

# SN54ALS465A THRU SN54ALS468A SN74ALS465A THRU SN74ALS468A OCTAL BUFFERS WITH 3-STATE OUTPUTS

SDAS223 - D2661, APRIL 1982 - REVISED MAY 1986

- Mechanically and Functionally Interchangeable With DM71/81LS97 and DM71/81LS98
- P-N-P Inputs Reduce Bus Loading
- 3-State Outputs Rated at  $I_{OL}$  of 12 mA and 24 mA for SN54ALS' and SN74ALS', Respectively
- Package Options Include Plastic Small Outline Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

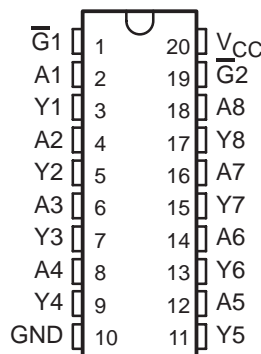
DEVICE	DATA PATH
'ALS465A	True
'ALS466A	Inverting
'ALS467A	True
'ALS468A	Inverting

## description

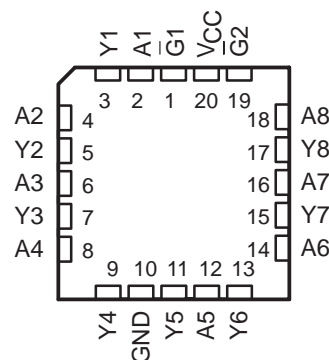
These octal buffers utilize the latest advanced low-power Schottky technology. The 'ALS465A and 'ALS466A have a two-input active-low AND enable gate controlling all eight data buffers. The 'ALS467A and 'ALS468A have two separate active-low enable inputs each controlling four data buffers. In each case, a high level on any  $\bar{G}$  places the affected outputs at high impedance.

The SN54ALS465A, SN54ALS466A, SN54ALS467A, and SN54ALS468A are characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74ALS465A, SN74ALS466A, SN74ALS467A, and SN74ALS468A are characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

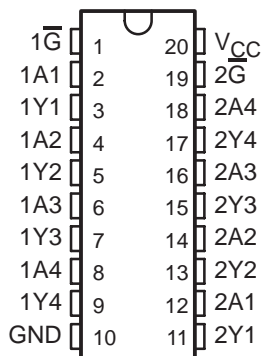
SN54ALS465A, SN54ALS466A . . . J PACKAGE  
SN74ALS465A, SN74ALS466A . . . DW OR N PACKAGE  
(TOP VIEW)



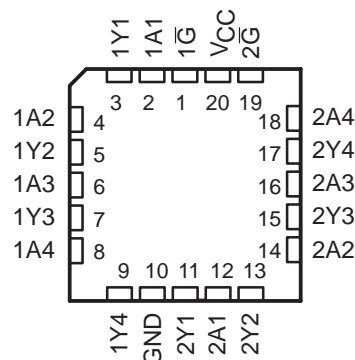
SN54ALS465A, SN54ALS466A . . . FK PACKAGE  
(TOP VIEW)



SN54ALS467A, SN54ALS468A . . . J PACKAGE  
SN74ALS467A, SN74ALS468A . . . DW OR N PACKAGE  
(TOP VIEW)



SN54ALS467A, SN54ALS468A . . . FK PACKAGE  
(TOP VIEW)



PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

**TEXAS  
INSTRUMENTS**

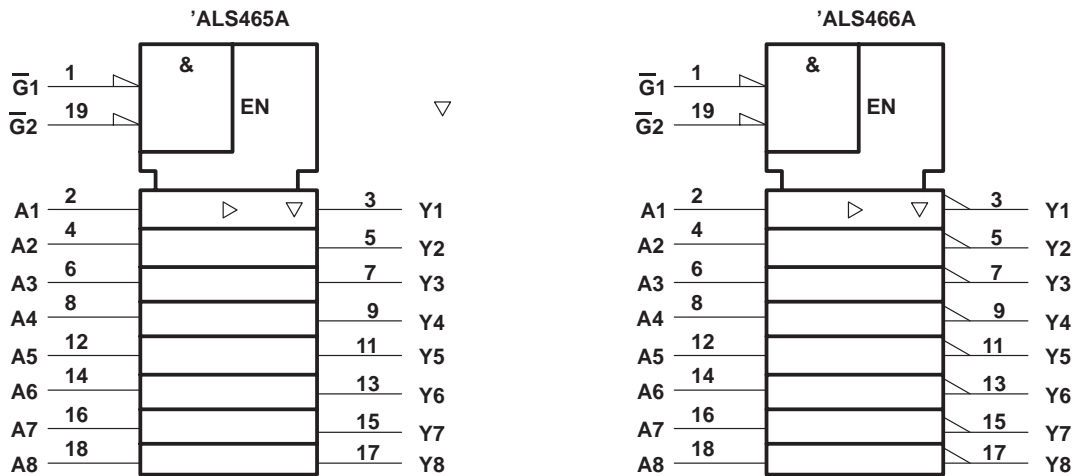
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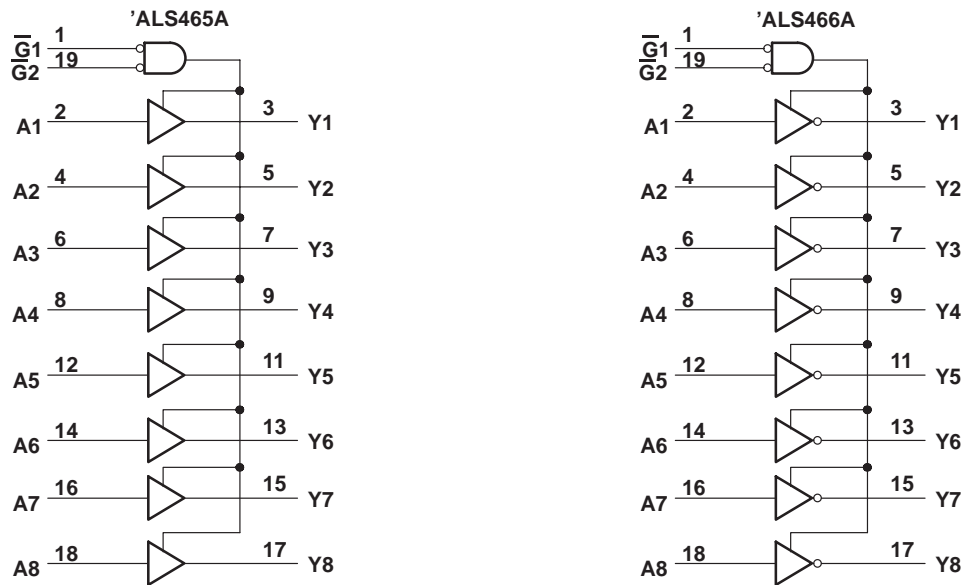
# SN54ALS465A THRU SN54ALS468A SN74ALS465A THRU SN74ALS468A OCTAL BUFFERS WITH 3-STATE OUTPUTS

SDAS223 - D2661, APRIL 1982 - REVISED MAY 1986

## logic symbols†



## logic diagrams (positive logic)

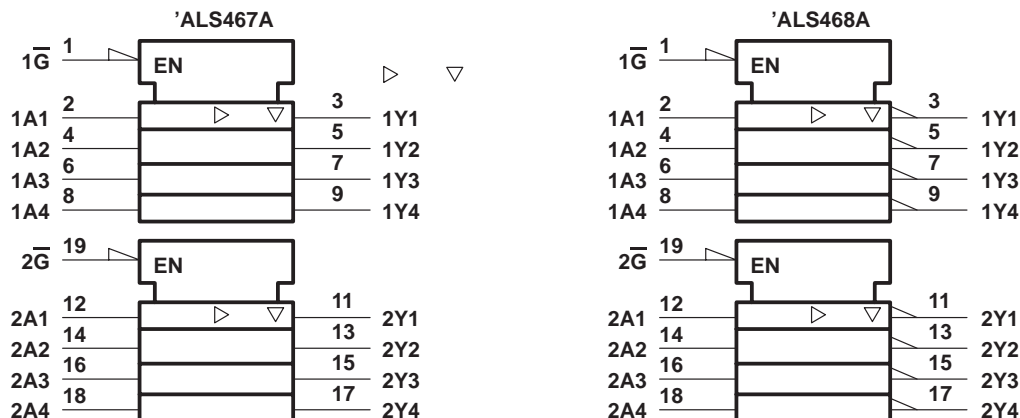


† These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.  
Pin numbers shown are for DW, J, and N packages.

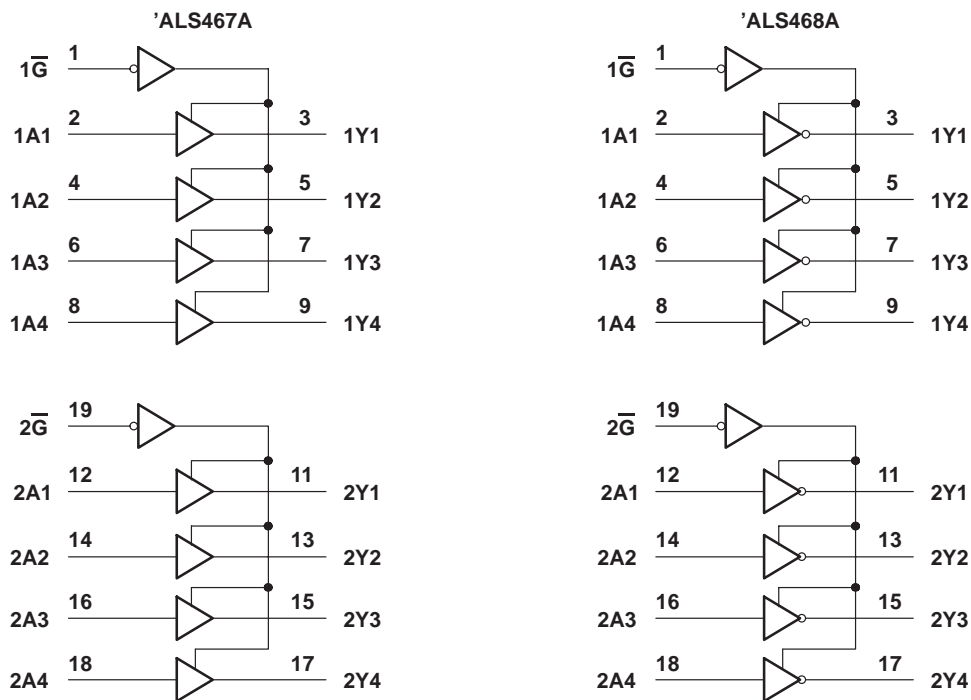
# SN54ALS465A THRU SN54ALS468A SN74ALS465A THRU SN74ALS468A OCTAL BUFFERS WITH 3-STATE OUTPUTS

SDAS223 - D2661, APRIL 1982 - REVISED MAY 1986

## logic symbols†



## logic diagrams (positive logic)



† These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.  
Pin numbers shown are for DW, J, and N packages.

# SN54ALS465A THRU SN54ALS468A SN74ALS465A THRU SN74ALS468A OCTAL BUFFERS WITH 3-STATE OUTPUTS

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

Supply voltage, $V_{CC}$	7 V
Input voltage	7 V
Voltage applied to a disabled 3-state output	5.5 V
Operating free-air temperature range: SN54ALS465A thru SN54ALS468A	-55°C to 125°C
SN74ALS465A thru SN74ALS468A	0°C to 70°C
Storage temperature range	-65°C to 150°C

## recommended operating conditions

		SN54ALS465A THRU SN54ALS468A			SN74ALS465A THRU SN74ALS468A			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			12			24	mA
							48†	
$T_A$	Operating free-air temperature	-55		125	0		70	°C

† The extended limit applies only if  $V_{CC}$  is maintained between 4.75 V and 5.25 V.

The 48-mA limit applies for SN74ALS465A-1, SN74ALS466A-1, SN74ALS467A-1, and SN74ALS468A-1 only.

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

PARAMETER	TEST CONDITIONS	SN54ALS465A THRU SN54ALS468A			SN74ALS465A THRU SN74ALS468A			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, $I_{OL} = 12$ mA		0.25	0.4		0.25	0.4	V
	$V_{CC} = 4.5$ V, $I_{OL} = 24$ mA ( $I_{OL} = 48$ mA -1 versions)					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
$I_{CC}$	'ALS465A 'ALS467A	$V_{CC} = 5.5$ V	Outputs high	11	21	11	16	mA
			Outputs low	19	33	19	28	
			Outputs disabled	23	38	23	33	
	'ALS466A 'ALS468A	$V_{CC} = 5.5$ V	Outputs high	7	15	7	10	
			Outputs low	16	29	16	24	
			Outputs disabled	19	32	19	27	

‡ All typical values are at  $V_{CC} = 5$  V,  $T_A = 25$ °C.

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



**SN54ALS465A THRU SN54ALS468A**  
**SN74ALS465A THRU SN74ALS468A**  
**OCTAL BUFFERS WITH 3-STATE OUTPUTS**

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**'ALS465A, 'ALS467A switching characteristics (see Note 1)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub> = 4.5 V to 5.5 V, C <sub>L</sub> = 50 pF, R <sub>1</sub> = 500 Ω, R <sub>2</sub> = 500 Ω, T <sub>A</sub> = MIN to MAX†				UNIT
			SN54ALS465A SN54ALS467A		SN74ALS465A SN74ALS467A		
			MIN	MAX	MIN	MAX	
t <sub>PLH</sub>	A	Y	2	16	2	13	ns
t <sub>PHL</sub>			4	15	4	12	
t <sub>PZH</sub>	$\bar{G}$	Any Y	4	27	4	23	ns
t <sub>PZL</sub>			5	30	5	25	
t <sub>PHZ</sub>	$\bar{G}$	Any Y	2	12	2	10	ns
t <sub>PLZ</sub>			3	21	3	18	

**'ALS466A, ALS468A switching characteristics (see Note 1)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub> = 4.5 V to 5.5 V, C <sub>L</sub> = 50 pF, R <sub>1</sub> = 500 Ω, R <sub>2</sub> = 500 Ω, T <sub>A</sub> = MIN to MAX†				UNIT
			SN54ALS466A SN54ALS468A		SN74ALS466A SN74ALS468A		
			MIN	MAX	MIN	MAX	
t <sub>PLH</sub>	A	Y	3	14	3	12	ns
t <sub>PHL</sub>			2	11	2	9	
t <sub>PZH</sub>	$\bar{G}$	Any Y	4	21	4	16	ns
t <sub>PZL</sub>			7	25	7	23	
t <sub>PHZ</sub>	$\bar{G}$	Any Y	2	12	2	10	ns
t <sub>PLZ</sub>			2	20	2	17	

† 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.



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