

# 74AUP1T34

Low-power dual supply translating buffer

Rev. 01 — 4 December 2006

Product data sheet

## 1. General description

The 74AUP1T34 is a high-performance, low-power, low-voltage, Si-gate CMOS device, superior to most advanced CMOS compatible TTL families.

Schmitt trigger action at all inputs makes the circuit tolerant to slower input rise and fall times across the entire  $V_{CC}$  range from 1.1 V to 3.6 V. This device ensures a very low static and dynamic power consumption across the entire  $V_{CC}$  range from 1.1 V to 3.6 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.

The 74AUP1T34 provides a single buffer with two separate supply voltages. Input A is designed to track  $V_{CC(A)}$ . Output Y is designed to track  $V_{CC(Y)}$ . Both,  $V_{CC(A)}$  and  $V_{CC(Y)}$  accepts any supply voltage from 1.1 V to 3.6 V. This feature allows universal low voltage interfacing between any of the 1.2 V, 1.5 V, 1.8 V, 2.5 V, and 3.3 V voltage nodes.

## 2. Features

- Wide supply voltage range from 1.1 V to 3.6 V
- High noise immunity
- Complies with JEDEC standards:
  - ◆ JESD8-7 (1.2 V to 1.95 V)
  - ◆ JESD8-5 (1.8 V to 2.7 V)
  - ◆ JESD8-B (2.7 V to 3.6 V)
- ESD protection:
  - ◆ HBM JESD22-A114-D Class 3A exceeds 5000 V
  - ◆ MM JESD22-A115-A exceeds 200 V
  - ◆ CDM JESD22-C101-C exceeds 1000 V
- Wide supply voltage range:
  - ◆  $V_{CC(A)}$ : 1.1 V to 3.6 V
  - ◆  $V_{CC(Y)}$ : 1.1 V to 3.6 V
- Low static power consumption;  $I_{CC} = 0.9 \mu\text{A}$  (maximum)
- Each port operates over the full 1.1 V to 3.6 V power supply range
- 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  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  and  $-40\text{ }^{\circ}\text{C}$  to  $+125\text{ }^{\circ}\text{C}$

### 3. Ordering information

Table 1. Ordering information

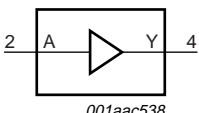
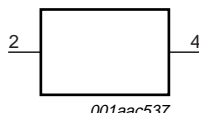
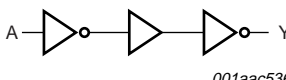
Type number	Package			Version
	Temperature range	Name	Description	
74AUP1T34GW	-40 °C to +125 °C	TSSOP5	plastic thin shrink small outline package; 5 leads; body width 1.25 mm	SOT353-1
74AUP1T34GM	-40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 × 1.45 × 0.5 mm	SOT886
74AUP1T34GF	-40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 × 1 × 0.5 mm	SOT891

### 4. Marking

Table 2. Marking

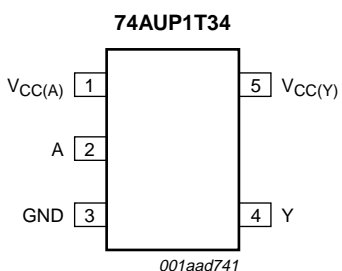
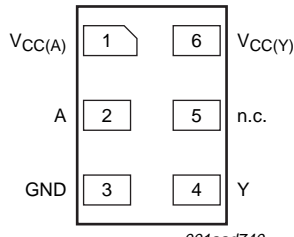
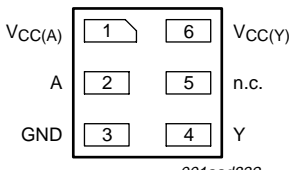
Type number	Marking code
74AUP1T34GW	pQ
74AUP1T34GM	pQ
74AUP1T34GF	pQ

### 5. Functional diagram

 <p>001aac538</p>	 <p>001aac537</p>	 <p>001aac536</p>
<b>Fig 1. Logic symbol</b>	<b>Fig 2. IEC logic symbol</b>	<b>Fig 3. Logic diagram</b>

### 6. Pinning information

#### 6.1 Pinning

 <p>001aad741</p>	<p><b>74AUP1T34</b></p>  <p>001aad740</p> <p>Transparent top view</p>	<p><b>74AUP1T34</b></p>  <p>001aad832</p> <p>Transparent top view</p>
<b>Fig 4. Pin configuration SOT353-1 (TSSOP5)</b>	<b>Fig 5. Pin configuration SOT886 (XSON6)</b>	<b>Fig 6. Pin configuration SOT891 (XSON6)</b>

## 6.2 Pin description

**Table 3.** Pin description

Symbol	Pin		Description
	TSSOP5	XSON6	
V <sub>CC(A)</sub>	1	1	supply voltage port A
A	2	2	data input A
GND	3	3	ground (0 V)
Y	4	4	data output Y
n.c.	-	5	not connected
V <sub>CC(Y)</sub>	5	6	supply voltage port Y

## 7. Functional description

**Table 4.** Function table<sup>[1]</sup>

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 <sub>CC(A)</sub>	supply voltage port A		-0.5	+4.6	V
V <sub>CC(Y)</sub>	supply voltage port Y		-0.5	+4.6	V
I <sub>IK</sub>	input clamping current	V <sub>I</sub> < 0 V	-	-50	mA
V <sub>I</sub>	input voltage		[1] -0.5	+4.6	V
I <sub>OK</sub>	output clamping current	V <sub>O</sub> > V <sub>CC(Y)</sub> or V <sub>O</sub> < 0 V	-	±50	mA
V <sub>O</sub>	output voltage	Active mode and Power-down mode	[1] -0.5	+4.6	V
I <sub>O</sub>	output current	V <sub>O</sub> = 0 V to V <sub>CC(Y)</sub>	-	±20	mA
I <sub>CC</sub>	supply current		-	50	mA
I <sub>GND</sub>	ground current		-	-50	mA
T <sub>stg</sub>	storage temperature		-65	+150	°C
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> = -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<sub>tot</sub> derates linearly with 4.0 mW/K.  
 For XSON6 packages: above 45 °C the value of P<sub>tot</sub> derates linearly with 2.4 mW/K.

## 9. Recommended operating conditions

**Table 6. Recommended operating conditions**

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{CC(A)}$	supply voltage port A		1.1	3.6	V
$V_{CC(Y)}$	supply voltage port Y		1.1	3.6	V
$V_I$	input voltage		0	3.6	V
$V_O$	output voltage		0	$V_{CC(Y)}$	V
$T_{amb}$	ambient temperature		-40	+125	°C
$\Delta t/\Delta V$	input transition rise and fall rate	control and data inputs; $V_{CC(A)} = 1.1 \text{ V to } 3.6 \text{ V}$	0	200	ns/V

## 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
<b><math>T_{amb} = 25 \text{ °C}</math></b>						
$V_{IH}$	HIGH-level input voltage	$V_{CC(A)} = 1.1 \text{ V to } 1.95 \text{ V}; V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	$0.65 \times V_{CC(A)}$	-	-	V
		$V_{CC(A)} = 2.3 \text{ V to } 2.7 \text{ V}; V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	1.6	-	-	V
		$V_{CC(A)} = 3.0 \text{ V to } 3.6 \text{ V}; V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	2.0	-	-	V
$V_{IL}$	LOW-level input voltage	$V_{CC(A)} = 1.1 \text{ V to } 1.95 \text{ V}; V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	-	-	$0.35 \times V_{CC(A)}$	V
		$V_{CC(A)} = 2.3 \text{ V to } 2.7 \text{ V}; V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	-	-	0.7	V
		$V_{CC(A)} = 3.0 \text{ V to } 3.6 \text{ V}; V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	-	-	0.9	V
$V_{OH}$	HIGH-level output voltage	$V_I = V_{IH}$				
		$I_O = -20 \text{ }\mu\text{A}; V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	$V_{CC(Y)} - 0.1$	-	-	V
		$I_O = -1.1 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V}$	$0.75 \times V_{CC(Y)}$	-	-	V
		$I_O = -1.7 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.4 \text{ V}$	1.11	-	-	V
		$I_O = -1.9 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.65 \text{ V}$	1.32	-	-	V
		$I_O = -2.3 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 2.3 \text{ V}$	2.05	-	-	V
		$I_O = -3.1 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 2.3 \text{ V}$	1.9	-	-	V
		$I_O = -2.7 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 3.0 \text{ V}$	2.72	-	-	V
$V_{OL}$	LOW-level output voltage	$V_I = V_{IL}$				
		$I_O = 20 \text{ }\mu\text{A}; V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	-	-	0.1	V
		$I_O = 1.1 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V}$	-	-	$0.3 \times V_{CC(Y)}$	V
		$I_O = 1.7 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.4 \text{ V}$	-	-	0.31	V
		$I_O = 1.9 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.65 \text{ V}$	-	-	0.31	V
		$I_O = 2.3 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 2.3 \text{ V}$	-	-	0.31	V
		$I_O = 3.1 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 2.3 \text{ V}$	-	-	0.44	V
		$I_O = 2.7 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 3.0 \text{ V}$	-	-	0.31	V
$I_I$	input leakage current	$V_I = \text{GND to } V_{CC(A)};$ $V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	-	-	$\pm 0.1$	$\mu\text{A}$

**Table 7. Static characteristics ...continued**

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I <sub>OFF</sub>	power-off leakage current	A input; V <sub>I</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V; V <sub>CC(Y)</sub> = 0 V to 3.6 V	-	-	±0.2	μA
		Y output; V <sub>O</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V to 3.6 V; V <sub>CC(Y)</sub> = 0 V	-	-	±0.2	μA
ΔI <sub>OFF</sub>	additional power-off leakage current	A input; V <sub>I</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V to 0.2 V; V <sub>CC(Y)</sub> = 0 V to 3.6 V	-	-	±0.2	μA
		Y output; V <sub>O</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V to 3.6 V; V <sub>CC(Y)</sub> = 0 V to 0.2 V	-	-	±0.2	μA
I <sub>CC</sub>	supply current	port A; V <sub>I</sub> = GND or V <sub>CC(A)</sub> ; I <sub>O</sub> = 0 A				
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.5	μA
		V <sub>CC(A)</sub> = 3.6 V; V <sub>CC(Y)</sub> = 0 V	-	-	0.5	μA
		V <sub>CC(A)</sub> = 0 V; V <sub>CC(Y)</sub> = 3.6 V	-	-	0.0	μA
		port Y; V <sub>I</sub> = GND or V <sub>CC(A)</sub> ; I <sub>O</sub> = 0 A				
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.5	μA
		V <sub>CC(A)</sub> = 3.6 V; V <sub>CC(Y)</sub> = 0 V	-	-	0.0	μA
		V <sub>CC(A)</sub> = 0 V; V <sub>CC(Y)</sub> = 3.6 V	-	-	0.5	μA
ΔI <sub>CC</sub>	additional supply current	A input; V <sub>CC(A)</sub> = 3.3 V; V <sub>CC(Y)</sub> = 0 V to 3.6 V; V <sub>I</sub> = V <sub>CC(A)</sub> - 0.6 V	-	-	40	μA
C <sub>I</sub>	input capacitance	A input; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 0 V to 3.6 V; V <sub>I</sub> = GND or V <sub>CC(A)</sub>	-	1.0	-	pF
C <sub>O</sub>	output capacitance	Y output; V <sub>O</sub> = GND; V <sub>CC(Y)</sub> = 0 V; V <sub>CC(A)</sub> = 0 V to 3.6 V	-	1.8	-	pF
<b>T<sub>amb</sub> = -40 °C to +85 °C</b>						
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC(A)</sub> = 1.1 V to 1.95 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	0.65 × V <sub>CC(A)</sub>	-	-	V
		V <sub>CC(A)</sub> = 2.3 V to 2.7 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	1.6	-	-	V
		V <sub>CC(A)</sub> = 3.0 V to 3.6 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	2.0	-	-	V
V <sub>IL</sub>	LOW-level input voltage	V <sub>CC(A)</sub> = 1.1 V to 1.95 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.35 × V <sub>CC(A)</sub>	V
		V <sub>CC(A)</sub> = 2.3 V to 2.7 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.7	V
		V <sub>CC(A)</sub> = 3.0 V to 3.6 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.9	V
V <sub>OH</sub>	HIGH-level output voltage	V <sub>I</sub> = V <sub>IH</sub>				
		I <sub>O</sub> = -20 μA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	V <sub>CC(Y)</sub> - 0.1	-	-	V
		I <sub>O</sub> = -1.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V	0.7 × V <sub>CC(Y)</sub>	-	-	V
		I <sub>O</sub> = -1.7 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.4 V	1.03	-	-	V
		I <sub>O</sub> = -1.9 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.65 V	1.30	-	-	V
		I <sub>O</sub> = -2.3 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	1.97	-	-	V
		I <sub>O</sub> = -3.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	1.85	-	-	V
		I <sub>O</sub> = -2.7 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	2.67	-	-	V
I <sub>O</sub> = -4.0 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	2.55	-	-	V		

**Table 7. Static characteristics ...continued**

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V <sub>OL</sub>	LOW-level output voltage	V <sub>I</sub> = V <sub>IL</sub>				
		I <sub>O</sub> = 20 μA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.1	V
		I <sub>O</sub> = 1.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V	-	-	0.3 × V <sub>CC(Y)</sub>	V
		I <sub>O</sub> = 1.7 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.4 V	-	-	0.37	V
		I <sub>O</sub> = 1.9 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.65 V	-	-	0.35	V
		I <sub>O</sub> = 2.3 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	-	-	0.33	V
		I <sub>O</sub> = 3.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	-	-	0.45	V
		I <sub>O</sub> = 2.7 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	-	-	0.33	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	-	-	0.45	V
I <sub>I</sub>	input leakage current	V <sub>I</sub> = GND to V <sub>CC(A)</sub> ; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	±0.5	μA
I <sub>OFF</sub>	power-off leakage current	A input; V <sub>I</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V; V <sub>CC(Y)</sub> = 0 V to 3.6 V	-	-	±0.5	μA
		Y output; V <sub>O</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V to 3.6 V; V <sub>CC(Y)</sub> = 0 V	-	-	±0.5	μA
ΔI <sub>OFF</sub>	additional power-off leakage current	A input; V <sub>I</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V to 0.2 V; V <sub>CC(Y)</sub> = 0 V to 3.6 V	-	-	±0.6	μA
		Y output; V <sub>O</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V to 3.6 V; V <sub>CC(Y)</sub> = 0 V to 0.2 V	-	-	±0.6	μA
I <sub>CC</sub>	supply current	port A; V <sub>I</sub> = GND or V <sub>CC(A)</sub> ; I <sub>O</sub> = 0 A				
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.9	μA
		V <sub>CC(A)</sub> = 3.6 V; V <sub>CC(Y)</sub> = 0 V	-	-	0.9	μA
		V <sub>CC(A)</sub> = 0 V; V <sub>CC(Y)</sub> = 3.6 V	-	-	0.0	μA
		port Y; V <sub>I</sub> = GND or V <sub>CC(A)</sub> ; I <sub>O</sub> = 0 A				
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.9	μA
		V <sub>CC(A)</sub> = 3.6 V; V <sub>CC(Y)</sub> = 0 V	-	-	0.0	μA
		V <sub>CC(A)</sub> = 0 V; V <sub>CC(Y)</sub> = 3.6 V	-	-	0.9	μA
		port A and port Y; V <sub>I</sub> = GND or V <sub>CC(A)</sub> ; I <sub>O</sub> = 0 A; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.9	μA
ΔI <sub>CC</sub>	additional supply current	A input; V <sub>CC(A)</sub> = 3.3 V; V <sub>CC(Y)</sub> = 0 V to 3.6 V; V <sub>I</sub> = V <sub>CC(A)</sub> - 0.6 V	-	-	50	μA
<b>T<sub>amb</sub> = -40 °C to +125 °C</b>						
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC(A)</sub> = 1.1 V to 1.95 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	0.7 × V <sub>CC(A)</sub>	-	-	V
		V <sub>CC(A)</sub> = 2.3 V to 2.7 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	1.6	-	-	V
		V <sub>CC(A)</sub> = 3.0 V to 3.6 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	2.0	-	-	V
V <sub>IL</sub>	LOW-level input voltage	V <sub>CC(A)</sub> = 1.1 V to 1.95 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.3 × V <sub>CC(A)</sub>	V
		V <sub>CC(A)</sub> = 2.3 V to 2.7 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.7	V
		V <sub>CC(A)</sub> = 3.0 V to 3.6 V; V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.9	V

**Table 7. Static characteristics ...continued**

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V <sub>OH</sub>	HIGH-level output voltage	V <sub>I</sub> = V <sub>IH</sub>				
		I <sub>O</sub> = -20 μA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	V <sub>CC(Y)</sub> - 0.11	-	-	V
		I <sub>O</sub> = -1.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V	0.6 × V <sub>CC(Y)</sub>	-	-	V
		I <sub>O</sub> = -1.7 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.4 V	0.93	-	-	V
		I <sub>O</sub> = -1.9 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.65 V	1.17	-	-	V
		I <sub>O</sub> = -2.3 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	1.77	-	-	V
		I <sub>O</sub> = -3.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	1.67	-	-	V
		I <sub>O</sub> = -2.7 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	2.40	-	-	V
		I <sub>O</sub> = -4.0 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	2.30	-	-	V
V <sub>OL</sub>	LOW-level output voltage	V <sub>I</sub> = V <sub>IL</sub>				
		I <sub>O</sub> = 20 μA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	0.11	V
		I <sub>O</sub> = 1.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V	-	-	0.33 × V <sub>CC(Y)</sub>	V
		I <sub>O</sub> = 1.7 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.4 V	-	-	0.41	V
		I <sub>O</sub> = 1.9 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.65 V	-	-	0.39	V
		I <sub>O</sub> = 2.3 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	-	-	0.36	V
		I <sub>O</sub> = 3.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	-	-	0.50	V
		I <sub>O</sub> = 2.7 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	-	-	0.36	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	-	-	0.50	V
I <sub>I</sub>	input leakage current	V <sub>I</sub> = GND to V <sub>CC(A)</sub> ; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	±0.75	μA
I <sub>OFF</sub>	power-off leakage current	A input; V <sub>I</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V; V <sub>CC(Y)</sub> = 0 V to 3.6 V	-	-	±0.75	μA
		Y output; V <sub>O</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V to 3.6 V; V <sub>CC(Y)</sub> = 0 V	-	-	±0.75	μA
ΔI <sub>OFF</sub>	additional power-off leakage current	A input; V <sub>I</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V to 0.2 V; V <sub>CC(Y)</sub> = 0 V to 3.6 V	-	-	±0.75	μA
		Y output; V <sub>O</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = 0 V to 3.6 V; V <sub>CC(Y)</sub> = 0 V to 0.2 V	-	-	±0.75	μA
I <sub>CC</sub>	supply current	port A; V <sub>I</sub> = GND or V <sub>CC(A)</sub> ; I <sub>O</sub> = 0 A				
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	1.4	μA
		V <sub>CC(A)</sub> = 3.6 V; V <sub>CC(Y)</sub> = 0 V	-	-	1.4	μA
		V <sub>CC(A)</sub> = 0 V; V <sub>CC(Y)</sub> = 3.6 V	-	-	0.0	μA
		port Y; V <sub>I</sub> = GND or V <sub>CC(A)</sub> ; I <sub>O</sub> = 0 A				
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	1.4	μA
		V <sub>CC(A)</sub> = 3.6 V; V <sub>CC(Y)</sub> = 0 V	-	-	0.0	μA
		V <sub>CC(A)</sub> = 0 V; V <sub>CC(Y)</sub> = 3.6 V	-	-	1.4	μA
port A and port Y; V <sub>I</sub> = GND or V <sub>CC(A)</sub> ; I <sub>O</sub> = 0 A; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	1.4	μA		
ΔI <sub>CC</sub>	additional supply current	A input; V <sub>CC(A)</sub> = 3.3 V; V <sub>CC(Y)</sub> = 0 V to 3.6 V; V <sub>I</sub> = V <sub>CC(A)</sub> - 0.6 V	-	-	75	μA

## 11. Dynamic characteristics

**Table 8. Dynamic characteristics**

Voltages are referenced to GND (ground = 0 V); for test circuit see [Figure 8](#).

Symbol	Parameter	Conditions	25 °C			–40 °C to +125 °C			Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max (85 °C)	Max (125 °C)	
<b><math>C_L = 5 \text{ pF}</math>; <math>V_{CC(A)} = 1.1 \text{ V to } 1.3 \text{ V}</math></b>									
$t_{pd}$	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.6	9.8	25.4	2.3	25.9	25.9	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.4	7.1	15.3	2.2	16.3	16.7	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.1	6.0	12.7	1.9	13.8	14.3	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.0	5.1	9.8	2.0	10.5	10.9	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.1	4.7	8.8	1.9	9.1	9.3	ns
<b><math>C_L = 5 \text{ pF}</math>; <math>V_{CC(A)} = 1.4 \text{ V to } 1.6 \text{ V}</math></b>									
$t_{pd}$	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.3	9.1	23.9	2.0	24.5	24.5	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.1	6.4	13.6	1.9	14.7	15.2	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	1.8	5.3	10.9	1.6	12.1	12.6	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	1.7	4.3	7.8	1.6	8.7	9.2	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	1.8	3.9	6.6	1.6	7.1	7.5	ns
<b><math>C_L = 5 \text{ pF}</math>; <math>V_{CC(A)} = 1.65 \text{ V to } 1.95 \text{ V}</math></b>									
$t_{pd}$	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.2	8.8	23.2	1.9	23.9	24.0	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.0	6.0	13.0	1.8	14.1	14.6	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	1.8	4.9	10.3	1.5	11.4	12.0	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	1.6	3.9	7.2	1.5	8.0	8.5	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	1.7	3.5	5.9	1.5	6.4	6.8	ns
<b><math>C_L = 5 \text{ pF}</math>; <math>V_{CC(A)} = 2.3 \text{ V to } 2.7 \text{ V}</math></b>									
$t_{pd}$	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.2	8.4	22.8	1.9	23.4	23.4	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	1.9	5.7	12.3	1.8	13.4	14.0	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	1.7	4.6	9.6	1.5	10.7	11.2	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	1.5	3.5	6.3	1.5	7.2	7.7	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	1.6	3.1	5.1	1.4	5.6	6.0	ns
<b><math>C_L = 5 \text{ pF}</math>; <math>V_{CC(A)} = 3.0 \text{ V to } 3.6 \text{ V}</math></b>									
$t_{pd}$	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.2	8.1	22.5	1.9	22.9	22.9	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	1.9	5.4	12.0	1.8	12.9	13.4	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	1.7	4.3	9.2	1.5	10.2	10.7	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	1.5	3.3	6.0	1.5	6.7	7.2	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	1.6	2.9	4.8	1.4	5.2	5.5	ns



**Table 8. Dynamic characteristics ...continued**  
 Voltages are referenced to GND (ground = 0 V); for test circuit see [Figure 8](#).

Symbol	Parameter	Conditions	25 °C			–40 °C to +125 °C			Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max (85 °C)	Max (125 °C)	
<b>C<sub>L</sub> = 10 pF; V<sub>CC(A)</sub> = 1.1 V to 1.3 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>							
				[2]					
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	2.6	10.7	27.1	2.5	27.6	27.6	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	2.6	7.7	16.7	2.3	17.5	17.6	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	2.7	6.6	13.4	2.4	14.2	14.7	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.2	5.6	10.3	2.2	11.0	11.4	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	2.5	5.3	9.5	2.2	9.7	10.0	ns
<b>C<sub>L</sub> = 10 pF; V<sub>CC(A)</sub> = 1.4 V to 1.6 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>							
				[2]					
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	2.4	10.0	25.6	2.2	26.1	26.1	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	2.4	7.0	15.0	2.0	15.8	16.4	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	2.4	5.9	11.6	2.1	12.5	13.1	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.0	4.8	8.4	1.9	9.2	9.7	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	2.2	4.4	7.4	1.9	7.7	8.1	ns
<b>C<sub>L</sub> = 10 pF; V<sub>CC(A)</sub> = 1.65 V to 1.95 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>							
				[2]					
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	2.3	9.7	24.8	2.1	25.5	25.7	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	2.3	6.6	14.3	2.0	15.3	15.8	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	2.3	5.5	11.0	2.0	11.9	12.5	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	1.9	4.4	7.7	1.8	8.6	9.0	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	2.1	4.0	6.6	1.8	7.1	7.4	ns
<b>C<sub>L</sub> = 10 pF; V<sub>CC(A)</sub> = 2.3 V to 2.7 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>							
				[2]					
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	2.3	9.3	24.4	2.1	25.1	25.1	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	2.2	6.3	13.6	1.9	14.6	15.1	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	2.2	5.1	10.3	2.0	11.2	11.7	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	1.8	4.1	6.9	1.8	7.7	8.2	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	2.0	3.6	5.8	1.7	6.3	6.6	ns
<b>C<sub>L</sub> = 10 pF; V<sub>CC(A)</sub> = 3.0 V to 3.6 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>							
				[2]					
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	2.3	9.0	24.2	2.1	24.6	24.6	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	2.2	6.0	13.3	1.9	14.1	14.6	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	2.2	4.9	9.9	2.0	10.6	11.2	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	1.8	3.9	6.5	1.8	7.3	7.7	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	2.0	3.5	5.4	1.7	5.8	6.2	ns

**Table 8. Dynamic characteristics ...continued**  
 Voltages are referenced to GND (ground = 0 V); for test circuit see [Figure 8](#).

Symbol	Parameter	Conditions	25 °C			−40 °C to +125 °C			Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max (85 °C)	Max (125 °C)	
<b>C<sub>L</sub> = 15 pF; V<sub>CC(A)</sub> = 1.1 V to 1.3 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	3.0	11.5	28.6	2.8	29.2	29.2	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	3.1	8.3	17.3	2.7	18.6	19.1	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	2.8	7.1	14.1	2.7	15.2	15.8	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.6	6.1	11.1	2.7	11.6	12.1	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	2.9	5.7	9.9	2.6	10.3	10.6	ns
<b>C<sub>L</sub> = 15 pF; V<sub>CC(A)</sub> = 1.4 V to 1.6 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	2.8	10.8	27.1	2.6	27.7	27.7	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	2.8	7.6	15.7	2.4	17.0	17.6	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	2.5	6.3	12.3	2.4	13.5	14.1	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.3	5.3	9.2	2.4	9.9	10.3	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	2.6	4.9	7.8	2.3	8.3	8.7	ns
<b>C<sub>L</sub> = 15 pF; V<sub>CC(A)</sub> = 1.65 V to 1.95 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	2.7	10.5	26.4	2.5	27.1	27.3	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	2.7	7.2	15.0	2.3	16.4	17.0	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	2.4	6.0	11.7	2.3	12.8	13.5	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.2	4.9	8.5	2.2	9.2	9.7	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	2.5	4.5	7.1	2.2	7.7	8.0	ns
<b>C<sub>L</sub> = 15 pF; V<sub>CC(A)</sub> = 2.3 V to 2.7 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	2.6	10.1	26.0	2.4	26.7	26.7	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	2.7	6.9	14.3	2.3	15.7	16.3	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	2.4	5.6	10.9	2.2	12.1	12.7	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.1	4.5	7.6	2.2	8.4	8.9	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	2.4	4.1	6.2	2.1	6.8	7.2	ns
<b>C<sub>L</sub> = 15 pF; V<sub>CC(A)</sub> = 3.0 V to 3.6 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	2.6	9.8	25.7	2.4	26.2	26.2	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	2.7	6.6	14.0	2.3	15.2	15.7	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	2.4	5.4	10.5	2.2	11.6	12.1	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.1	4.3	7.3	2.2	7.9	8.4	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	2.4	3.9	5.9	2.1	6.4	6.8	ns

**Table 8. Dynamic characteristics ...continued**  
 Voltages are referenced to GND (ground = 0 V); for test circuit see [Figure 8](#).

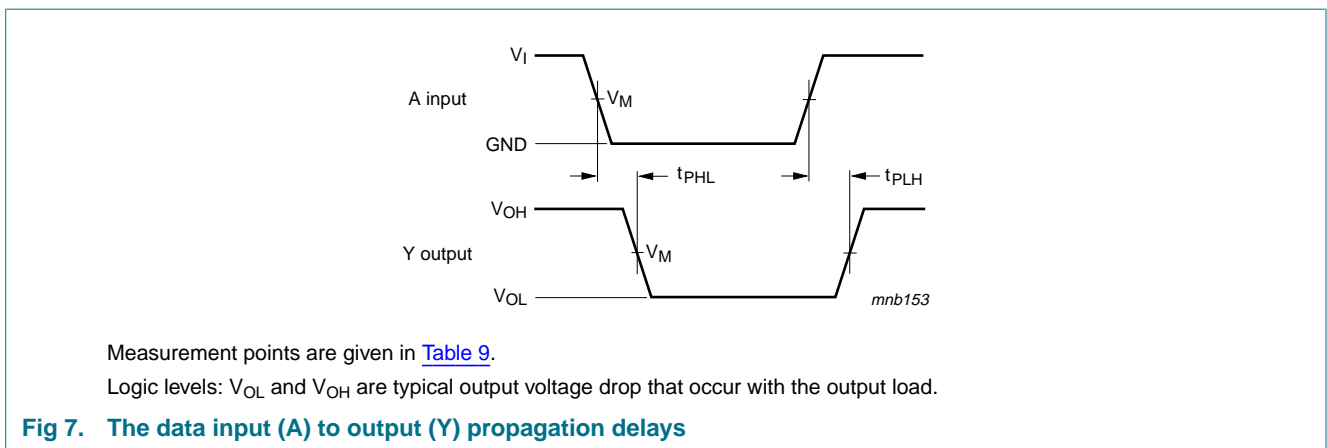
Symbol	Parameter	Conditions	25 °C			−40 °C to +125 °C			Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max (85 °C)	Max (125 °C)	
<b>C<sub>L</sub> = 30 pF; V<sub>CC(A)</sub> = 1.1 V to 1.3 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	3.7	13.7	32.9	3.5	33.5	33.5	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	3.6	9.8	19.5	3.6	20.9	21.4	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	3.7	8.4	15.9	3.5	17.0	17.7	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	3.0	7.2	12.2	3.4	12.7	13.2	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	3.8	6.8	10.9	3.4	12.2	12.5	ns
<b>C<sub>L</sub> = 30 pF; V<sub>CC(A)</sub> = 1.4 V to 1.6 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	3.5	13.1	31.5	3.2	32.0	32.0	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	3.3	9.1	17.8	3.3	19.2	19.9	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	3.4	7.6	14.2	3.2	15.4	16.0	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.8	6.4	10.3	3.1	11.0	11.5	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	3.5	5.9	8.9	3.1	10.1	10.5	ns
<b>C<sub>L</sub> = 30 pF; V<sub>CC(A)</sub> = 1.65 V to 1.95 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	3.4	12.7	30.7	3.1	31.5	31.5	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	3.2	8.8	17.2	3.2	18.7	19.3	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	3.3	7.3	13.5	3.1	14.7	15.4	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.7	6.0	9.6	3.0	10.4	10.9	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	3.4	5.6	8.2	2.9	9.4	9.8	ns
<b>C<sub>L</sub> = 30 pF; V<sub>CC(A)</sub> = 2.3 V to 2.7 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	3.3	12.4	30.3	3.1	31.0	31.0	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	3.2	8.4	16.5	3.1	18.0	18.7	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	3.2	6.9	12.8	3.0	14.0	14.6	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.6	5.6	8.8	2.9	9.6	10.1	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	3.3	5.2	7.3	2.9	8.5	9.0	ns
<b>C<sub>L</sub> = 30 pF; V<sub>CC(A)</sub> = 3.0 V to 3.6 V</b>									
t <sub>pd</sub>	propagation delay	A to Y; see <a href="#">Figure 7</a>	<a href="#">[2]</a>						
		V <sub>CC(Y)</sub> = 1.1 V to 1.3 V	3.3	12.0	30.0	3.1	30.5	30.5	ns
		V <sub>CC(Y)</sub> = 1.4 V to 1.6 V	3.2	8.1	16.2	3.1	17.5	18.1	ns
		V <sub>CC(Y)</sub> = 1.65 V to 1.95 V	3.2	6.7	12.4	3.0	13.4	14.1	ns
		V <sub>CC(Y)</sub> = 2.3 V to 2.7 V	2.6	5.5	8.5	2.9	9.1	9.6	ns
		V <sub>CC(Y)</sub> = 3.0 V to 3.6 V	3.2	5.0	7.0	2.9	8.1	8.5	ns

**Table 8. Dynamic characteristics ...continued**  
 Voltages are referenced to GND (ground = 0 V); for test circuit see [Figure 8](#).

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C			Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max (85 °C)	Max (125 °C)	
<b>C<sub>L</sub> = 5 pF, 10 pF, 15 pF and 30 pF</b>									
C <sub>PD</sub>	power dissipation capacitance	f <sub>i</sub> = 1 MHz; V <sub>I</sub> = GND to V <sub>CC(A)</sub> <sup>[3][4]</sup>							
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.2 V	-	3.8	-	-	-	-	pF
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.5 V	-	3.8	-	-	-	-	pF
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.8 V	-	4.1	-	-	-	-	pF
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.5 V	-	4.2	-	-	-	-	pF
		V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.3 V	-	4.6	-	-	-	-	pF

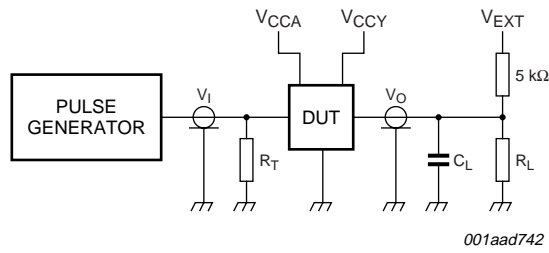
- [1] All typical values are measured at nominal V<sub>CC</sub>.
- [2] t<sub>pd</sub> is the same as t<sub>PLH</sub> and t<sub>PHL</sub>.
- [3] All specified values are the average typical values over all stated loads.
- [4] C<sub>PD</sub> is used to determine the dynamic power dissipation (P<sub>D</sub> 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<sub>i</sub> = input frequency in MHz;  
 f<sub>o</sub> = output frequency in MHz;  
 C<sub>L</sub> = output load capacitance in pF;  
 V<sub>CC</sub> = supply voltage in V;  
 N = number of inputs switching;  
 Σ(C<sub>L</sub> × V<sub>CC</sub><sup>2</sup> × f<sub>o</sub>) = sum of the outputs.

## 12. Waveforms



**Table 9. Measurement points**

Supply voltage	Output	Input		
V <sub>CC(A)</sub> / V <sub>CC(Y)</sub>	V <sub>M</sub>	V <sub>M</sub>	V <sub>I</sub>	t <sub>r</sub> = t <sub>f</sub>
1.1 V to 3.6 V	0.5 × V <sub>CC(Y)</sub>	0.5 × V <sub>CC(A)</sub>	V <sub>CC(A)</sub>	≤ 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  $Z_o$  of the pulse generator.

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

**Fig 8. Load circuitry for switching times**

**Table 10. Test data**

Supply voltage	Load		$V_{EXT}$
$V_{CC(A)} / V_{CC(Y)}$	$C_L$	$R_L$ [1]	$t_{PLH}$ , $t_{PHL}$
1.1 V to 3.6 V	5 pF, 10 pF, 15 pF and 30 pF	5 kΩ or 1 MΩ	open

[1] For measuring enable and disable times  $R_L = 5\text{ k}\Omega$ , for measuring propagation delays, setup and hold times and pulse width  $R_L = 1\text{ M}\Omega$ .

13. Package outline

TSSOP5: plastic thin shrink small outline package; 5 leads; body width 1.25 mm

SOT353-1

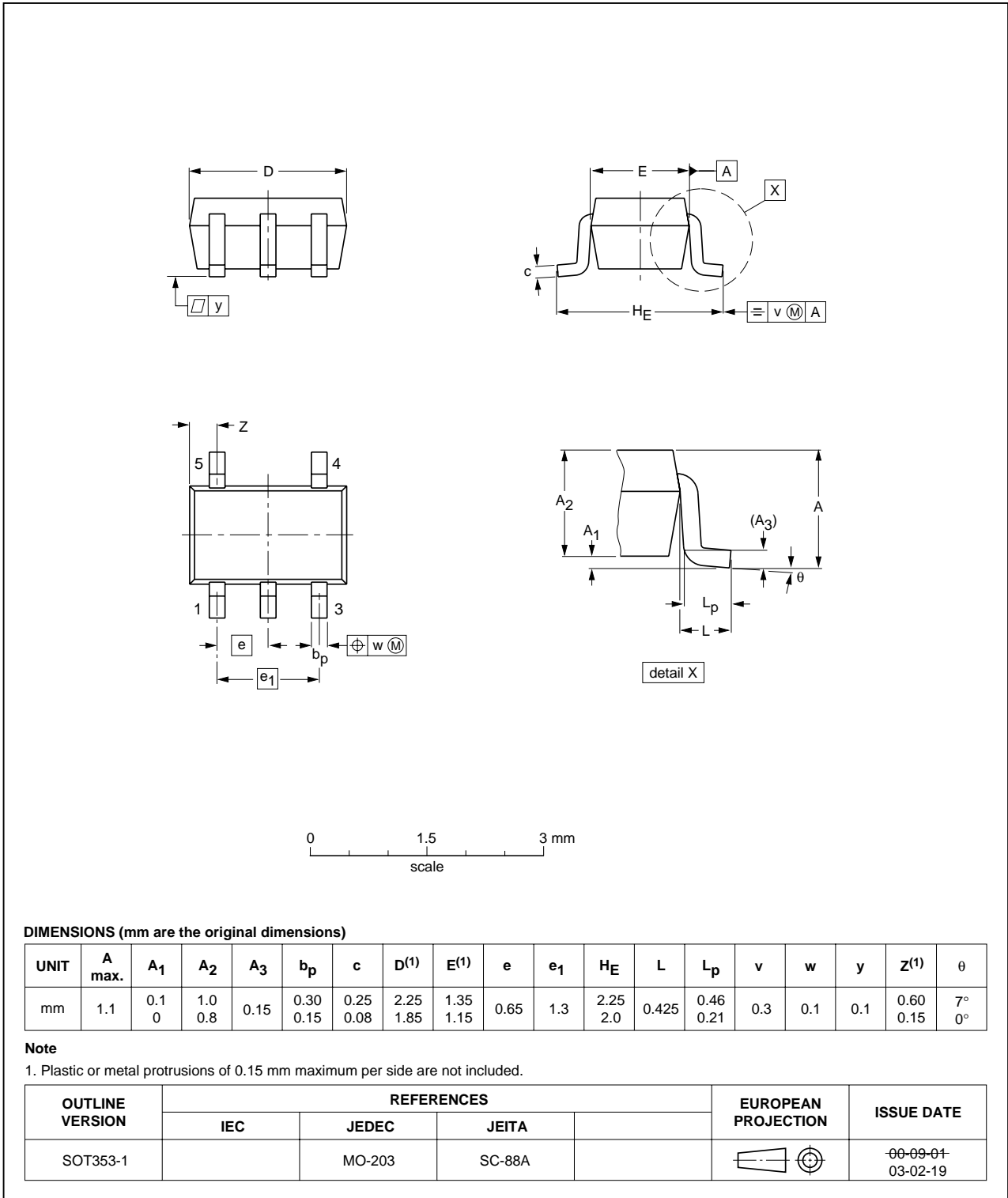


Fig 9. Package outline SOT353-1 (TSSOP5)

XSON6: plastic extremely thin small outline package; no leads; 6 terminals; body 1 x 1.45 x 0.5 mm

SOT886

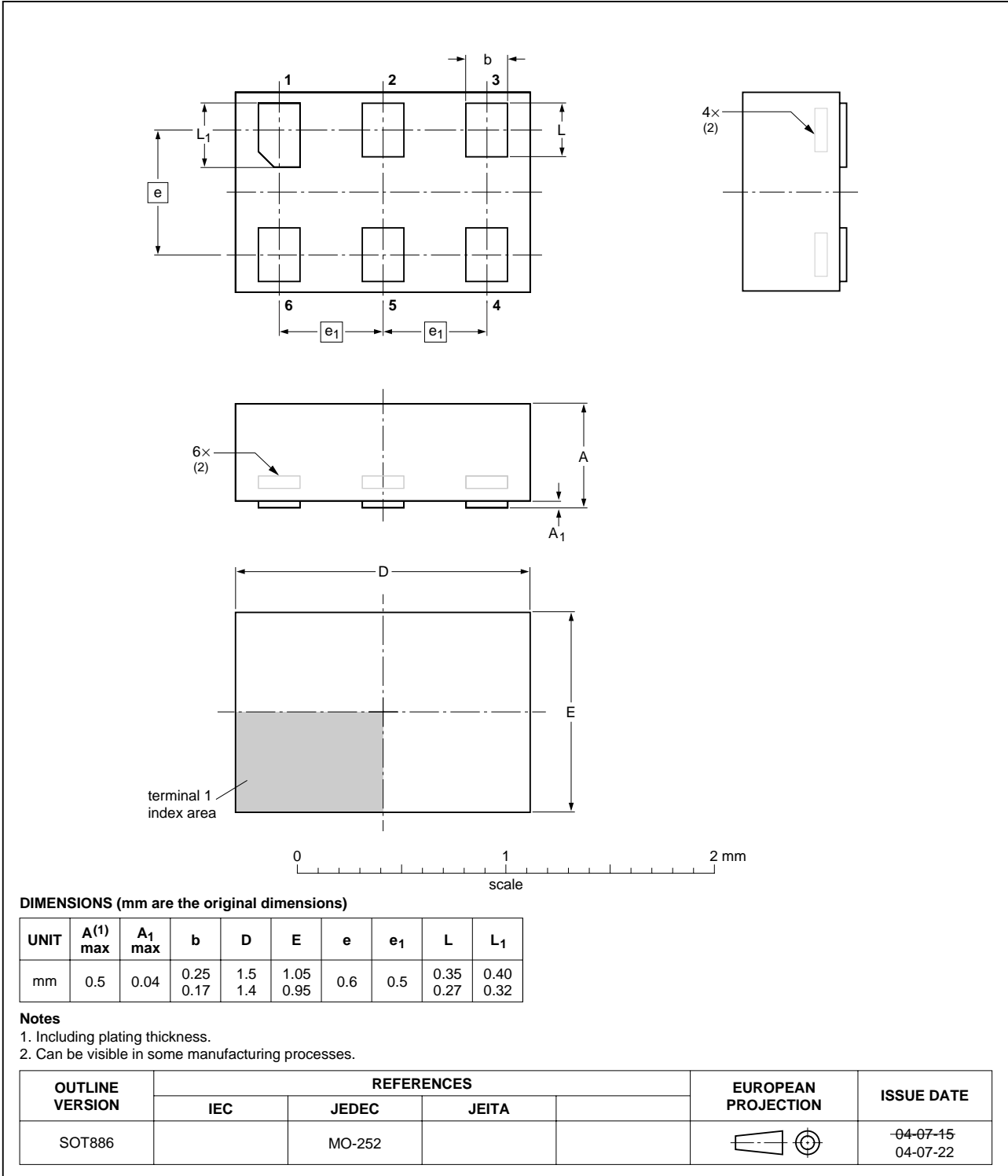


Fig 10. Package outline SOT886 (XSON6)

XSON6: plastic extremely thin small outline package; no leads; 6 terminals; body 1 x 1 x 0.5 mm

SOT891

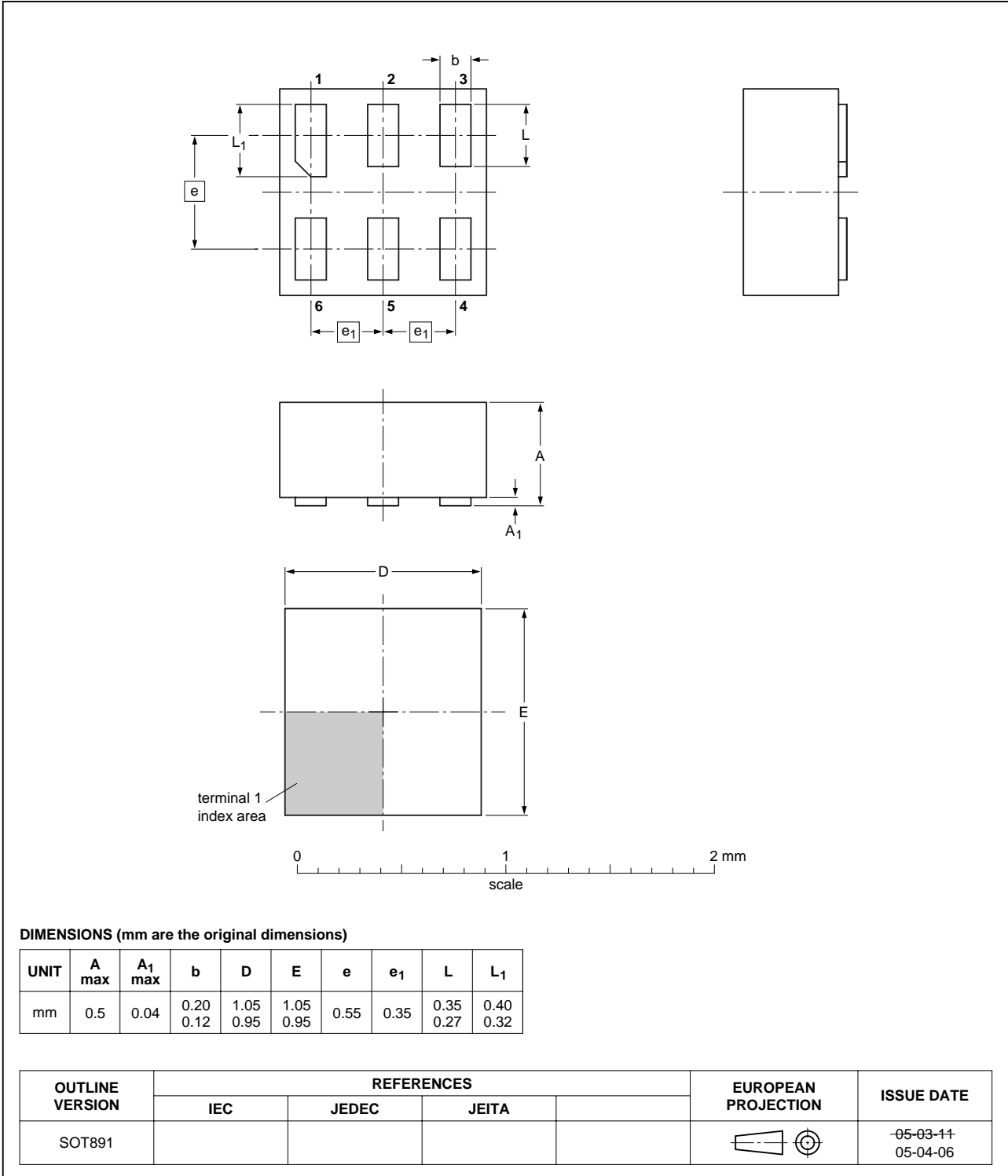


Fig 11. Package outline SOT891 (XSON6)



## 14. 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
MM	Machine Model
TTL	Transistor-Transistor Logic

## 15. Revision history

Table 12. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74AUP1T34_1	20061204	Product data sheet	-	-

## 16. Legal information

### 16.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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".

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