

TYPES SN54S268, SN74S268 HEX D-TYPE TRANSPARENT LATCHES WITH 3-STATE OUTPUTS

DECEMBER 1983

- 6 Latches in a Single Package
- 3-State Bus-Driving True Outputs
- Full Parallel Access for Loading
- Buffered Control Inputs
- PNP Inputs Reduce D-C Loading on Data Lines
- HEX Version of 'S373

description

These 6-bit latches feature three-state outputs designed specifically for driving highly capacitive or relatively low-impedance loads. They are particularly suitable for implementing buffer registers, I/O ports, bidirectional bus drivers, and working registers.

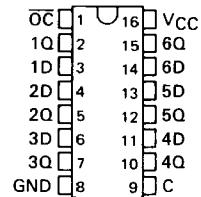
The six latches of the 'S268 are transparent D-type latches. While the enable (C) is high the Q outputs will follow the data (D) inputs. When the enable is taken low, the Q outputs will be latched at the levels that were set up at the D inputs.

Schmitt-trigger buffered inputs at the enable/clock lines simplify system design as ac and dc noise rejection is improved by typically 400 mV due to the input hysteresis. A buffered output control input can be used to place the eight outputs in either a normal logic state (high or low logic levels) or a high-impedance state. In the high-impedance state the outputs neither load nor drive the bus lines significantly.

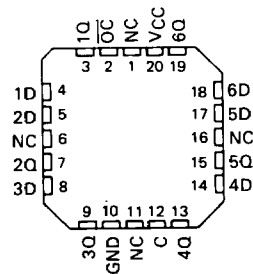
The output control \overline{OC} does not affect the internal operations of the latches. Old data can be retained or new data can be entered while the outputs are off.

The SN54S268 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74S268 is characterized for operation from 0°C to 70°C .

SN54S268 . . . J PACKAGE
SN74S268 . . . D, J OR N PACKAGE
(TOP VIEW)



SN54S268 . . . FK PACKAGE
SN74S268 . . . FN PACKAGE
(TOP VIEW)



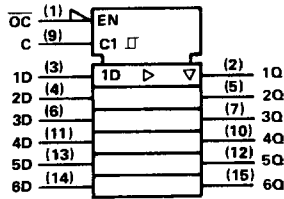
NC - No internal connection

FUNCTION TABLE (EACH LATCH)

INPUTS			OUTPUT
\overline{OC}	ENABLE C	D	Q
L	H	H	H
L	H	L	L
L	L	X	Q_0
H	X	X	Z

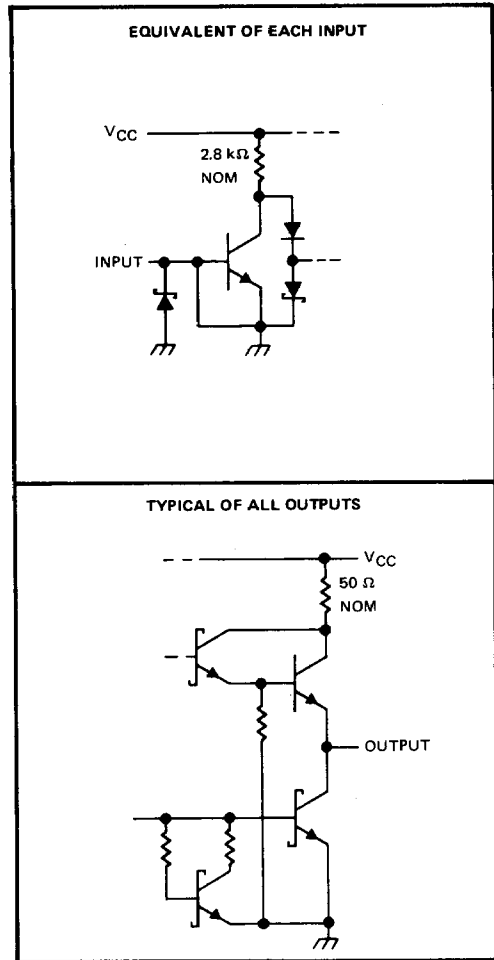
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logic symbol

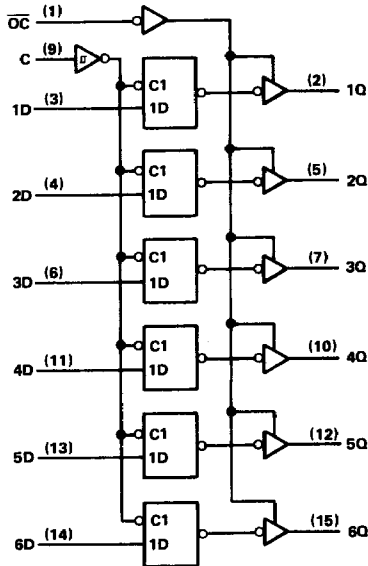


Pin numbers shown on logic notation are for D, J or N packages.

schematics of inputs and outputs



logic diagram (positive logic)



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

Supply voltage, V_{CC} (see Note 1)	7 V
Input voltage	5.5 V
Voltage applied to a disabled 3-state output	5.5 V
Operating free-air temperature range: SN54S268	-55°C to 125°C
SN74S268	0°C to 70°C
Storage temperature range	-65°C to 150°C

NOTE 1: Voltage values are with respect to network ground terminal.

TYPES SN54S268, SN74S268 HEX D-TYPE TRANSPARENT LATCHES WITH 3-STATE OUTPUTS

recommended operating conditions

		SN54S268			SN74S268			UNIT		
		MIN	NOM	MAX	MIN	NOM	MAX			
V _{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	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				-2			mA		
I _{OL}	Low-level output current				20			mA		
t _w	Pulse duration, enable C	High	6			6			ns	
		Low	7.3			7.3			ns	
t _{su}	Setup time, data before enable C ↓	0			0			ns		
t _h	Hold time, data after enable C ↓	10			10			ns		
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†		MIN	TYP‡	MAX	UNIT	
V _{IK}		V _{CC} = MIN, I _I = -18 mA				-1.2	V	
V _{OH}	SN54S'	V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OH} = MAX		2.4	3.4	V		
	SN74S'			2.4	3.1			
V _{OL}		V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OL} = 20 mA				0.5	V	
I _{OZH}		V _{CC} = MAX, V _{IH} = 2 V, V _O = 2.4 V				50	μA	
I _{OZL}		V _{CC} = MAX, V _{IH} = 2 V, V _O = 0.5 V				-50	μA	
I _I		V _{CC} = MAX, V _I = 5.5 V				1	mA	
I _{IH}		V _{CC} = MAX, V _I = 2.7 V				50	μA	
I _{IL}		V _{CC} = MAX, V _I = 0.5 V				-0.25	mA	
I _{OS§}		V _{CC} = MAX				-40	-100	mA
I _{CC}	V _{CC} = MAX	Outputs high		54	94	mA		
		Outputs low		67	119			
		Outputs disabled		81	136			

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.

§ Not more than one output should be shorted at a time and duration of the short circuit should not exceed one second.

switching characteristics, V_{CC} = 5 V, T_A = 25°C

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	'S268			UNIT
				MIN	TYP	MAX	
t _{PLH}	D	Any Q	R _L = 280 Ω, See Note 2	C _L = 15 pF	7	12	ns
t _{PHL}					7	12	
t _{PLH}	C	Any Q			7	14	ns
t _{PHL}					12	18	
t _{PZH}	\overline{OC}	Any Q			8	15	ns
t _{PZL}					11	18	
t _{PHZ}	\overline{OC}	Any Q	R _L = 280 Ω, See Note 2	C _L = 5 pF	6	9	ns
t _{PLZ}			8		12		

NOTE: 2. See General Information Section for load circuits and voltage waveforms.

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