

HD74AC280

9-bit Parity Generator/Checker

REJ03D0266-0200Z
(Previous ADE-205-387 (Z))
Rev.2.00
Jul.16.2004

Description

The HD74AC280 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

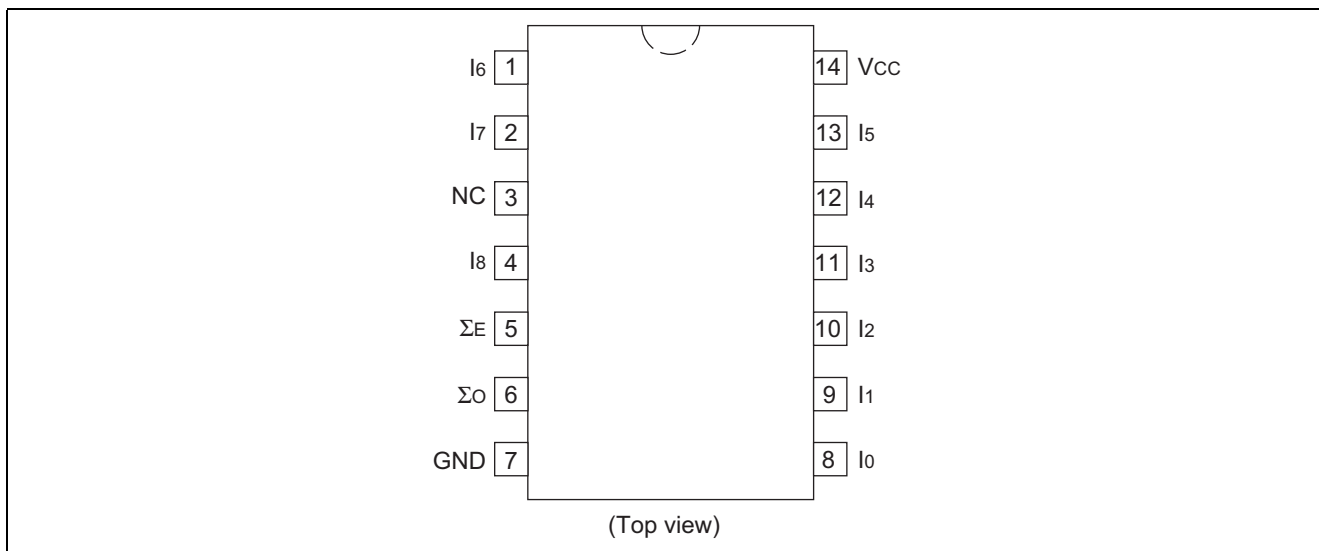
- Outputs Source/Sink 24 mA
- Ordering Information

Part Name	Package Type	Package Code	Package Abbreviation	Taping Abbreviation (Quantity)
HD74AC280FPEL	SOP-14 pin (JEITA)	FP-14DAV	FP	EL (2,000 pcs/reel)
HD74AC280RPEL	SOP-14 pin (JEDEC)	FP-14DNV	RP	EL (2,500 pcs/reel)

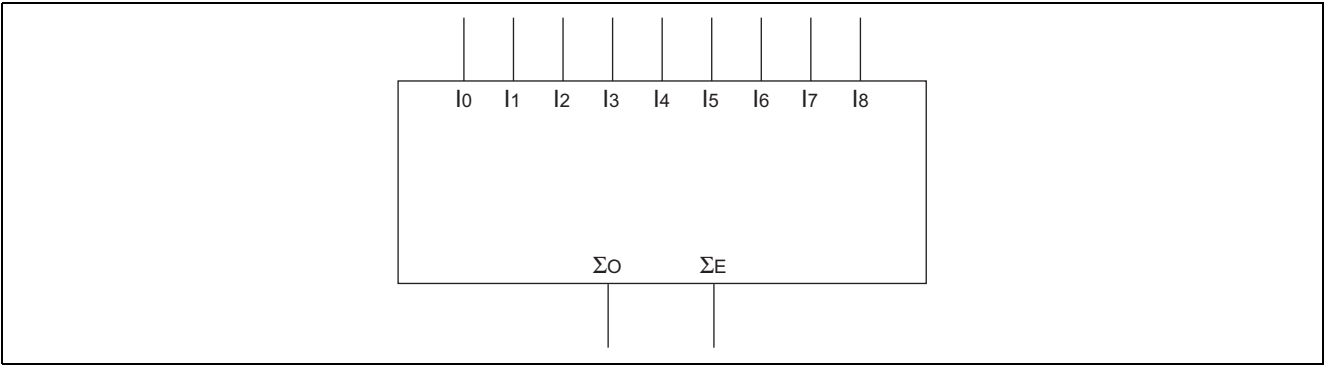
Notes: 1. Please consult the sales office for the above package availability.

2. The packages with lead-free pins are distinguished from the conventional products by adding V at the end of the package code.

Pin Arrangement



Logic Symbol



Pin Names

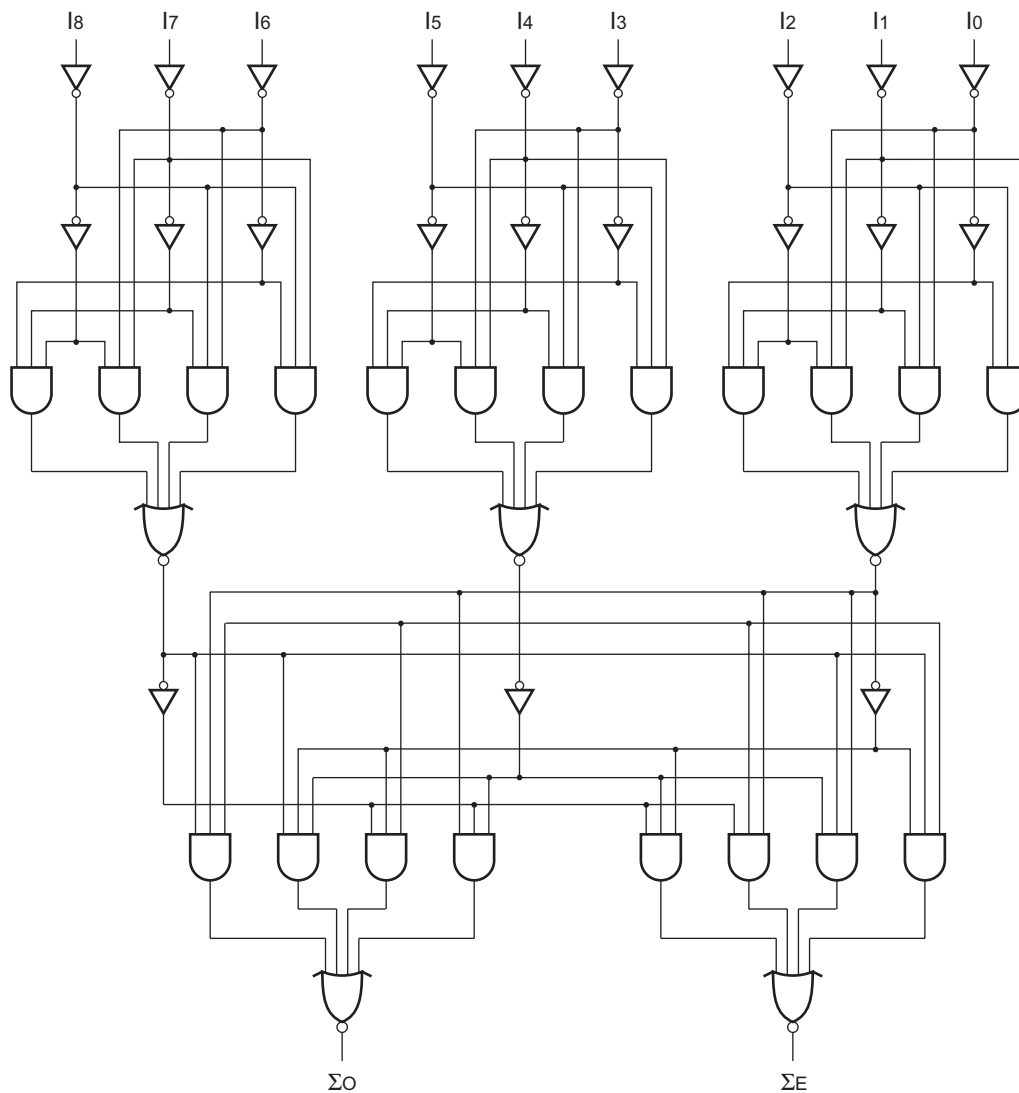
- I₀ – I₈ Data Inputs
- Σ_O Odd Parity Output
- Σ_E Even Parity Output

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

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

Item	Symbol	Ratings	Unit	Condition
Supply voltage	V_{CC}	-0.5 to 7	V	
DC input diode current	I_{IK}	-20	mA	$V_I = -0.5V$
		20	mA	$V_I = V_{CC}+0.5V$
DC input voltage	V_I	-0.5 to $V_{CC}+0.5$	V	
DC output diode current	I_{OK}	-50	mA	$V_O = -0.5V$
		50	mA	$V_O = V_{CC}+0.5V$
DC output voltage	V_O	-0.5 to $V_{CC}+0.5$	V	
DC output source or sink current	I_O	± 50	mA	
DC V_{CC} or ground current per output pin	I_{CC}, I_{GND}	± 50	mA	
Storage temperature	T_{stg}	-65 to +150	$^{\circ}C$	

Recommended Operating Conditions

Item	Symbol	Ratings	Unit	Condition
Supply voltage	V_{CC}	2 to 6	V	
Input and output voltage	V_I, V_O	0 to V_{CC}	V	
Operating temperature	T_a	-40 to +85	°C	
Input rise and fall time (except Schmitt inputs) V_{IN} 30% to 70% V_{CC}	t_r, t_f	8	ns/V	$V_{CC} = 3.0V$ $V_{CC} = 4.5V$ $V_{CC} = 5.5V$

DC Characteristics

Item	Sym- bol	V_{CC} (V)	$T_a = 25^\circ C$			$T_a = -40 \text{ to } +85^\circ C$		Unit	Condition
			min.	typ.	max.	min.	max.		
Input Voltage	V_{IH}	3.0	2.1	1.5	—	2.1	—	V	$V_{OUT} = 0.1V \text{ or } V_{CC} - 0.1V$
		4.5	3.15	2.25	—	3.15	—		
		5.5	3.85	2.75	—	3.85	—		
	V_{IL}	3.0	—	1.50	0.9	—	0.9		$V_{OUT} = 0.1V \text{ or } V_{CC} - 0.1V$
		4.5	—	2.25	1.35	—	1.35		
		5.5	—	2.75	1.65	—	1.65		
Output voltage	V_{OH}	3.0	2.9	2.99	—	2.9	—	V	$V_{IN} = V_{IL} \text{ or } V_{IH}$ $I_{OUT} = -50 \mu A$
		4.5	4.4	4.49	—	4.4	—		
		5.5	5.4	5.49	—	5.4	—		
		3.0	2.58	—	—	2.48	—		$V_{IN} = V_{IL} \text{ or } V_{IH}$ $I_{OH} = -12 \text{ mA}$ $I_{OH} = -24 \text{ mA}$ $I_{OH} = -24 \text{ mA}$
		4.5	3.94	—	—	3.80	—		
		5.5	4.94	—	—	4.80	—		
	V_{OL}	3.0	—	0.002	0.1	—	0.1		$V_{IN} = V_{IL} \text{ or } V_{IH}$ $I_{OUT} = 50 \mu A$
		4.5	—	0.001	0.1	—	0.1		
		5.5	—	0.001	0.1	—	0.1		
		3.0	—	—	0.32	—	0.37		$V_{IN} = V_{IL} \text{ or } V_{IH}$ $I_{OL} = 12 \text{ mA}$ $I_{OL} = 24 \text{ mA}$ $I_{OL} = 24 \text{ mA}$
		4.5	—	—	0.32	—	0.37		
		5.5	—	—	0.32	—	0.37		
		3.0	—	—	0.32	—	0.37		
		4.5	—	—	0.32	—	0.37		
		5.5	—	—	0.32	—	0.37		
Input leakage current	I_{IN}	5.5	—	—	± 0.1	—	± 1.0	μA	$V_{IN} = V_{CC} \text{ or GND}$
Dynamic output current*	I_{OLD}	5.5	—	—	—	86	—	mA	$V_{OLD} = 1.1V$
	I_{OHD}	5.5	—	—	—	-75	—	mA	$V_{OHD} = 3.85V$
Quiescent supply current	I_{CC}	5.5	—	—	8.0	—	80	μA	$V_{IN} = V_{CC} \text{ or ground}$

*Maximum test duration 2.0 ms, one output loaded at a time.

AC Characteristics

Item	Symbol	V_{CC} (V)*1	$T_a = +25^\circ C$ $C_L = 50 \text{ pF}$			$T_a = -40^\circ C \text{ to } +85^\circ C$ $C_L = 50 \text{ pF}$		Unit
			Min	Typ	Max	Min	Max	
Propagation delay	t_{PLH}	3.3	1.0	14.5	17.0	1.0	18.5	ns
		5.0	1.0	11.0	13.0	1.0	14.5	
Propagation delay	t_{PHL}	3.3	1.0	14.5	17.0	1.0	18.5	ns
		5.0	1.0	11.0	13.0	1.0	14.5	

Note: 1. Voltage Range 3.3 is $3.3V \pm 0.3V$
Voltage Range 5.0 is $5.0V \pm 0.5V$

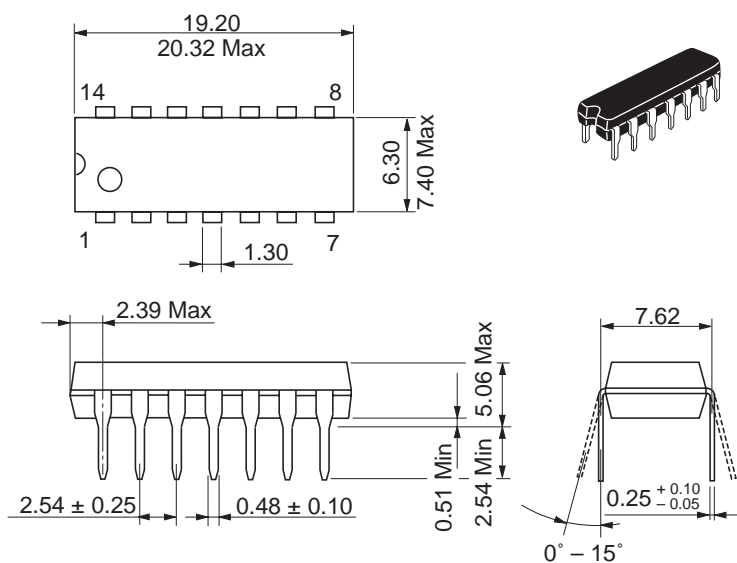
Capacitance

Item	Symbol	Typ	Unit	Condition
Input capacitance	C_{IN}	4.5	pF	$V_{CC} = 5.5 \text{ V}$
Power dissipation capacitance	C_{PD}	60.0	pF	$V_{CC} = 5.0 \text{ V}$

Package Dimensions

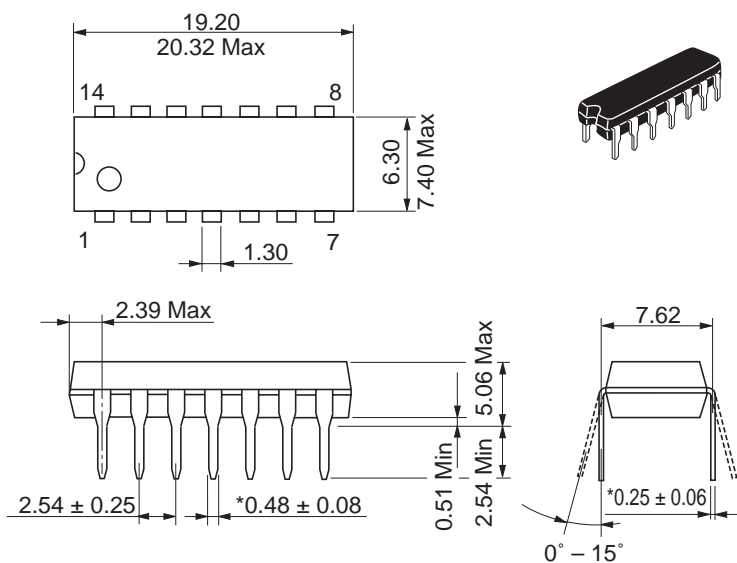
As of January, 2003

Unit: mm



Package Code	DP-14
JEDEC	Conforms
JEITA	Conforms
Mass (reference value)	0.97 g

Unit: mm

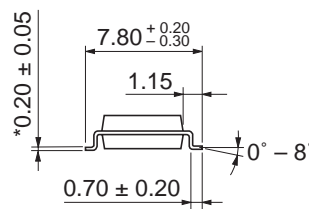
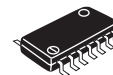
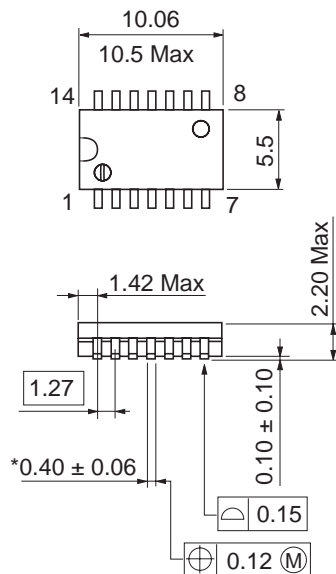


*Ni/Pd/AU Plating

Package Code	DP-14AV
JEDEC	Conforms
JEITA	Conforms
Mass (reference value)	0.97 g

As of January, 2003

Unit: mm

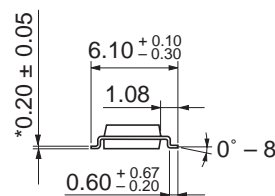
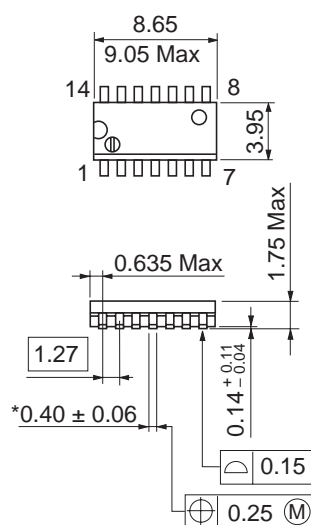


*Ni/Pd/Au plating

Package Code	FP-14DAV
JEDEC	—
JEITA	Conforms
Mass (reference value)	0.23 g

As of January, 2003

Unit: mm



*Ni/Pd/Au plating

Package Code	FP-14DNV
JEDEC	Conforms
JEITA	Conforms
Mass (reference value)	0.13 g

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