AXP1T34

Dual supply translating buffer

Rev. 1 — 1 December 2023 Product data sheet

1. General description

The AXP1T34 is a single bit, dual supply translating buffer. It features one input (A), an output (Y) and dual supply pins (V_{CCI} and V_{CCO}). Both V_{CCI} and V_{CCO} can be supplied at any voltage between 0.9 V and 5.5 V making the device suitable for translating between any voltage nodes specified (1.2 V, 1.5 V, 1.8 V, 2.5 V, 3.3 V and 5.0 V). No power supply sequencing is required and output glitches during power supply transitions are prevented using patented circuitry. As a result, glitches will not appear on the outputs for supply transitions during power-up/down between 20 mV/µs and 5.5 V/s

The input is referenced to V_{CCI} and the output is referenced to V_{CCO}. Schmitt-trigger action at the input makes the circuit tolerant of slower input rise and fall times.

This device ensures low static and dynamic power consumption across the entire supply range and is fully specified for partial power down applications using I_{OFF}. The I_{OFF} circuitry disables the output, preventing the potentially damaging backflow current through the device when it is powered down. In suspend mode when either V_{CCI} or V_{CCO} are at GND level the output is in the high-impedance OFF-state

2. Features and benefits

- Wide supply voltage range:
  - V_{CCI}: 0.9 V to 5.5 V
  - V_{CCO}: 0.9 V to 5.5 V
- Low input capacitance; C_I = 1.5 pF (typical)
- Low output capacitance; C_O = 3.8 pF (typical)
- Low dynamic power consumption; C_{PD} = 0.4 pF at V_{CCI} = 1.2 V (typical)
- Low dynamic power consumption; C_{PD} = 11 pF at V_{CCO} = 5 V (typical)
- Low static power consumption; I_{CCI} = 0.1 µA (25 °C maximum)
- Low static power consumption; I_{CCO} = 1.0 µA (25 °C maximum)
- High noise immunity
- Complies with JEDEC standard:
  - JESD8-12 (1.1 V to 1.3 V; A input)
  - JESD8-11 (1.4 V to 1.6 V)
  - JESD8-7 (1.65 V to 1.95 V)
  - JESD8-5 (2.3 V to 2.7 V)
  - JESD8C (2.7 V to 3.6 V)
  - JESD12-6 (4.5 V to 5.5 V)
- ESD protection:
  - HBM: ANSI/ESDA/JEDEC JS-001 class 2 exceeds 2000 V
  - CDM: ANSI/ESDA/JEDEC JS-002 class C3 exceeds 1000 V
- Latch-up performance exceeds 100 mA per JESD78D Class II
- Inputs accept voltages up to 5.5 V
- Low noise overshoot and undershoot < 10% of V_{CCO}
- I_{OFF} circuitry provides partial power-down mode operation
- Multiple package options
- Specified from −40 °C to +125 °C

3. Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
AXP1T34GW	-40 °C to +125 °C	TSSOP5	plastic thin shrink small outline package; 5 leads; body width 1.25 mm	SOT353-1
AXP1T34GM	-40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 × 1.45 × 0.5 mm	SOT886
AXP1T34GS	-40 °C to +125 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body 1.0 × 1.0 × 0.35 mm	SOT1202
AXP1T34GX	-40 °C to +125 °C	X2SON5	plastic thermal enhanced extremely thin small outline package; no leads; 5 terminals; body 0.8 × 0.8 × 0.32 mm	SOT1226-3

4. Marking

Table 2. Marking

Type number	Marking code[1]
AXP1T34GW	r3
AXP1T34GM	r3
AXP1T34GS	r3
AXP1T34GX	r3

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

5. Functional diagram

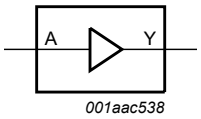


Fig. 1. Logic symbol

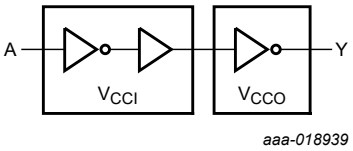
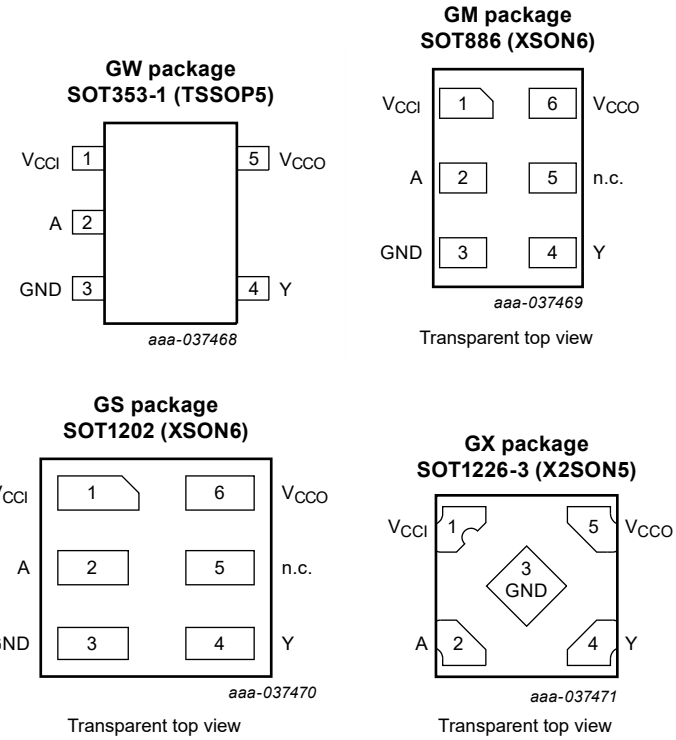


Fig. 2. Logic diagram

6. Pinning information

6.1. Pinning



6.2. Pin description

Table 3. Pin description

Symbol	Pin		Description
	TSSOP5 and X2SON5	XSON6	
V_{CCI}	1	1	input supply voltage
A	2	2	data input A
GND	3	3	ground (0 V)
Y	4	4	data output Y
n.c.	-	5	not connected
V_{CCO}	5	6	output supply voltage

7. Functional description

Table 4. Function table

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

Supply voltage		Input	Output
V_{CCI}	V_{CCO}	A	Y
0.9 V to 5.5 V	0.9 V to 5.5 V	L	L
0.9 V to 5.5 V	0.9 V to 5.5 V	H	H
GND[1]	0.9 V to 5.5 V	X	Z
0.9 V to 5.5 V	GND[1]	X	Z
GND[1]	GND[1]	X	Z

[1] If V_{CCI} or V_{CCO} is at GND level, the device goes into suspend mode.

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_{CCI}	input supply voltage		-0.5	+6.5	V
V_{CCO}	output supply voltage		-0.5	+6.5	V
I_{IK}	input clamping current	V_I < 0 V	50	-	mA
V_I	input voltage	[1]	-0.5	+6.5	V
I_{OK}	output clamping current	V_O < 0 V	-50	-	mA
V_O	output voltage	Active mode [1] [2]	-0.5	V_{CCO} + 0.5	V
		Suspend or 3-state mode [1]	-0.5	+6.5	V
I_O	output current	V_O = 0 V to V_{CCO}	-	±25	mA
I_{CC}	supply current	I_{CCI} or I_{CCO}; per V_{CC} pin	-	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 [3]	-	250	mW

[1] The minimum input and output voltage ratings may be exceeded if the input and output current ratings are observed.
[2] V_{CCO} + 0.5 V should not exceed 6.5 V.
[3] For SOT353-1 (TSSOP5) package: P_{tot} derates linearly with 3.3 mW/K above 74 °C.
For SOT886 (XSON6) package: P_{tot} derates linearly with 3.3 mW/K above 74 °C.
For SOT1202 (XSON6) package: P_{tot} derates linearly with 3.3 mW/K above 74 °C.
For SOT1226-3 (X2SON5) package: P_{tot} derates linearly with 3.0 mW/K above 67 °C.

9. Recommended operating conditions

Table 6. Recommended operating conditions

Voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions		Min	Max	Unit
V_{CCI}	input supply voltage			0.9	5.5	V
V_{CCO}	output supply voltage			0.9	5.5	V
V_I	input voltage			0	5.5	V
V_O	output voltage	Active mode	[1]	0	V_{CCO}	V
		Power-down or 3-state mode		0	5.5	V
T_{amb}	ambient temperature			-40	+125	°C
Δt/ΔV	input transition rise and fall rate	V_{CCI} = 0.9 V	[2]	-	20	ns/V
		V_{CCI} = 1.1 V to 1.3 V		-	20	ns/V
		V_{CCI} = 1.4 V to 1.95 V		-	20	ns/V
		V_{CCI} = 2.3 V to 2.7 V		-	20	ns/V
		V_{CCI} = 3.0 V to 3.6 V		-	10	ns/V
		V_{CCI} = 4.5 V to 5.5 V		-	8	ns/V

[1] V_{CCO} is the supply voltage associated with the output port.
[2] V_{CCI} is the supply voltage associated with the input port.

10. Static characteristics

Table 7. Static characteristics

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

Symbol	Parameter	Conditions	T_{amb} = 25 °C			T_{amb} = -40 °C to +85 °C		T_{amb} = -40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
V_{IH}	HIGH-level input voltage	V_{CCI} = 0.9 V	$0.7V_{CCI}$	-	-	$0.7V_{CCI}$	-	$0.7V_{CCI}$	-	V
		V_{CCI} = 1.1 V to 1.95 V	$0.65V_{CCI}$	-	-	$0.65V_{CCI}$	-	$0.65V_{CCI}$	-	V
		V_{CCI} = 2.3 V to 2.7 V	1.6	-	-	1.6	-	1.6	-	V
		V_{CCI} = 3.0 V to 3.6 V	2	-	-	2	-	2	-	V
		V_{CCI} = 4.5 V to 5.5 V	$0.7V_{CCI}$	-	-	$0.7V_{CCI}$	-	$0.7V_{CCI}$	-	V
V_{IL}	LOW-level input voltage	V_{CCI} = 0.9 V	-	-	$0.3V_{CCI}$	-	$0.3V_{CCI}$	-	$0.3V_{CCI}$	V
		V_{CCI} = 1.1 V to 1.95 V	-	-	$0.35V_{CCI}$	-	$0.35V_{CCI}$	-	$0.35V_{CCI}$	V
		V_{CCI} = 2.3 V to 2.7 V	-	-	0.7	-	0.7	-	0.7	V
		V_{CCI} = 3.0 V to 3.6 V	-	-	0.8	-	0.8	-	0.8	V
		V_{CCI} = 4.5 V to 5.5 V	-	-	$0.3V_{CCI}$	-	$0.3V_{CCI}$	-	$0.3V_{CCI}$	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$;								
		I_O = -0.1 mA; V_{CCO} = 0.9 V to 5.5 V [1]	V_{CCO}-0.1	0.9	-	V_{CCO}-0.1	-	V_{CCO}-0.1	-	V
		I_O = -1.5 mA; V_{CCO} = 1.1 V	0.825	-	-	0.825	-	0.825	-	V
		I_O = -3 mA; V_{CCO} = 1.4 V	1.05	-	-	1.05	-	1.05	-	V
		I_O = -4.5 mA; V_{CCO} = 1.65 V	1.2	-	-	1.2	-	1.2	-	V
		I_O = -8 mA; V_{CCO} = 2.3 V	1.7	-	-	1.7	-	1.7	-	V
		I_O = -10 mA; V_{CCO} = 3.0 V	2.2	-	-	2.2	-	2.2	-	V
		I_O = -12 mA; V_{CCO} = 4.5 V	3.7	-	-	3.7	-	3.7	-	V

Symbol	Parameter	Conditions	T_{amb} = 25 °C			T_{amb} = -40 °C to +85 °C		T_{amb} = -40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
V_{OL}	LOW-level output voltage	$V_I = V_{IL}$;								
		I_O = 0.1 mA; V_{CCO} = 0.9 V to 5.5 V [1]	-	0	0.1	-	0.1	-	0.1	V
		I_O = 1.5 mA; V_{CCO} = 1.1 V	-	-	0.275	-	0.275	-	0.275	V
		I_O = 3 mA; V_{CCO} = 1.4 V	-	-	0.35	-	0.35	-	0.35	V
		I_O = 4.5 mA; V_{CCO} = 1.65 V	-	-	0.45	-	0.7	-	0.7	V
		I_O = 8 mA; V_{CCO} = 2.3 V	-	-	0.7	-	0.8	-	0.8	V
		I_O = 10 mA; V_{CCO} = 3.0 V	-	-	0.8	-	0.8	-	0.8	V
		I_O = 12 mA; V_{CCO} = 4.5 V	-	-	0.8	-	0.8	-	0.8	V
I_I	input leakage current	V_I = 0 V to 5.5 V; V_{CCI} = 0.9 V to 5.5 V	-	-	±0.1	-	±0.5	-	±1	µA
I_{OZ}	OFF-state output current	Y output; V_O = 0 V or 5.5 V; V_{CCO} = 0.9 V to 5.5 V	-	-	±0.1	-	±0.5	-	±2	µA
		suspend mode Y output; V_O = 0 V or V_{CCO}; V_{CCI} = 5.5 V; V_{CCO} = 0 V	-	-	±0.1	-	±0.5	-	±2	µA
		suspend mode Y output; V_O = 0 V or V_{CCO}; V_{CCI} = 0 V; V_{CCO} = 5.5 V	-	-	±0.1	-	±0.5	-	±2	µA
I_{OFF}	power-off leakage current	A input; V_I = 0 V to 5.5 V; V_{CCI} = 0 V; V_{CCO} = 0.9 V to 5.5 V	-	-	±0.1	-	±0.5	-	±2	µA
		Y output; V_I or V_O = 0 V to 5.5 V; V_{CCI} = 0.9 V to 5.5 V; V_{CCO} = 0 V	-	-	±0.1	-	±0.5	-	±2	µA
ΔI_{OFF}	additional power-off leakage current	A input; V_I = 0 V to 5.5 V; V_{CCI} = 0 V to 0.1 V; V_{CCO} = 0.9 V to 5.5 V	-	-	±0.1	-	±0.5	-	±2	µA
		Y output; V_I or V_O = 0 V to 5.5 V; V_{CCI} = 0.9 V to 5.5 V; V_{CCO} = 0 V to 0.1 V	-	-	±0.1	-	±0.5	-	±2	µA

[1] Typical values for V_{OL} and V_{OH} are measured at V_{CCO} = 0.9 V

Table 8. Static characteristics supply current

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

Symbol	Parameter	Conditions	T_{amb} = 25 °C		T_{amb} = -40 °C to +85 °C		T_{amb} = -40 °C to +125 °C		Unit
			Typ	Max	Min	Max	Min	Max	
I_{CCI}	input supply current	V_I = 0 V or V_{CCI}; see Table 8							
		V_{CCI}, V_{CCO} = 0.9 V to 5.5 V [1]	0.01	0.1	-	0.5	-	1	µA
		V_{CCI} = 5.5 V; V_{CCO} = 0 V	0.01	0.1	-	0.2	-	1	µA
		V_{CCI} = 0 V; V_{CCO} = 5.5 V	0.01	0.1	-	0.1	-	0.5	µA
I_{CCO}	output supply current	V_I = 0 V or V_{CCI}; I_O = 0 A; see Table 10							
		V_{CCI}, V_{CCO} = 0.9 V to 5.5 V [1]	0.125	1	-	1.2	-	1.5	µA
		V_{CCI} = 5.5 V; V_{CCO} = 0 V	0.01	0.1	-	0.2	-	0.5	µA
		V_{CCI} = 0 V; V_{CCO} = 5.5 V	0.01	0.6	-	0.8	-	1	µA
ΔI_{CCI}	additional input supply current	V_I = V_{CCI} - 0.6 V; I_O = 0 A							µA
		V_{CCI}, V_{CCO} = 4.5 V to 5.5 V [2]	2	100	-	150	-	200	µA

[1] Typical values are measured at V_{CCI} = V_{CCO} = 1.2 V
[2] Typical values for ΔI_{CC} are measured at V_{CCI}, V_{CCO} = 5 V

Table 9. Typical input supply current (I_{CCI}) at Tamb = 25 °C

Voltages are referenced to GND (ground = 0 V).

V_{CCI}	V_{CCO}								Unit
	0 V	0.9 V	1.2 V	1.5 V	1.8 V	2.5 V	3.3 V	5.0 V	
0 V	10	10	10	10	10	10	10	10	nA
0.9 V	10	10	10	10	10	10	10	10	nA
1.2 V	10	10	10	10	10	10	10	10	nA
1.5 V	10	10	10	10	10	10	10	10	nA
1.8 V	10	10	10	10	10	10	10	10	nA
2.5 V	10	10	10	10	10	10	10	10	nA
3.3 V	10	10	10	10	10	10	10	10	nA
5 V	10	10	10	10	10	10	10	10	nA

Table 10. Typical output supply current (I_{CCO}) at Tamb = 25 °C

Voltages are referenced to GND (ground = 0 V).

V_{CCI}	V_{CCO}								Unit
	0 V	0.9 V	1.2 V	1.5 V	1.8 V	2.5 V	3.3 V	5.0 V	
0 V	10	10	10	10	10	10	10	10	nA
0.9 V	10	85	125	150	170	240	320	500	nA
1.2 V	10	85	125	150	170	240	320	500	nA
1.5 V	10	85	125	150	170	240	320	500	nA
1.8 V	10	85	125	150	170	240	320	500	nA
2.5 V	10	85	125	150	170	240	320	500	nA
3.3 V	10	85	125	150	170	240	320	500	nA
5 V	15	85	125	150	170	240	320	500	nA

11. Dynamic characteristics

Table 11. Typical dynamic characteristics at V_{CCI} = 0.9 V and T_{amb} = 25 °C

Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 4; for waveforms see Fig. 3.

Symbol	Parameter	Conditions	V_{CCO}							Unit
			0.9 V	1.2 V	1.5 V	1.8 V	2.5 V	3.3 V	5.0 V	
t_{pd}	propagation delay	A to Y [1]	40	22	18.5	16.5	15	15	15	ns

[1] t_{pd} is the same as t_{PLH} and t_{PHL}.

Table 12. Typical dynamic characteristics at V_{CCO} = 0.9 V and T_{amb} = 25 °C

Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 4; for waveforms see Fig. 3.

Symbol	Parameter	Conditions	V_{CCI}							Unit
			0.9 V	1.2 V	1.5 V	1.8 V	2.5 V	3.3 V	5.0 V	
t_{pd}	propagation delay	A to Y [1]	40	33	32	31	31	31	32	ns

[1] t_{pd} is the same as t_{PLH} and t_{PHL}.

Table 13. Typical dynamic characteristics at T_{amb} = 25 °C

Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 4; for waveform see Fig. 3.

Symbol	Parameter	Conditions	V_{CCO}							Unit
			0.9 V	1.2 V	1.5 V	1.8 V	2.5 V	3.3 V	5.0 V	
C_{PD}	power dissipation capacitance	f_i = 1 MHz; V_I = GND to V_{CCI}; $t_r = t_f$ = 1 ns; C_L = 0 pF; R_L = ∞ Ω [1]								
		input supply [2]								
		V_{CCI} = 0.9 V	0.4	0.4	0.4	0.4	0.4	0.4	0.4	pF
		V_{CCI} = 1.2 V	0.4	0.4	0.4	0.4	0.4	0.4	0.4	pF
		V_{CCI} = 1.5 V	0.4	0.4	0.4	0.4	0.4	0.4	0.4	pF
		V_{CCI} = 1.8 V	0.4	0.4	0.4	0.4	0.4	0.4	0.4	pF
		V_{CCI} = 2.5 V	0.5	0.5	0.5	0.5	0.5	0.5	0.5	pF
		V_{CCI} = 3.3 V	0.6	0.6	0.6	0.6	0.6	0.6	0.6	pF
		V_{CCI} = 5.0 V	0.9	0.9	0.9	0.9	0.9	0.9	0.9	pF
		output supply [3]								
		V_{CCI} = 0.9 V	9.4	9.4	9.4	9.5	9.7	10.3	12	pF
		V_{CCI} = 1.2 V	9.4	9.4	9.5	9.5	9.6	9.9	10.7	pF
		V_{CCI} = 1.5 V	9.4	9.4	9.5	9.5	9.7	9.9	10.4	pF
		V_{CCI} = 1.8 V	9.4	9.4	9.5	9.6	9.7	9.9	10.4	pF
		V_{CCI} = 2.5 V	9.5	9.5	9.6	9.6	9.8	10	10.4	pF
		V_{CCI} = 3.3 V	9.7	9.7	9.7	9.7	9.9	10.1	10.5	pF
		V_{CCI} = 5.0 V	10.1	10.1	10.1	10.2	10.3	10.4	10.8	pF
C_I	input capacitance	V_I = 0 V or V_{CCI}; V_{CCI} = 0 V to 5.5 V	1.5	1.5	1.5	1.5	1.5	1.5	1.5	pF
C_O	output capacitance	V_O = 0 V; V_{CCO} = 0 V	3.8							pF

[1] C_{PD} is used to determine the dynamic power dissipation (P_D in µW).

[2] Power dissipated from input supply (V_{CCI})

$P_D = C_{PD} \times V_{CCI}^2 \times f_i \times N$ where:

C_{PD} = power dissipation capacitance of the input supply.

V_{CCI} = input supply voltage in V;

f_i = input frequency in MHz;

N = number of inputs switching;

[3] Power dissipated from output supply (V_{CCO})

$P_D = (C_L + C_{PD}) \times V_{CCO}^2 \times f_o$ where:

C_L = load capacitance in pF;

C_{PD} = power dissipation capacitance of the output supply.

V_{CCO} = output supply voltage in V;

f_o = output frequency in MHz;

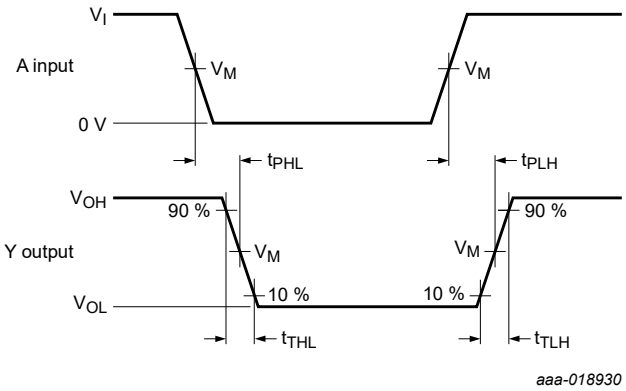
Table 14. Dynamic characteristics for temperature range -40 °C to +85 °C and -40 °C to +125 °C

Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 4; for waveforms see Fig. 3.

Symbol	Parameter	Conditions	V_{CCO}												Unit
			1.2 V ± 0.1 V		1.5 V ± 0.1 V		1.8 V ± 0.15 V		2.5 V ± 0.2 V		3.3 V ± 0.3 V		5.0 V ± 0.5 V		
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
T_{amb} = -40 °C to +85 °C															
t_{pd}	propagation delay	A to Y [1]													
		V_{CCI} = 1.2 V ± 0.1 V	4.0	38	3.6	25	3.4	21	3.1	16	2.9	14.5	2.7	14.5	ns
		V_{CCI} = 1.5 V ± 0.1 V	3.5	33	3.0	21	2.8	16.5	2.6	12.5	2.4	10.5	2.2	9.8	ns
		V_{CCI} = 1.8 V ± 0.15 V	3.1	32	2.7	19	2.4	15	2.2	11	2.1	9.0	1.9	8.2	ns
		V_{CCI} = 2.5 V ± 0.2 V	2.8	31	2.4	17.5	2.1	13.5	1.9	9.1	1.7	7.5	1.6	6.6	ns
		V_{CCI} = 3.3 V ± 0.3 V	2.7	31	2.3	17	2.0	13	1.8	8.5	1.6	6.9	1.4	5.8	ns
		V_{CCI} = 5.0 V ± 0.5 V	2.7	31	2.2	16.5	1.9	12.5	1.6	8.1	1.4	6.4	1.2	5.0	ns
t_t	transition time	Y output													
		V_{CCI} = 1.1 V to 5.5 V	1.0	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0	-	ns
T_{amb} = -40 °C to +125 °C															
t_{pd}	propagation delay	A to Y [1]													
		V_{CCI} = 1.2 V ± 0.1 V	4.0	38	3.6	26	3.4	22	3.1	17	2.9	15	2.7	15	ns
		V_{CCI} = 1.5 V ± 0.1 V	3.5	33	3.0	22	2.8	17.5	2.6	13.5	2.4	11.5	2.2	10.5	ns
		V_{CCI} = 1.8 V ± 0.15 V	3.1	32	2.7	20	2.4	16	2.2	12	2.1	9.7	1.9	9.4	ns
		V_{CCI} = 2.5 V ± 0.2 V	2.8	31	2.4	18.5	2.1	14.5	1.9	9.8	1.7	8.1	1.6	7.1	ns
		V_{CCI} = 3.3 V ± 0.3 V	2.7	31	2.3	18	2.0	14	1.8	9.2	1.6	7.5	1.4	6.3	ns
		V_{CCI} = 5.0 V ± 0.5 V	2.7	31	2.2	17.5	1.9	13.5	1.6	8.8	1.4	6.9	1.2	5.5	ns
t_t	transition time	Y output													
		V_{CCI} = 1.1 V to 5.5 V	1.0	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0	-	ns

[1] t_{pd} is the same as t_{PLH} and t_{PHL}.

11.1. Waveform, graphs and test circuit



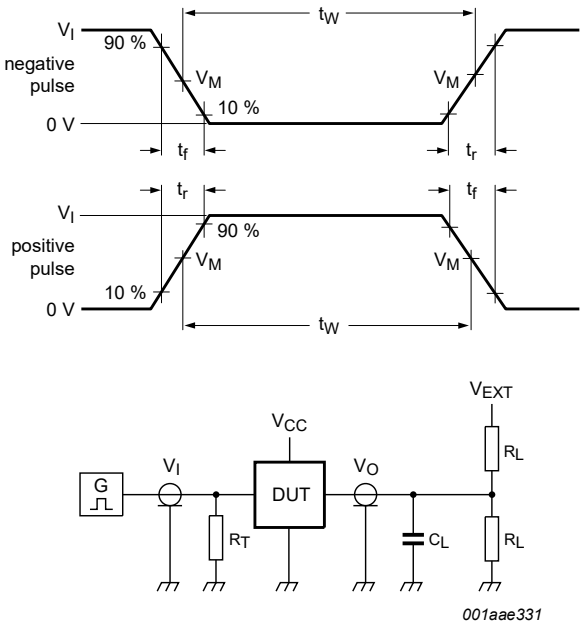
Measurement points are given in Table 15.

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

Fig. 3. Input A to output Y propagation delay times and output transition times

Table 15. Measurement points

Supply voltage		Output	Input	
V_{CCI}	V_{CCO}	V_M	V_M	V_I
0.9 V to 5.5 V	0.9 V to 5.5 V	0.5 x V_{CCO}	0.5 x V_{CCI}	V_{CCI}



Test data is given in Table 16.

R_L = Load resistance;

C_L = Load capacitance including jig and probe capacitance;

R_T = Termination resistance;

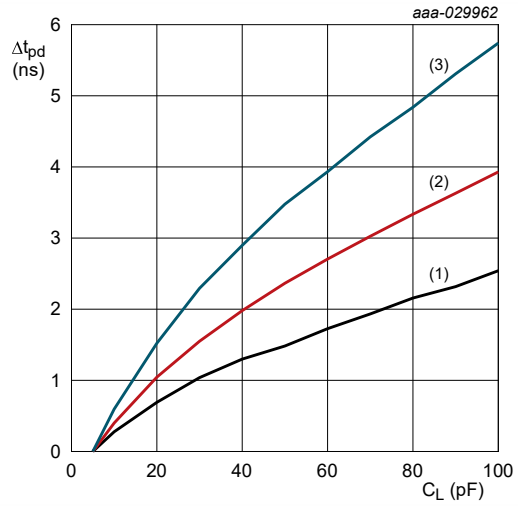
V_{EXT} = External voltage for measuring switching times.

Fig. 4. Test circuit for measuring switching times

Table 16. Test data

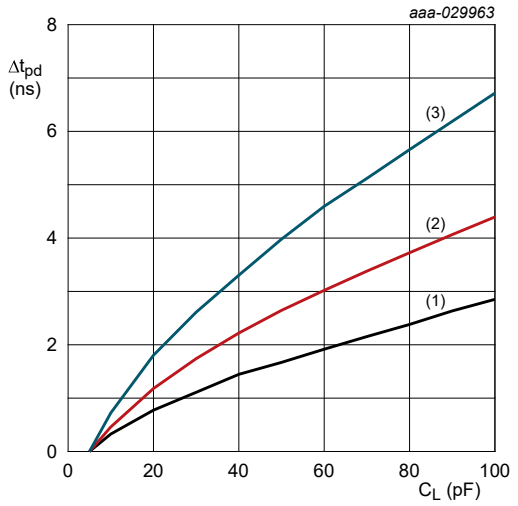
Supply voltage	Load		Input		V_{EXT}
V_{CCI}, V_{CCO}	C_L	R_L	t_r, t_f	V_I [1]	t_{PLH}, t_{PHL}
0.9 V to 5.5 V	5 pF	10 kΩ	≤3.0 ns	V_{CCI}	GND

[1] V_{CCI} is the supply voltage associated with the control input or input port.



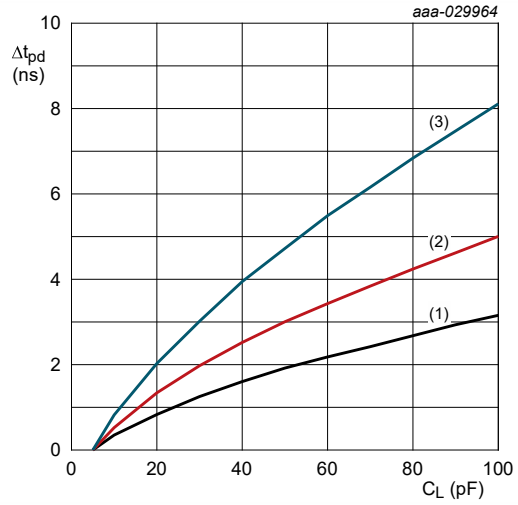
T_{amb} = -40 °C to +125 °C
For t_{PLH} and t_{PHL}.
(1) Minimum: V_{CCO} = 5.5 V
(2) Typical: T_{amb} = 25 °C; V_{CCO} = 5 V
(3) Maximum: V_{CCO} = 4.5 V

Fig. 5. Additional propagation delay versus load capacitance



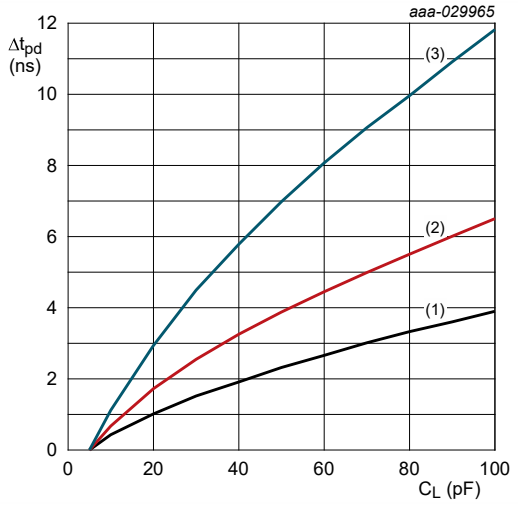
T_{amb} = -40 °C to +125 °C
For t_{PLH} and t_{PHL}.
(1) Minimum: V_{CCO} = 3.6 V
(2) Typical: T_{amb} = 25 °C; V_{CCO} = 3.3 V
(3) Maximum: V_{CCO} = 3 V

Fig. 6. Additional propagation delay versus load capacitance



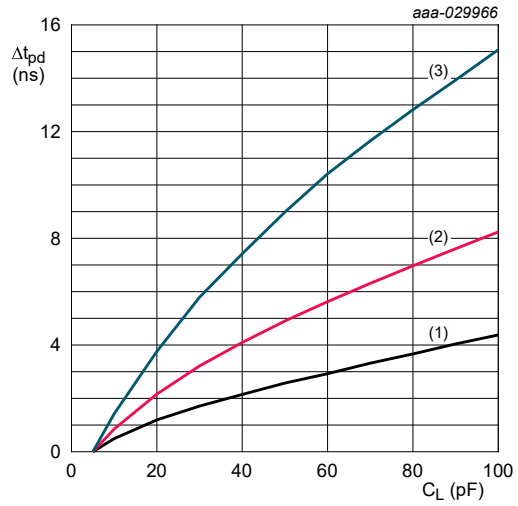
T_{amb} = -40 °C to +125 °C
For t_{PLH} and t_{PHL}.
(1) Minimum: V_{CCO} = 2.7 V
(2) Typical: T_{amb} = 25 °C; V_{CCO} = 2.5 V
(3) Maximum: V_{CCO} = 2.3 V

Fig. 7. Additional propagation delay versus load capacitance



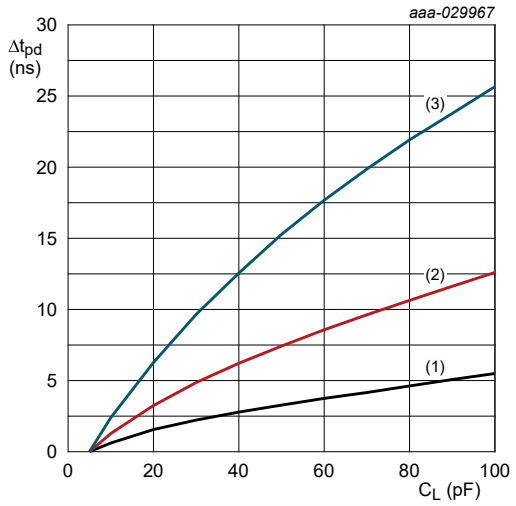
T_{amb} = -40 °C to +125 °C
For t_{PLH} and t_{PHL}.
(1) Minimum: V_{CCO} = 1.95 V
(2) Typical: T_{amb} = 25 °C; V_{CCO} = 1.8 V
(3) Maximum: V_{CCO} = 1.65 V

Fig. 8. Additional propagation delay versus load capacitance



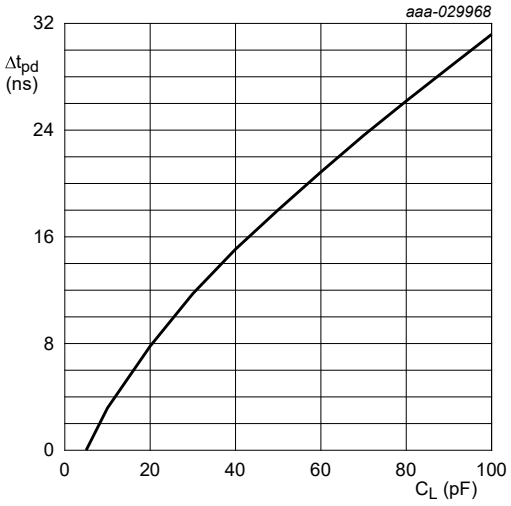
T_{amb} = -40 °C to +125 °C
For t_{PLH} and t_{PHL}.
(1) Minimum: V_{CCO} = 1.6 V
(2) Typical: T_{amb} = 25 °C; V_{CCO} = 1.5 V
(3) Maximum: V_{CCO} = 1.4 V

Fig. 9. Additional propagation delay versus load capacitance



T_{amb} = -40 °C to +125 °C
For t_{PLH} and t_{PHL}.
(1) Minimum: V_{CCO} = 1.3 V
(2) Typical: T_{amb} = 25 °C; V_{CCO} = 1.2 V
(3) Maximum: V_{CCO} = 1.1 V

Fig. 10. Additional propagation delay versus load capacitance

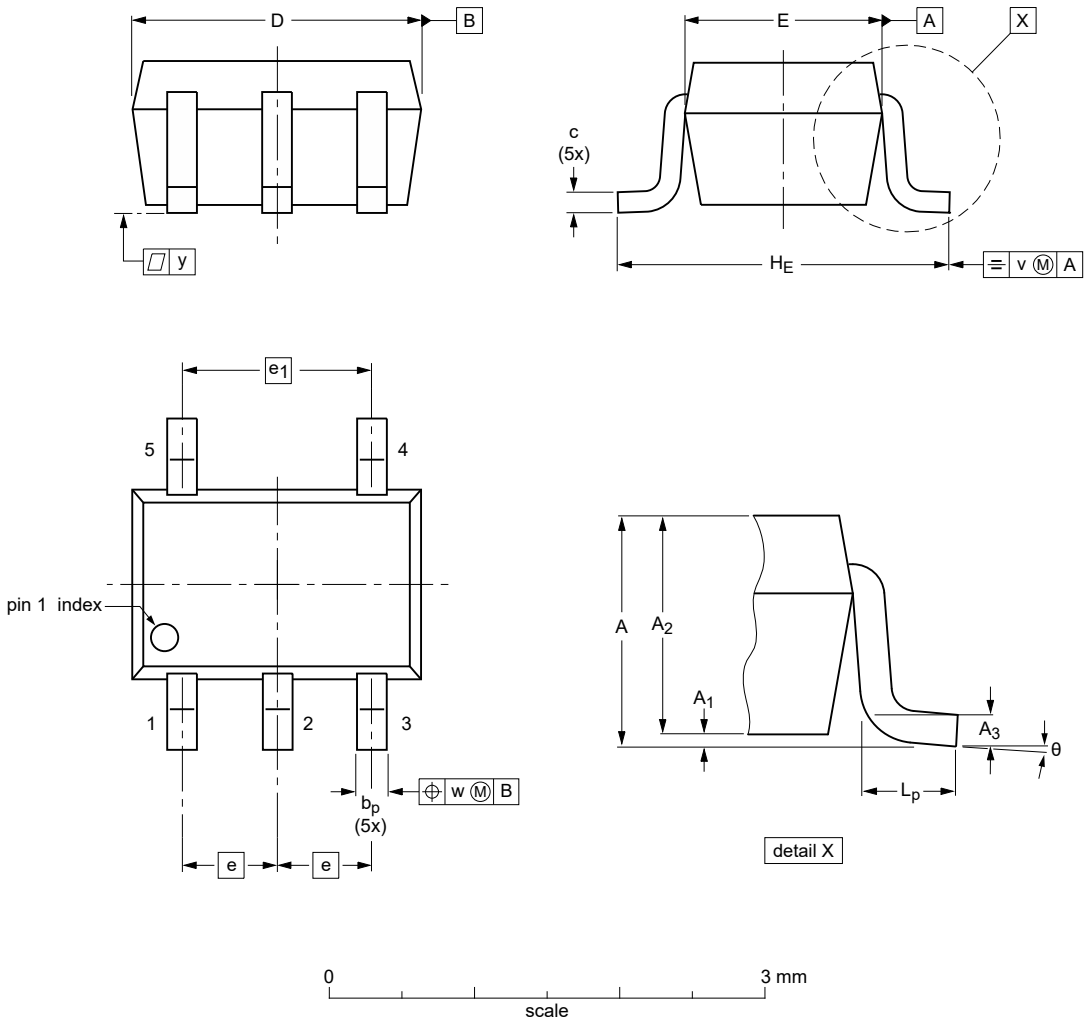


T_{amb} = 25 °C
For t_{PLH}, t_{PHL}
V_{CCO} = 0.9 V

Fig. 11. Additional propagation delay versus load capacitance

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	A_1	A_2	A_3	b_p	c	$D^{(1)}$	$E^{(1)}$	e	e_1	H_E	L_p	v	w	y	θ
mm	max	1.1	0.1	1.0	0.15	0.30	0.25	2.2	1.35	0.65	1.3	2.4	0.46	0.3	0.1	0.1	8°
	min	0.8	0	0.8		0.15	0.08	1.8	1.15			1.8	0.26				0°

Note

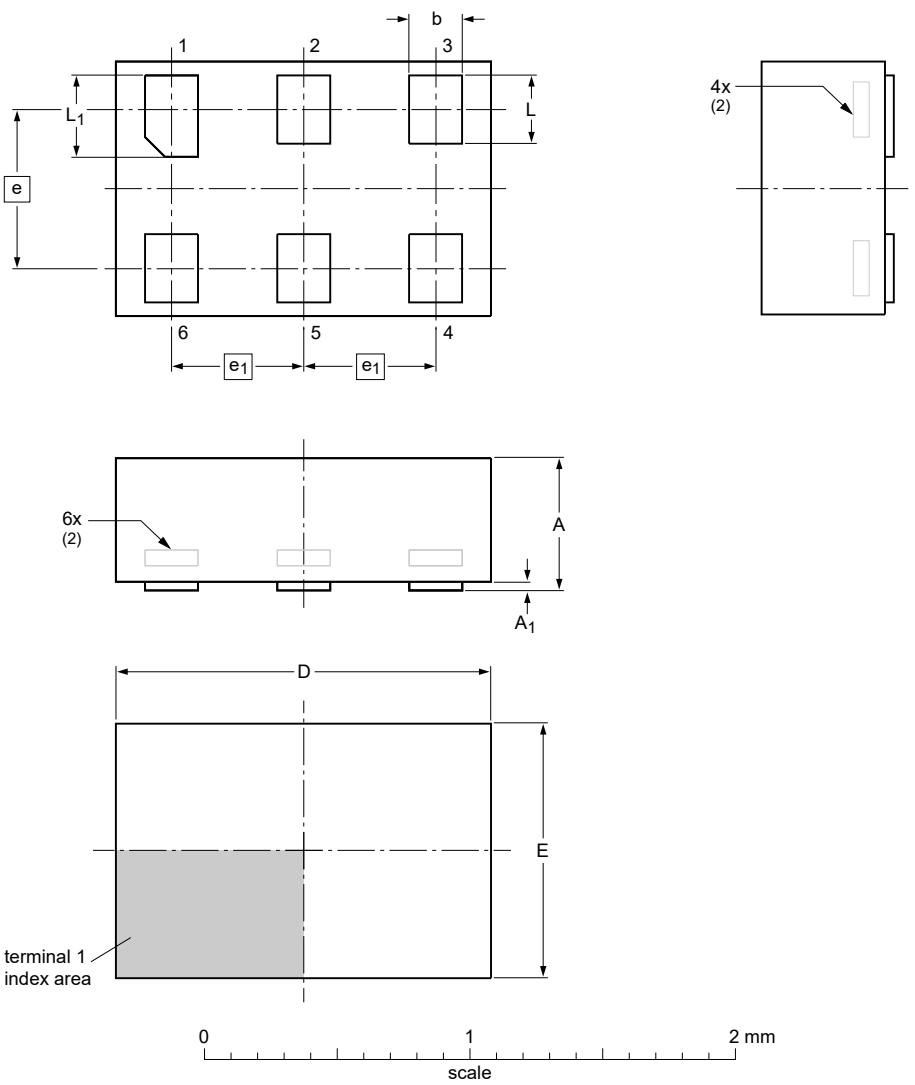
1. Plastic or metal protrusions of 0.2 mm maximum per side are not included.

sot353-1_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOT353-1		MO-203	SC-88A			~~21-12-15~~ 21-12-16

Fig. 12. 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



Dimensions (mm are the original dimensions)

Unit		A(1)	A_1	b	D	E	e	e_1	L	L_1
mm	max	0.5	0.04	0.25	1.50	1.05			0.35	0.40
	nom			0.20	1.45	1.00	0.6	0.5	0.30	0.35
	min			0.17	1.40	0.95			0.27	0.32

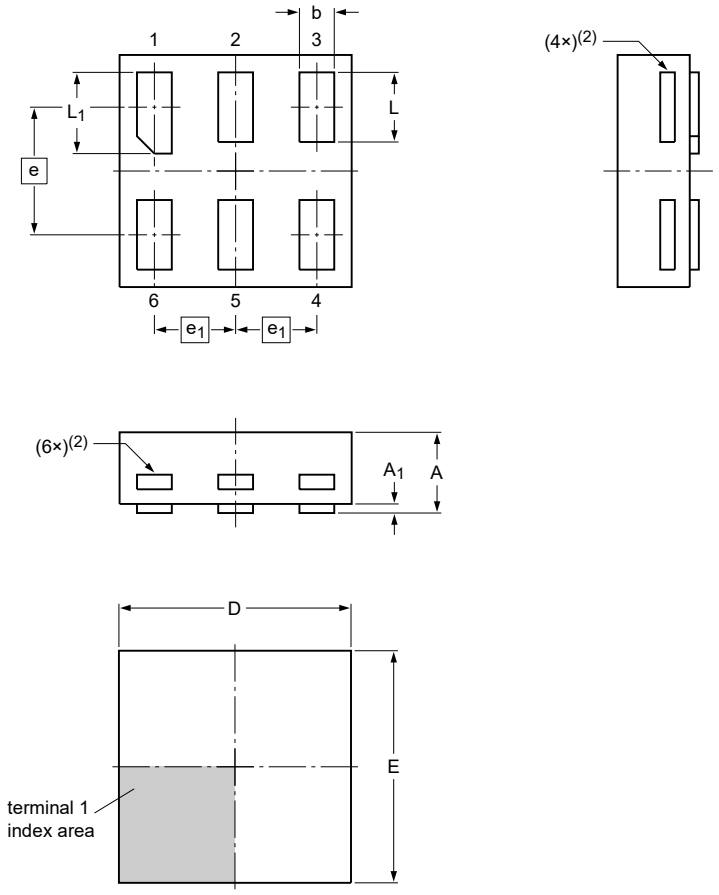
Notes
1. Including plating thickness.
2. Can be visible in some manufacturing processes.

sot886_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOT886		MO-252				~~04-07-22~~ 12-01-05

Fig. 13. Package outline SOT886 (XSON6)

XSON6: extremely thin small outline package; no leads;
6 terminals; body 1.0 x 1.0 x 0.35 mm **SOT1202**



Dimensions

Unit		$A^{(1)}$	A_1	b	D	E	e	e_1	L	L_1
mm	max	0.35	0.04	0.20	1.05	1.05			0.35	0.40
	nom			0.15	1.00	1.00	0.55	0.35	0.30	0.35
	min			0.12	0.95	0.95			0.27	0.32

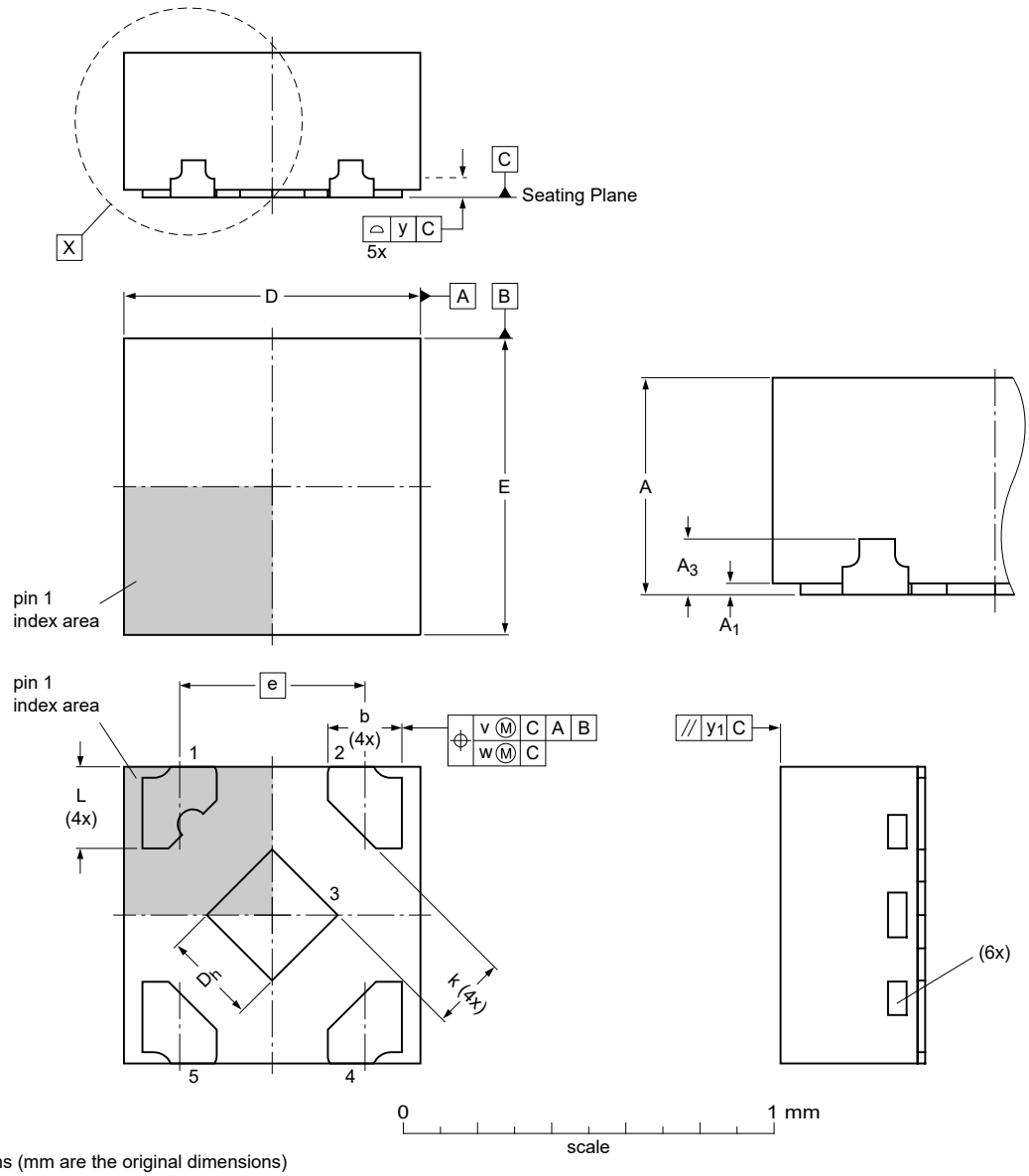
Note
1. Including plating thickness.
2. Visible depending upon used manufacturing technology.

sot1202_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOT1202						~~10-04-02~~ 10-04-06

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 0.32 mm **SOT1226-3**



Dimensions (mm are the original dimensions)

Unit		A	A_1	A_3	D	D_h	E	b	e	K	L	v	w	y	y_1
mm	max	0.35	0.04	0.10 (Typ.)	0.85	0.30	0.85	0.25	0.50		0.27	0.1	0.05	0.05	0.05
	nom	0.32	0.02		0.80	0.25	0.80	0.20			0.22				
	min	0.30	0.00		0.75	0.20	0.75	0.15		0.20	0.17				

sot1226-3_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	EIAJ			
SOT1226-3		---				~~19-11-06~~ 19-11-07

Fig. 15. Package outline SOT1226-3 (X2SON5)

13. Abbreviations

Table 17. Abbreviations

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

14. Revision history

Table 18. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
AXP1T34 v.1	20231201	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".
[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 https://www.nexperia.com.

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