



U74AHC1G06

CMOS IC

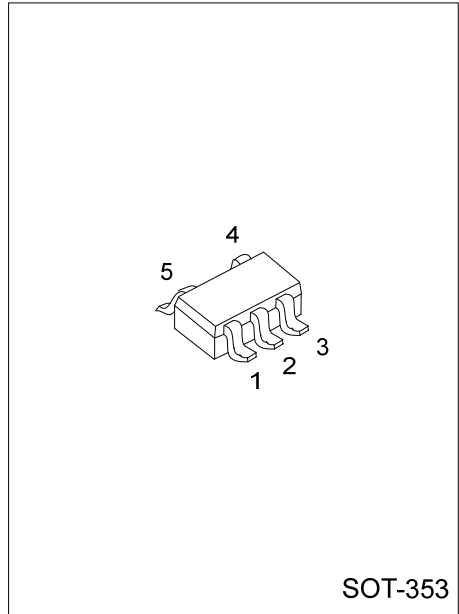
INVERTER WITH OPEN-DRAIN OUTPUT

DESCRIPTION

The UTC **U74AHC1G06** is an inverter with open-drain output and it provides the Function $Y = \bar{A}$

FEATURES

- * Operation Voltage Range: 2V~5.5V
- * High noise immunity
- * Low Power Dissipation
- * Halogen Free

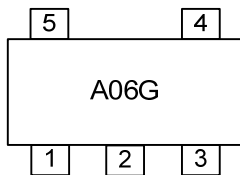


ORDERING INFORMATION

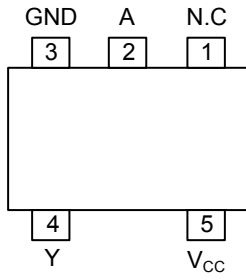
| Ordering Number | Package | Packing |
|-------------------|---------|-----------|
| U74AHC1G06G-AL5-R | SOT-353 | Tape Reel |

| | |
|--|--|
| <p>U74AHC1G06G-AL5-R</p> <p>(1) Packing Type (2) Package Type (3) Halogen Free</p> | <p>(1) R: Tape Reel (2) AL5: SOT-353 (3) G: Halogen Free</p> |
|--|--|

MARKING



■ PIN CONFIGURATION

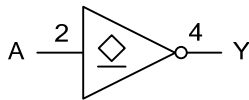


■ FUNCTION TABLE

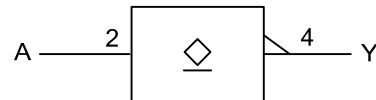
| INPUT A | OUTPUT Y |
|---------|----------|
| H | L |
| L | Z |

Note: H: High Voltage Level
L: Low Voltage Level
Z: High-Impedance OFF-State

■ LOGIC DIAGRAM



Logic symbol



IEC logic symbol

■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|-----------|------------|------------|
| Supply Voltage | V_{CC} | -0.5~+7.0 | V |
| Input Voltage | V_{IN} | -0.5~+7.0 | V |
| Input Clamp Current ($V_{IN} < -0.5V$) | I_{IK} | -20 | mA |
| Output Clamp Current ($V_{OUT} < -0.5V$) (Note 2) | I_{OK} | ± 20 | mA |
| Output Current ($V_{OUT} > -0.5V$) | I_{OUT} | ± 25 | mA |
| V_{CC} or GND Current | I_{CC} | ± 75 | mA |
| Power Dissipation | P_D | 250 | mW |
| Derate above $T_a > 87.5^\circ C$ | | 4.0 | mW/K |
| Operating Temperature | T_{OPR} | -40~+125 | $^\circ C$ |
| Storage Temperature | T_{STG} | -65 ~ +150 | $^\circ C$ |

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
 2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

■ RECOMMENDED OPERATING CONDITIONS

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------------------|---------------------|-------------------|-----|-----|----------|------|
| Supply Voltage | V_{CC} | | 2.0 | | 5.5 | V |
| Input Voltage | V_{IN} | | 0 | | 5.5 | V |
| Output Voltage | V_{OUT} | | 0 | | V_{CC} | V |
| Input Transition Rise or Fall Rate | $\Delta t/\Delta v$ | $V_{CC}=3.3+0.3V$ | | | 100 | ns/V |
| | | $V_{CC}=5.0+0.5V$ | | | 20 | ns/V |

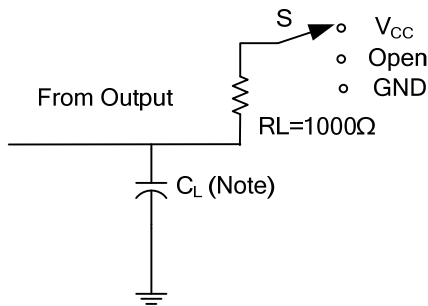
■ STATIC CHARACTERISTICS ($T_a=25^\circ C$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|----------------------------------|---------------|--|---------------|------|------------|---------|
| High-Level Input Voltage | V_{IH} | $V_{CC}=2.0V$ | 1.5 | | | V |
| | | $V_{CC}=3.0V$ | 2.1 | | | V |
| | | $V_{CC}=5.5V$ | 3.85 | | | V |
| Low-Level Input Voltage | V_{IL} | $V_{CC}=2.0V$ | | | 0.5 | V |
| | | $V_{CC}=3.0V$ | | | 0.9 | V |
| | | $V_{CC}=5.5V$ | | | 1.65 | V |
| Low-Level Output Voltage | V_{OL} | $I_{OL}=50\mu A$ | $V_{CC}=2.0V$ | | 0.1 | V |
| | | | $V_{CC}=3.0V$ | | 0.1 | V |
| | | | $V_{CC}=4.5V$ | | 0.1 | V |
| | | $I_{OL}=4mA, V_{CC}=3.0V$ | | 0.36 | V | |
| | | $I_{OL}=8mA, V_{CC}=4.5V$ | | 0.36 | V | |
| Input Leakage Current | $I_{I(LEAK)}$ | $V_{IN}=V_{CC}$ or GND, $V_{CC}=5.5V$ | | | 0.1 | μA |
| 3-state output OFF-state current | I_{OZ} | $V_{IN}=V_{IH}$ or V_{IL} , $V_{OUT}=V_{CC}$ or GND $V_{CC}=5.5V$ | | | ± 0.25 | μA |
| Quiescent Supply Current | I_{CC} | $V_{IN}=V_{CC}$ or GND, $I_{OUT}=0A$ $V_{CC}=5.5V$ | | | 1.0 | μA |
| Input Capacitance | C_{IN} | $V_{IN}=V_{CC}$ or GND | | 1.5 | 10 | pF |

■ DYNAMIC CHARACTERISTICS (Input: $t_R, t_F \leq 3\text{ns}$; $\text{PRR} \leq 1\text{MHz}$, $T_a = 25^\circ\text{C}$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT | |
|--|-----------|----------------------------------|-----------------------|-----|-----|------|----|
| Propagation delay from input (A) to output (Y) | t_{PZL} | $V_{CC} = 3.3 \pm 0.3 \text{ V}$ | $C_L = 15 \text{ pF}$ | | 3.7 | 7.0 | ns |
| | | | $C_L = 50 \text{ pF}$ | | 5.2 | 10.0 | ns |
| | t_{PLZ} | | $C_L = 15 \text{ pF}$ | | 4.8 | 6.4 | ns |
| | | | $C_L = 50 \text{ pF}$ | | 6.9 | 10.0 | ns |
| | t_{PZL} | $V_{CC} = 5 \pm 0.5 \text{ V}$ | $C_L = 15 \text{ pF}$ | | 2.7 | 4.9 | ns |
| | | | $C_L = 50 \text{ pF}$ | | 3.8 | 7.0 | ns |
| | t_{PLZ} | | $C_L = 15 \text{ pF}$ | | 3.0 | 4.1 | ns |
| | | | $C_L = 50 \text{ pF}$ | | 4.3 | 6.5 | ns |

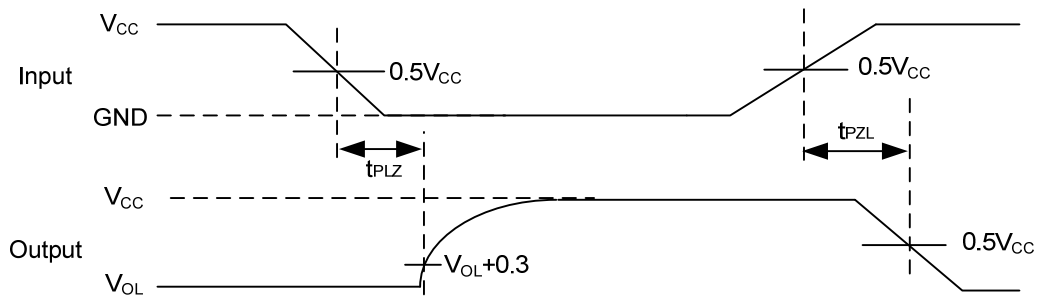
■ TEST CIRCUIT AND WAVEFORMS



| TEST | S |
|-------------------|----------|
| t_{PLH}/t_{PHL} | Open |
| t_{PHZ}/t_{PZH} | GND |
| t_{PLZ}/t_{PZL} | V_{CC} |

TEST CIRCUIT

Note: C_L includes probe and jig capacitance.



PROPAGATION DELAY TIMES

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.