# 74AUP1T50

## Low-power buffer with voltage-level translator

Rev. 1 — 28 November 2017 Product data sheet

## 1 General description

The 74AUP1T50 provides the single buffer function. This device ensures a very low static and dynamic power consumption across the entire $V_{CC}$ range from 2.3 V to 3.6 V.

The 74AUP1T50 is designed for logic-level translation applications with input switching levels that accept 1.8 V low-voltage CMOS signals, while operating from either a single 2.5 V or 3.3 V supply voltage.

The wide supply voltage range ensures normal operation as battery voltage drops from 3.6 V to 2.3 V.

This device is fully specified for partial power-down applications using $I_{OFF}$. The $I_{OFF}$ circuitry disables the output, preventing the damaging backflow current through the device when it is powered down.

Schmitt trigger inputs make the circuit tolerant to slower input rise and fall times across the entire $V_{CC}$ range.

## 2 Features and benefits

- Wide supply voltage range from 2.3 V to 3.6 V
- High noise immunity
- ESD protection:
  - HBM JESD22-A114F Class 3A exceeds 5000 V
  - CDM JESD22-C101E exceeds 1000 V
- Low static power consumption; $I_{CC}$ = 1.5 µA (maximum)
- Latch-up performance exceeds 100 mA per JESD 78 Class II
- Inputs accept voltages up to 3.6 V
- Low noise overshoot and undershoot < 10 % of $V_{CC}$
- $I_{OFF}$ circuitry provides partial power-down mode operation
- Multiple package options
- Specified from -40 °C to +85 °C and -40 °C to +125 °C

# 3 Ordering information

**Table 1. Ordering information**

| Type number | Package | | | |
|---|---|---|---|---|
| | Temperature range | Name | Description | Version |
| 74AUP1T50GW | -40 °C to +125 °C | TSSOP5 | plastic thin shrink small outline package; 5 leads; body width 1.25 mm | SOT353-1 |
| 74AUP1T50GX | -40 °C to +125 °C | X2SON5 | plastic thermal enhanced extremely thin small outline package; no leads; 5 terminals; body 0.8 x 0.8 x 0.35 mm | SOT1226 |

# 4 Marking

**Table 2. Marking**

| Type number | Marking code [1] |
|---|---|
| 74AUP1T50GW | 5E |
| 74AUP1T50GX | 5E |

[1] The pin 1 indicator is located on the lower left corner of the device, below the marking code.

# 5 Functional diagram

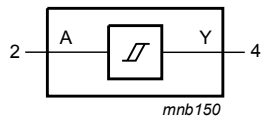



**Figure 1. Logic symbol**

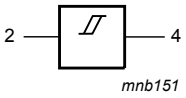



**Figure 2. IEC logic symbol**

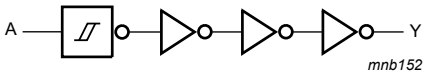



**Figure 3. Logic diagram**

# 6 Pinning information

## 6.1 Pinning

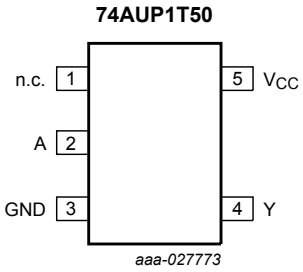
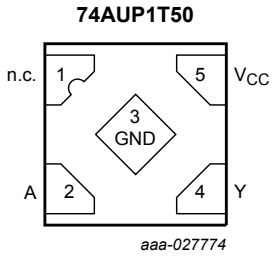



**Figure 4. Pin configuration SOT353-1**




Transparent top view

**Figure 5. Pin configuration SOT1226 (X2SON5)**

### 6.2 Pin description

**Table 3. Pin description**

| Symbol | Pin | Description |
|---|---|---|
| n.c. | 1 | not connected |
| A | 2 | data input |
| GND | 3 | ground (0 V) |
| Y | 4 | data output |
| $V_{CC}$ | 5 | supply voltage |

## 7 Functional description

**Table 4. Function table [1]**

| Input | Output |
|---|---|
| **A** | **Y** |
| L | L |
| H | H |

[1] H = HIGH voltage level;
L = LOW voltage level.

## 8 Limiting values

**Table 5. Limiting values**

*In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).*

| Symbol | Parameter | Conditions | | Min | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | | | -0.5 | +4.6 | V |
| $I_{IK}$ | input clamping current | $V_I < 0$ V | | -50 | - | mA |
| $V_I$ | input voltage | | [1] | -0.5 | +4.6 | V |
| $I_{OK}$ | output clamping current | $V_O < 0$ V | | -50 | - | mA |
| $V_O$ | output voltage | Active mode and Power-down mode | [1] | -0.5 | +4.6 | V |
| $I_O$ | output current | $V_O$ = 0 V to $V_{CC}$ | | - | ±20 | mA |
| $I_{CC}$ | supply current | | | - | 50 | mA |
| $I_{GND}$ | ground current | | | -50 | - | mA |
| $T_{stg}$ | storage temperature | | | -65 | +150 | °C |
| $P_{tot}$ | total power dissipation | $T_{amb}$ = -40 °C to +125 °C | [2] | - | 250 | mW |

[1] The minimum input and output voltage ratings may be exceeded if the input and output current ratings are observed.
[2] For TSSOP5 packages: above 87.5 °C the value of $P_{tot}$ derates linearly with 4.0 mW/K.
For X2SON5 packages: above 118 °C the value of $P_{tot}$ derates linearly with 7.8 mW/K.

# 9 Recommended operating conditions

**Table 6. Recommended operating conditions**

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | | 2.3 | 3.6 | V |
| $V_I$ | input voltage | | 0 | 3.6 | V |
| $V_O$ | output voltage | Active mode | 0 | $V_{CC}$ | V |
| | | Power-down mode; $V_{CC}$ = 0 V | 0 | 3.6 | V |
| $T_{amb}$ | ambient temperature | | -40 | +125 | °C |

# 10 Static characteristics

**Table 7. Static characteristics**

*At recommended operating conditions; voltages are referenced to GND (ground = 0 V).*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **$T_{amb}$ = 25 °C** | | | | | | |
| $V_{T+}$ | positive-going threshold voltage | $V_{CC}$ = 2.3 V to 2.7 V | 0.60 | - | 1.10 | V |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.75 | - | 1.16 | V |
| $V_{T-}$ | negative-going threshold voltage | $V_{CC}$ = 2.3 V to 2.7 V | 0.35 | - | 0.60 | V |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.50 | - | 0.85 | V |
| $V_H$ | hysteresis voltage | ($V_H = V_{T+} - V_{T-}$) | | | | |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 0.23 | - | 0.60 | V |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.25 | - | 0.56 | V |
| $V_{OH}$ | HIGH-level output voltage | $V_I = V_{T+}$ or $V_{T-}$ | | | | |
| | | $I_O$ = -20 µA; $V_{CC}$ = 2.3 V to 3.6 V | $V_{CC}$ - 0.1 | - | - | V |
| | | $I_O$ = -2.3 mA; $V_{CC}$ = 2.3 V | 2.05 | - | - | V |
| | | $I_O$ = -3.1 mA; $V_{CC}$ = 2.3 V | 1.9 | - | - | V |
| | | $I_O$ = -2.7 mA; $V_{CC}$ = 3.0 V | 2.72 | - | - | V |
| | | $I_O$ = -4.0 mA; $V_{CC}$ = 3.0 V | 2.6 | - | - | V |
| $V_{OL}$ | LOW-level output voltage | $V_I = V_{T+}$ or $V_{T-}$ | | | | |
| | | $I_O$ = 20 µA; $V_{CC}$ = 2.3 V to 3.6 V | - | - | 0.10 | V |
| | | $I_O$ = 2.3 mA; $V_{CC}$ = 2.3 V | - | - | 0.31 | V |
| | | $I_O$ = 3.1 mA; $V_{CC}$ = 2.3 V | - | - | 0.44 | V |
| | | $I_O$ = 2.7 mA; $V_{CC}$ = 3.0 V | - | - | 0.31 | V |
| | | $I_O$ = 4.0 mA; $V_{CC}$ = 3.0 V | - | - | 0.44 | V |
| $I_I$ | input leakage current | $V_I$ = GND to 3.6 V; $V_{CC}$ = 0 V to 3.6 V | - | - | ±0.1 | µA |
| $I_{OFF}$ | power-off leakage current | $V_I$ or $V_O$ = 0 V to 3.6 V; $V_{CC}$ = 0 V | - | - | ±0.1 | µA |
| $\Delta I_{OFF}$ | additional power-off leakage current | $V_I$ or $V_O$ = 0 V to 3.6 V; $V_{CC}$ = 0 V to 0.2 V | - | - | ±0.1 | µA |
| $I_{CC}$ | supply current | $V_I$ = GND or $V_{CC}$; $I_O$ = 0 A; $V_{CC}$ = 2.3 V to 3.6 V | - | - | 1.2 | µA |

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $C_I$ | input capacitance | $V_{CC}$ = 0 V to 3.6 V; $V_I$ = GND or $V_{CC}$ | - | 0.8 | - | pF |
| $C_O$ | output capacitance | $V_O$ = GND; $V_{CC}$ = 0 V | - | 1.7 | - | pF |
| **$T_{amb}$ = -40 °C to +85 °C** | | | | | | |
| $V_{T+}$ | positive-going threshold voltage | $V_{CC}$ = 2.3 V to 2.7 V | 0.60 | - | 1.10 | V |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.75 | - | 1.19 | V |
| $V_{T-}$ | negative-going threshold voltage | $V_{CC}$ = 2.3 V to 2.7 V | 0.35 | - | 0.60 | V |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.50 | - | 0.85 | V |
| $V_H$ | hysteresis voltage | ($V_H = V_{T+} - V_{T-}$) | | | | |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 0.10 | - | 0.60 | V |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.15 | - | 0.56 | V |
| $V_{OH}$ | HIGH-level output voltage | $V_I = V_{T+}$ or $V_{T-}$ | | | | |
| | | $I_O$ = -20 µA; $V_{CC}$ = 2.3 V to 3.6 V | $V_{CC}$ - 0.1 | - | - | V |
| | | $I_O$ = -2.3 mA; $V_{CC}$ = 2.3 V | 1.97 | - | - | V |
| | | $I_O$ = -3.1 mA; $V_{CC}$ = 2.3 V | 1.85 | - | - | V |
| | | $I_O$ = -2.7 mA; $V_{CC}$ = 3.0 V | 2.67 | - | - | V |
| | | $I_O$ = -4.0 mA; $V_{CC}$ = 3.0 V | 2.55 | - | - | V |
| $V_{OL}$ | LOW-level output voltage | $V_I = V_{T+}$ or $V_{T-}$ | | | | |
| | | $I_O$ = 20 µA; $V_{CC}$ = 2.3 V to 3.6 V | - | - | 0.1 | V |
| | | $I_O$ = 2.3 mA; $V_{CC}$ = 2.3 V | - | - | 0.33 | V |
| | | $I_O$ = 3.1 mA; $V_{CC}$ = 2.3 V | - | - | 0.45 | V |
| | | $I_O$ = 2.7 mA; $V_{CC}$ = 3.0 V | - | - | 0.33 | V |
| | | $I_O$ = 4.0 mA; $V_{CC}$ = 3.0 V | - | - | 0.45 | V |
| $I_I$ | input leakage current | $V_I$ = GND to 3.6 V; $V_{CC}$ = 0 V to 3.6 V | - | - | ±0.5 | µA |
| $I_{OFF}$ | power-off leakage current | $V_I$ or $V_O$ = 0 V to 3.6 V; $V_{CC}$ = 0 V | - | - | ±0.5 | µA |
| $\Delta I_{OFF}$ | additional power-off leakage current | $V_I$ or $V_O$ = 0 V to 3.6 V; $V_{CC}$ = 0 V to 0.2 V | - | - | ±0.5 | µA |
| $I_{CC}$ | supply current | $V_I$ = GND or $V_{CC}$; $I_O$ = 0 A; $V_{CC}$ = 2.3 V to 3.6 V | - | - | 1.5 | µA |
| $\Delta I_{CC}$ | additional supply current | $V_{CC}$ = 2.3 V to 2.7 V; $I_O$ = 0 A [1] | - | - | 0.6 | µA |
| | | $V_{CC}$ = 3.0 V to 3.6 V; $I_O$ = 0 A [2] | - | - | 10 | µA |

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **$T_{amb}$ = -40 °C to +125 °C** | | | | | | |
| $V_{T+}$ | positive-going threshold voltage | $V_{CC}$ = 2.3 V to 2.7 V | 0.60 | - | 1.10 | V |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.75 | - | 1.19 | V |
| $V_{T-}$ | negative-going threshold voltage | $V_{CC}$ = 2.3 V to 2.7 V | 0.33 | - | 0.64 | V |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.46 | - | 0.85 | V |
| $V_H$ | hysteresis voltage | ($V_H = V_{T+} - V_{T-}$) | | | | |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 0.10 | - | 0.60 | V |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.15 | - | 0.56 | V |
| $V_{OH}$ | HIGH-level output voltage | $V_I = V_{T+}$ or $V_{T-}$ | | | | |
| | | $I_O$ = -20 µA; $V_{CC}$ = 2.3 V to 3.6 V | $V_{CC}$ - 0.11 | - | - | V |
| | | $I_O$ = -2.3 mA; $V_{CC}$ = 2.3 V | 1.77 | - | - | V |
| | | $I_O$ = -3.1 mA; $V_{CC}$ = 2.3 V | 1.67 | - | - | V |
| | | $I_O$ = -2.7 mA; $V_{CC}$ = 3.0 V | 2.40 | - | - | V |
| | | $I_O$ = -4.0 mA; $V_{CC}$ = 3.0 V | 2.30 | - | - | V |
| $V_{OL}$ | LOW-level output voltage | $V_I = V_{T+}$ or $V_{T-}$ | | | | |
| | | $I_O$ = 20 µA; $V_{CC}$ = 2.3 V to 3.6 V | - | - | 0.11 | V |
| | | $I_O$ = 2.3 mA; $V_{CC}$ = 2.3 V | - | - | 0.36 | V |
| | | $I_O$ = 3.1 mA; $V_{CC}$ = 2.3 V | - | - | 0.50 | V |
| | | $I_O$ = 2.7 mA; $V_{CC}$ = 3.0 V | - | - | 0.36 | V |
| | | $I_O$ = 4.0 mA; $V_{CC}$ = 3.0 V | - | - | 0.50 | V |
| $I_I$ | input leakage current | $V_I$ = GND to 3.6 V; $V_{CC}$ = 0 V to 3.6 V | - | - | ±0.75 | µA |
| $I_{OFF}$ | power-off leakage current | $V_I$ or $V_O$ = 0 V to 3.6 V; $V_{CC}$ = 0 V | - | - | ±0.75 | µA |
| $\Delta I_{OFF}$ | additional power-off leakage current | $V_I$ or $V_O$ = 0 V to 3.6 V; $V_{CC}$ = 0 V to 0.2 V | - | - | ±0.75 | µA |
| $I_{CC}$ | supply current | $V_I$ = GND or $V_{CC}$; $I_O$ = 0 A; $V_{CC}$ = 2.3 V to 3.6 V | - | - | 3.5 | µA |
| $\Delta I_{CC}$ | additional supply current | $V_{CC}$ = 2.3 V to 2.7 V; $I_O$ = 0 A [1] | - | - | 1.8 | µA |
| | | $V_{CC}$ = 3.0 V to 3.6 V; $I_O$ = 0 A [2] | - | - | 18 | µA |

[1] One input at 0.3 V or 1.1 V, other input at $V_{CC}$ or GND.
[2] One input at 0.45 V or 1.2 V, other input at $V_{CC}$ or GND.

## 11 Dynamic characteristics

**Table 8. Dynamic characteristics**

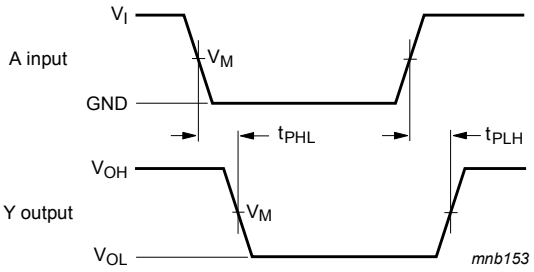
*Voltages are referenced to GND (ground = 0 V); for test circuit see Figure 7.*

| Symbol | Parameter | Conditions | 25 °C | | | -40 °C to +125 °C | | | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ [1] | Max | Min | Max (85 °C) | Max (125 °C) | |
| **$V_{CC}$ = 2.3 V to 2.7 V; $V_I$ = 1.65 V to 1.95 V** | | | | | | | | | |
| $t_{pd}$ | propagation delay | A, B to Y; see Figure 6 [2] | | | | | | | |
| | | $C_L$ = 5 pF | 2.0 | 3.2 | 4.9 | 0.5 | 6.8 | 7.5 | ns |
| | | $C_L$ = 10 pF | 2.4 | 3.8 | 5.6 | 1.0 | 7.9 | 8.7 | ns |
| | | $C_L$ = 15 pF | 2.7 | 4.3 | 6.1 | 1.0 | 8.7 | 9.6 | ns |
| | | $C_L$ = 30 pF | 3.6 | 5.4 | 7.6 | 1.5 | 10.8 | 11.9 | ns |
| **$V_{CC}$ = 2.3 V to 2.7 V; $V_I$ = 2.3 V to 2.7 V** | | | | | | | | | |
| $t_{pd}$ | propagation delay | A, B to Y; see Figure 6 [2] | | | | | | | |
| | | $C_L$ = 5 pF | 1.6 | 3.1 | 5.0 | 0.5 | 6.0 | 6.6 | ns |
| | | $C_L$ = 10 pF | 2.0 | 3.7 | 5.7 | 1.0 | 7.1 | 7.9 | ns |
| | | $C_L$ = 15 pF | 2.3 | 4.1 | 6.3 | 1.0 | 7.9 | 8.7 | ns |
| | | $C_L$ = 30 pF | 3.2 | 5.3 | 7.8 | 1.5 | 10.0 | 11.0 | ns |
| **$V_{CC}$ = 2.3 V to 2.7 V; $V_I$ = 3.0 V to 3.6 V** | | | | | | | | | |
| $t_{pd}$ | propagation delay | A, B to Y; see Figure 6 [2] | | | | | | | |
| | | $C_L$ = 5 pF | 1.2 | 2.8 | 4.5 | 0.5 | 5.5 | 6.1 | ns |
| | | $C_L$ = 10 pF | 1.7 | 3.4 | 5.1 | 1.0 | 6.5 | 7.2 | ns |
| | | $C_L$ = 15 pF | 2.0 | 3.9 | 5.7 | 1.0 | 7.4 | 8.2 | ns |
| | | $C_L$ = 30 pF | 2.8 | 5.0 | 7.2 | 1.5 | 9.5 | 10.5 | ns |
| **$V_{CC}$ = 3.0 V to 3.6 V; $V_I$ = 1.65 V to 1.95 V** | | | | | | | | | |
| $t_{pd}$ | propagation delay | A, B to Y; see Figure 6 [2] | | | | | | | |
| | | $C_L$ = 5 pF | 1.8 | 2.7 | 3.7 | 0.5 | 8.0 | 8.8 | ns |
| | | $C_L$ = 10 pF | 2.2 | 3.2 | 4.4 | 1.0 | 8.5 | 9.4 | ns |
| | | $C_L$ = 15 pF | 2.7 | 3.7 | 5.0 | 1.0 | 9.1 | 10.1 | ns |
| | | $C_L$ = 30 pF | 3.5 | 4.9 | 6.3 | 1.5 | 9.8 | 10.8 | ns |
| **$V_{CC}$ = 3.0 V to 3.6 V; $V_I$ = 2.3 V to 2.7 V** | | | | | | | | | |
| $t_{pd}$ | propagation delay | A, B to Y; see Figure 6 [2] | | | | | | | |
| | | $C_L$ = 5 pF | 1.4 | 2.6 | 3.8 | 0.5 | 5.3 | 5.9 | ns |
| | | $C_L$ = 10 pF | 1.9 | 3.1 | 4.5 | 1.0 | 6.1 | 6.8 | ns |
| | | $C_L$ = 15 pF | 2.2 | 3.6 | 5.1 | 1.0 | 6.8 | 7.5 | ns |
| | | $C_L$ = 30 pF | 3.0 | 4.8 | 6.6 | 1.5 | 8.5 | 9.4 | ns |

| Symbol | Parameter | Conditions | 25 °C | | | -40 °C to +125 °C | | | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ [1] | Max | Min | Max (85 °C) | Max (125 °C) | |
| **$V_{CC}$ = 3.0 V to 3.6 V; $V_I$ = 3.0 V to 3.6 V** | | | | | | | | | |
| $t_{pd}$ | propagation delay | A, B to Y; see Figure 6 [2] | | | | | | | |
| | | $C_L$ = 5 pF | 1.1 | 2.5 | 4.0 | 0.5 | 4.7 | 5.2 | ns |
| | | $C_L$ = 10 pF | 1.6 | 3.1 | 4.5 | 1.0 | 5.7 | 6.3 | ns |
| | | $C_L$ = 15 pF | 1.9 | 3.6 | 5.1 | 1.0 | 6.2 | 6.9 | ns |
| | | $C_L$ = 30 pF | 2.7 | 4.7 | 6.6 | 1.5 | 7.8 | 8.6 | ns |
| **$T_{amb}$ = 25 °C** | | | | | | | | | |
| $C_{PD}$ | power dissipation capacitance | $f_i$ = 1 MHz; $V_I$ = GND to $V_{CC}$ [3] | | | | | | | |
| | | $V_{CC}$ = 2.3 V to 2.7 V | - | 4 | - | - | - | - | pF |
| | | $V_{CC}$ = 3.0 V to 3.6 V | - | 5 | - | - | - | - | pF |

[1] All typical values are measured at nominal $V_{CC}$.
[2] $t_{pd}$ is the same as $t_{PLH}$ and $t_{PHL}$
[3] $C_{PD}$ is used to determine the dynamic power dissipation ($P_D$ in µW).
$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma(C_L \times V_{CC}^2 \times f_o)$ where:
$f_i$ = input frequency in MHz;
$f_o$ = output frequency in MHz;
$C_L$ = output load capacitance in pF;
$V_{CC}$ = supply voltage in V;
N = number of inputs switching;
$\Sigma(C_L \times V_{CC}^2 \times f_o)$ = sum of the outputs.

## 11.1 Waveforms and test circuit



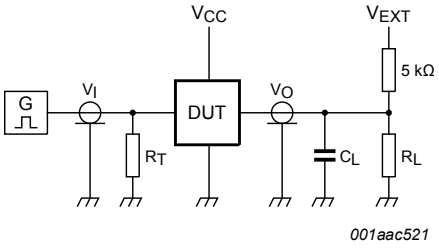

Measurement points are given in Table 9

$V_{OL}$ and $V_{OH}$ are typical output voltage levels that occur with the output load.

**Figure 6. Input A and B to output Y propagation delay times**

**Table 9. Measurement points**

| Supply voltage | Output | Input | | |
|---|---|---|---|---|
| $V_{CC}$ | $V_M$ | $V_M$ | $V_I$ | $t_r = t_f$ |
| 2.3 V to 3.6 V | 0.5 × $V_{CC}$ | 0.5 × $V_I$ | 1.65 V to 3.6 V | ≤ 3.0 ns |




Test data is given in Table 10.

Definitions for test circuit:

$R_L$ = Load resistance.

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

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

$V_{EXT}$ = External voltage for measuring switching times.

**Figure 7. Test circuit for measuring switching times**

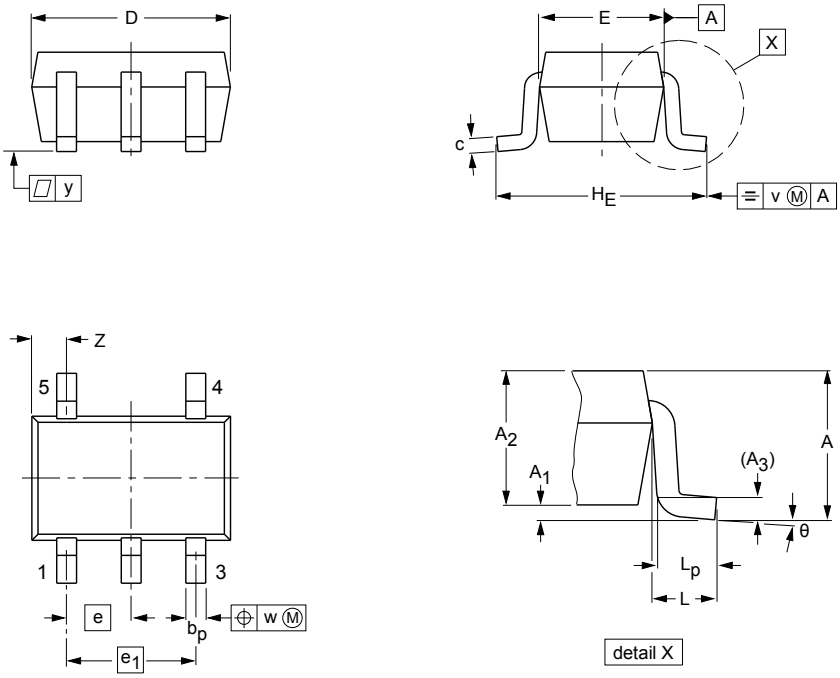
**Table 10. Test data**

| Supply voltage | Load | | $V_{EXT}$ | | |
|---|---|---|---|---|---|
| $V_{CC}$ | $C_L$ | $R_L$[1] | $t_{PLH}$, $t_{PHL}$ | $t_{PZH}$, $t_{PHZ}$ | $t_{PZL}$, $t_{PLZ}$ |
| 2.3 V to 3.6 V | 5 pF, 10 pF, 15 pF and 30 pF | 5 kΩ or 1 MΩ | open | GND | 2 × $V_{CC}$ |

[1] For measuring enable and disable times $R_L$ = 5 kΩ.
For measuring propagation delays, setup and hold times and pulse width $R_L$ = 1 MΩ.

## 12 Package outline

**TSSOP5: plastic thin shrink small outline package; 5 leads; body width 1.25 mm** **SOT353-1**




**DIMENSIONS (mm are the original dimensions)**

| UNIT | A max. | $A_1$ | $A_2$ | $A_3$ | $b_p$ | c | $D^{(1)}$ | $E^{(1)}$ | e | $e_1$ | $H_E$ | L | $L_p$ | v | w | y | $Z^{(1)}$ | θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1 | 0.1<br>0 | 1.0<br>0.8 | 0.15 | 0.30<br>0.15 | 0.25<br>0.08 | 2.25<br>1.85 | 1.35<br>1.15 | 0.65 | 1.3 | 2.25<br>2.0 | 0.425 | 0.46<br>0.21 | 0.3 | 0.1 | 0.1 | 0.60<br>0.15 | 7°<br>0° |

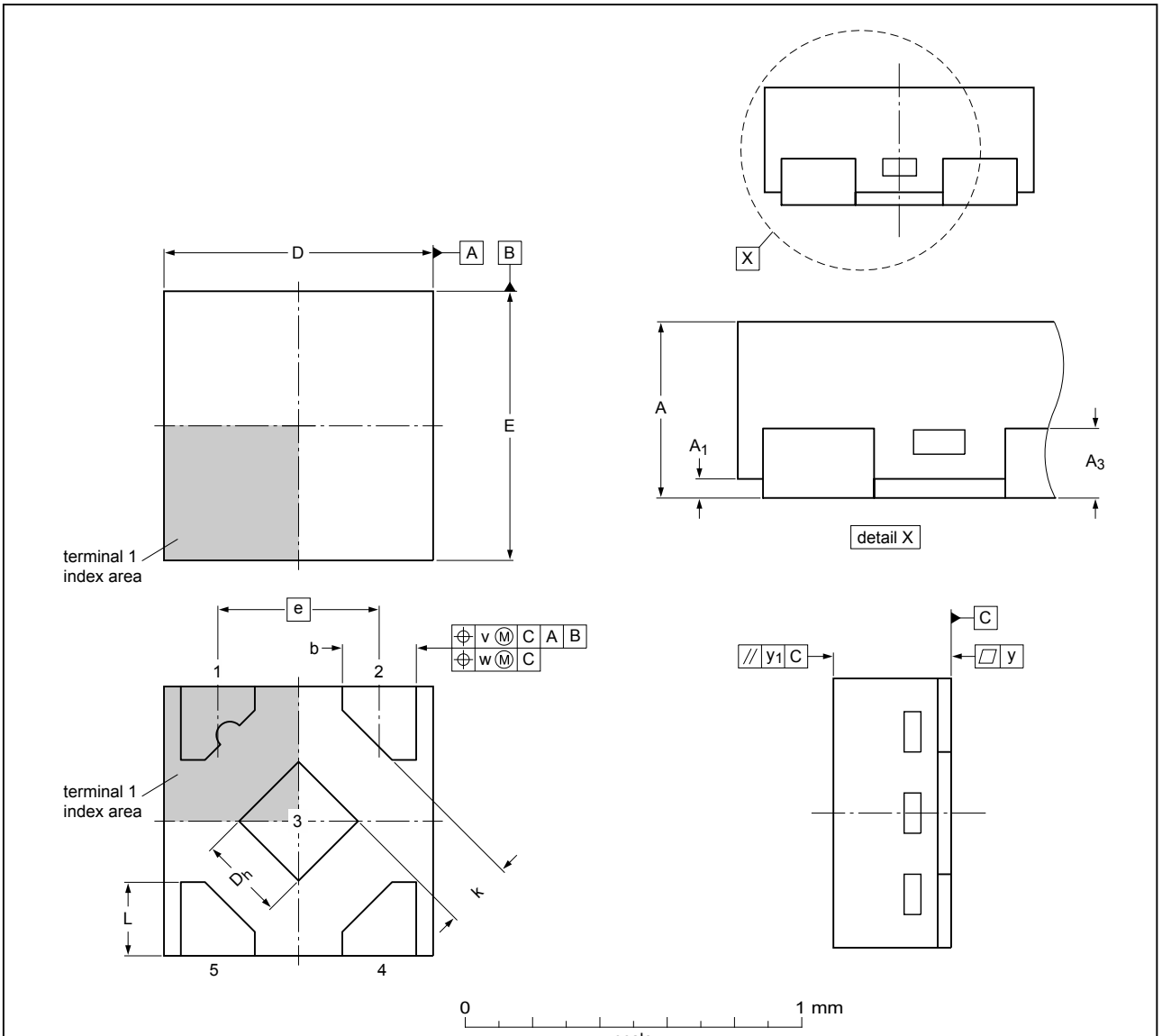
**Note**

1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT353-1 | | MO-203 | SC-88A | | | ~~00-09-01~~<br>03-02-19 |

**Figure 8. Package outline SOT353-1 (TSSOP5)**

**X2SON5: plastic thermal enhanced extremely thin small outline package; no leads; 5 terminals; body 0.8 x 0.8 x 0.35 mm** **SOT1226**




Dimensions

| Unit | | A(1) | A1 | A3 | D | Dh | E | b | e | k | L | v | w | y | y1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | max | 0.35 | 0.04 | 0.128 | 0.85 | 0.30 | 0.85 | 0.27 | | | 0.27 | | | | |
| | nom | | | | 0.80 | 0.25 | 0.80 | 0.22 | 0.48 | | 0.22 | 0.1 | 0.05 | 0.05 | 0.05 |
| | min | | | 0.040 | 0.75 | 0.20 | 0.75 | 0.17 | | 0.20 | 0.17 | | | | |

Note
1. Dimension A is including plating thickness.
2. Plastic or metal protrusions of 0.075 mm maximum per side are not included.

*sot1226_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | EIAJ | | | |
| SOT1226 | | | | | | ~~12-04-10~~ 12-04-25 |

**Figure 9. Package outline SOT1226 (X2SON5)**

## 13 Abbreviations

**Table 11. Abbreviations**

| Acronym | Description |
|---|---|
| CDM | Charged Device Model |
| CMOS | Complementary Metal-Oxide Semiconductor |
| DUT | Device Under Test |
| ESD | ElectroStatic Discharge |
| HBM | Human Body Model |

## 14 Revision history

**Table 12. Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| 74AUP1T50 v.1 | 20171128 | Product data sheet | - | - |

# 15 Legal information

## 15.1 Data sheet status

| Document status[1][2] | Product status[3] | Definition |
|---|---|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nexperia.com.

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