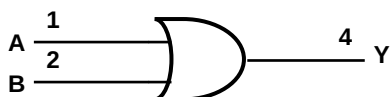


### Pin Descriptions

| Pin Name        | Pin No | Description    |
|-----------------|--------|----------------|
| A               | 1      | Data Input     |
| B               | 2      | Data Input     |
| GND             | 3      | Ground         |
| Y               | 4      | Data Output    |
| V <sub>CC</sub> | 5      | Supply Voltage |

### Logic Diagram



### Function Table

| Inputs |   | Output |
|--------|---|--------|
| A      | B | Y      |
| H      | X | H      |
| X      | H | H      |
| L      | L | L      |

### Absolute Maximum Ratings (Note 2)

| Symbol           | Description                                                                    | Rating                       | Unit |
|------------------|--------------------------------------------------------------------------------|------------------------------|------|
| ESD HBM          | Human Body Model ESD Protection                                                | 2                            | KV   |
| ESD CDM          | Charged Device Model ESD Protection                                            | 1                            | KV   |
| ESD MM           | Machine Model ESD Protection                                                   | 200                          | V    |
| V <sub>CC</sub>  | Supply Voltage Range                                                           | -0.5 to 6.5                  | V    |
| V <sub>I</sub>   | Input Voltage Range                                                            | -0.5 to 6.5                  | V    |
| V <sub>O</sub>   | Voltage applied to output in high or low state                                 | -0.5 to V <sub>CC</sub> +0.5 | V    |
| I <sub>IK</sub>  | Input Clamp Current V <sub>I</sub> < 0                                         | -20                          | mA   |
| I <sub>OK</sub>  | Output Clamp Current (V <sub>O</sub> < 0 or V <sub>O</sub> > V <sub>CC</sub> ) | ±20                          | mA   |
| I <sub>O</sub>   | Continuous output current (V <sub>O</sub> = 0 to V <sub>CC</sub> )             | ±25                          | mA   |
| I <sub>CC</sub>  | Continuous current through V <sub>CC</sub>                                     | 50                           | mA   |
| I <sub>GND</sub> | Continuous current through GND                                                 | -50                          | mA   |
| T <sub>J</sub>   | Operating Junction Temperature                                                 | -40 to 150                   | °C   |
| T <sub>STG</sub> | Storage Temperature                                                            | -65 to 150                   | °C   |

Notes: 2. Stresses beyond the absolute maximum may result in immediate failure or reduced reliability. These are stress values and device operation should be within recommend values.

### Recommended Operating Conditions (Note 3)

| Symbol          | Parameter                          | Min | Max             | Unit |
|-----------------|------------------------------------|-----|-----------------|------|
| V <sub>CC</sub> | Operating Voltage                  | 4.5 | 5.5             | V    |
| V <sub>IH</sub> | High-level Input Voltage           | 2.0 |                 | V    |
| V <sub>IL</sub> | Low-level input voltage            |     | 0.8             | V    |
| V <sub>I</sub>  | Input Voltage                      | 0   | 5.5             | V    |
| V <sub>O</sub>  | Output Voltage                     | 0   | V <sub>CC</sub> | V    |
| I <sub>OH</sub> | High-level output current          |     | -8              | mA   |
| I <sub>OL</sub> | Low-level output current           |     | 8               | mA   |
| Δt/ΔV           | Input transition rise or fall rate |     | 20              | ns/V |
| T <sub>A</sub>  | Operating free-air temperature     | -40 | 125             | °C   |

Notes: 3. Unused inputs should be held at V<sub>CC</sub> or Ground.

**Electrical Characteristics**

| Symbol           | Parameter                              | Test Conditions                                           | V <sub>CC</sub> | 25°C |      |       | -40°C to 85°C |      | -40°C to 125°C |      | Unit |
|------------------|----------------------------------------|-----------------------------------------------------------|-----------------|------|------|-------|---------------|------|----------------|------|------|
|                  |                                        |                                                           |                 | Min  | Typ. | Max   | Min           | Max  | Min            | Max  |      |
| V <sub>OH</sub>  | High Level Output Voltage              | I <sub>OH</sub> = -50µA                                   | 4.5V            | 4.4  | 4.5  |       | 4.4           |      | 4.4            |      | V    |
|                  |                                        | I <sub>OH</sub> = -8mA                                    | 4.5V            | 3.94 |      |       | 3.8           |      | 3.70           |      |      |
| V <sub>OL</sub>  | Low Level Output Voltage               | I <sub>OL</sub> = 50µA                                    | 4.5V            |      | 0    | 0.1   |               | 0.1  |                | 0.1  | V    |
|                  |                                        | I <sub>OL</sub> = 8mA                                     | 4.5V            |      |      | 0.36  |               | 0.44 |                | 0.55 |      |
| I <sub>I</sub>   | Input Current                          | V <sub>I</sub> = 5.5V or GND                              | 0 to 5.5V       |      |      | ± 0.1 |               | ± 1  |                | ± 2  | µA   |
| I <sub>CC</sub>  | Supply Current                         | V <sub>I</sub> = 5.5V or GND<br>I <sub>O</sub> =0         | 5.5V            |      |      | 1     |               | 10   |                | 40   | µA   |
| C <sub>i</sub>   | Input Capacitance                      | V <sub>I</sub> = V <sub>CC</sub> – or GND                 | 5.5V            |      | 2.0  | 10    |               | 10   |                | 10   | pF   |
| ΔI <sub>CC</sub> | Additional Supply Current              | One input at 3.4 V Other inputs at V <sub>CC</sub> or GND | 5.5V            |      |      | 1.35  |               | 1.5  |                |      | mA   |
| θ <sub>JA</sub>  | Thermal Resistance Junction-to-Ambient | SOT25                                                     | (Note 4)        |      | 204  |       |               |      |                |      | °C/W |
|                  |                                        | SOT353                                                    |                 |      | 371  |       |               |      |                |      |      |
| θ <sub>JC</sub>  | Thermal Resistance Junction-to-Case    | SOT25                                                     | (Note 4)        |      | 52   |       |               |      |                |      | °C/W |
|                  |                                        | SOT353                                                    |                 |      | 143  |       |               |      |                |      |      |

Note: 4. Test conditions for SOT25, and SOT353: Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

**Switching Characteristics**

 V<sub>CC</sub> = 5V ± 0.5V (see Figure 1)

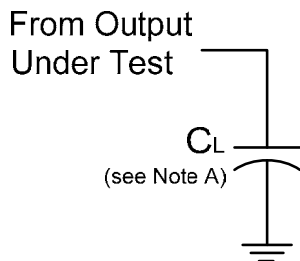
| Parameter       | From (Input) | TO (OUTPUT) |                      | 25°C |      |     | -40°C to 85°C |     | -40°C to 125°C |      | Unit |
|-----------------|--------------|-------------|----------------------|------|------|-----|---------------|-----|----------------|------|------|
|                 |              |             |                      | Min  | Typ. | Max | Min           | Max | Min            | Max  |      |
| t <sub>pd</sub> | A or B       | Y           | C <sub>L</sub> =15pF | 0.6  | 3.3  | 6.9 | 0.6           | 8.0 | 0.6            | 9.0  | ns   |
|                 |              |             | C <sub>L</sub> =50pF | 0.6  | 4.8  | 7.9 | 0.6           | 9.0 | 0.6            | 10.0 | ns   |

**Operating Characteristics**

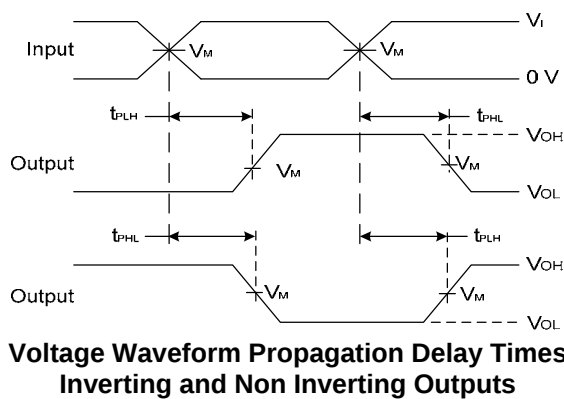
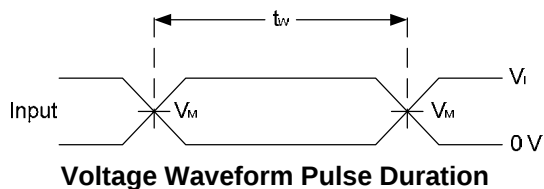
 T<sub>A</sub> = 25 °C

| Parameter       |                               | Test Conditions      | V <sub>CC</sub> = 5 V | Unit |
|-----------------|-------------------------------|----------------------|-----------------------|------|
|                 |                               |                      | Typ.                  |      |
| C <sub>pd</sub> | Power dissipation capacitance | f = 1 MHz<br>No Load | 11.5                  | pF   |

**Parameter Measurement Information**

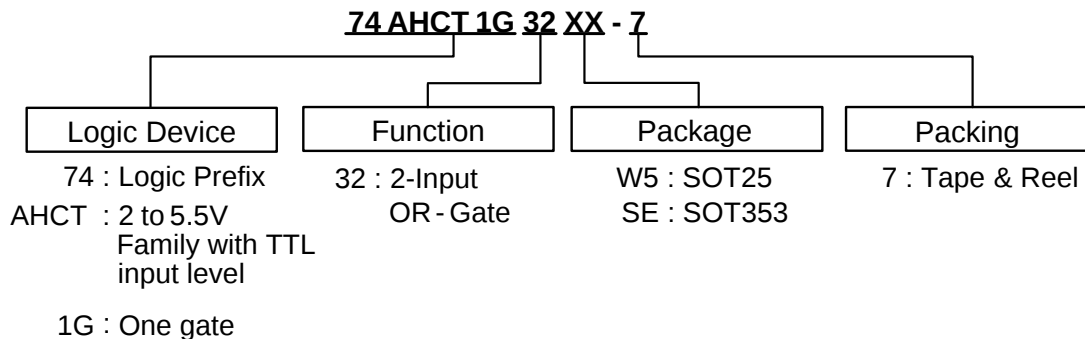


| $V_{CC}$      | Inputs |            | $V_M$ | $C_L$ |
|---------------|--------|------------|-------|-------|
|               | $V_I$  | $t_r/t_f$  |       |       |
| $5V \pm 0.5V$ | 3V     | $\leq 3ns$ | 1.5V  | 15pF  |
| $5V \pm 0.5V$ | 3V     | $\leq 3ns$ | 1.5V  | 50pF  |



- Notes:
- A. Includes test lead and test apparatus capacitance.
  - B. All pulses are supplied at pulse repetition rate  $\leq 1$  MHz.
  - C. Inputs are measured separately one transition per measurement.
  - D.  $t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{pd}$ .

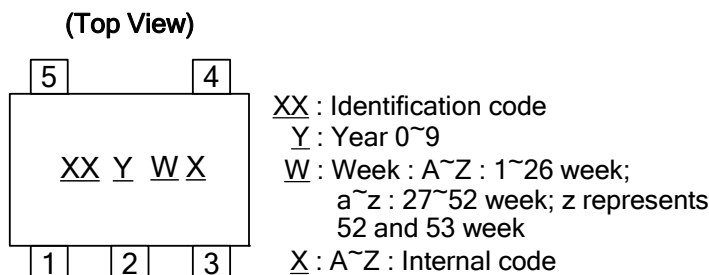
### Ordering Information



| Device         | Package Code | Packaging (Note 5) | 7" Tape and Reel |                    |
|----------------|--------------|--------------------|------------------|--------------------|
|                |              |                    | Quantity         | Part Number Suffix |
| 74AHCT1G32W5-7 | W5           | SOT25              | 3000/Tape & Reel | -7                 |
| 74AHCT1G32SE-7 | SE           | SOT353             | 3000/Tape & Reel | -7                 |

Notes: 5. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

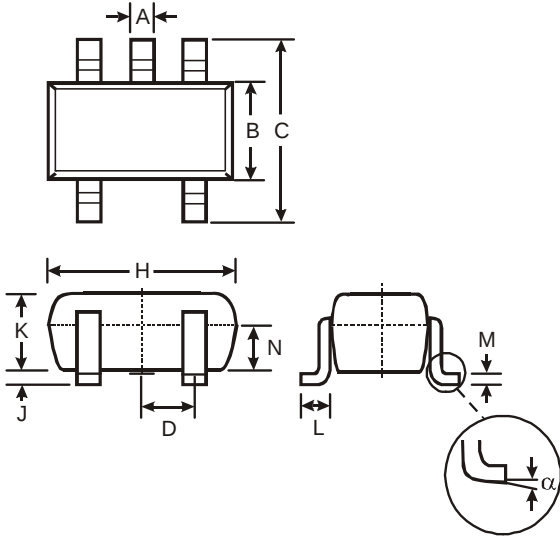
### Marking Information



| Part Number  | Package | Identification Code |
|--------------|---------|---------------------|
| 74AHCT1G32W5 | SOT25   | ZW                  |
| 74AHCT1G32SE | SOT353  | ZW                  |

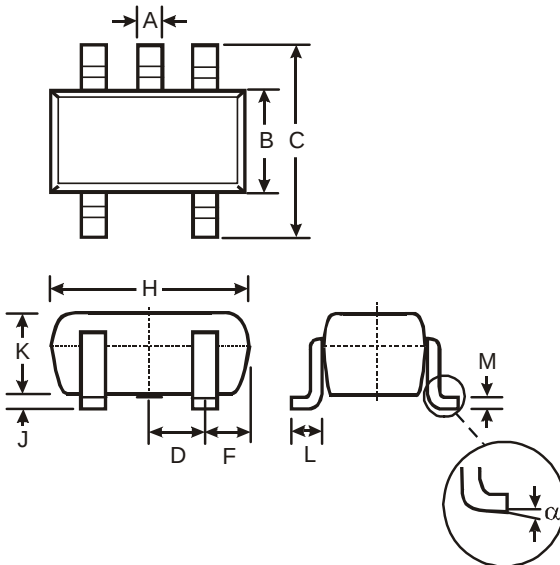
**Package Outline Dimensions (All Dimensions in mm)**

**(1) Package Type: SOT25**



| SOT25                |       |      |      |
|----------------------|-------|------|------|
| Dim                  | Min   | Max  | Typ  |
| A                    | 0.35  | 0.50 | 0.38 |
| B                    | 1.50  | 1.70 | 1.60 |
| C                    | 2.70  | 3.00 | 2.80 |
| D                    | —     | —    | 0.95 |
| H                    | 2.90  | 3.10 | 3.00 |
| J                    | 0.013 | 0.10 | 0.05 |
| K                    | 1.00  | 1.30 | 1.10 |
| L                    | 0.35  | 0.55 | 0.40 |
| M                    | 0.10  | 0.20 | 0.15 |
| N                    | 0.70  | 0.80 | 0.75 |
| α                    | 0°    | 8°   | —    |
| All Dimensions in mm |       |      |      |

**(2) Package Type: SOT353**



| SOT353               |          |      |
|----------------------|----------|------|
| Dim                  | Min      | Max  |
| A                    | 0.10     | 0.30 |
| B                    | 1.15     | 1.35 |
| C                    | 2.00     | 2.20 |
| D                    | 0.65 Typ |      |
| F                    | 0.40     | 0.45 |
| H                    | 1.80     | 2.20 |
| J                    | 0        | 0.10 |
| K                    | 0.90     | 1.00 |
| L                    | 0.25     | 0.40 |
| M                    | 0.10     | 0.22 |
| α                    | 0°       | 8°   |
| All Dimensions in mm |          |      |

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