

SN54HC7032, SN74HC7032 QUADRUPLE POSITIVE-OR GATES WITH SCHMITT-TRIGGER INPUTS

D2831, MARCH 1984—REVISED SEPTEMBER 1987

- Operation from Very Slow Input Transitions
- Temperature-Compensated Threshold Levels
- High Noise Immunity
- Same Pinouts as 'HC32
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

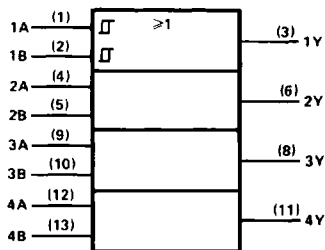
description

Each circuit functions as a quadruple OR gate. They perform the Boolean function $Y = A + B$ or $Y = \overline{A \cdot B}$ in positive logic. However, because of the Schmitt action, the inputs have different input threshold levels for positive- and negative-going signals.

The circuits are temperature compensated and can be triggered from the slowest of input ramps and will still give clean jitter-free output signals.

The SN54HC7032 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74HC7032 is characterized for operation from -40°C to 85°C .

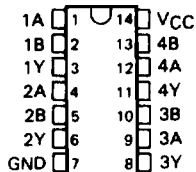
logic symbol†



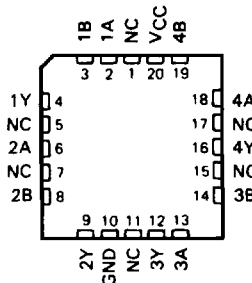
†This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

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

SN54HC7032 . . . J PACKAGE
SN74HC7032 . . . D OR N PACKAGE
(TOP VIEW)



SN54HC7032 . . . FK PACKAGE
(TOP VIEW)

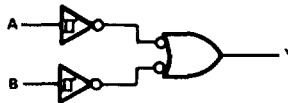


NC—No internal connection

FUNCTION TABLE

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

logic diagram, each gate (positive logic)



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**SN54HC7032, SN74HC7032
QUADRUPLE POSITIVE-OR GATES WITH SCHMITT-TRIGGER INPUTS**

absolute maximum ratings over operating free-air temperature range†

Supply voltage, V_{CC}	-0.5 V to 7 V
Input clamp current, I_{IK} ($V_I < 0$ or $V_I > V_{CC}$)	± 20 mA
Output clamp current, I_{OK} ($V_O < 0$ or $V_O > V_{CC}$)	± 20 mA
Continuous output current, I_O ($V_O = 0$ to V_{CC})	± 25 mA
Continuous current through V_{CC} or GND pins	± 50 mA
Lead temperature 1,6 mm (1/16 in) from case for 60 s: FK or J package	300 °C
Lead temperature 1,6 mm (1/16 in) from case for 10 s: D or N package	260 °C
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.

recommended operating conditions

		SN54HC7032			SN74HC7032			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	2	5	6	2	5	6	V
V_{IH}	High-level input voltage	$V_{CC} = 2$ V	1.5		1.5			V
		$V_{CC} = 4.5$ V	3.15		3.15			
		$V_{CC} = 6$ V	4.2		4.2			
V_{IL}	Low-level input voltage	$V_{CC} = 2$ V	0	0.3	0	0.3		V
		$V_{CC} = 4.5$ V	0	0.9	0	0.9		
		$V_{CC} = 6$ V	0	1.2	0	1.2		
V_I	Input voltage	0		V_{CC}	0		V_{CC}	V
V_O	Output voltage	0		V_{CC}	0		V_{CC}	V
T_A	Operating free-air temperature	-55		125	-40		85	°C

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HCNOS Devices

SN54HC7032, SN74HC7032
QUADRUPLE POSITIVE-OR GATES WITH SCHMITT-TRIGGERED INPUTS

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

PARAMETER	TEST CONDITIONS	V _{CC}	T _A = 25 °C			SN54HC7032		SN74HC7032		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V _{OH}	V _I = V _{IH} or V _{IL} , I _{OH} = -20 μA	2 V	1.9	1.998		1.9		1.9	V	
		4.5 V	4.4	4.499		4.4		4.4		
		6 V	5.9	5.999		5.9		5.9		
	4.5 V	3.98	4.30		3.7		3.84			
V _{OL}	V _I = V _{IH} or V _{IL} , I _{OH} = -4 mA	2 V		0.002	0.1			0.1	V	
		4.5 V		0.001	0.1			0.1		
		6 V		0.001	0.1			0.1		
	4.5 V		0.17	0.26			0.4	0.33		
V _{T+}	V _I = V _{IH} or V _{IL} , I _{OL} = 5.2 mA	2 V		0.15	0.26			0.4	0.33	
		4.5 V		0.17	0.26			0.4	0.33	
		6 V		0.15	0.26			0.4	0.33	
V _{T-}		2 V	0.70	1.2	1.50	0.70	1.50	0.70	1.50	
		4.5 V	1.55	2.5	3.15	1.55	3.15	1.55	3.15	
		6 V	2.10	3.3	4.20	2.10	4.20	2.10	4.20	
V _{T+} - V _{T-}		2 V	0.30	0.6	1.00	0.30	1.00	0.30	1.00	
		4.5 V	0.90	1.6	2.45	0.90	2.45	0.90	2.45	
		6 V	1.20	2.0	3.20	1.20	3.20	1.20	3.20	
I _I	V _I = V _{CC} or 0	6 V		±0.1	±100		±1000	±1000	nA	
I _{CC}	V _I = V _{CC} or 0, I _Q = 0	6 V			2		40	20	μA	
C _i		2 to 6 V		3	10		10	10	pF	

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HC MOS Devices

switching characteristics over recommended operating free-air temperature range (unless otherwise noted), C_L = 50 pF (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC}	T _A = 25 °C			SN54HC7032		SN74HC7032		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t _{pd}	A or B	Y	2 V		60	130		195		163	ns
			4.5 V		18	26		39		33	
			6 V		14	22		33		28	
t _t		Any	2 V		28	75		110		95	ns
			4.5 V		8	15		22		19	
			6 V		6	13		19		16	
C _{pd}	Power dissipation capacitance per gate			No load, T _A = 25 °C				20 pF typ			

Note 1: Load circuits and voltage waveforms are shown in Section 1.

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