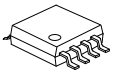
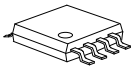
# U74HCT3G07

**CMOS IC**

## BUFFER WITH OPEN-DRAIN OUTPUTS



MSOP-8



TSSOP-8

## ■ DESCRIPTION

The **U74HCT3G07** provides three buffers with open-drain outputs, it is compatible with TTL.

## ■ FEATURES

* Low power dissipation
* High speed
* High noise immunity

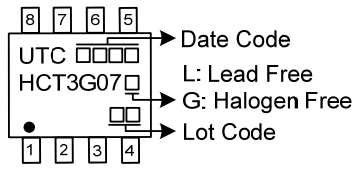
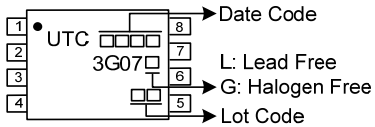
## ■ ORDERING INFORMATION

| Ordering Number | | Package | Packing |
|---|---|---|---|
| Lead Free | Halogen Free | | |
| U74HCT3G07L-SM1-R | U74HCT3G07G-SM1-R | MSOP-8 | Tape Reel |
| U74HCT3G07L-P08-R | U74HCT3G07G-P08-R | TSSOP-8 | Tape Reel |

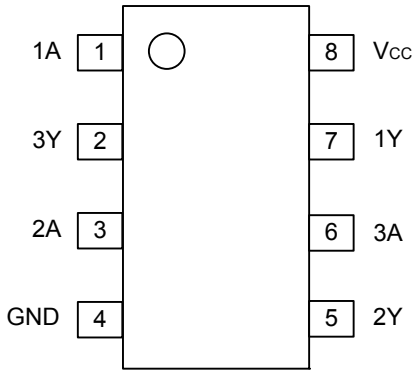
U74HCT3G07G-SM1-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) SM1: MSOP-8, P08: TSSOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

## ■ MARKING

| MSOP-8 | TSSOP-8 |
|---|---|
|  |  |

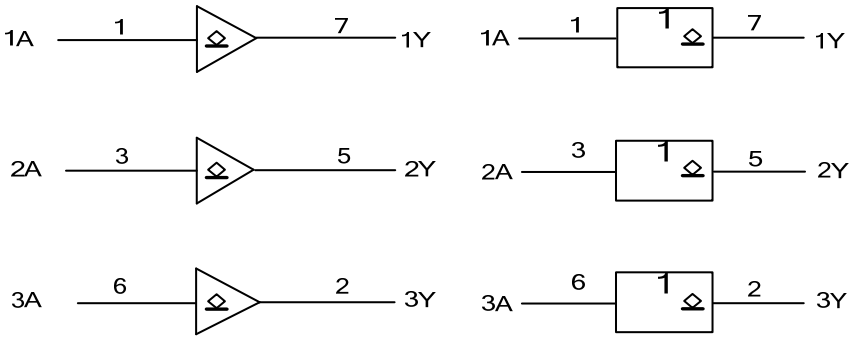
## ■ PIN CONFIGURATION




## ■ FUNCTION TABLE (each gate)

| INPUT | OUTPUT |
|---|---|
| nA | nY |
| L | L |
| H | Z |

## ■ LOGIC DIAGRAM (positive logic)




IEC logic symbol

## ■ ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | -0.5 ~ 7 | V |
| Output Voltage | $V_{OUT}$ | -0.5 ~ $V_{CC}$+0.5 (active mode) | V |
| | | -0.5 ~ 7.0 (high-impedance mode) | V |
| $V_{CC}$ or GND Current | $I_{CC}$ | ±50 | mA |
| Input Clamp Current | $I_{IK}$ | ±20 | mA |
| Output Clamp Current | $I_{OK}$ | -20 | mA |
| Output Current | $I_{OUT}$ | -25 | mA |
| Power Dissipation | $P_D$ | 300 | mW |
| Storage Temperature | $T_{STG}$ | -65 ~ +150 | ºC |

Note: 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.

## ■ RECOMMENDED OPERATING CONDITIONS

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Supply Voltage | $V_{CC}$ | | 4.5 | 5.0 | 5.5 | V |
| Input Voltage | $V_{IN}$ | | 0 | | 5.5 | V |
| Output Voltage | $V_{OUT}$ | | 0 | | $V_{CC}$ | V |
| Input Rise and Fall Times | $t_R$, $t_F$ | $V_{CC}$=4.5V | | 6.0 | 500 | ns |
| Operating Temperature | $T_A$ | | -40 | +25 | +125 | ºC |

## ■ STATIC CHARACTERISTICS ($T_A$=25℃)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| High-Level Input Voltage | $V_{IH}$ | $V_{CC}$= 4.5V~5.5V | 2.0 | 1.6 | | V |
| Low-Level Input Voltage | $V_{IL}$ | $V_{CC}$= 4.5V~5.5V | | 1.2 | 0.8 | V |
| Low-Level Output Voltage | $V_{OL}$ | $V_{CC}$= 4.5V, $I_{OL}$=20μA | | 0 | 0.1 | V |
| | | $V_{CC}$= 4.5V, $I_{OL}$ =4.0mA | | 0.15 | 0.33 | V |
| Input Leakage Current | $I_{I(LEAK)}$ | $V_{CC}$= 5.5V, $V_{IN}$=$V_{CC}$ or GND | | | ±1.0 | μA |
| Output OFF-State Current | $I_{OZ}$ | $V_{CC}$= 5.5V, $V_{IN}$=$V_{IH}$ or $V_{IL}$; $V_{OUT}$=$V_{CC}$ or GND | | | ±5.0 | μA |
| Quiescent Supply Current | $I_Q$ | $V_{CC}$= 5.5V, $V_{IN}$=$V_{CC}$ or GND, $I_{OUT}$=0 | | | 10 | μA |
| Additional Quiescent Supply Current | Δ $I_Q$ | $V_{CC}$= 4.5V~5.5V, $V_{IN}$=$V_{CC}$ -2.1V; $I_{OUT}$=0 | | | 375 | μA |
| Input Capacitance | $C_{IN}$ | | | 1.5 | | pF |

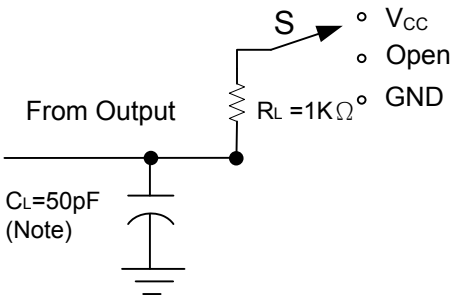
## ■ DYNAMIC CHARACTERISTICS ($T_A$=25℃, $t_R$, $t_F$≤6.0ns)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Propagation Delay From nA to nY | $t_{PZL}$ | $V_{CC}$=4.5V, $C_L$= 50 pF | | 11 | 27 | ns |
| | $t_{PLZ}$ | $V_{CC}$=4.5V, $C_L$= 50 pF | | 10 | 26 | ns |
| Output Transition Time | $t_{THL}$ | $V_{CC}$=4.5V, $C_L$= 50 pF | | 6 | 19 | ns |

## ■ OPERATING CHARACTERISTICS

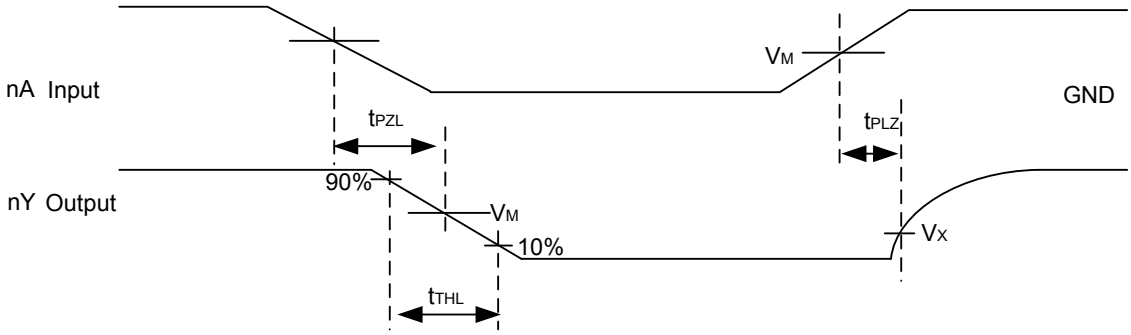
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Power Dissipation Capacitance | $C_{PD}$ | | | 4 | | pF |

## ■ TEST CIRCUIT AND WAVEFORMS




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

Note: $C_L$ includes probe and jig capacitance.




$V_X$=0.1X$V_{CC}$
$V_M$=1.3V; Input=GND to3.0V