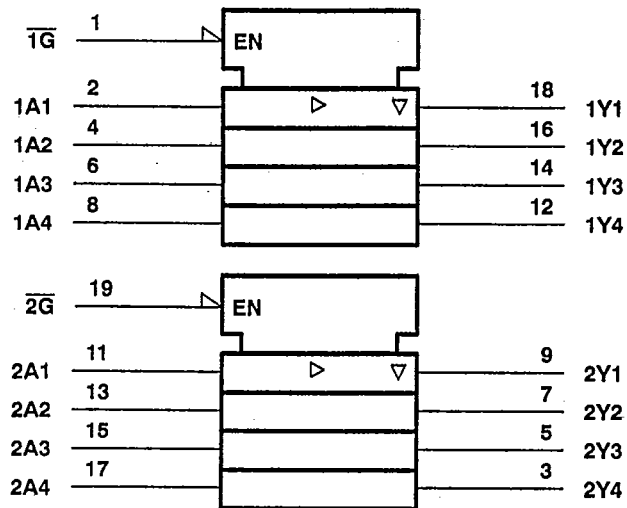
SN54ALS1244A . . . FK PACKAGE

(TOP VIEW)



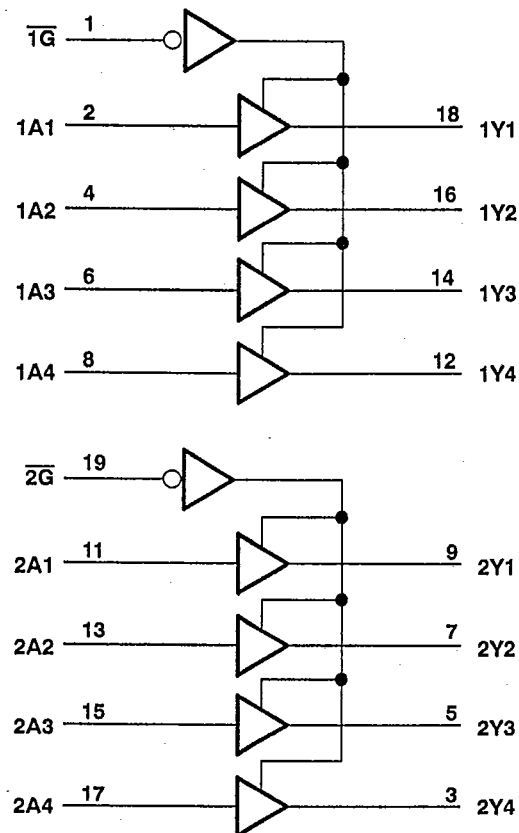
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logic symbol†



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

logic diagram (positive logic)



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					0.35	0.5	
	($I_{OL} = 24$ mA for – 1 version)							
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			6			6	mA
				15			11	
				10			17	
				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} .

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switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T _A = MIN to MAX†				UNIT
			SN54ALS1244A		SN74ALS1244B		
			MIN	MAX	MIN	MAX	
t _{PLH}	A	Y	3	21	3	14	ns
t _{PHL}			3	16	3	14	
t _{PZH}	G̅	Y	6	28	6	22	ns
t _{PZL}			6	26	6	22	
t _{PHZ}	G̅	Y	2	15	2	13	ns
t _{PLZ}			3	25	3	16	

[†] 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*.