

SN54ALS1008A, SN54AS1008A, SN74ALS1008A, SN74AS1008A QUADRUPLE 2-INPUT POSITIVE-AND BUFFERS/DRIVERS

SDAS071A – D2661, DECEMBER 1982 – REVISED MAY 1986

- 'ALS1008A is a Buffer Version of 'ALS08
- 'AS1008A is a Driver Version of 'AS08
- 'AS1008A Offers High Capacitive Drive Capability
- Package Options include Plastic Small Outline Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

description

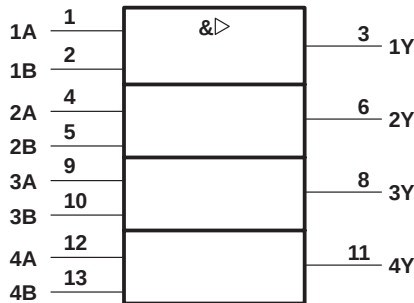
These devices contain four independent 2-input AND buffers/drivers. They perform the Boolean functions $Y = A \bullet B$ or $Y = \overline{A+B}$ in positive logic.

The SN54ALS1008A and SN54AS1008A are characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS1008A and SN74AS1008A are characterized for operation from 0°C to 70°C .

FUNCTION TABLE
(each gate)

INPUTS		OUTPUT
A	B	Y
H	H	H
L	X	L
X	L	L

logic symbol†

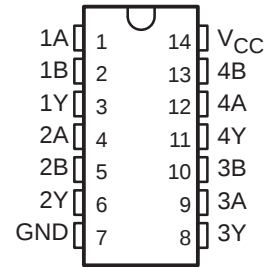


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

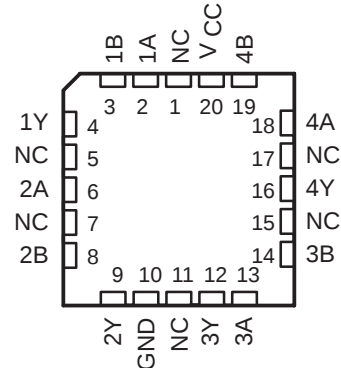
Pin numbers shown are for D, J, and N packages.

SN54ALS1008A, SN54AS1008A . . . J PACKAGE
SN74ALS1008A, SN74AS1008A . . . D OR N PACKAGE

(TOP VIEW)

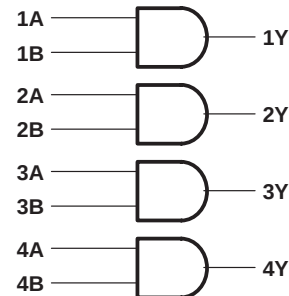


SN54ALS1008A, SN54AS1008A . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection

logic diagram (positive logic)



SN54ALS1008A, SN74ALS1008A QUADRUPLE 2-INPUT POSITIVE-AND BUFFERS

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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
Operating free-air temperature range: SN54ALS1008A	–55°C to 125°C
SN74ALS1008A	0°C to 70°C
Storage temperature range	–65°C to 150°C

recommended operating conditions

		SN54ALS1008A			SN74ALS1008A			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			–1			–2.6	mA
I_{OL}	Low-level output current			12			24	mA
T_A	Operating free-air temperature	–55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS	SN54ALS1008A			SN74ALS1008A			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, $I_{OH} = -1$ mA	2.4	3.3					
	$V_{CC} = 4.5$ V, $I_{OH} = -2.6$ mA				2.4	3.2		
V_{OL}	$V_{CC} = 4.5$ V, $I_{OL} = 12$ mA		0.25	0.4				V
	$V_{CC} = 4.5$ V, $I_{OL} = 24$ mA				0.35	0.5		
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
$I_{O}^{\dagger}$	$V_{CC} = 5.5$ V, $V_O = 2.25$ V	–30		–112	–30		–112	mA
I_{CCH}	$V_{CC} = 5.5$ V, $V_I = 4.5$ V		1.8	3		1.8	3	mA
I_{CCL}	$V_{CC} = 5.5$ V, $V_I = 0$		5.7	9.3		5.7	9.3	mA

† 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 approaches the true short-circuit output current, I_{OS} .

switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R _L = 500 Ω, T _A = MIN to MAX				UNIT
			SN54ALS1008A		SN74ALS1008A		
			MIN	MAX	MIN	MAX	
t _{PLH}	A or B	Y	2	11	2	9	ns
t _{PHL}			3	11	3	9	

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.



SN54AS1008A, SN74AS1008A QUADRUPLE 2-INPUT POSITIVE-AND DRIVERS

SDAS071A – D2661, DECEMBER 1982 – REVISED MAY 1986

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

Supply voltage, V_{CC}	7 V
Input voltage	7 V
Operating free-air temperature range: SN54AS1008A	–55°C to 125°C
SN74AS1008A	0°C to 70°C
Storage temperature range	–65°C to 150°C

recommended operating conditions

		SN54AS1008A			SN74AS1008A			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			0.8			0.8	V
I_{OH}	High-level output current			–40			–48	mA
I_{OL}	Low-level output current			40			48	mA
T_A	Operating free-air temperature	–55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS	SN54AS1008A			SN74AS1008A			UNIT
		MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5$ V, $I_I = -18$ mA			–1.2			–1.2	V
V_{OH}	$V_{CC} = 4.5$ V to 5.5 V, $I_{OH} = -2$ 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, $I_{OH} = -40$ mA	2						
	$V_{CC} = 4.5$ V, $I_{OH} = -48$ mA				2			
V_{OL}	$V_{CC} = 4.5$ V, $I_{OL} = 40$ mA	0.25	0.5					V
	$V_{CC} = 4.5$ V, $I_{OL} = 48$ mA				0.35	0.5		
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			–0.5			–0.5	mA
$I_{O}^{\dagger}$	$V_{CC} = 5.5$ V, $V_O = 2.25$ V	–50		–200	–50		–200	mA
I_{CCH}	$V_{CC} = 5.5$ V, $V_I = 4.5$ V		5.6	9.5		5.6	9.5	mA
I_{CCL}	$V_{CC} = 5.5$ V, $V_I = 0$		13.5	22		13.5	22	mA

† 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 approaches the true short-circuit output current, I_{OS} .

switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R _L = 500 Ω, T _A = MIN to MAX				UNIT
			SN54AS1008A		SN74AS1008A		
			MIN	MAX	MIN	MAX	
t _{PLH}	A or B	Y	1	6.5	1	6	ns
t _{PHL}			1	6.5	1	6	

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.

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