

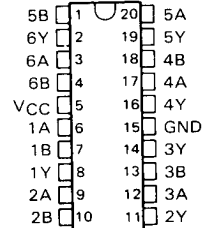
SN54ALS1832A, SN54AS1832, SN74ALS1832A, SN74AS1832 HEX 2-INPUT OR DRIVERS

AUGUST 1984 - REVISED MAY 1986

- High Capacitive Drive Capability
- 'ALS1832A Has Typical Delay Time of 5 ns ($C_L = 50$ pF) and Typical Power Dissipation of 5.3 mW per Gate
- 'AS1832 Has Typical Delay Time of 3.9 ns ($C_L = 50$ pF) and Typical Power Dissipation of Less than 17 mW per Gate
- Center VCC and GND Configuration Provides Minimum Lead Inductance in High Current Switching Applications
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

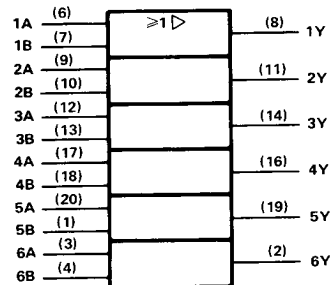
SN54ALS1832A, SN54AS1832 ... J PACKAGE
SN74ALS1832A, SN74AS1832 ... N PACKAGE

(TOP VIEW)



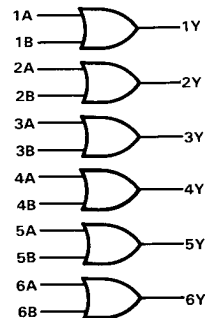
Use 'ALS832A or 'AS832B for chip carrier option.

logic symbol†



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

logic diagram (positive logic)



description

These devices contain six independent 2-input OR drivers. They perform the Boolean functions $Y = A + B$ or $Y = \bar{A} \cdot \bar{B}$ in positive logic.

The center pin configuration used in the 'ALS1832A and 'AS1832 provides a reduction of lead inductance when compared to the 'ALS832A and 'AS832B. This reduction of lead inductance will minimize noise generated onto either the VCC or GND bus. This reduction is significant in high current switching applications.

The SN54ALS1832A and SN54AS1832 are characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS1832A and SN74AS1832 are characterized for operation from 0°C to 70°C .

FUNCTION TABLE (each driver)

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

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SN54ALS1832A, SN74ALS1832A
HEX 2-INPUT OR DRIVERS

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: SN54ALS1832A	-55°C to 125°C
SN74ALS1832A	0°C to 70°C
Storage temperature range	-65°C to 150°C

recommended operating conditions

		SN54ALS1832A			SN74ALS1832A			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
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		SN54ALS1832A			SN74ALS1832A			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} = -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					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 [‡]	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		6	9		6	9	mA
I _{CCL}	V _{CC} = 5.5 V,	V _I = 0 V		9.5	16		9.5	16	mA

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

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

switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 5 V, C _L = 50 pF, R _L = 500 Ω, T _A = 25 °C	V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R _L = 500 Ω, T _A = MIN to MAX		UNIT		
			ALS1832A	SN54ALS1832A	SN74ALS1832A			
			TYP	MIN	MAX		MIN	MAX
t _{PLH}	A or B	Y	6	2	11	2	9	ns
t _{PHL}			4	1	10	1	8	

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

2
ALS and AS Circuits

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: SN54AS1832	-55°C to 125°C
SN74AS1832	0°C to 70°C
Storage temperature range	-65°C to 150°C

recommended operating conditions

		SN54AS1832			SN74AS1832			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		SN54AS1832			SN74AS1832			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
$I_{O\ddagger}$	$V_{CC} = 5.5$ V,	$V_O = 2.25$ V	-50		-200	-50		-200	mA
I_{CCH}	$V_{CC} = 5.5$ V,	$V_I = 4.5$ V		11	17		11	17	mA
I_{CCL}	$V_{CC} = 5.5$ V,	$V_I = 0$ V		22	36		22	36	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 approximates one half of the true short-circuit output current, I_{OS} .

switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	VCC = 4.5 V to 5.5 V, CL = 50 pF, RL = 500 Ω TA = MIN to MAX				UNIT
			SN54AS1832		SN74AS1832		
			MIN	MAX	MIN	MAX	
			tPLH	A or B	Y	1	
tPHL	1	7	1			6.3	

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