

74S280

Parity Generator/Checker

9-Bit Odd/Even Parity Generator/Checker
Product Specification

Logic Products

FEATURES

- Buffered inputs — one normalized load
- Word-length easily expanded by cascading
- Similar pin configuration to '180 for easy system up-grading

DESCRIPTION

The '280 is a 9-bit parity generator or checker commonly used to detect errors in high-speed data transmission or data retrieval systems. Both Even and Odd parity outputs are available for generating or checking even or odd parity on up to 9 bits.

The Even parity output (Σ_E) is HIGH when an even number of Data inputs ($I_0 - I_8$) are HIGH. The Odd parity output (Σ_O) is HIGH when an odd number of data inputs are HIGH.

Expansion to larger word sizes is accomplished by tying the Even outputs (Σ_E)

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
74S280	9.9ns	67mA

ORDERING CODE

PACKAGES	COMMERCIAL RANGE $V_{CC} = 5V \pm 5\%$; $T_A = 0^\circ C$ to $+70^\circ C$
Plastic DIP	N74S280N

NOTE:

For information regarding devices processed to Military Specifications, see the Signetics Military Products Data Manual.

INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

PINS	DESCRIPTION	74S
$I_0 - I_8$	Data inputs	1Sul
Σ_E, Σ_O	Parity outputs	10Sul

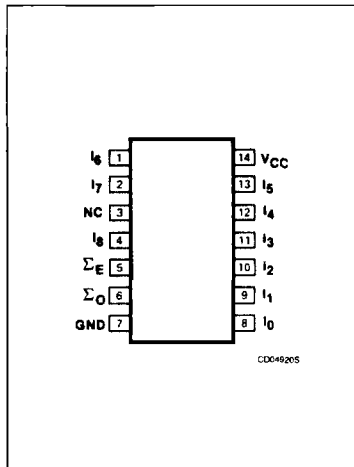
NOTE:

A 74S unit load (Sul) is $50\mu A$ I_{IH} and $-2.0mA$ I_{IL} .

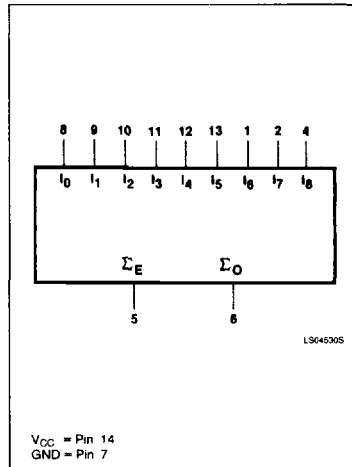
of up to nine parallel devices to the Data inputs of the final stage. This expansion scheme allows an 81-bit data word to be

checked in less than 40ns with the 'S280.

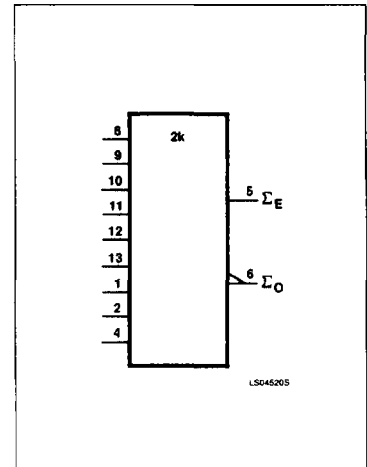
PIN CONFIGURATION



LOGIC SYMBOL



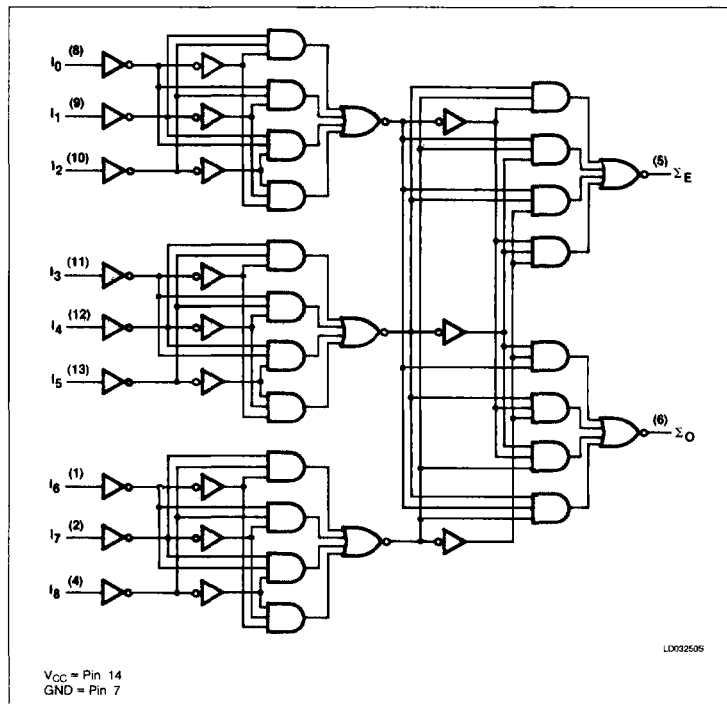
LOGIC SYMBOL (IEEE/IEC)



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LOGIC DIAGRAM



FUNCTION TABLE

INPUTS	OUTPUTS	
	ΣE	ΣO
Number of HIGH data inputs ($I_0 - I_8$)		
Even	H	L
Odd	L	H

H = HIGH voltage level
L = LOW voltage level

ABSOLUTE MAXIMUM RATINGS (Over operating free-air temperature range unless otherwise noted.)

PARAMETER	74S	UNIT
V_{CC} Supply voltage	7.0	V
V_{IN} Input voltage	-0.5 to +5.5	V
I_{IN} Input current	-30 to +5	mA
V_{OUT} Voltage applied to output in HIGH output state	-0.5 to $+V_{CC}$	V
T_A Operating free-air temperature range	0 to 70	°C

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RECOMMENDED OPERATING CONDITIONS

PARAMETER		74S			UNIT
		Min	Nom	Max	
V _{CC}	Supply voltage	4.75	5.0	5.25	V
V _{IH}	HIGH-level input voltage	2.0			V
V _{IL}	LOW-level input voltage			+0.8	V
I _{IK}	Input clamp current			-18	mA
I _{OH}	HIGH-level output current			-1000	μA
I _{OL}	LOW-level output current			20	mA
T _A	Operating free-air temperature	0		70	°C

DC ELECTRICAL CHARACTERISTICS (Over recommended operating free-air temperature range unless otherwise noted.)

PARAMETER	TEST CONDITIONS ¹	74S280			UNIT	
		Min	Typ ²	Max		
V _{OH}	HIGH-level output voltage	V _{CC} = MIN, V _{IL} = MAX, I _{OH} = MAX, V _{IH} = MIN	2.7	3.4		V
V _{OL}	LOW-level output voltage	V _{CC} = MIN, V _{IH} = MIN, I _{OL} = MAX, V _{IL} = MAX			0.5	V
V _{IK}	Input clamp voltage	V _{CC} = MIN, I _I = I _{IK}			-1.2	V
I _I	Input current at maximum input voltage	V _{CC} = MAX, V _I = 5.5V			1.0	mA
I _{IH}	HIGH-level input current	V _{CC} = MAX, V _I = 2.7V			50	μA
I _{IL}	LOW-level input current	V _{CC} = MAX, V _I = 0.5V			-2	mA
I _{OS}	Short-circuit output current ³	V _{CC} = MAX	-40		-100	mA
I _{CC}	Supply current ⁴ (total)	V _{CC} = MAX		67	105	mA

NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
- All typical values are at V_{CC} = 5V, T_A = 25°C.
- I_{OS} is tested with V_{OUT} = +0.5V and V_{CC} = V_{CC} MAX + 0.5V. Not more than one output should be shorted at a time and duration of the short circuit should not exceed one second.
- I_{CC} is measured with all inputs grounded and all outputs open.

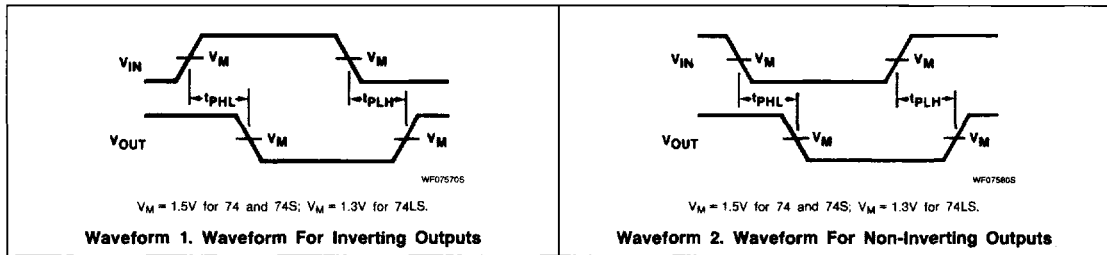
AC ELECTRICAL CHARACTERISTICS T_A = 25°C, V_{CC} = 5.0V

PARAMETER	TEST CONDITIONS	74S280		UNIT	
		C _L = 15pF, R _L = 280Ω			
		Min	Max		
t _{PLH} t _{PHL}	Propagation delay Data to even output	Waveforms 1 & 2	10 11	21 18	ns
t _{PLH} t _{PHL}	Propagation delay Data to odd output	Waveforms 1 & 2	9.6 9.3	21 18	ns

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AC WAVEFORMS



TEST CIRCUITS AND WAVEFORMS

