



**THE DATASHEET OF  
74AUP1T34GM,115**



# 74AUP1T34

## Low-power dual supply translating buffer

Rev. 6 — 28 January 2019

Product data sheet

## 1. General description

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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.

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.

## 2. Features and benefits

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- 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-A114F Class 3A exceeds 5000 V
  - MM JESD22-A115-A exceeds 200 V
  - CDM JESD22-C101E 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
74AUP1T34GN	-40 °C to +125 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body 0.9 × 1.0 × 0.35 mm	SOT1115
74AUP1T34GS	-40 °C to +125 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body 1.0 × 1.0 × 0.35 mm	SOT1202
74AUP1T34GX	-40 °C to +125 °C	X2SON5	X2SON5: plastic thermal enhanced extremely thin small outline package; no leads; 5 terminals; body 0.8 × 0.8 × 0.35 mm	SOT1226

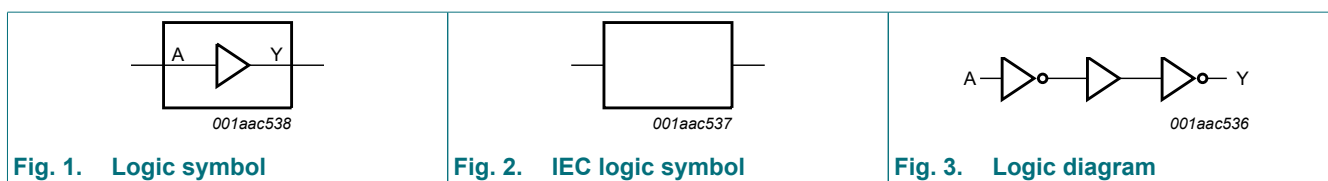
### 4. Marking

Table 2. Marking

Type number	Marking code [1]
74AUP1T34GW	pQ
74AUP1T34GM	pQ
74AUP1T34GF	pQ
74AUP1T34GN	pQ
74AUP1T34GS	pQ
74AUP1T34GX	pQ

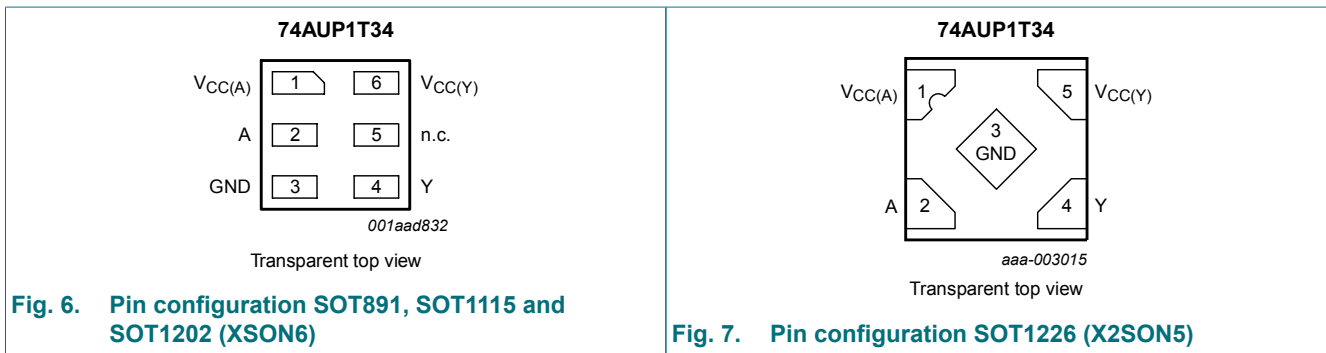
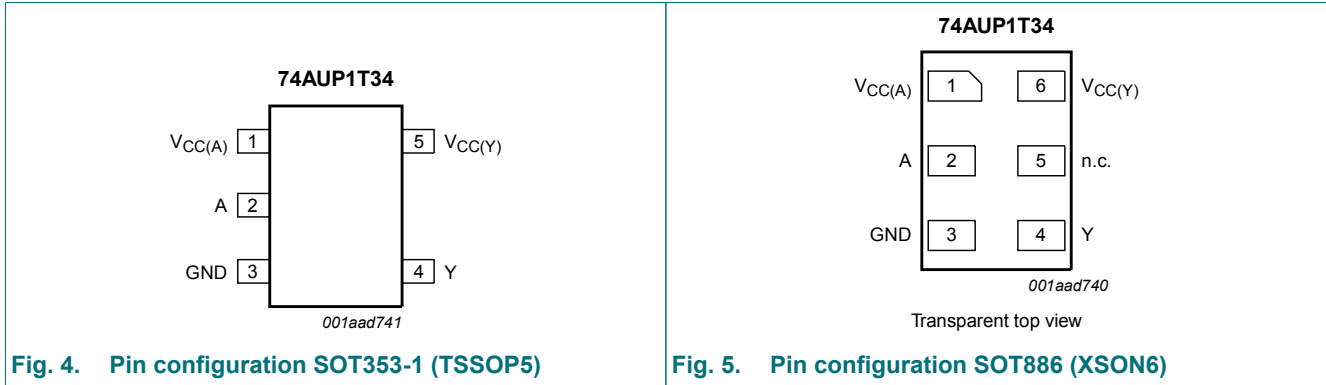
[1] The pin 1 indicator is located on the lower left corner of the device, below the marking code.

### 5. Functional diagram



## 6. Pinning information

### 6.1. Pinning



### 6.2. Pin description

Table 3. Pin description

Symbol	Pin		Description
	TSSOP5 and X2SON5	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

H = HIGH voltage level; L = LOW voltage level.

Input	Output
A	Y
L	L
H	H

## 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
$V_{CC(A)}$	supply voltage A		-0.5	+4.6	V
$V_{CC(Y)}$	supply voltage Y		-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 $V_{CC(Y)}$	-	±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 XSON6 and 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
$V_{CC(A)}$	supply voltage A		1.1	3.6	V
$V_{CC(Y)}$	supply voltage 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; $V_{CC(A)} = 1.1$ V to 3.6 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</math> °C</b>						
$V_{IH}$	HIGH-level input voltage	$V_{CC(A)} = 1.1$ V to 1.95 V; $V_{CC(Y)} = 1.1$ V to 3.6 V	$0.65V_{CC(A)}$	-	-	V
		$V_{CC(A)} = 2.3$ V to 2.7 V; $V_{CC(Y)} = 1.1$ V to 3.6 V	1.6	-	-	V
		$V_{CC(A)} = 3.0$ V to 3.6 V; $V_{CC(Y)} = 1.1$ V to 3.6 V	2.0	-	-	V
$V_{IL}$	LOW-level input voltage	$V_{CC(A)} = 1.1$ V to 1.95 V; $V_{CC(Y)} = 1.1$ V to 3.6 V	-	-	$0.35V_{CC(A)}$	V
		$V_{CC(A)} = 2.3$ V to 2.7 V; $V_{CC(Y)} = 1.1$ V to 3.6 V	-	-	0.7	V
		$V_{CC(A)} = 3.0$ V to 3.6 V; $V_{CC(Y)} = 1.1$ V to 3.6 V	-	-	0.9	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> - 0.1	-	-	V
		I <sub>O</sub> = -1.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V	0.75V <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	1.11	-	-	V
		I <sub>O</sub> = -1.9 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.65 V	1.32	-	-	V
		I <sub>O</sub> = -2.3 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	2.05	-	-	V
		I <sub>O</sub> = -3.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	1.9	-	-	V
		I <sub>O</sub> = -2.7 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	2.72	-	-	V
I <sub>O</sub> = -4.0 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	2.6	-	-	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	-	-	0.1	V
		I <sub>O</sub> = 1.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V	-	-	0.3V <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	-	-	0.31	V
		I <sub>O</sub> = 1.9 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.65 V	-	-	0.31	V
		I <sub>O</sub> = 2.3 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	-	-	0.31	V
		I <sub>O</sub> = 3.1 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 2.3 V	-	-	0.44	V
		I <sub>O</sub> = 2.7 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	-	-	0.31	V
I <sub>O</sub> = 4.0 mA; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 3.0 V	-	-	0.44	V		
I <sub>I</sub>	input leakage current	V <sub>I</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	±0.1	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	-	-	±0.2	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>I</sub> = 0 V or 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>I</sub> = 0 V or 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
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	-	-	0.5	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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<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	0.65V <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	-	-	0.35V <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	0.7V <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
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	-	-	0.3V <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>I</sub>	input leakage current	V <sub>I</sub> = 0 V to 3.6 V; V <sub>CC(A)</sub> = V <sub>CC(Y)</sub> = 1.1 V to 3.6 V	-	-	±0.5	μA
		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
I <sub>OFF</sub>	power-off leakage current	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>I</sub> = 0 V or 3.6 V; V <sub>CC(Y)</sub> = 0 V	-	-	±0.5	μA
		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
ΔI <sub>OFF</sub>	additional power-off leakage current	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>I</sub> = 0 V or 3.6 V; V <sub>CC(Y)</sub> = 0 V to 0.2 V	-	-	±0.6	μA
			-	-	±0.6	μA

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_{CC}$	supply current	port A; $V_I = \text{GND}$ or $V_{CC(A)}$ ; $I_O = 0 \text{ A}$				
		$V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	-	-	0.9	$\mu\text{A}$
		$V_{CC(A)} = 3.6 \text{ V}; V_{CC(Y)} = 0 \text{ V}$	-	-	0.9	$\mu\text{A}$
		$V_{CC(A)} = 0 \text{ V}; V_{CC(Y)} = 3.6 \text{ V}$	-	0.0	-	$\mu\text{A}$
		port Y; $V_I = \text{GND}$ or $V_{CC(A)}$ ; $I_O = 0 \text{ A}$				
		$V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	-	-	0.9	$\mu\text{A}$
		$V_{CC(A)} = 3.6 \text{ V}; V_{CC(Y)} = 0 \text{ V}$	-	0.0	-	$\mu\text{A}$
		$V_{CC(A)} = 0 \text{ V}; V_{CC(Y)} = 3.6 \text{ V}$	-	-	0.9	$\mu\text{A}$
$\Delta I_{CC}$	additional supply current	port A and port Y; $V_I = \text{GND}$ or $V_{CC(A)}$ ; $I_O = 0 \text{ A}$ ; $V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	-	-	0.9	$\mu\text{A}$
		A input; $V_{CC(A)} = 3.3 \text{ V}; V_{CC(Y)} = 0 \text{ V to } 3.6 \text{ V}$ ; $V_I = V_{CC(A)} - 0.6 \text{ V}$	-	-	50	$\mu\text{A}$
<b><math>T_{\text{amb}} = -40 \text{ }^\circ\text{C to } +125 \text{ }^\circ\text{C}</math></b>						
$V_{IH}$	HIGH-level input voltage	$V_{CC(A)} = 1.1 \text{ V to } 1.95 \text{ V}; V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	$0.7V_{CC(A)}$	-	-	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	$V_{CC(A)} = 1.1 \text{ V to } 1.95 \text{ V}; V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	-	-	$0.3V_{CC(A)}$	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	$V_I = V_{IH}$				
		$I_O = -20 \mu\text{A}; V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	$V_{CC(Y)} - 0.11$	-	-	V
		$I_O = -1.1 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V}$	$0.6V_{CC(Y)}$	-	-	V
		$I_O = -1.7 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.4 \text{ V}$	0.93	-	-	V
		$I_O = -1.9 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.65 \text{ V}$	1.17	-	-	V
		$I_O = -2.3 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 2.3 \text{ V}$	1.77	-	-	V
		$I_O = -3.1 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 2.3 \text{ V}$	1.67	-	-	V
		$I_O = -2.7 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 3.0 \text{ V}$	2.40	-	-	V
$V_{OL}$	LOW-level output voltage	$V_I = V_{IL}$				
		$I_O = 20 \mu\text{A}; V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V to } 3.6 \text{ V}$	-	-	0.11	V
		$I_O = 1.1 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.1 \text{ V}$	-	-	$0.33V_{CC(Y)}$	V
		$I_O = 1.7 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.4 \text{ V}$	-	-	0.41	V
		$I_O = 1.9 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 1.65 \text{ V}$	-	-	0.39	V
		$I_O = 2.3 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 2.3 \text{ V}$	-	-	0.36	V
		$I_O = 3.1 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 2.3 \text{ V}$	-	-	0.50	V
		$I_O = 2.7 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 3.0 \text{ V}$	-	-	0.36	V
	$I_O = 4.0 \text{ mA}; V_{CC(A)} = V_{CC(Y)} = 3.0 \text{ V}$	-	-	0.50	V	

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_I$	input leakage current	$V_I = 0\text{ V to }3.6\text{ V}$ ; $V_{CC(A)} = V_{CC(Y)} = 1.1\text{ V to }3.6\text{ V}$	-	-	$\pm 0.75$	$\mu\text{A}$
$I_{OFF}$	power-off leakage current	A input; $V_I = 0\text{ V to }3.6\text{ V}$ ; $V_{CC(A)} = 0\text{ V}$ ; $V_{CC(Y)} = 0\text{ V to }3.6\text{ V}$	-	-	$\pm 0.75$	$\mu\text{A}$
		Y output; $V_O = 0\text{ V to }3.6\text{ V}$ ; $V_{CC(A)} = 0\text{ V to }3.6\text{ V}$ ; $V_I = 0\text{ V or }3.6\text{ V}$ ; $V_{CC(Y)} = 0\text{ V}$	-	-	$\pm 0.75$	$\mu\text{A}$
$\Delta I_{OFF}$	additional power-off leakage current	A input; $V_I = 0\text{ V to }3.6\text{ V}$ ; $V_{CC(A)} = 0\text{ V to }0.2\text{ V}$ ; $V_{CC(Y)} = 0\text{ V to }3.6\text{ V}$	-	-	$\pm 0.75$	$\mu\text{A}$
		Y output; $V_O = 0\text{ V to }3.6\text{ V}$ ; $V_{CC(A)} = 0\text{ V to }3.6\text{ V}$ ; $V_I = 0\text{ V or }3.6\text{ V}$ ; $V_{CC(Y)} = 0\text{ V to }0.2\text{ V}$	-	-	$\pm 0.75$	$\mu\text{A}$
$I_{CC}$	supply current	port A; $V_I = \text{GND or }V_{CC(A)}$ ; $I_O = 0\text{ A}$				
		$V_{CC(A)} = V_{CC(Y)} = 1.1\text{ V to }3.6\text{ V}$	-	-	1.4	$\mu\text{A}$
		$V_{CC(A)} = 3.6\text{ V}$ ; $V_{CC(Y)} = 0\text{ V}$	-	-	1.4	$\mu\text{A}$
		$V_{CC(A)} = 0\text{ V}$ ; $V_{CC(Y)} = 3.6\text{ V}$	-	0.0	-	$\mu\text{A}$
		port Y; $V_I = \text{GND or }V_{CC(A)}$ ; $I_O = 0\text{ A}$				
		$V_{CC(A)} = V_{CC(Y)} = 1.1\text{ V to }3.6\text{ V}$	-	-	1.4	$\mu\text{A}$
		$V_{CC(A)} = 3.6\text{ V}$ ; $V_{CC(Y)} = 0\text{ V}$	-	0.0	-	$\mu\text{A}$
		$V_{CC(A)} = 0\text{ V}$ ; $V_{CC(Y)} = 3.6\text{ V}$	-	-	1.4	$\mu\text{A}$
$\Delta I_{CC}$	additional supply current	port A and port Y; $V_I = \text{GND or }V_{CC(A)}$ ; $I_O = 0\text{ A}$ ; $V_{CC(A)} = V_{CC(Y)} = 1.1\text{ V to }3.6\text{ V}$	-	-	1.4	$\mu\text{A}$
		A input; $V_{CC(A)} = 3.3\text{ V}$ ; $V_{CC(Y)} = 0\text{ V to }3.6\text{ V}$ ; $V_I = V_{CC(A)} - 0.6\text{ V}$	-	-	75	$\mu\text{A}$

## 11. Dynamic characteristics

**Table 8. Dynamic characteristics**

Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 9.

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C			Unit
			Min	Typ [1]	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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1\text{ V to }1.3\text{ V}$	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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1\text{ V to }1.3\text{ V}$	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

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C			Unit
			Min	Typ [1]	Max	Min	Max (85 °C)	Max (125 °C)	
<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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	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
<b><math>C_L = 10 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.6	10.7	27.1	2.5	27.6	27.6	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.6	7.7	16.7	2.3	17.5	17.6	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.7	6.6	13.4	2.4	14.2	14.7	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.2	5.6	10.3	2.2	11.0	11.4	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.5	5.3	9.5	2.2	9.7	10.0	ns
<b><math>C_L = 10 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.4	10.0	25.6	2.2	26.1	26.1	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.4	7.0	15.0	2.0	15.8	16.4	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.4	5.9	11.6	2.1	12.5	13.1	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.0	4.8	8.4	1.9	9.2	9.7	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.2	4.4	7.4	1.9	7.7	8.1	ns
<b><math>C_L = 10 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.3	9.7	24.8	2.1	25.5	25.7	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.3	6.6	14.3	2.0	15.3	15.8	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.3	5.5	11.0	2.0	11.9	12.5	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	1.9	4.4	7.7	1.8	8.6	9.0	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.1	4.0	6.6	1.8	7.1	7.4	ns

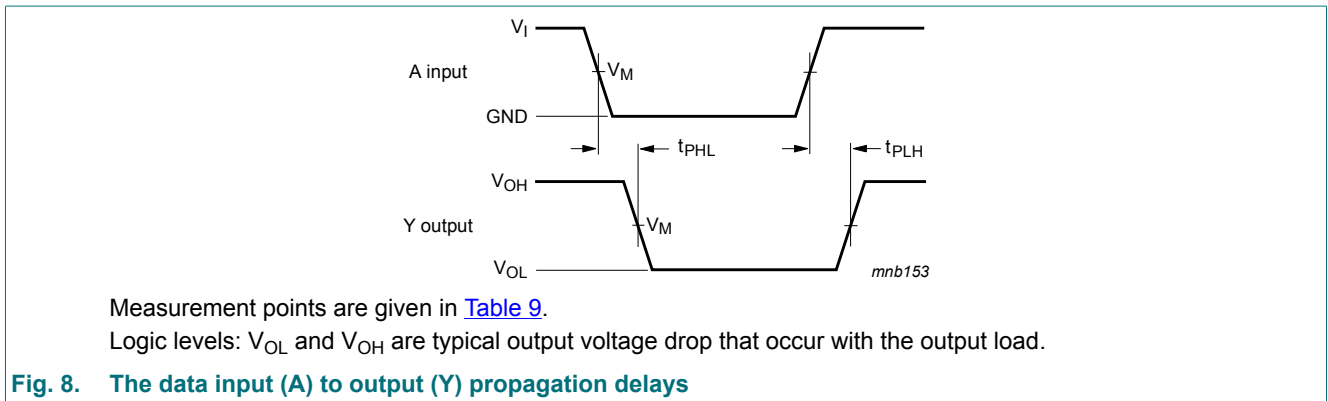
Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C			Unit
			Min	Typ [1]	Max	Min	Max (85 °C)	Max (125 °C)	
<b><math>C_L = 10 \text{ pF}</math>; <math>V_{CC(A)} = 2.3 \text{ V to } 2.7 \text{ V}</math></b>									
$t_{pd}$	propagation delay	A to Y; see Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.3	9.3	24.4	2.1	25.1	25.1	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.2	6.3	13.6	1.9	14.6	15.1	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.2	5.1	10.3	2.0	11.2	11.7	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	1.8	4.1	6.9	1.8	7.7	8.2	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.0	3.6	5.8	1.7	6.3	6.6	ns
<b><math>C_L = 10 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.3	9.0	24.2	2.1	24.6	24.6	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.2	6.0	13.3	1.9	14.1	14.6	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.2	4.9	9.9	2.0	10.6	11.2	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	1.8	3.9	6.5	1.8	7.3	7.7	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.0	3.5	5.4	1.7	5.8	6.2	ns
<b><math>C_L = 15 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	3.0	11.5	28.6	2.8	29.2	29.2	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	3.1	8.3	17.3	2.7	18.6	19.1	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.8	7.1	14.1	2.7	15.2	15.8	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.6	6.1	11.1	2.7	11.6	12.1	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.9	5.7	9.9	2.6	10.3	10.6	ns
<b><math>C_L = 15 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.8	10.8	27.1	2.6	27.7	27.7	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.8	7.6	15.7	2.4	17.0	17.6	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.5	6.3	12.3	2.4	13.5	14.1	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.3	5.3	9.2	2.4	9.9	10.3	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.6	4.9	7.8	2.3	8.3	8.7	ns
<b><math>C_L = 15 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.7	10.5	26.4	2.5	27.1	27.3	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.7	7.2	15.0	2.3	16.4	17.0	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.4	6.0	11.7	2.3	12.8	13.5	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.2	4.9	8.5	2.2	9.2	9.7	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.5	4.5	7.1	2.2	7.7	8.0	ns
<b><math>C_L = 15 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.6	10.1	26.0	2.4	26.7	26.7	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.7	6.9	14.3	2.3	15.7	16.3	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.4	5.6	10.9	2.2	12.1	12.7	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.1	4.5	7.6	2.2	8.4	8.9	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.4	4.1	6.2	2.1	6.8	7.2	ns

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C			Unit
			Min	Typ [1]	Max	Min	Max (85 °C)	Max (125 °C)	
<b><math>C_L = 15 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	2.6	9.8	25.7	2.4	26.2	26.2	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	2.7	6.6	14.0	2.3	15.2	15.7	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	2.4	5.4	10.5	2.2	11.6	12.1	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.1	4.3	7.3	2.2	7.9	8.4	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	2.4	3.9	5.9	2.1	6.4	6.8	ns
<b><math>C_L = 30 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	3.7	13.7	32.9	3.5	33.5	33.5	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	3.6	9.8	19.5	3.6	20.9	21.4	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	3.7	8.4	15.9	3.5	17.0	17.7	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	3.0	7.2	12.2	3.4	12.7	13.2	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	3.8	6.8	10.9	3.4	12.2	12.5	ns
<b><math>C_L = 30 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	3.5	13.1	31.5	3.2	32.0	32.0	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	3.3	9.1	17.8	3.3	19.2	19.9	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	3.4	7.6	14.2	3.2	15.4	16.0	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.8	6.4	10.3	3.1	11.0	11.5	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	3.5	5.9	8.9	3.1	10.1	10.5	ns
<b><math>C_L = 30 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	3.4	12.7	30.7	3.1	31.5	31.5	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	3.2	8.8	17.2	3.2	18.7	19.3	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	3.3	7.3	13.5	3.1	14.7	15.4	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.7	6.0	9.6	3.0	10.4	10.9	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	3.4	5.6	8.2	2.9	9.4	9.8	ns
<b><math>C_L = 30 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	3.3	12.4	30.3	3.1	31.0	31.0	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	3.2	8.4	16.5	3.1	18.0	18.7	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	3.2	6.9	12.8	3.0	14.0	14.6	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.6	5.6	8.8	2.9	9.6	10.1	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	3.3	5.2	7.3	2.9	8.5	9.0	ns
<b><math>C_L = 30 \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 Fig. 8 [2]							
		$V_{CC(Y)} = 1.1 \text{ V to } 1.3 \text{ V}$	3.3	12.0	30.0	3.1	30.5	30.5	ns
		$V_{CC(Y)} = 1.4 \text{ V to } 1.6 \text{ V}$	3.2	8.1	16.2	3.1	17.5	18.1	ns
		$V_{CC(Y)} = 1.65 \text{ V to } 1.95 \text{ V}$	3.2	6.7	12.4	3.0	13.4	14.1	ns
		$V_{CC(Y)} = 2.3 \text{ V to } 2.7 \text{ V}$	2.6	5.5	8.5	2.9	9.1	9.6	ns
		$V_{CC(Y)} = 3.0 \text{ V to } 3.6 \text{ V}$	3.2	5.0	7.0	2.9	8.1	8.5	ns

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C			Unit
			Min	Typ [1]	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; [3][4] V <sub>I</sub> = GND to V <sub>CC(A)</sub>							
		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;  
 $\Sigma(C_L \times V_{CC}^2 \times f_o)$  = sum of the outputs.

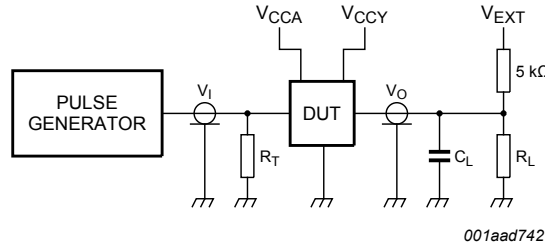
### 11.1. Waveforms and test circuit



**Fig. 8. The data input (A) to output (Y) propagation delays**

**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. 9. Test circuit for measuring 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  $R_L = 1\text{ M}\Omega$ .

## 12. Package outline

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

SOT353-1

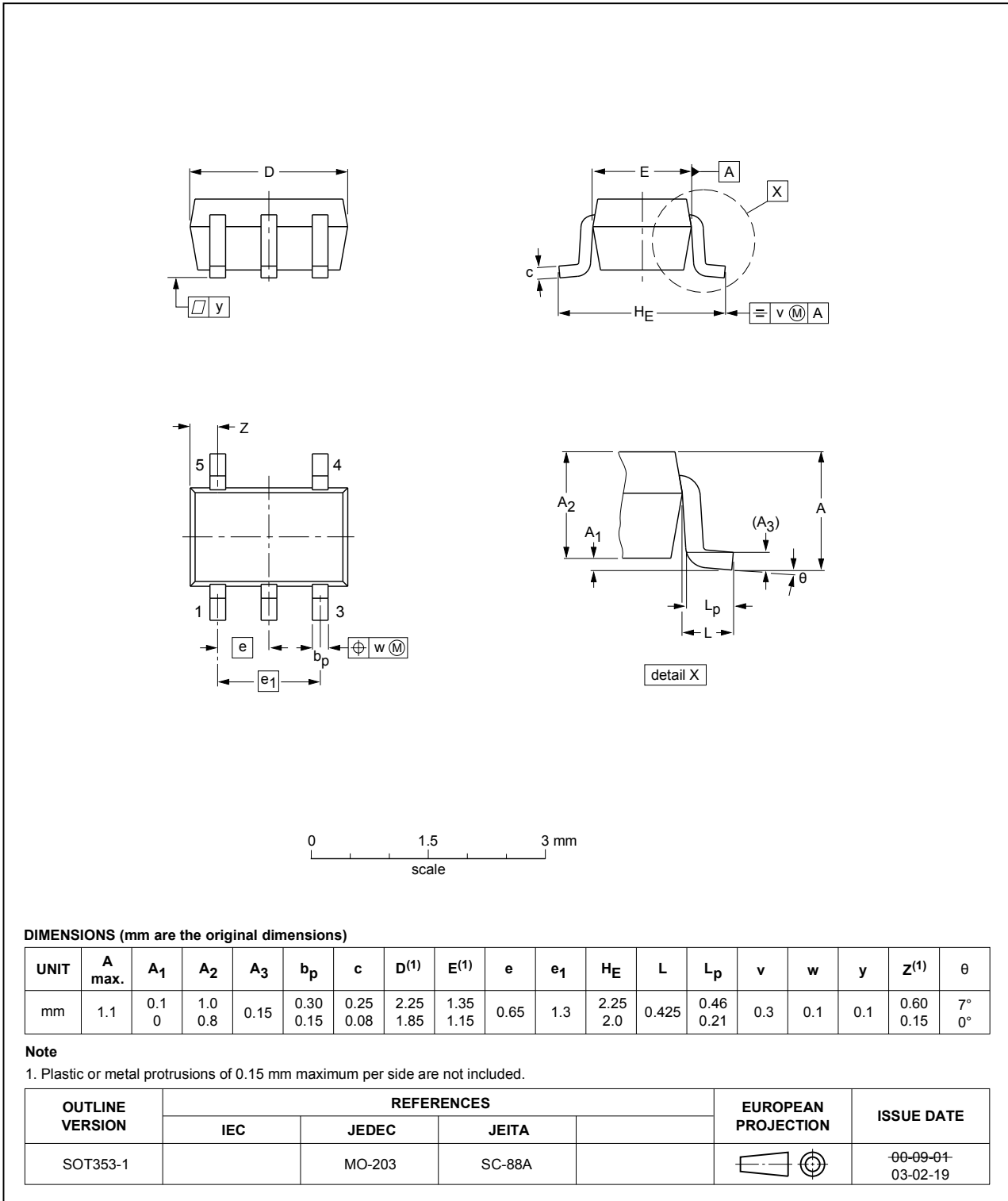


Fig. 10. Package outline SOT353-1 (TSSOP5)

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

SOT886

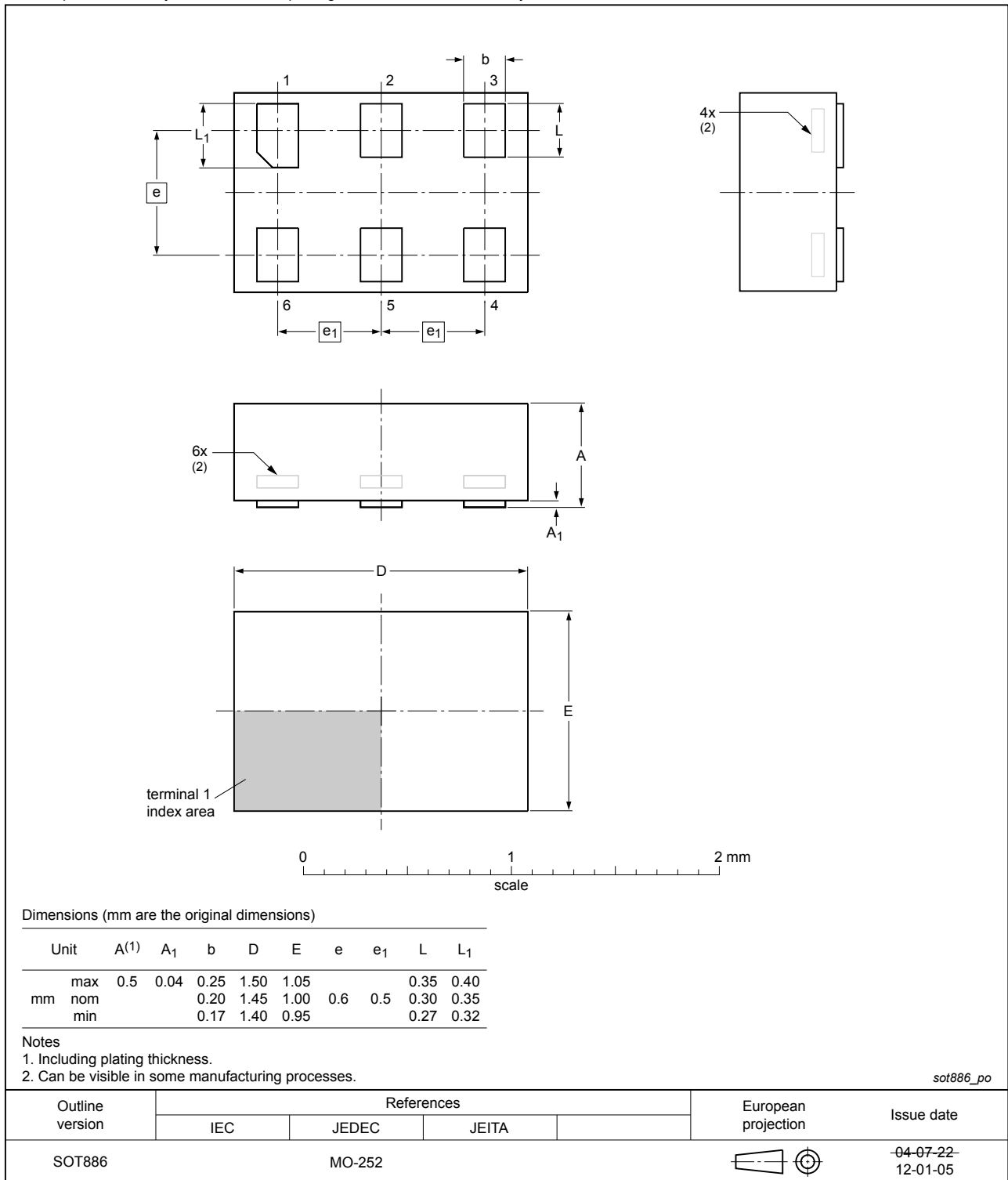


Fig. 11. Package outline SOT886 (XSON6)

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

SOT891

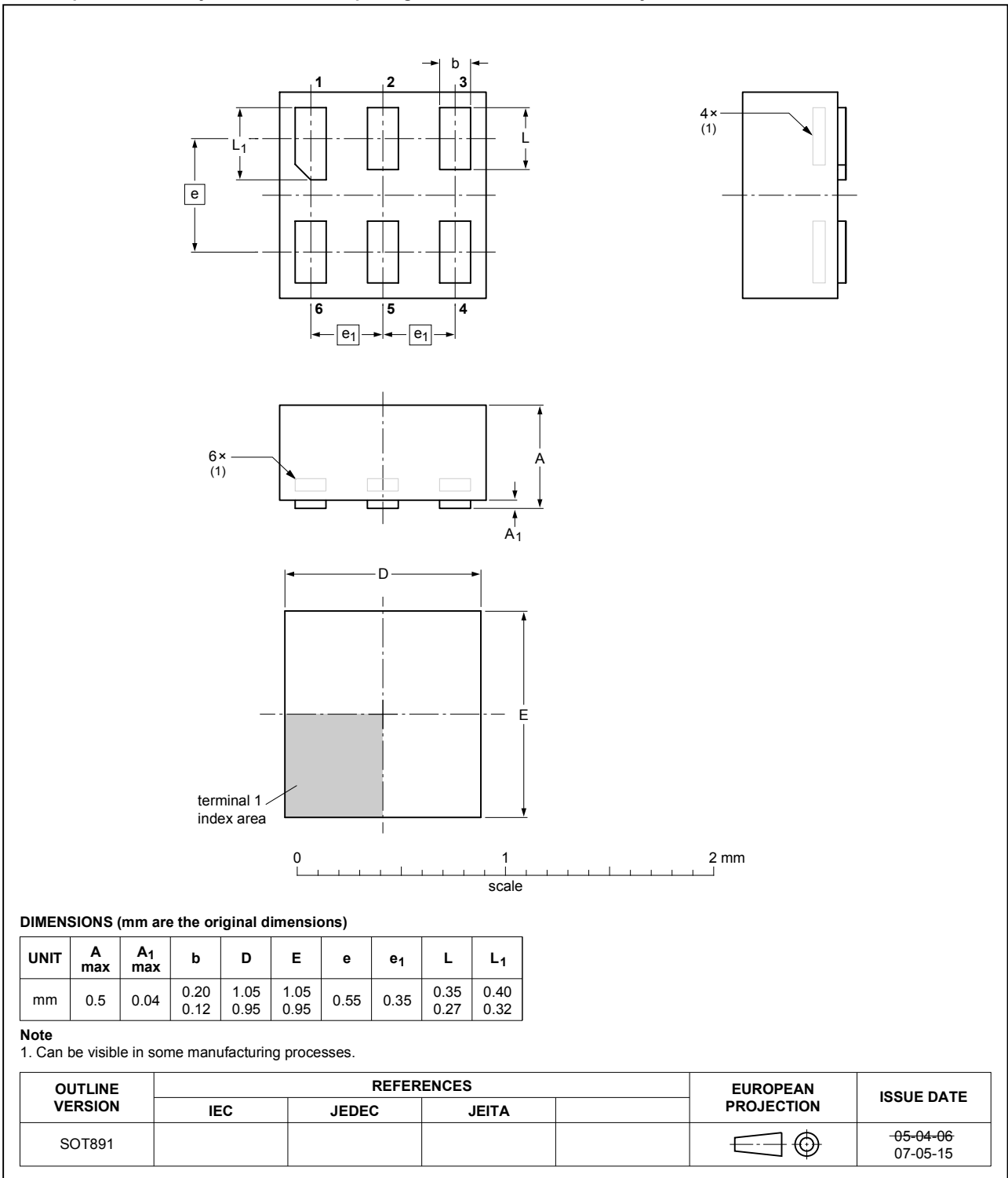


Fig. 12. Package outline SOT891 (XSON6)

XSON6: extremely thin small outline package; no leads;  
6 terminals; body 0.9 x 1.0 x 0.35 mm

SOT1115

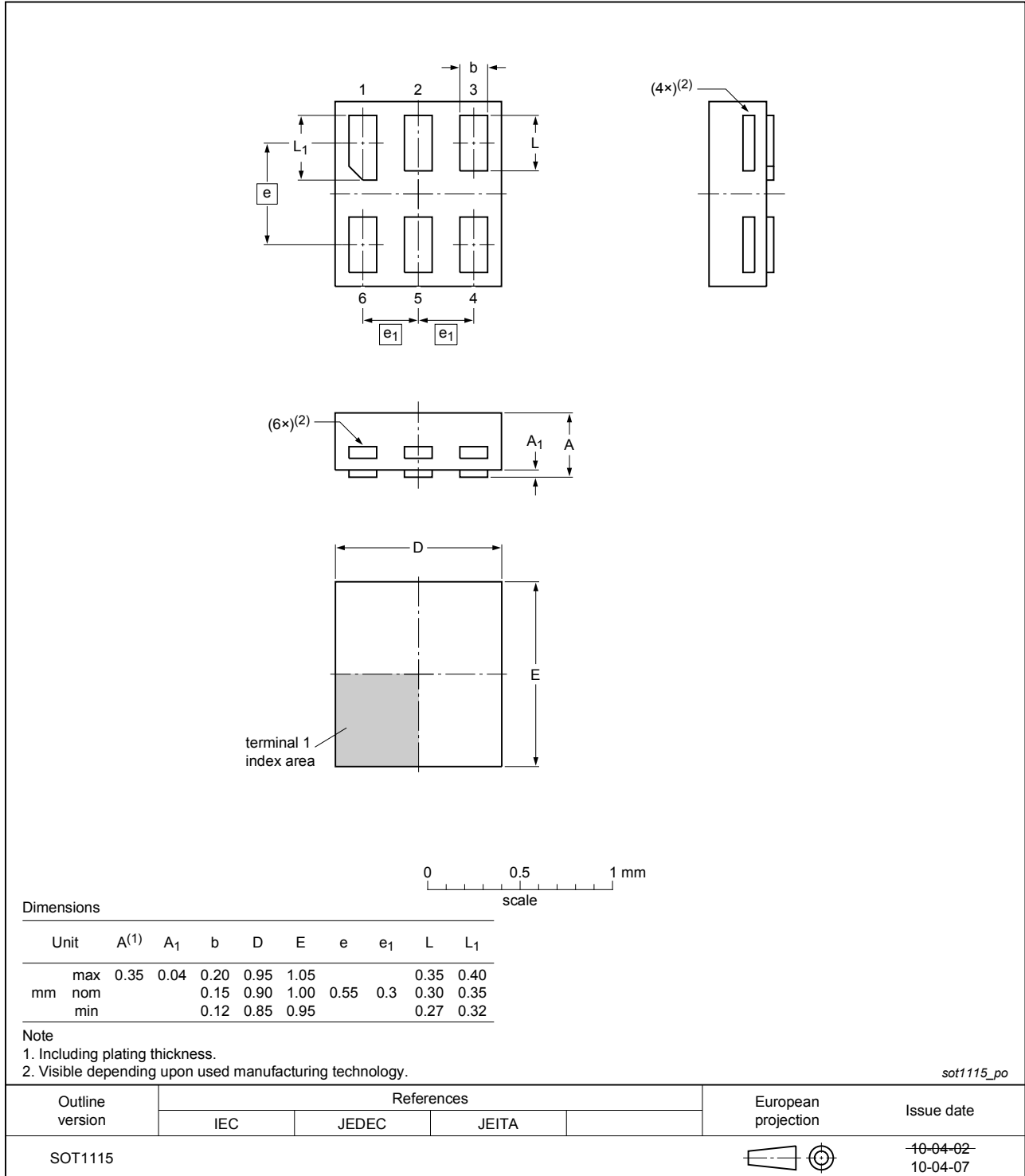


Fig. 13. Package outline SOT1115 (XSON6)

XSON6: extremely thin small outline package; no leads;  
6 terminals; body 1.0 x 1.0 x 0.35 mm

SOT1202

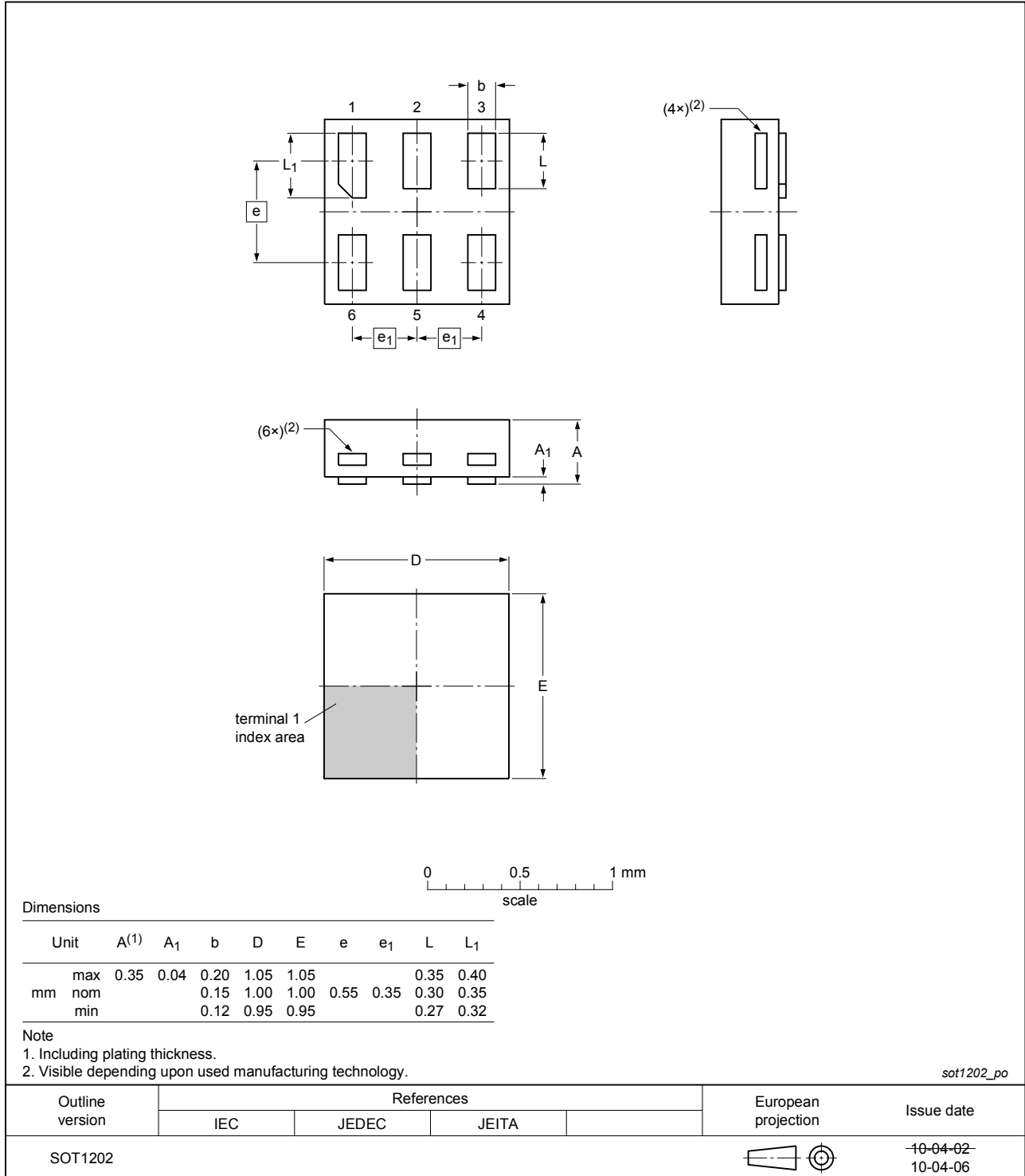


Fig. 14. Package outline SOT1202 (XSON6)

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

SOT1226

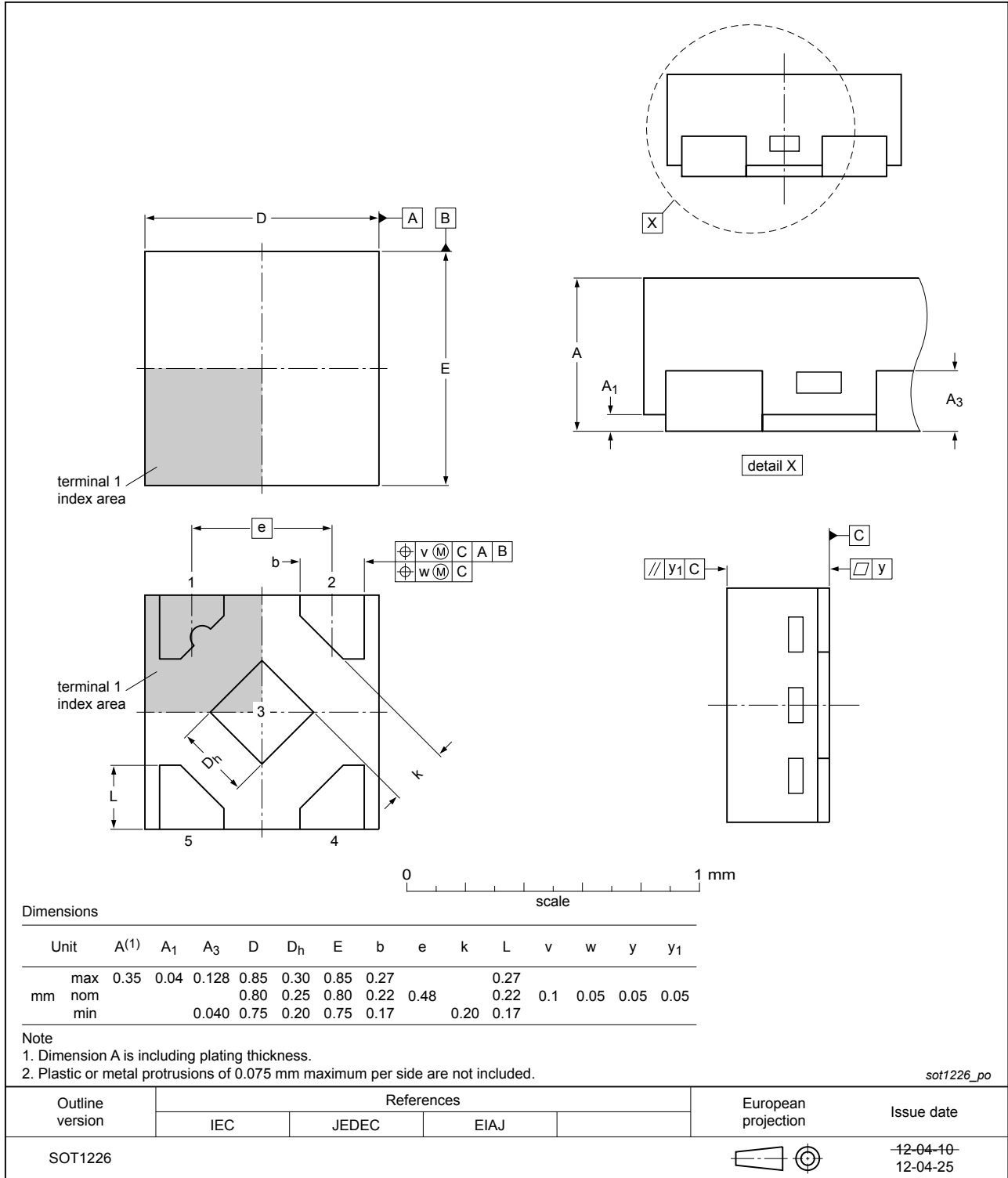


Fig. 15. Package outline SOT1226 (X2SON5)

## 13. Abbreviations

Table 11. Abbreviations

Acronym	Description
CDM	Charged Device Model
DUT	Device Under Test
ESD	ElectroStatic Discharge
HBM	Human Body Model
MM	Machine Model

## 14. Revision history

Table 12. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74AUP1T34 v.6	20190128	Product data sheet	-	74AUP1T34 v.5
Modifications:	<ul style="list-style-type: none"> <li>The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li> <li>Legal texts have been adapted to the new company name where appropriate.</li> </ul>			
74AUP1T34 v.5	20130904	Product data sheet	-	74AUP1T34 v.4
Modifications:	<ul style="list-style-type: none"> <li>Added type number 74AUP1T34GX (SOT1226)</li> </ul>			
74AUP1T34 v.4	20120316	Product data sheet	-	74AUP1T34 v.3
Modifications:	<ul style="list-style-type: none"> <li>Package outline drawing of SOT886 (<a href="#">Fig. 11</a>) modified.</li> </ul>			
74AUP1T34 v.3	20111128	Product data sheet	-	74AUP1T34 v.2
Modifications:	<ul style="list-style-type: none"> <li>Legal pages updated.</li> </ul>			
74AUP1T34 v.2	20100819	Product data sheet	-	74AUP1T34 v.1
74AUP1T34 v.1	20061204	Product data sheet	-	-

## 15. Legal information

### 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".
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## Contents

<b>1. General description</b> .....	<b>1</b>
<b>2. Features and benefits</b> .....	<b>1</b>
<b>3. Ordering information</b> .....	<b>2</b>
<b>4. Marking</b> .....	<b>2</b>
<b>5. Functional diagram</b> .....	<b>2</b>
<b>6. Pinning information</b> .....	<b>3</b>
6.1. Pinning.....	3
6.2. Pin description.....	3
<b>7. Functional description</b> .....	<b>3</b>
<b>8. Limiting values</b> .....	<b>4</b>
<b>9. Recommended operating conditions</b> .....	<b>4</b>
<b>10. Static characteristics</b> .....	<b>4</b>
<b>11. Dynamic characteristics</b> .....	<b>8</b>
11.1. Waveforms and test circuit.....	12
<b>12. Package outline</b> .....	<b>14</b>
<b>13. Abbreviations</b> .....	<b>20</b>
<b>14. Revision history</b> .....	<b>20</b>
<b>15. Legal information</b> .....	<b>21</b>

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