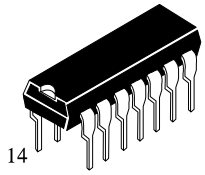
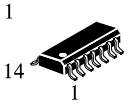
# KK74180

# 9-Bit ODD/EVEN Parity Generators/Checkers



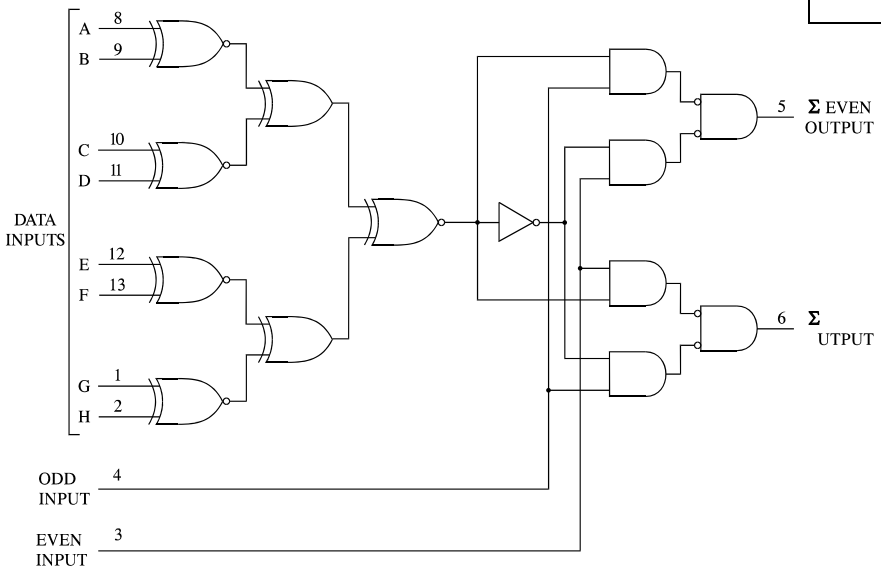

N SUFFIX
PLASTIC




D SUFFIX
SOIC

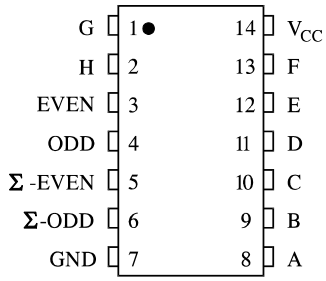
**ORDERING INFORMATION**
KK74180N Plastic
KK74180D SOIC
$T_A$ = -10° to 70° C for all packages

## LOGIC DIAGRAM




PIN 14 =$V_{CC}$
PIN 7 = GND

## PIN ASSIGNMENT




## FUNCTION TABLE

| Inputs | | | Output | |
|---|---|---|---|---|
| Σ of H's at A Thru H | 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 |
|---|---|---|---|
| $V_{CC}$ | Supply Voltage | 7.0 | V |
| $V_{IN}$ | Input Voltage | 5.5 | V |
| $I_{OL}$ | Low Level Output Current | 16 | mA |
| Tstg | 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 |
|---|---|---|---|---|
| $V_{CC}$ | Supply Voltage | 4.75 | 5.25 | V |
| $V_{IH}$ | High Level Input Voltage | 2.0 | | V |
| $V_{IL}$ | Low Level Input Voltage | | 0.8 | V |
| $I_{OH}$ | High Level Output Current | | -800 | µA |
| $I_{OL}$ | Low Level Output Current | | 16 | mA |
| $T_A$ | Ambient Temperature Range | -10 | +70 | °C |

## DC ELECTRICAL CHARACTERISTICS over full operating conditions

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

*Not more than one output should be shorted at a time.
Note: $I_{CC}$ is measured with even and odd inputs at 4.5 V, all other inputs and outputs open.

## AC ELECTRICAL CHARACTERISTICS ($T = 25°C$, $V_{CC} = 5.0$ V, $C_L = 15$ pF, $R_L = 390\ \Omega$, Input $t_r = t_f = 10$ ns)

| Symbol | Parameter | Test Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $t_{PLH}$ | Propagation Delay Time, Low to High Level Output (from Data toΣ EVEN) | ODD input grounded | | 60 | ns |
| $t_{PHL}$ | Propagation Delay Time, High to Low Level Output (from Data toΣ EVEN) | | | 68 | |
| $t_{PLH}$ | Propagation Delay Time, Low to High Level Output (from Data toΣ ODD) | | | 48 | ns |
| $t_{PHL}$ | Propagation Delay Time, High to Low Level Output (from Data toΣ ODD) | | | 38 | |
| $t_{PLH}$ | Propagation Delay Time, Low to High Level Output (from Data toΣ EVEN) | EVEN input grounded | | 48 | ns |
| $t_{PHL}$ | Propagation Delay Time, High to Low Level Output (from Data toΣ EVEN) | | | 38 | |
| $t_{PLH}$ | Propagation Delay Time, Low to High Level Output (from Data toΣ ODD) | | | 60 | ns |
| $t_{PHL}$ | Propagation Delay Time, High to Low Level Output (from Data toΣ ODD) | | | 68 | |
| $t_{PLH}$ | Propagation Delay Time, Low to High Level Output (from EVEN or ODD to Σ EVEN or Σ ODD) | | | 20 | ns |
| $t_{PHL}$ | Propagation Delay Time, High to Low Level Output (from EVEN or ODD to Σ EVEN or Σ ODD) | | | 10 | |

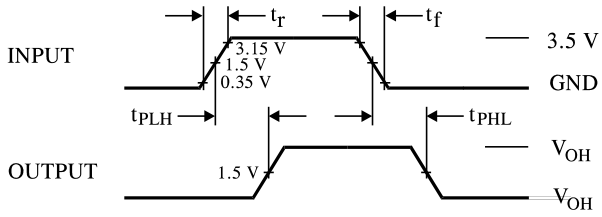



**Figure 1. Switching Waveforms**

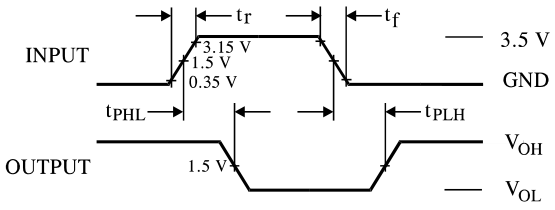
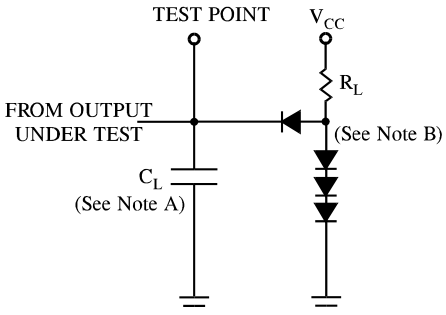


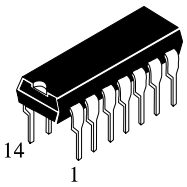

**Figure 2. Switching Waveforms**

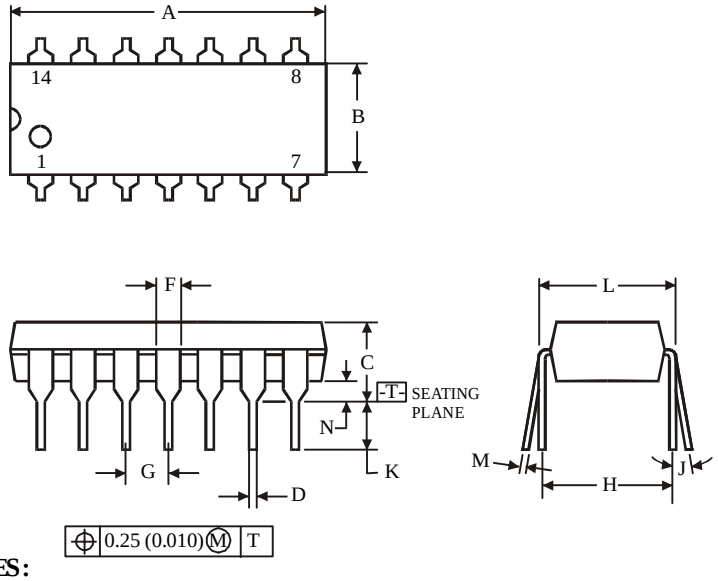



NOTES A. $C_L$ includes probe and jig capacitance.
B. All diodes are 1N916 or 1N3064.

**Figure 3. Test Circuit**

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



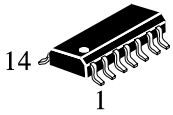



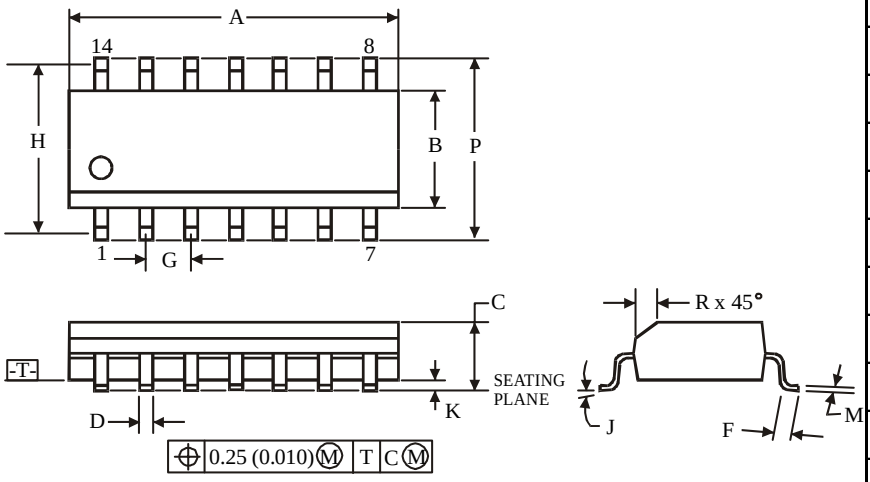

| | Dimension, mm | |
|---|---|---|
| **Symbol** | **MIN** | **MAX** |
| **A** | 18.67 | 19.69 |
| **B** | 6.1 | 7.11 |
| **C** | | 5.33 |
| **D** | 0.36 | 0.56 |
| **F** | 1.14 | 1.78 |
| **G** | 2.54 | |
| **H** | 7.62 | |
| **J** | 0° | 10° |
| **K** | 2.92 | 3.81 |
| **L** | 7.62 | 8.26 |
| **M**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

**NOTES:**

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

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




| | Dimension, mm | |
|---|---|---|
| **Symbol** | **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 |

**NOTES:**

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