

74AC280 9-Bit Parity Generator/Checker

General Description

The AC280 is a high-speed parity generator/checker that accepts nine bits of input data and detects whether an even or an odd number of these inputs is HIGH. If an even number of inputs is HIGH, the Sum Even output is HIGH. If an odd number is HIGH, the Sum Even output is LOW. The Sum Odd output is the complement of the Sum Even output.

Features

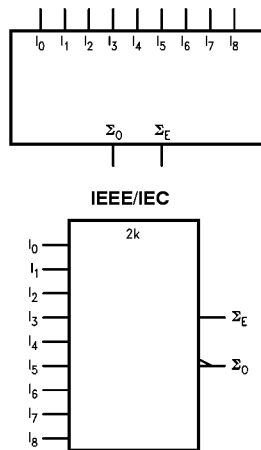
- I_{CC} reduced by 50%
- 9-bit width for memory applications
- AC280: 5962-92201

Ordering Code:

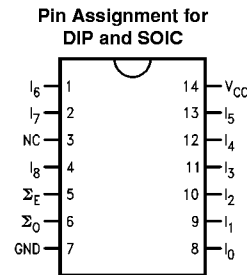
Order Number	Package Number	Package Description
74AC280SC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150" Narrow Body

Devices also available in Tape and Reel. Specify by appending suffix letter "X" to the ordering code.

Logic Symbols



Connection Diagram



Pin Descriptions

Pin Names	Description
I_0-I_8	Data Inputs
Σ_0	Odd Parity Output
Σ_E	Even Parity Output

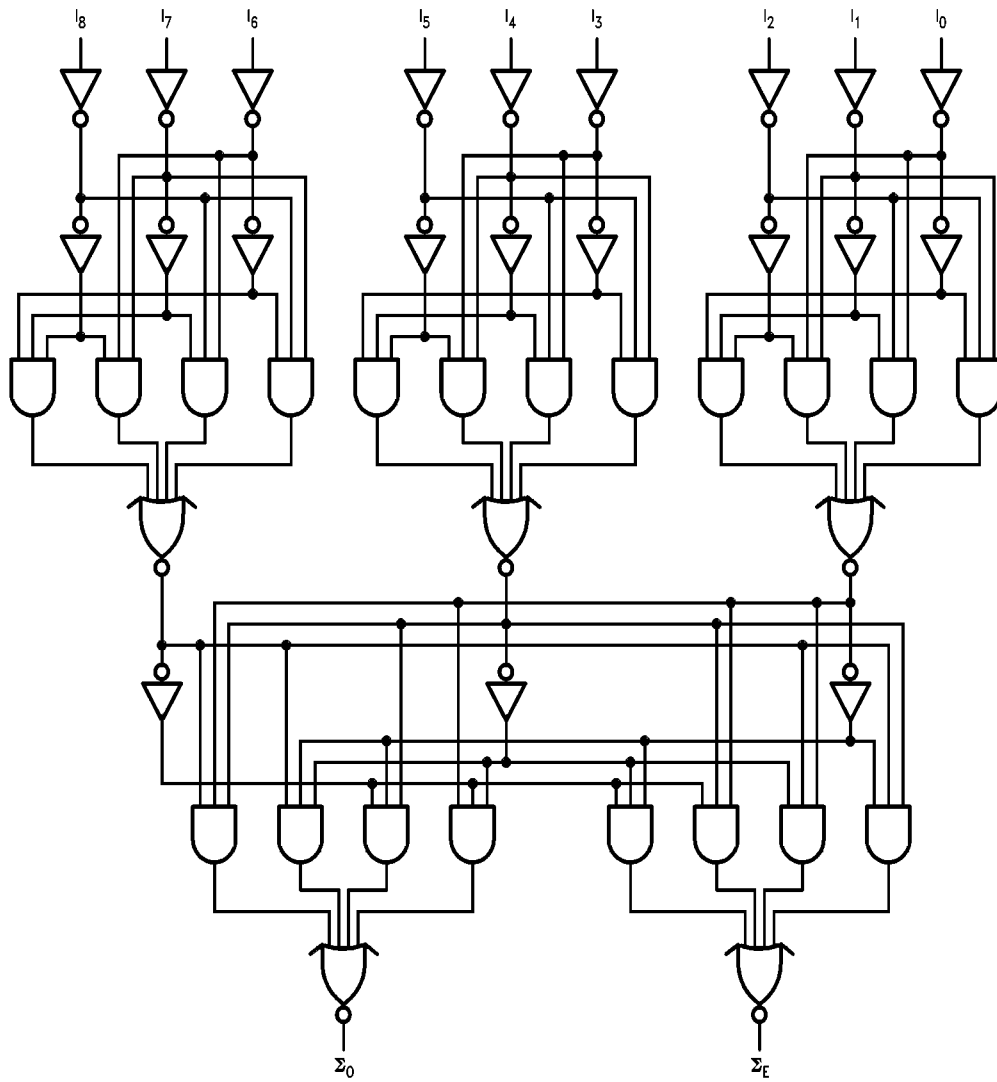
Truth Table

Number of HIGH Inputs I_0-I_8	Outputs	
	Σ Even	Σ Odd
0, 2, 4, 6, 8	H	L
1, 3, 5, 7, 9	L	H

H = HIGH Voltage Level
L = LOW Voltage Level

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Logic Diagram



Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

Absolute Maximum Ratings (Note 1)		Junction Temperature (T_J)	
Supply Voltage (V_{CC})	-0.5V to +7.0V	PDIP	140°C
DC Input Diode Current (I_{IK})		Recommended Operating Conditions	
$V_I = -0.5V$	-20 mA	Supply Voltage (V_{CC})	2.0V to 6.0V
$V_I = V_{CC} + 0.5V$	+20 mA	Input Voltage (V_I)	0V to V_{CC}
DC Input Voltage (V_I)	-0.5V to $V_{CC} + 0.5V$	Output Voltage (V_O)	0V to V_{CC}
DC Output Diode Current (I_{OK})		Operating Temperature (T_A)	-40°C to +85°C
$V_O = -0.5V$	-20 mA	Minimum Input Edge Rate ($\Delta V/\Delta t$)	
$V_O = V_{CC} + 0.5V$	+20 mA	V_{IN} from 30% to 70% of V_{CC}	
DC Output Voltage (V_O)	-0.5V to $V_{CC} + 0.5V$	V_{CC} @ 3.3V, 4.5V, 5.5V	125 mV/hs
DC Output Source or Sink Current (I_O)	± 50 mA	Note 1: Absolute maximum ratings are those values beyond which damage to the device may occur. The databook specifications should be met, without exception, to ensure that the system design is reliable over its power supply, temperature, output/input loading variables. Fairchild does not recommend operation of FACT circuits outside databook specifications.	
DC V_{CC} or Ground Current per Output Pin (I_{CC} or I_{GND})	± 50 mA		
Storage Temperature (T_{STG})	-65°C to +150°C		

DC Electrical Characteristics

Symbol	Parameter	V_{CC} (V)	74AC			Units	Conditions
			$T_A = +25^\circ\text{C}$		$T_A = -55^\circ\text{C to } +125^\circ\text{C}$		
			Typ	Guaranteed Limits			
V_{IH}	Minimum HIGH Level Input Voltage	3.0	1.5	2.1	2.1	V	$V_{OUT} = 0.1V$ or $V_{CC} - 0.1V$
		4.5	2.25	3.15	3.15		
		5.5	2.75	3.85	3.85		
V_{IL}	Maximum LOW Level Input Voltage	3.0	1.5	0.9	0.9	V	$V_{OUT} = 0.1V$ or $V_{CC} - 0.1V$
		4.5	2.25	1.35	1.35		
		5.5	2.75	1.65	1.65		
V_{OH}	Minimum HIGH Level Output Voltage	3.0	2.99	2.9	2.9	V	$I_{OUT} = -50 \mu A$
		4.5	4.49	4.4	4.4		
		5.5	5.49	5.4	5.4		
V_{OL}	Maximum LOW Level Output Voltage	3.0		2.56	2.4	V	$V_{IN} = V_{IL}$ or V_{IH} $I_{OH} = -12$ mA $I_{OH} = -24$ mA $I_{OH} = -24$ mA (Note 2)
		4.5		3.86	3.7		
		5.5		4.86	4.7		
V_{OL}	Maximum LOW Level Output Voltage	3.0	0.002	0.1	0.1	V	$I_{OUT} = 50 \mu A$
		4.5	0.001	0.1	0.1		
		5.5	0.001	0.1	0.1		
V_{OL}	Maximum LOW Level Output Voltage	3.0		0.36	0.50	V	$V_{IN} = V_{IL}$ or V_{IH} $I_{OL} = 12$ mA $I_{OL} = 24$ mA $I_{OL} = 24$ mA (Note 2)
		4.5		0.36	0.50		
		5.5		0.36	0.50		
I_{IN}	Maximum Input Leakage Current	5.5		± 0.1	± 1.0	μA	$V_I = V_{CC}, GND$
I_{OLD}	Minimum Dynamic Output Current (Note 3)	5.5			50	mA	$V_{OLD} = 1.65V$ Max
I_{OHD}	Maximum Dynamic Output Current (Note 3)	5.5			-50	mA	$V_{OHD} = 3.85V$ Min
I_{CC} (Note 4)	Maximum Quiescent Supply Current	5.5		4.0	80.0	μA	$V_{IN} = V_{CC}$ or GND

Note 2: All outputs loaded; thresholds on input associated with output under test.

Note 3: Maximum test duration 2.0 ms, one output loaded at a time.

Note 4: I_{IN} and I_{CC} @ 3.0V are guaranteed to be less than or equal to the respective limit @ 5.5V V_{CC} .

AC Electrical Characteristics

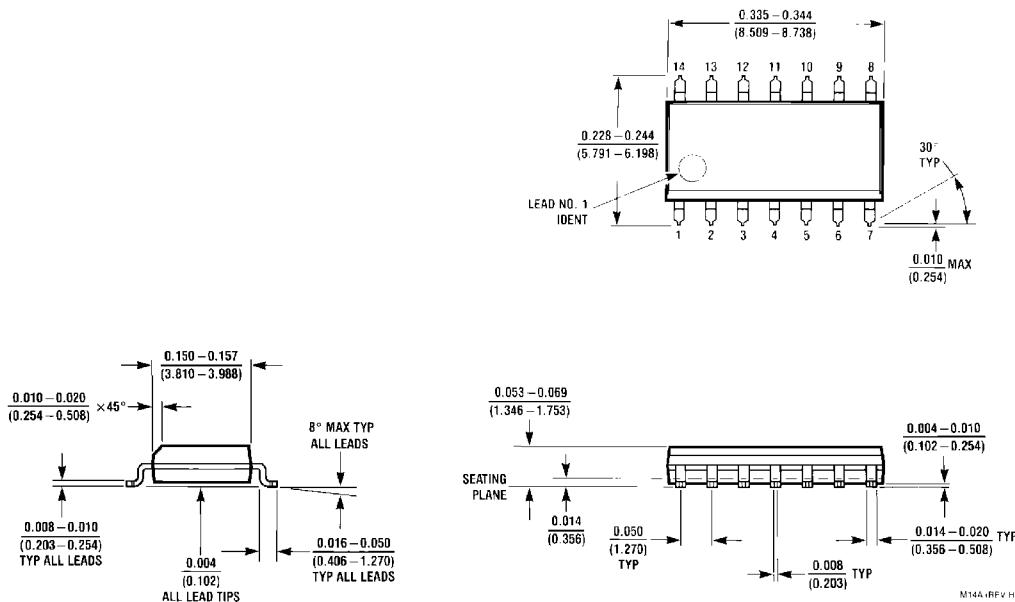
Symbol	Parameter	V _{CC} (V) (Note 5)	74AC			54AC		74AC		Units
			T _A = +25°C			T _A = -55°C to +125°C		T _A = -40°C to +85°C		
			C _L = 50 pF			C _L = 50 pF		C _L = 50 pF		
Min	Typ	Max	Min	Max	Min	Max				
t _{PLH}	Propagation Delay	3.3	5.0	10.5	17.0	1.0	20.0	4.0	18.5	ns
t _{PHL}	I _n to Σ _E	5.0	3.0	7.5	13.0	1.5	14.5	2.0	14.5	ns
t _{PLH}	Propagation Delay	3.3	5.0	12.0	17.0	1.0	20.0	4.0	18.5	ns
t _{PHL}	I _n to Σ _O	5.0	3.0	8.5	13.0	1.5	14.5	2.0	14.5	ns

Note 5: Voltage range 3.3 is 3.3V ±0.3V.
Voltage range 5.0 is 5.0V ±0.5V.

Capacitance

Symbol	Parameter	Typ	Units	Conditions
C _{IN}	Input Capacitance	4.5	pF	V _{CC} = OPEN
C _{PD}	Power Dissipation Capacitance	75.0	pF	V _{CC} = 5.0V

Physical Dimensions inches (millimeters) unless otherwise noted



**14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150" Narrow Body
Package Number M14A**

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