

## Features

- Wide supply voltage range from 2.0 V to 6.0 V
- Input CMOS level
- High noise immunity
- CMOS low power dissipation
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)
- MSOP-8 Package Available

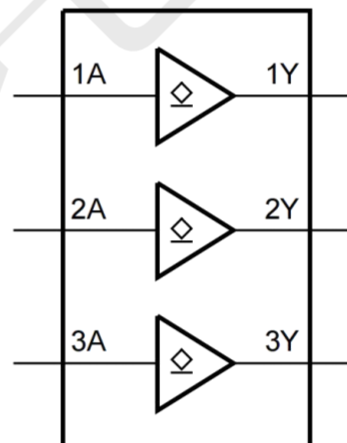
## General Description

The 74HC3G07 is a triple buffer with open-drain outputs. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of VCC

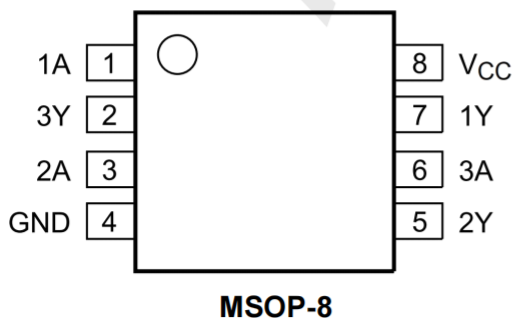
## Applications

- AV Receiver
- Audio Dock: Portable
- Blu-ray Player and Home Theater
- Embedded PC
- Personal Digital Assistant(PDA)
- Power: Telecom/Server AC/DC Supply: Single Controller: Analog and Digital

## Logic Diagram



## Pin Configuratio



## Function Table

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

Note: H: High voltage level; L: Low voltage level.

### Absolute Maximum Ratings (Unless otherwise specified)

| PARAMETER                      | SYMBOL           | CONDITIONS                      | RATINGS                     | UNIT |
|--------------------------------|------------------|---------------------------------|-----------------------------|------|
| Supply Voltage                 | V <sub>CC</sub>  |                                 | -0.5 ~ +7.0                 | V    |
| Input Voltage                  | V <sub>IN</sub>  |                                 | -0.5 ~ +7.0                 | V    |
| Output Voltage                 | V <sub>OUT</sub> | Output in the high or low state | -0.5 ~ +7.0                 | V    |
|                                |                  | Output in the power-off state   | -0.5 ~ V <sub>CC</sub> +0.5 | V    |
| V <sub>CC</sub> or GND Current | I <sub>CC</sub>  |                                 | 50                          | mA   |
| Continuous Output Current      | I <sub>OUT</sub> |                                 | 50                          | mA   |
| Input Clamp Current            | I <sub>IK</sub>  | V <sub>IN</sub> <0              | 20                          | mA   |
| Output Clamp Current           | I <sub>OK</sub>  | V <sub>OUT</sub> <0             | 20                          | mA   |
| Storage Temperature Range      | T <sub>STG</sub> |                                 | -65 ~ +150                  | °C   |
| Junction to Ambient            | θ <sub>JA</sub>  |                                 | 220                         | °C/W |

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 (Unless otherwise specified)

| PARAMETER                          | SYMBOL           | TEST CONDITIONS       | MIN | TYP | MAX | UNIT |
|------------------------------------|------------------|-----------------------|-----|-----|-----|------|
| Supply Voltage                     | V <sub>CC</sub>  | Operating             | 2.0 | --  | 6.0 | V    |
|                                    |                  | Data retention only   | 1.5 | --  | --  | V    |
| Input Voltage                      | V <sub>IN</sub>  |                       | 0   | --  | 6.0 | V    |
| Output Voltage                     | V <sub>OUT</sub> | High or low state     | 0   | --  | 6.0 | V    |
| Operating Temperature              | T <sub>A</sub>   |                       | -40 | --  | 125 | °C   |
| Input Transition Rise or Fall Rate | Δt/Δv            | V <sub>CC</sub> =2.0V | --  | --  | 625 | ns/V |
|                                    |                  | V <sub>CC</sub> =4.5V | --  | --  | 139 | ns/V |
|                                    |                  | V <sub>CC</sub> =6.0V | --  | --  | 83  | ns/V |

### Electrical Characteristics ( unless otherwise specified)

| PARAMETER                 | SYMBOL        | TEST CONDITIONS                                            | MIN  | TYP | MAX      | UNIT    |
|---------------------------|---------------|------------------------------------------------------------|------|-----|----------|---------|
| High-level Input Voltage  | $V_{IH}$      | $V_{CC}=2.0V$                                              | 1.5  | --  | --       | V       |
|                           |               | $V_{CC}=3.3V$                                              | 2.4  | --  | --       | V       |
|                           |               | $V_{CC}=4.5V$                                              | 3.15 | --  | --       | V       |
|                           |               | $V_{CC}=6.0V$                                              | 4.2  | --  | --       | V       |
| Low-level Input Voltage   | $V_{IL}$      | $V_{CC}=2.0V$                                              | --   | --  | 0.5      | V       |
|                           |               | $V_{CC}=3.3V$                                              | --   | --  | 0.7      | V       |
|                           |               | $V_{CC}=4.5V$                                              | --   | --  | 1.35     | V       |
|                           |               | $V_{CC}=6.0V$                                              | --   | --  | 1.8      | V       |
| Low-Level Output Voltage  | $V_{OL}$      | $I_O = 20 \mu A; V_{CC} = 2.0 V$                           | --   | --  | 0.1      | V       |
|                           |               | $I_O = 20 \mu A; V_{CC} = 4.5 V$                           | --   | --  | 0.1      | V       |
|                           |               | $I_O = 20 \mu A; V_{CC} = 6.0 V$                           | --   | --  | 0.1      | V       |
|                           |               | $I_O = 4.0 mA; V_{CC} = 4.5 V$                             | --   | --  | 0.33     | V       |
|                           |               | $I_O = 5.2 mA; V_{CC} = 6.0 V$                             | --   | --  | 0.33     | V       |
| Input Current Leakage     | $I_{I(LEAK)}$ | $V_{CC}=0 \sim 6.0V, V_{IN}=6.0V$ or GND                   | --   | --  | $\pm 1$  | $\mu A$ |
| Power OFF Leakage Current | $I_{off}$     | $V_{CC}=0V, V_{IN}$ or $V_{OUT}=6.0V$                      | --   | --  | $\pm 10$ | $\mu A$ |
| Quiescent Supply Current  | $I_{CC}$      | $V_{CC}=2.0 \sim 6.0V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0A$ | --   | --  | 10       | $\mu A$ |
| Input Capacitance         | $C_i$         | $V_{CC}=3.3V, V_{IN}=V_{CC}$ or GND                        | --   | 1.5 | --       | pF      |

## OPERATING CHARACTERISTICS

(f=10MHz, TA =25°C , unless otherwise specified)

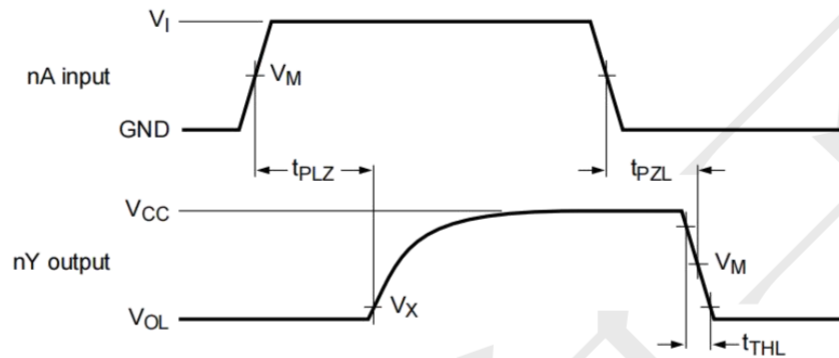
| PARAMETER                        | SYMBOL          | TEST CONDITIONS       | MIN | TYP | MAX | UNIT |
|----------------------------------|-----------------|-----------------------|-----|-----|-----|------|
| Power Dissipation<br>Capacitance | C <sub>PD</sub> | V <sub>CC</sub> =2.0V | --  | 3   | --  | pF   |
|                                  |                 | V <sub>CC</sub> =3.3V | --  | 3   | --  | pF   |
|                                  |                 | V <sub>CC</sub> =4.5V | --  | 4   | --  | pF   |
|                                  |                 | V <sub>CC</sub> =6.0V | --  | 5   | --  | pF   |

## SWITCHING CHARACTERISTICS

(TA=25°C, unless otherwise specified)

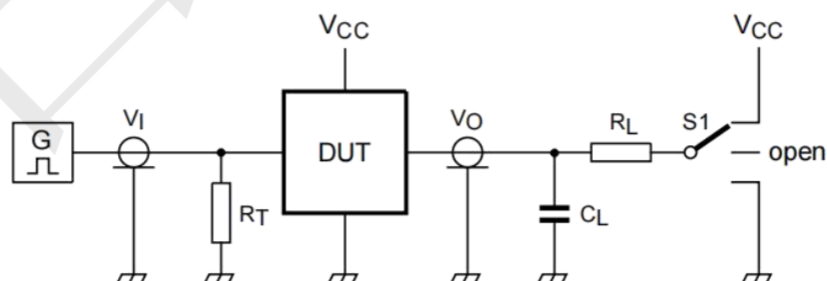
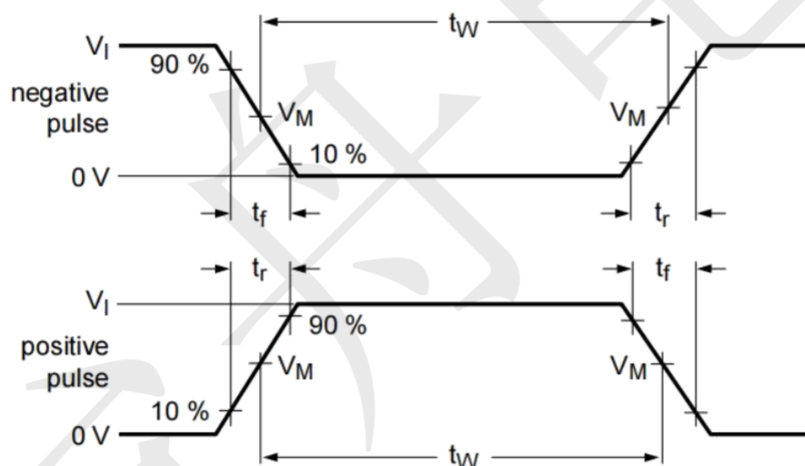
| PARAMETER                                     | SYMBOL                              | TEST CONDITIONS                                                  | MIN | TYP | MAX | UNIT |
|-----------------------------------------------|-------------------------------------|------------------------------------------------------------------|-----|-----|-----|------|
| Propagation delay from input (A) to output(Y) | t <sub>PZL</sub> / t <sub>PLZ</sub> | V <sub>CC</sub> =2.0V, C <sub>L</sub> =30pF, R <sub>L</sub> =1kΩ | --  | --  | 95  | ns   |
|                                               |                                     | V <sub>CC</sub> =3.3, C <sub>L</sub> =30pF, R <sub>L</sub> =500Ω | --  | --  | 45  | ns   |
|                                               |                                     | V <sub>CC</sub> =4.5, C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω | --  | --  | 19  | ns   |
|                                               |                                     | V <sub>CC</sub> =6.0, C <sub>L</sub> =50pF, R <sub>L</sub> =500Ω | --  | --  | 16  | ns   |

## TEST CIRCUIT AND WAVEFORMS



$V_{OL}$  is the typical output voltage level that occurs with the output load.

**The input (nA) to output (nY) propagation delays**



$R_T$  = Termination resistance should be equal to output impedance  $Z_o$  of the pulse generator.

$C_L$  = Load capacitance including jig and probe capacitance.

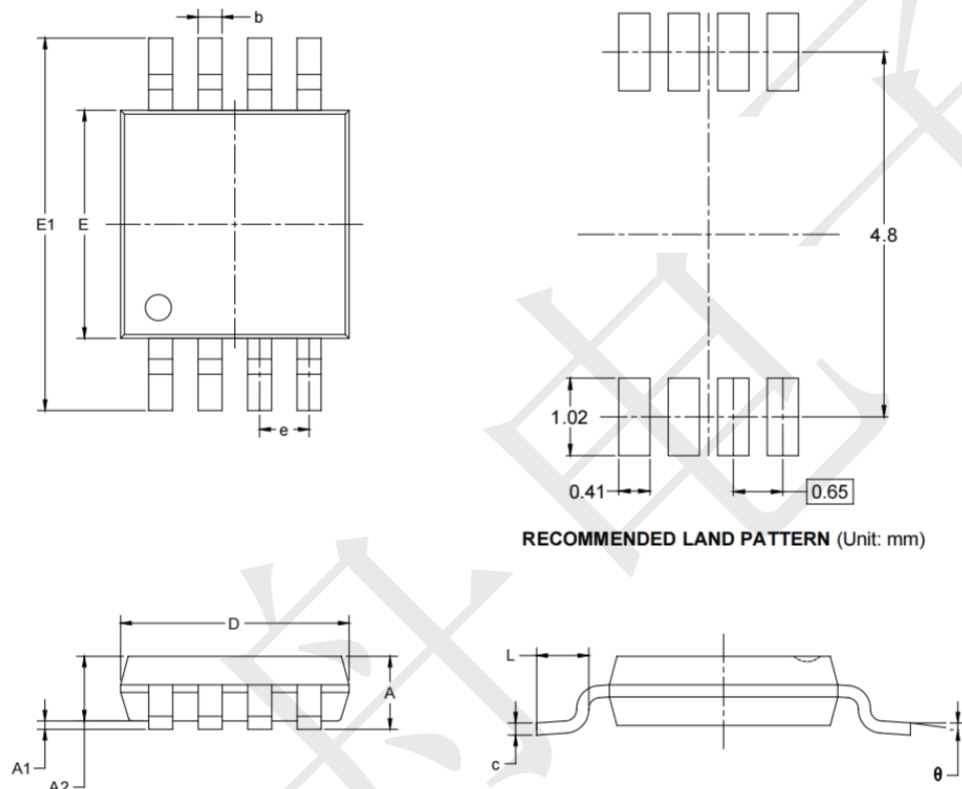
$R_L$  = Load resistance.

S1 = Test selection switch.

**Test circuit for measuring switching times**

### Package informantion

#### MSOP-8



| Symbol   | Dimensions<br>In Millimeters |       | Dimensions<br>In Inches |       |
|----------|------------------------------|-------|-------------------------|-------|
|          | MIN                          | MAX   | MIN                     | MAX   |
| A        | 0.820                        | 1.100 | 0.032                   | 0.043 |
| A1       | 0.020                        | 0.150 | 0.001                   | 0.006 |
| A2       | 0.750                        | 0.950 | 0.030                   | 0.037 |
| b        | 0.250                        | 0.380 | 0.010                   | 0.015 |
| c        | 0.090                        | 0.230 | 0.004                   | 0.009 |
| D        | 2.900                        | 3.100 | 0.114                   | 0.122 |
| E        | 2.900                        | 3.100 | 0.114                   | 0.122 |
| E1       | 4.750                        | 5.050 | 0.187                   | 0.199 |
| e        | 0.650 BSC                    |       | 0.026 BSC               |       |
| L        | 0.400                        | 0.800 | 0.016                   | 0.031 |
| $\theta$ | 0°                           | 6°    | 0°                      | 6°    |