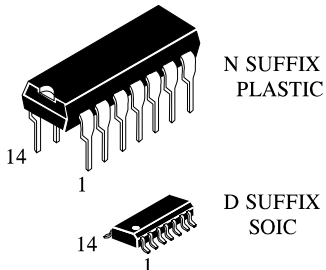


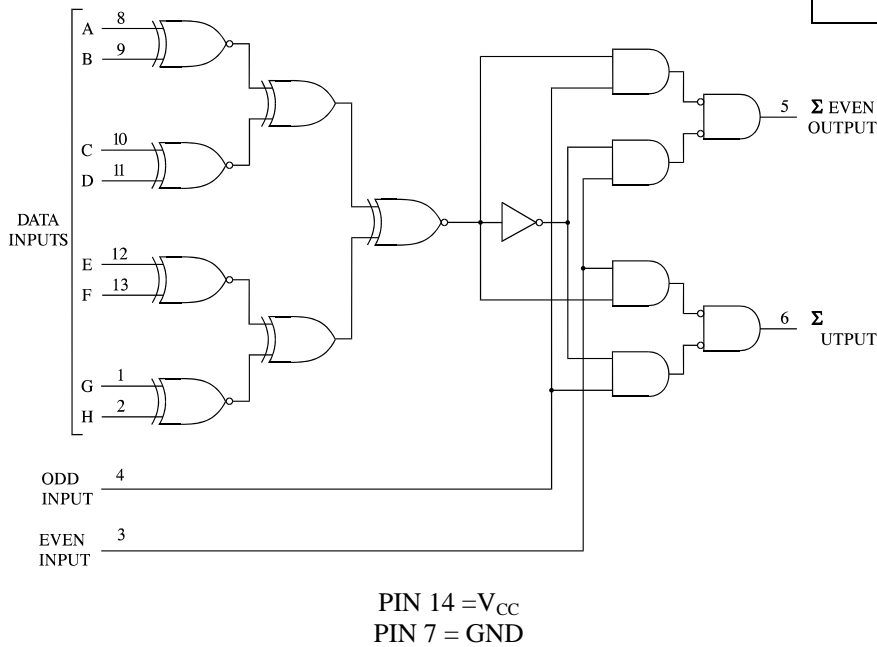
**IN74180**

**9-Bit ODD/EVEN Parity  
Generators/Checkers**

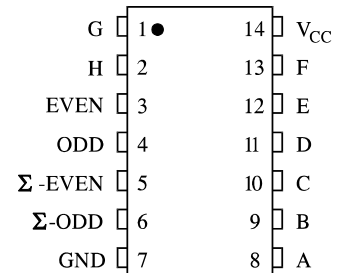


**ORDERING INFORMATION**  
 IN74180N Plastic  
 IN74180D SOIC  
 T<sub>A</sub> = -10° to 70° C for all packages

**LOGIC DIAGRAM**



**PIN ASSIGNMENT**



**FUNCTION TABLE**

Σ of H's at A Thru H	Inputs		Output	
	EVEN	ODD	Σ EVEN	Σ ODD
EVEN	H	L	H	L
ODD	H	L	L	H
EVEN	L	H	L	H
ODD	L	H	H	L
X	H	H	L	L
X	L	L	H	H

X = don't care

**MAXIMUM RATINGS\***

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Supply Voltage	7.0	V
V <sub>IN</sub>	Input Voltage	5.5	V
I <sub>OL</sub>	Low Level Output Current	16	mA
T <sub>stg</sub>	Storage Temperature Range	-65 to +150	°C

\*Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Recommended Operating Conditions.

**RECOMMENDED OPERATING CONDITIONS**

Symbol	Parameter	Min	Max	Unit
V <sub>CC</sub>	Supply Voltage	4.75	5.25	V
V <sub>IH</sub>	High Level Input Voltage	2.0		V
V <sub>IL</sub>	Low Level Input Voltage		0.8	V
I <sub>OH</sub>	High Level Output Current		-800	μA
I <sub>OL</sub>	Low Level Output Current		16	mA
T <sub>A</sub>	Ambient Temperature Range	-10	+70	°C

**DC ELECTRICAL CHARACTERISTICS** over full operating conditions

Symbol	Parameter		Test Conditions	Guaranteed Limit		Unit
				Min	Max	
V <sub>IK</sub>	Input Clamp Voltage		V <sub>CC</sub> = min, I <sub>IN</sub> = -10 mA		-1.5	V
V <sub>OH</sub>	High Level Output Voltage		V <sub>CC</sub> = min, I <sub>OH</sub> =max	2.4		V
V <sub>OL</sub>	Low Level Output Voltage		V <sub>CC</sub> = min, I <sub>OL</sub> =max		0.4	V
I <sub>I</sub>	Input Current at Maximum Input Voltage		V <sub>CC</sub> = max, V <sub>IN</sub> = 5.5 V		1	mA
I <sub>IH</sub>	High Level Input Current	Any data input	V <sub>CC</sub> = max, V <sub>IN</sub> = 2.4 V		40	μA
		Even or odd input			80	
I <sub>IL</sub>	Low Level Input Current	Any data input	V <sub>CC</sub> = max, V <sub>IN</sub> = 0.4 V		-1.6	mA
		Even or odd input			-3.2	
I <sub>OS</sub> *	Short-Circuit Output Current		V <sub>CC</sub> = max	-18	-55	mA
I <sub>CC</sub>	Supply Current		V <sub>CC</sub> = max, See Note		56	mA

\*Not more than one output should be shorted at a time.

Note: I<sub>CC</sub> is measured with even and odd inputs at 4.5 V, all other inputs and outputs open.

**AC ELECTRICAL CHARACTERISTICS** (T = 25°C, V<sub>CC</sub> = 5.0 V, C<sub>L</sub> = 15 pF, R<sub>L</sub> = 390 Ω, Input t<sub>r</sub> = t<sub>f</sub> = 10 ns)

Symbol	Parameter	Test Conditions	Min	Max	Unit
t <sub>PLH</sub>	Propagation Delay Time, Low to High Level Output (from Data to Σ EVEN)	ODD input grounded		60	ns
t <sub>PHL</sub>	Propagation Delay Time, High to Low Level Output (from Data to Σ EVEN)			68	
t <sub>PLH</sub>	Propagation Delay Time, Low to High Level Output (from Data to Σ ODD)			48	ns
t <sub>PHL</sub>	Propagation Delay Time, High to Low Level Output (from Data to Σ ODD)			38	
t <sub>PLH</sub>	Propagation Delay Time, Low to High Level Output (from Data to Σ EVEN)	EVEN input grounded		48	ns
t <sub>PHL</sub>	Propagation Delay Time, High to Low Level Output (from Data to Σ EVEN)			38	
t <sub>PLH</sub>	Propagation Delay Time, Low to High Level Output (from Data to Σ ODD)			60	ns
t <sub>PHL</sub>	Propagation Delay Time, High to Low Level Output (from Data to Σ ODD)			68	
t <sub>PLH</sub>	Propagation Delay Time, Low to High Level Output (from EVEN or ODD to Σ EVEN or Σ ODD)			20	ns
t <sub>PHL</sub>	Propagation Delay Time, High to Low Level Output (from EVEN or ODD to Σ EVEN or Σ ODD)			10	

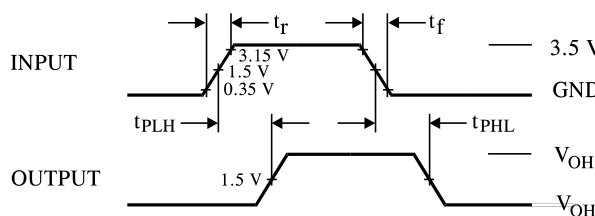


Figure 1. Switching Waveforms

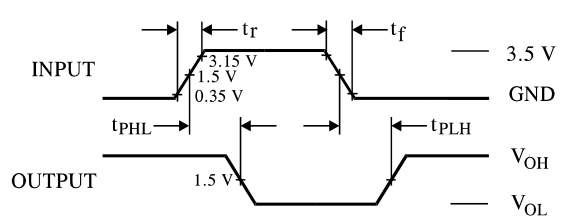
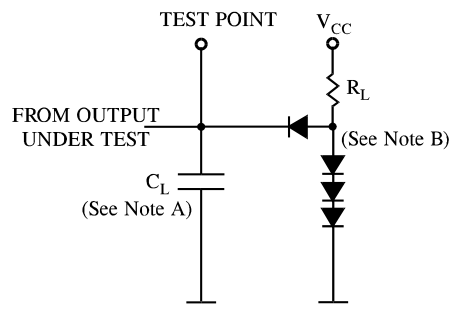


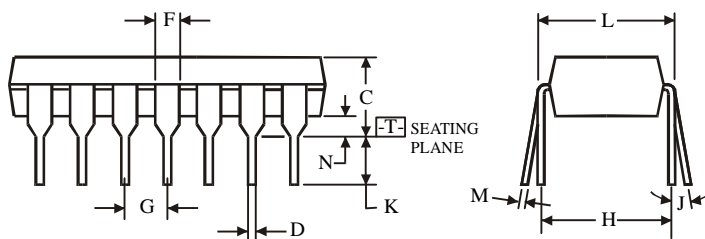
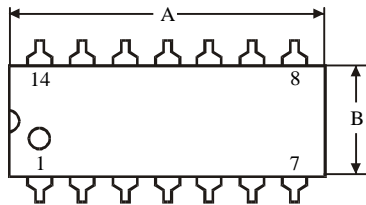
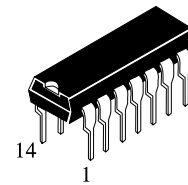
Figure 2. Switching Waveforms



NOTES A. C<sub>L</sub> includes probe and jig capacitance.  
 B. All diodes are 1N916 or 1N3064.

Figure 3. Test Circuit

**N SUFFIX PLASTIC DIP  
(MS - 001AA)**



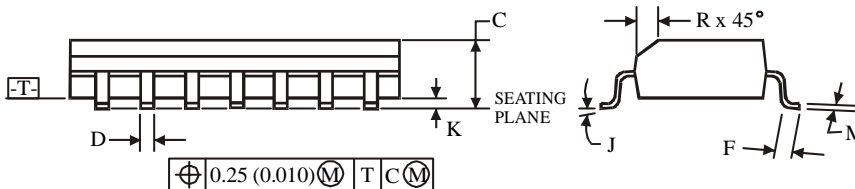
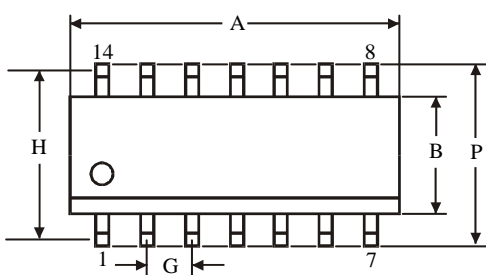
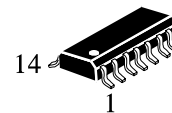
$\oplus 0.25 (0.010) \text{ (M) T}$

**NOTES:**

- Dimensions "A", "B" do not include mold flash or protrusions.  
Maximum mold flash or protrusions 0.25 mm (0.010) per side.

Symbol	Dimension, mm	
	MIN	MAX
A	18.67	19.69
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

**D SUFFIX SOIC  
(MS - 012AB)**



$\oplus 0.25 (0.010) \text{ (M) T C (M)}$

**NOTES:**

- Dimensions A and B do not include mold flash or protrusion.
- Maximum mold flash or protrusion 0.15 mm (0.006) per side for A; for B - 0.25 mm (0.010) per side.

Symbol	Dimension, mm	
	MIN	MAX
A	8.55	8.75
B	3.8	4
C	1.35	1.75
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	5.27	
J	0°	8°
K	0.1	0.25
M	0.19	0.25
P	5.8	6.2
R	0.25	0.5