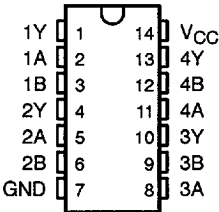


SN74LVC02
QUADRUPLE 2-INPUT POSITIVE-NOR GATE

SCAS280 – JANUARY 1993 – REVISED MARCH 1994

- **EPIC™** (Enhanced-Performance Implanted CMOS) Submicron Process
- Typical V_{OLP} (Output Ground Bounce) $< 0.8\text{ V}$ at $V_{CC} = 3.3\text{ V}$, $T_A = 25^\circ\text{C}$
- Typical V_{OHV} (Output V_{OH} Undershoot) $> 2\text{ V}$ at $V_{CC} = 3.3\text{ V}$, $T_A = 25^\circ\text{C}$
- Package Options Include Plastic Small-Outline (D), Shrink Small-Outline (DB), and Thin Shrink Small-Outline (PW) Packages

D, DB, OR PW PACKAGE
(TOP VIEW)



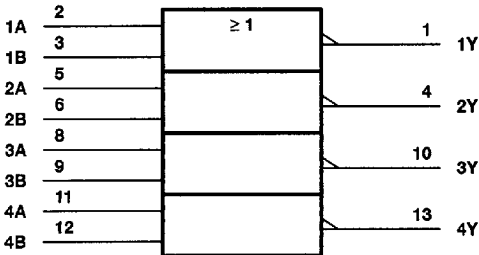
description

This quadruple 2-input positive-NOR gate is designed for 2.7-V to 3.6-V V_{CC} operation. The SN74LVC02 performs the Boolean functions $Y = \overline{A + B}$ or $Y = \overline{A} \cdot \overline{B}$ in positive logic. The SN74LVC02 is characterized for operation from -40°C to 85°C .

FUNCTION TABLE
(each gate)

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

logic symbol†



logic diagram, each gate (positive logic)



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

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SN74LVC02
QUADRUPLE 2-INPUT POSITIVE-NOR GATE

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

Supply voltage range, V_{CC}	–0.5 V to 4.6 V
Input voltage range, V_I	–0.5 V to 4.6 V
Output voltage range, V_O (see Note 1)	–0.5 V to $V_{CC} + 0.5$ V
Input clamp current, I_{IK} ($V_I < 0$)	–50 mA
Output clamp current, I_{OK} ($V_O < 0$ or $V_O > V_{CC}$)	±50 mA
Continuous output current, I_O ($V_O = 0$ to V_{CC})	±50 mA
Continuous current through V_{CC} or GND	±100 mA
Maximum power dissipation at $T_A = 55^{\circ}\text{C}$ (in still air): D package	1.25 W
DB or PW package	0.5 W
Storage temperature range	–65°C to 150°C

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTE 1: This value is limited to 4.6 V maximum.

recommended operating conditions (see Note 2)

			MIN	MAX	UNIT
V_{CC}	Supply voltage		2.7	3.6	V
V_{IH}	High-level input voltage	$V_{CC} = 2.7$ V to 3.6 V	2		V
V_{IL}	Low-level input voltage	$V_{CC} = 2.7$ V to 3.6 V		0.8	V
V_I	Input voltage		0	V_{CC}	V
V_O	Output voltage		0	V_{CC}	V
I_{OH}	High-level output current	$V_{CC} = 2.7$ V		–12	mA
		$V_{CC} = 3$ V		–24	
I_{OL}	Low-level output current	$V_{CC} = 2.7$ V		12	mA
		$V_{CC} = 3$ V		24	
$\Delta t/\Delta v$	Input transition rise or fall rate		0	10	ns/V
T_A	Operating free-air temperature		–40	85	°C

NOTE 2: Unused or floating inputs must be held high or low.

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

PARAMETER	TEST CONDITIONS	V _{CC} [‡]	T _A = -40°C to 85°C		UNIT
			MIN	MAX	
V _{OH}	I _{OH} = -100 μA	MIN to MAX	V _{CC} - 0.2		V
	I _{OH} = -12 mA	2.7 V	2.2		
		3 V	2.4		
	I _{OH} = -24 mA	3 V	2		
V _{OL}	I _{OL} = 100 μA	MIN to MAX	0.2		V
	I _{OL} = 12 mA	2.7 V	0.4		
		3 V	0.55		
	I _{OL} = 24 mA				
I _I	V _I = V _{CC} or GND	3.6 V	±5		μA
I _{CC}	V _I = V _{CC} or GND, I _O = 0	3.6 V	20		μA
ΔI _{CC}	V _{CC} = 3 V to 3.6 V, One input at V _{CC} - 0.6 V, Other inputs at V _{CC} or GND		500		μA
C _i	V _I = V _{CC} or GND	3.3 V			pF

‡ For conditions shown as MIN or MAX, use the appropriate values under recommended operating conditions.