

# SN54ALS805A, SN54AS805B, SN74ALS805A, SN74AS805B HEX 2-INPUT NOR DRIVERS

D2661, DECEMBER 1982 — REVISED MAY 1986

- High Capacitive Drive Capability
- 'ALS805A has Typical Delay Time of 4.2 ns ( $C_L = 50$  pF) and Typical Power Dissipation of 4.2 mW per Gate
- 'AS805B has Typical Delay Time of 2.6 ns ( $C_L = 50$  pF) and Typical Power Dissipation of 12 mW per Gate
- 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

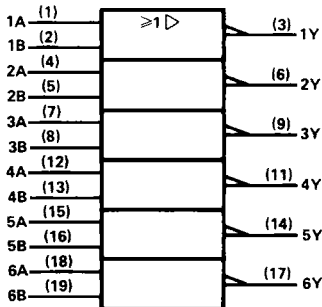
These devices contain six independent 2-input NOR drivers. They perform the Boolean functions  $Y = A + B$  or  $Y = \bar{A} \cdot \bar{B}$  in positive logic.

The SN54ALS805A and SN54AS805B are characterized for operation over the full military temperature range of  $-55^\circ\text{C}$  to  $125^\circ\text{C}$ . The SN74ALS805A and SN74AS805B are characterized for operation from  $0^\circ\text{C}$  to  $70^\circ\text{C}$ .

FUNCTION TABLE (each driver)

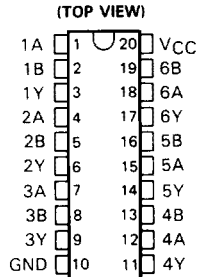
INPUTS		OUTPUT
A	B	Y
H	X	L
X	H	L
L	L	H

## logic symbol†

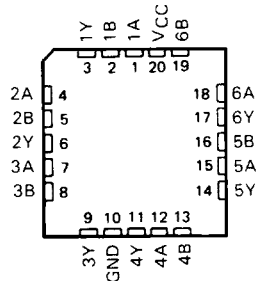


†This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

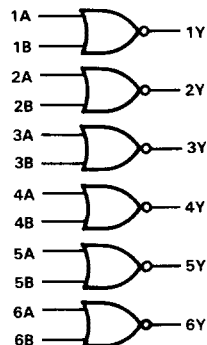
SN54ALS805A, SN54AS805B . . . J PACKAGE  
SN74ALS805A, SN74AS805B . . . DW OR N PACKAGE



SN54ALS805A, SN54AS805B . . . FK PACKAGE  
(TOP VIEW)



## logic diagram (positive logic)



# SN54ALS805A, SN74ALS805A HEX 2-INPUT NOR 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: SN54ALS805A .....	-55°C to 125°C
SN74ALS805A .....	0°C to 70°C
Storage temperature range .....	-65°C to 150°C

## recommended operating conditions

		SN54ALS805A			SN74ALS805A			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			V	
$I_{OH}$	High-level output current				-15			mA	
$I_{OL}$	Low-level output current				24			mA	
$T_A$	Operating free-air temperature	-55			0			70	°C

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

PARAMETER	TEST CONDITIONS	SN54ALS805A			SN74ALS805A			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, $V_I = 0$ V				2	4	2	4	mA
$I_{CCL}$	$V_{CC} = 5.5$ V, $V_I = 4.5$ V				8	14	8	14	mA

†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,  $I_{OS}$ .

## 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, $T_A = \text{MIN to MAX}$		UNIT	
			ALS805A		SN74ALS805A			
			TYP	MIN	MAX	MIN		MAX
$t_{PLH}$	A or B	Y	4	2	9	2	7	ns
$t_{PHL}$			4	2	9	2	8	

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

# SN54AS805B, SN74AS805B HEX 2-INPUT NOR 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: SN54AS805B .....	-55°C to 125°C
SN74AS805B .....	0°C to 70°C
Storage temperature range .....	-65°C to 150°C

## recommended operating conditions

		SN54AS805B			SN74AS805B			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

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ALS and AS Circuits

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

PARAMETER	TEST CONDITIONS	SN54AS805B			SN74AS805B			UNIT
		MIN	TYP†	MAX	MIN	TYP†	MAX	
$V_{IK}$	$V_{CC} = 4.5 \text{ V}$ , $I_I = -18 \text{ mA}$			-1.2			-1.2	V
$V_{OH}$	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$ , $I_{OH} = -2 \text{ mA}$	$V_{CC}-2$			$V_{CC}-2$			V
	$V_{CC} = 4.5 \text{ V}$ , $I_{OH} = -3 \text{ mA}$	2.4	3.2		2.4	3.2		
	$V_{CC} = 4.5 \text{ V}$ , $I_{OH} = -40 \text{ mA}$	2						
$V_{OL}$	$V_{CC} = 4.5 \text{ V}$ , $I_{OH} = -48 \text{ mA}$				2			V
	$V_{CC} = 4.5 \text{ V}$ , $I_{OL} = 40 \text{ mA}$		0.25	0.5				
$I_I$	$V_{CC} = 5.5 \text{ V}$ , $V_I = 7 \text{ V}$			0.1			0.1	mA
$I_{IH}$	$V_{CC} = 5.5 \text{ V}$ , $V_I = 2.7 \text{ V}$			20			20	µA
$I_{IL}$	$V_{CC} = 5.5 \text{ V}$ , $V_I = 0.4 \text{ V}$			-0.5			-0.5	mA
$I_{O\pm}$	$V_{CC} = 5.5 \text{ V}$ , $V_O = 2.25 \text{ V}$	-50		-200	-50		-200	mA
$I_{CCH}$	$V_{CC} = 5.5 \text{ V}$ , $V_I = 0 \text{ V}$		6.5	10		6.5	10	mA
$I_{CCL}$	$V_{CC} = 5.5 \text{ V}$ , $V_I = 4.5 \text{ V}$		20	32		20	32	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)	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$ , $C_L = 50 \text{ pF}$ , $R_L = 500 \Omega$ , $T_A = \text{MIN to MAX}$				UNIT
			SN54AS805B		SN74AS805B		
			MIN	MAX	MIN	MAX	
$t_{PLH}$	A or B	Y	1	4.8	1	4.3	ns
$t_{PHL}$			1	4.8	1	4.3	

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

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## ALS and AS Circuits