

74AXP1T125

Dual supply buffer/line driver; 3-state

Rev. 3 — 3 November 2021

Product data sheet

1. General description

The 74AXP1T125 is a dual supply non-inverting buffer/line driver with 3-state output. It features one input (A), an output (Y), an output enable input ($\overline{OE}$) and dual supply pins (V_{CCI} and V_{CCO}). A HIGH level at pin $\overline{OE}$ causes the output to assume a high-impedance OFF-state. The inputs are referenced to V_{CCI} and the output is referenced to V_{CCO} . All inputs can be connected directly to V_{CCI} or GND. V_{CCI} can be supplied at any voltage between 0.7 V and 2.75 V and V_{CCO} can be supplied at any voltage between 1.2 V and 5.5 V. This feature allows voltage level translation.

Schmitt-trigger action at all inputs makes the circuit tolerant of slower input rise and fall times.

This device ensures very 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.

2. Features and benefits

- Wide supply voltage range:
 - V_{CCI} : 0.7 V to 2.75 V
 - V_{CCO} : 1.2 V to 5.5 V
- Low input capacitance; $C_I = 0.6$ pF (typical)
- Low output capacitance; $C_O = 1.8$ pF (typical)
- Low dynamic power consumption; $C_{PD} = 0.4$ pF at $V_{CCI} = 1.2$ V (typical)
- Low dynamic power consumption; $C_{PD} = 7.1$ pF at $V_{CCO} = 3.3$ V (typical)
- Low static power consumption; $I_{CCI} = 0.5$ μ A (85 °C maximum)
- Low static power consumption; $I_{CCO} = 1.8$ μ A (85 °C maximum)
- High noise immunity
- Complies with JEDEC standard:
 - JESD8-12A.01 (1.1 V to 1.3 V; A, $\overline{OE}$ inputs)
 - JESD8-11A.01 (1.4 V to 1.6 V)
 - JESD8-7A (1.65 V to 1.95 V)
 - JESD8-5A.01 (2.3 V to 2.7 V)
 - JESD8-C (2.7 V to 3.6 V; Y output)
 - JESD12-6 (4.5 V to 5.5 V; Y output)
- ESD protection:
 - HBM ANSI/ESDA/JEDEC JS-001 Class 2 exceeds 2 kV
 - CDM JESD22-C101E exceeds 1000 V
- Latch-up performance exceeds 100 mA per JESD78D Class II
- Inputs accept voltages up to 2.75 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 +85 °C

3. Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
74AXP1T125GM	-40 °C to +85 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 × 1.45 × 0.5 mm	SOT886
74AXP1T125GN	-40 °C to +85 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body 0.9 × 1.0 × 0.35 mm	SOT1115
74AXP1T125GS	-40 °C to +85 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body 1.0 × 1.0 × 0.35 mm	SOT1202
74AXP1T125GX	-40 °C to +85 °C	X2SON6	plastic thermal enhanced extremely thin small outline package; no leads; 6 terminals; body 1.0 × 0.8 × 0.32 mm	SOT1255-2

4. Marking

Table 2. Marking

Type number	Marking code[1]
74AXP1T125GM	rN
74AXP1T125GN	rN
74AXP1T125GS	rN
74AXP1T125GX	rN

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

5. Functional diagram

aaa-018926

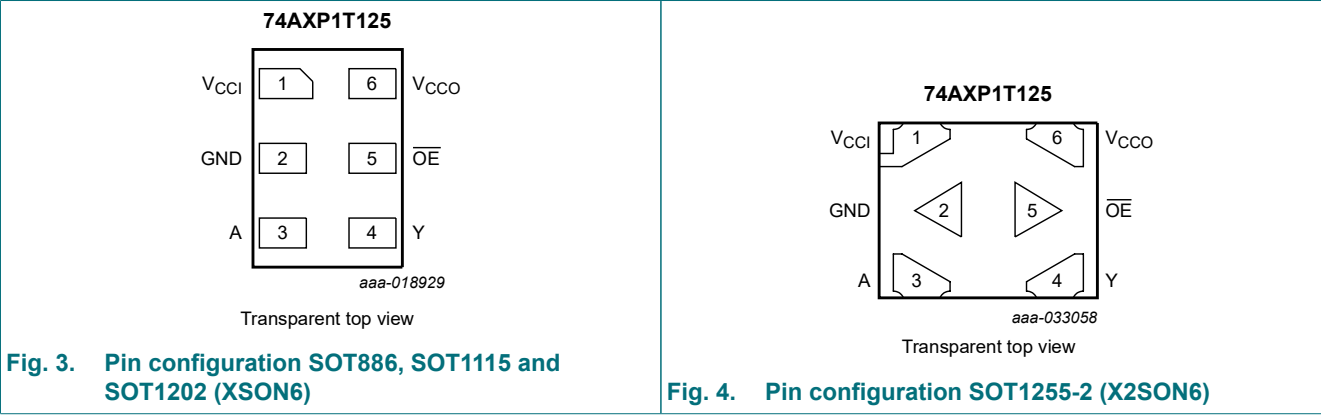
Fig. 1. Logic symbol

aaa-018927

Fig. 2. Logic diagram

6. Pinning information

6.1. Pinning



6.2. Pin description

Table 3. Pin description

Symbol	Pin	Description
VCCI	1	input supply voltage
GND	2	ground (0 V)
A	3	data input A
Y	4	data output Y
OE	5	output enable input
VCCO	6	output supply voltage

7. Functional description

Table 4. Function table

H = HIGH voltage level; L = LOW voltage level; X = Don't care; Z = high-impedance OFF-state.

Supply voltage		Input		Output
VCCI	VCCO	OE	A	Y
0.7 V to 2.75 V	1.2 V to 5.5 V	L	L	L
0.7 V to 2.75 V	1.2 V to 5.5 V	L	H	H
0.7 V to 2.75 V	1.2 V to 5.5 V	H	X	Z
GND	1.2 V to 5.5 V	X	X	Z
0.7 V to 2.75 V	GND	X	X	Z
GND	GND	X	X	Z

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	3.3	V
V_{CCO}	output supply voltage		-0.5	6.0	V
I_{IK}	input clamping current	$V_I < 0$ V	-50	-	mA
V_I	input voltage	[1]	-0.5	3.3	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
		Power-down or 3-state mode [1]	-0.5	6.0	V
I_O	output current	$V_O = 0$ V to V_{CCO}	-	± 25	mA
I_{CCI}	input supply current		-	50	mA
I_{CCO}	output 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 +85 °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 6.0 V.

[3] For SOT886 (XSON6) package: P_{tot} derates linearly with 3.3 mW/K above 74 °C.
 For SOT1115 (XSON6) package: P_{tot} derates linearly with 3.2 mW/K above 71 °C.
 For SOT1202 (XSON6) package: P_{tot} derates linearly with 3.3 mW/K above 74 °C.
 For SOT1255-2 (X2SON6) package: P_{tot} derates linearly with 3.3 mW/K above 75 °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		0.7	2.75	V
V_{CCO}	output supply voltage		1.2	5.5	V
V_I	input voltage		0	2.75	V
V_O	output voltage	Active mode	0	V_{CCO}	V
		Power-down or 3-state mode	0	5.5	V
T_{amb}	ambient temperature		-40	+85	°C
$\Delta t/\Delta V$	input transition rise and fall rate	$V_{CCI} = 0.7$ V to 2.75 V	0	200	ns/V

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		Unit
			Min	Typ	Max	Min	Max	
V _{IH}	HIGH-level input voltage	V _{CCI} = 0.75 V to 0.85 V	0.75V _{CCI}	-	-	0.75V _{CCI}	-	V
		V _{CCI} = 1.1 V to 1.95 V	0.65V _{CCI}	-	-	0.65V _{CCI}	-	V
		V _{CCI} = 2.3 V to 2.7 V	1.6	-	-	1.6	-	V
V _{IL}	LOW-level input voltage	V _{CCI} = 0.75 V to 0.85 V	-	-	0.25V _{CCI}	-	0.25V _{CCI}	V
		V _{CCI} = 1.1 V to 1.95 V	-	-	0.35V _{CCI}	-	0.35V _{CCI}	V
		V _{CCI} = 2.3 V to 2.7 V	-	-	0.7	-	0.7	V
V _{OH}	HIGH-level output voltage	I _O = -2 mA; V _{CCO} = 1.2 V [1]	-	1.05	-	-	-	V
		I _O = -3 mA; V _{CCO} = 1.4 V	1.05	-	-	1.05	-	V
		I _O = -4.5 mA; V _{CCO} = 1.65 V	1.2	-	-	1.2	-	V
		I _O = -8 mA; V _{CCO} = 2.3 V	1.7	-	-	1.7	-	V
		I _O = -10 mA; V _{CCO} = 3.0 V	2.2	-	-	2.2	-	V
		I _O = -12 mA; V _{CCO} = 4.5 V	3.7	-	-	3.7	-	V
V _{OL}	LOW-level output voltage	I _O = 2 mA; V _{CCO} = 1.2 V [1]	-	0.18	-	-	-	V
		I _O = 3 mA; V _{CCO} = 1.4 V	-	-	0.35	-	0.35	V
		I _O = 4.5 mA; V _{CCO} = 1.65 V	-	-	0.45	-	0.45	V
		I _O = 8 mA; V _{CCO} = 2.3 V	-	-	0.7	-	0.7	V
		I _O = 10 mA; V _{CCO} = 3.0 V	-	-	0.8	-	0.8	V
		I _O = 12 mA; V _{CCO} = 4.5 V	-	-	0.8	-	0.8	V
I _I	input leakage current	V _I = 0 V to 2.75 V; V _{CCI} = 0 V to 2.75 V [1]	-	±0.001	±0.1	-	±0.5	µA
I _{OZ}	OFF-state output current	V _O = 0 V to 5.5 V; V _{CCO} = 1.2 V to 5.5 V	-	±0.001	±0.1	-	±0.5	µA
I _{OFF}	power-off leakage current	inputs; V _I = 0 V to 2.75 V; V _{CCI} = 0 V; V _{CCO} = 0 V to 5.5 V [1]	-	±0.01	±0.1	-	±0.5	µA
		output; V _O = 0 V to 5.5 V; V _{CCO} = 0 V; V _{CCI} = 0 V to 2.75 V; V _I = 0 V to 2.75 V [1]	-	±0.01	±0.1	-	±0.5	µA
ΔI _{OFF}	additional power-off leakage current	inputs; V _I = 0 V or 2.75 V; V _{CCI} = 0 V to 0.1 V; V _{CCO} = 0 V to 5.5 V [1]	-	±0.02	±0.1	-	±0.5	µA
		output; V _O = 0 V or 5.5 V; V _{CCO} = 0 V to 0.1 V; V _{CCI} = 0 V to 2.75 V; V _I = 0 V or 2.75 V [1]	-	±0.02	±0.1	-	±0.5	µA

[1] Typical values are measured at V_{CCI} = V_{CCO} = 1.2 V unless otherwise specified.

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} = -40 °C to +85 °C				Unit
			Typ 25 °C	Max 25 °C	Typ 85 °C	Max 85 °C	
I _{CCI}	input supply current	V _I = 0 V or V _{CCI} ;					
		V _{CCI} = 0.7 V to 1.3 V [1]	1	100	10	300	nA
		V _{CCI} = 1.3 V to 2.75 V [2]	1	100	20	500	nA
		V _{CCI} = 2.75 V; V _{CCO} = 0 V	1	100	20	500	nA
		V _{CCI} = 0 V; V _{CCO} = 5.5 V	1	100	1	100	nA
I _{CCO}	output supply current	V _I = 0 V or V _{CCI} ; I _O = 0 A; see Table 9					
		V _{CCO} = 1.2 V to 3.6 V [1]	0.001	1.0	0.01	1.2	μA
		V _{CCO} = 3.6 V to 5.5 V [3]	0.8	1.5	1.0	1.8	μA
		V _{CCI} = 2.75 V; V _{CCO} = 0 V	0.001	0.1	0.003	0.2	μA
		V _{CCI} = 0 V; V _{CCO} = 3.6 V	0.2	0.6	0.3	0.8	μA
		V _{CCI} = 0 V; V _{CCO} = 5.5 V	0.4	0.8	0.5	1.0	μA
ΔI _{CCI}	additional input supply current	V _I = V _{CCI} - 0.5 V; V _{CCI} = 2.5 V	2	100	14	150	μA

[1] Typical values are measured at V_{CCI} = V_{CCO} = 1.2 V unless otherwise specified.[2] Typical values are measured at V_{CCI} = V_{CCO} = 2.5 V.[3] Typical values are measured at V_{CCI} = 1.2 V and V_{CCO} = 5.0 V.**Table 9. Typical output supply current (I_{CCO})**

V _{CCI}	V _{CCO}							Unit
	0 V	1.2 V	1.5 V	1.8 V	2.5 V	3.3 V	5.0 V	
0 V	0	1	5	20	100	200	400	nA
0.8 V	1	10	150	200	300	500	800	nA
1.2 V	1	1	5	200	300	500	800	nA
1.5 V	1	1	5	100	300	500	800	nA
1.8 V	1	1	5	100	300	500	800	nA
2.5 V	1	1	5	100	100	500	800	nA

11. Dynamic characteristics

Table 10. Dynamic characteristics

Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 13; for waveform see Fig. 5 and Fig. 6.

Symbol	Parameter	Conditions	V _{CCO}							Unit
			1.2 V	1.5 V ± 0.1 V		1.8 V ± 0.15 V				
			Typ[1]	Min	Typ[1]	Max	Min	Typ[1]	Max	
T _{amb} = 25 °C										
t _{pd}	propagation delay	A to Y [2]								
		V _{CCI} = 0.75 V to 0.85 V	22	3	16	61	3	15	57	ns
		V _{CCI} = 1.1 V to 1.3 V	16.2	3.1	10.3	19.8	2.8	8.2	15.8	ns
		V _{CCI} = 1.4 V to 1.6 V	15.4	2.8	9.5	18.2	2.5	7.4	13.2	ns
		V _{CCI} = 1.65 V to 1.95 V	15.0	2.7	9.1	17.4	2.4	7.0	11.9	ns
		V _{CCI} = 2.3 V to 2.7 V	14.7	2.5	8.7	16.9	2.2	6.6	11.1	ns

Symbol	Parameter	Conditions	V _{CCO}							Unit
			1.2 V	1.5 V ± 0.1 V		1.8 V ± 0.15 V				
			Typ[1]	Min	Typ[1]	Max	Min	Typ[1]	Max	
t _{en}	enable time	OE to Y [3]								
		V _{CCI} = 0.75 V to 0.85 V	25	3	20	76	3	18	72	ns
		V _{CCI} = 1.1 V to 1.3 V	17.9	3.1	11.3	18.9	2.8	9.0	15.5	ns
		V _{CCI} = 1.4 V to 1.6 V	16.9	2.8	10.3	17.5	2.5	8.1	13.9	ns
		V _{CCI} = 1.65 V to 1.95 V	16.5	2.7	9.9	16.9	2.4	7.6	13.3	ns
		V _{CCI} = 2.3 V to 2.7 V	16.0	2.5	9.4	16.4	2.2	7.1	12.7	ns
t _{dis}	disable time	OE to Y [4]								
		V _{CCI} = 0.75 V to 0.85 V	25	3	20	76	3	20	72	ns
		V _{CCI} = 1.1 V to 1.3 V	17.1	3.1	12.0	18.3	2.8	11.3	17.4	ns
		V _{CCI} = 1.4 V to 1.6 V	16.1	2.8	11.1	17.4	2.5	10.3	16.0	ns
		V _{CCI} = 1.65 V to 1.95 V	15.6	2.7	10.6	16.5	2.4	9.9	15.5	ns
		V _{CCI} = 2.3 V to 2.7 V	15.0	2.5	10.0	16.3	2.2	9.4	15.0	ns
T _{amb} = -40 °C to +85 °C										
t _{pd}	propagation delay	A to Y [2]								
		V _{CCI} = 0.75 V to 0.85 V	22	3	16	136	3	15	133	ns
		V _{CCI} = 1.1 V to 1.3 V	16.2	3.1	10.3	19.8	2.8	8.2	15.8	ns
		V _{CCI} = 1.4 V to 1.6 V	15.4	2.8	9.5	18.2	2.5	7.4	13.2	ns
		V _{CCI} = 1.65 V to 1.95 V	15.0	2.7	9.1	17.4	2.4	7.0	11.9	ns
		V _{CCI} = 2.3 V to 2.7 V	14.7	2.5	8.7	16.9	2.2	6.6	11.1	ns
t _{en}	enable time	OE to Y [3]								
		V _{CCI} = 0.75 V to 0.85 V	25	3	20	151	3	18	148	ns
		V _{CCI} = 1.1 V to 1.3 V	17.9	3.1	11.3	18.9	2.8	9.0	15.5	ns
		V _{CCI} = 1.4 V to 1.6 V	16.9	2.8	10.3	17.5	2.5	8.1	13.9	ns
		V _{CCI} = 1.65 V to 1.95 V	16.5	2.7	9.9	16.9	2.4	7.6	13.3	ns
		V _{CCI} = 2.3 V to 2.7 V	16.0	2.5	9.4	16.4	2.2	7.1	12.7	ns
t _{dis}	disable time	OE to Y [4]								
		V _{CCI} = 0.75 V to 0.85 V	25	3	20	151	3	20	148	ns
		V _{CCI} = 1.1 V to 1.3 V	17.1	3.1	12.0	18.3	2.8	11.3	17.4	ns
		V _{CCI} = 1.4 V to 1.6 V	16.1	2.8	11.1	17.4	2.5	10.3	16.0	ns
		V _{CCI} = 1.65 V to 1.95 V	15.6	2.7	10.6	16.5	2.4	9.9	15.5	ns
		V _{CCI} = 2.3 V to 2.7 V	15.0	2.5	10.0	16.3	2.2	9.4	15.0	ns
t _t	transition time	V _{CCI} = 0.75 V to 2.7 V [5]	-	1.0	-	-	1.0	-	-	ns

[1] Typical values are measured at nominal supply voltages and T_{amb} = +25 °C.

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

[3] t_{en} is the same as t_{PZH} and t_{PZL}.

[4] t_{dis} is the same as t_{PHZ} and t_{PLZ}.

[5] t_t is the same as t_{THL} and t_{TLH}.

Table 11. Dynamic characteristics

Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 13; for waveform see Fig. 5 and Fig. 6.

Symbol	Parameter	Conditions	V _{CCO}									Unit
			2.5 V ± 0.2 V			3.3 V ± 0.3 V			5.0 V ± 0.5 V			
			Min	Typ[1]	Max	Min	Typ[1]	Max	Min	Typ[1]	Max	
T _{amb} = 25 °C												
t _{pd}	propagation delay	A to Y [2]										
		V _{CCI} = 0.75 V to 0.85 V	2	13	57	2	13	65	2	14	77	ns
		V _{CCI} = 1.1 V to 1.3 V	2.4	6.5	10.8	2.2	5.9	9.5	2.1	5.6	9.0	ns
		V _{CCI} = 1.4 V to 1.6 V	2.1	5.7	9.1	2.0	5.1	8.2	1.9	4.8	7.7	ns
		V _{CCI} = 1.65 V to 1.95 V	2.0	5.3	8.7	1.8	4.7	7.7	1.8	4.4	7.3	ns
		V _{CCI} = 2.3 V to 2.7 V	1.9	4.9	8.1	1.7	4.3	7.1	1.6	4.0	6.6	ns
t _{en}	enable time	OE to Y [3]										
		V _{CCI} = 0.75 V to 0.85 V	2	17	72	2	17	80	2	20	92	ns
		V _{CCI} = 1.1 V to 1.3 V	2.4	7.2	12.5	2.2	6.7	11.4	2.1	6.5	11.2	ns
		V _{CCI} = 1.4 V to 1.6 V	2.1	6.3	11.0	2.0	5.7	10.2	1.9	5.5	9.8	ns
		V _{CCI} = 1.65 V to 1.95 V	2.0	5.8	10.5	1.8	5.2	9.8	1.8	5.0	9.2	ns
		V _{CCI} = 2.3 V to 2.7 V	1.9	5.3	9.9	1.7	4.7	9.1	1.6	4.5	8.6	ns
t _{dis}	disable time	OE to Y [4]										
		V _{CCI} = 0.75 V to 0.85 V	2	17	72	2	18	80	2	16	92	ns
		V _{CCI} = 1.1 V to 1.3 V	2.4	9.2	14.2	2.2	9.9	15.2	2.1	8.3	13.2	ns
		V _{CCI} = 1.4 V to 1.6 V	2.1	8.2	13.1	2.0	9.1	14.1	1.9	7.4	12.1	ns
		V _{CCI} = 1.65 V to 1.95 V	2.0	7.8	12.6	1.8	8.6	13.7	1.8	7.0	11.7	ns
		V _{CCI} = 2.3 V to 2.7 V	1.9	7.2	12.1	1.7	8.1	13.2	1.6	6.5	11.2	ns
T _{amb} = -40 °C to +85 °C												
t _{pd}	propagation delay	A to Y [2]										
		V _{CCI} = 0.75 V to 0.85 V	2	13	152	2	13	179	2	14	210	ns
		V _{CCI} = 1.1 V to 1.3 V	2.4	6.5	10.8	2.2	5.9	9.5	2.1	5.6	9.0	ns
		V _{CCI} = 1.4 V to 1.6 V	2.1	5.7	9.1	2.0	5.1	8.2	1.9	4.8	7.7	ns
		V _{CCI} = 1.65 V to 1.95 V	2.0	5.3	8.7	1.8	4.7	7.7	1.8	4.4	7.3	ns
		V _{CCI} = 2.3 V to 2.7 V	1.9	4.9	8.1	1.7	4.3	7.1	1.6	4.0	6.6	ns
t _{en}	enable time	OE to Y [3]										
		V _{CCI} = 0.75 V to 0.85 V	2	17	167	2	17	194	2	20	225	ns
		V _{CCI} = 1.1 V to 1.3 V	2.4	7.2	12.5	2.2	6.7	11.4	2.1	6.5	11.2	ns
		V _{CCI} = 1.4 V to 1.6 V	2.1	6.3	11.0	2.0	5.7	10.2	1.9	5.5	9.8	ns
		V _{CCI} = 1.65 V to 1.95 V	2.0	5.8	10.5	1.8	5.2	9.8	1.8	5.0	9.2	ns
		V _{CCI} = 2.3 V to 2.7 V	1.9	5.3	9.9	1.7	4.7	9.1	1.6	4.5	8.6	ns

Symbol	Parameter	Conditions	V _{CCO}									Unit
			2.5 V ± 0.2 V			3.3 V ± 0.3 V			5.0 V ± 0.5 V			
			Min	Typ[1]	Max	Min	Typ[1]	Max	Min	Typ[1]	Max	
t _{dis}	disable time	OE to Y [4]										
		V _{CCI} = 0.75 V to 0.85 V	2	17	167	2	18	194	2	16	225	ns
		V _{CCI} = 1.1 V to 1.3 V	2.4	9.2	14.2	2.2	9.9	15.2	2.1	8.3	13.2	ns
		V _{CCI} = 1.4 V to 1.6 V	2.1	8.2	13.1	2.0	9.1	14.1	1.9	7.4	12.1	ns
		V _{CCI} = 1.65 V to 1.95 V	2.0	7.8	12.6	1.8	8.6	13.7	1.8	7.0	11.7	ns
		V _{CCI} = 2.3 V to 2.7 V	1.9	7.2	12.1	1.7	8.1	13.2	1.6	6.5	11.2	ns
t _t	transition time	V _{CCO} = 5.5 V [5]	1.0	-	-	1.0	-	-	1.0	-	-	ns

[1] Typical values are measured at nominal supply voltages and t_{amb} = +25 °C.

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

[3] t_{en} is the same as t_{PZH} and t_{PZL}.

[4] t_{dis} is the same as t_{PHZ} and t_{PLZ}.

[5] t_t is the same as t_{THL} and t_{TLH}.

Table 12. Typical dynamic characteristics at T_{amb} = 25 °C

Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 13; for waveform see Fig. 5 and Fig. 6.

Symbol	Parameter	Conditions	V _{CCO}						Unit
			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; R _L = ∞ Ω; V _I = 0 V to V _{CCI} [1]							
		input supply [2]							
		V _{CCI} = 0.8 V	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	pF
		V _{CCI} = 1.5 V	0.5	0.5	0.5	0.5	0.5	0.5	pF
		V _{CCI} = 1.8 V	0.5	0.5	0.5	0.5	0.5	0.5	pF
		V _{CCI} = 2.5 V	0.7	0.7	0.7	0.7	0.7	0.7	pF
		output supply [3]							
		V _{CCI} = 0.8 V	6.7	6.8	6.8	6.9	7.5	9.5	pF
		V _{CCI} = 1.2 V	6.8	6.9	7.0	7.0	7.1	7.6	pF
		V _{CCI} = 1.5 V	6.9	6.9	6.9	7.0	7.1	7.6	pF
		V _{CCI} = 1.8 V	6.9	6.9	6.9	7.0	7.2	7.6	pF
		V _{CCI} = 2.5 V	6.9	7.0	7.0	7.0	7.2	7.6	pF
C _I	input capacitance	V _I = 0 V or V _{CCI} ; V _{CCI} = 0 V to 2.7 V	0.6	0.6	0.6	0.6	0.6	0.6	pF
C _O	output capacitance	V _O = 0 V; V _{CCO} = 0 V	1.8	1.8	1.8	1.8	1.8	1.8	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} × V_{CCI}² × f_i × 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}) × V_{CCO}² × 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;

11.1. Waveforms, graphs and test circuit

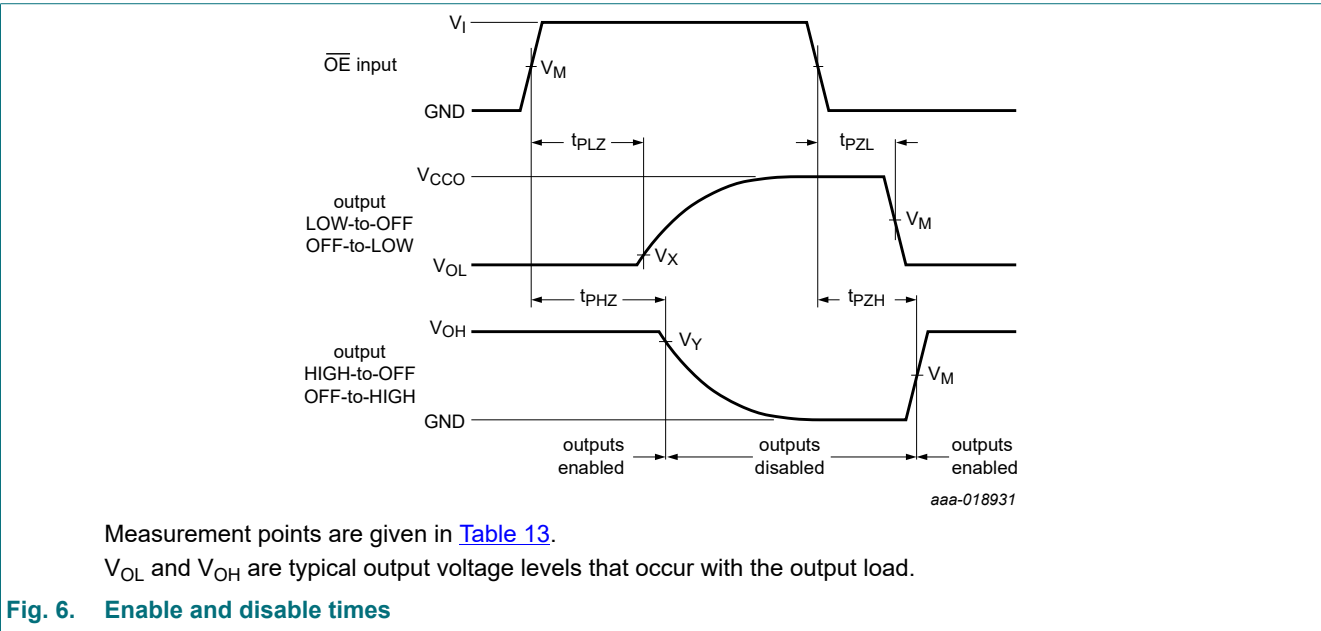
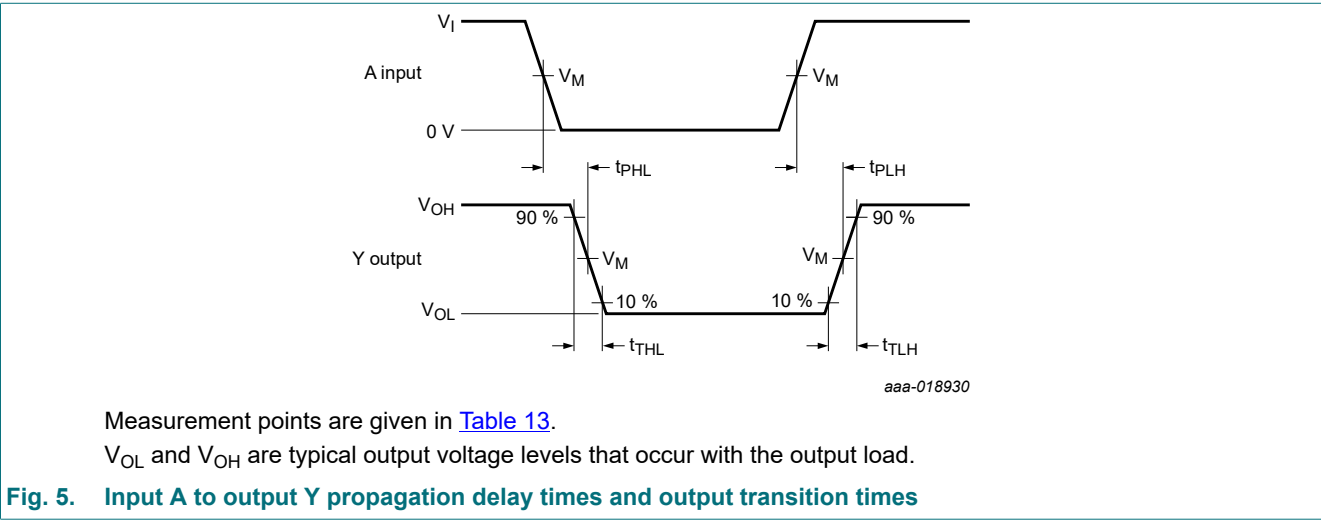
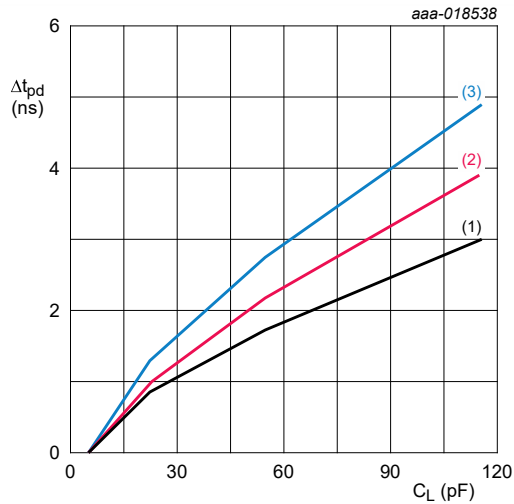


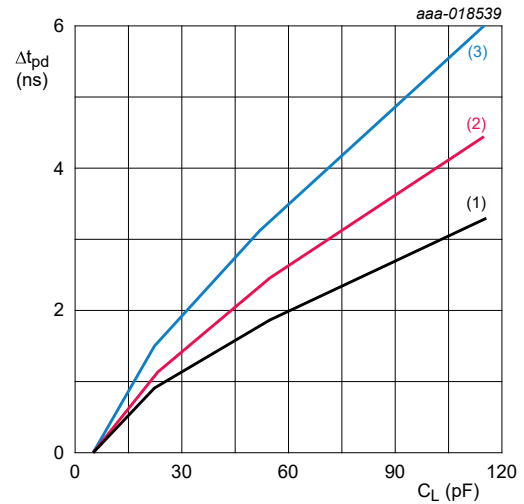
Table 13. Measurement points

Supply voltage		Output			Input	
V_{CCI}	V_{CCO}	V_M	V_X	V_Y	V_M	V_I
0.75 V to 2.7 V	1.2 V to 1.6 V	$0.5V_{CCO}$	$V_{OL} + 0.1\text{ V}$	$V_{OH} - 0.1\text{ V}$	$0.5V_{CCI}$	V_{CCI}
0.75 V to 2.7 V	1.65 V to 2.7 V	$0.5V_{CCO}$	$V_{OL} + 0.15\text{ V}$	$V_{OH} - 0.15\text{ V}$	$0.5V_{CCI}$	V_{CCI}
0.75 V to 2.7 V	3.0 V to 5.5 V	$0.5V_{CCO}$	$V_{OL} + 0.3\text{ V}$	$V_{OH} - 0.3\text{ V}$	$0.5V_{CCI}$	V_{CCI}



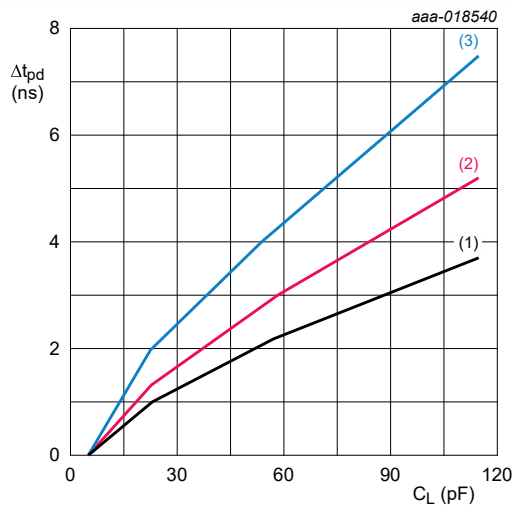
$T_{amb} = -40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ unless otherwise specified.
For t_{PLH} , t_{PHL} , t_{PZH} and t_{PZL}
(1) Minimum: $V_{CCO} = 5.5\text{ V}$
(2) Typical: $T_{amb} = 25\text{ }^{\circ}\text{C}$; $V_{CCO} = 5\text{ V}$
(3) Maximum: $V_{CCO} = 4.5\text{ V}$

Fig. 7. Additional propagation delay versus load capacitance



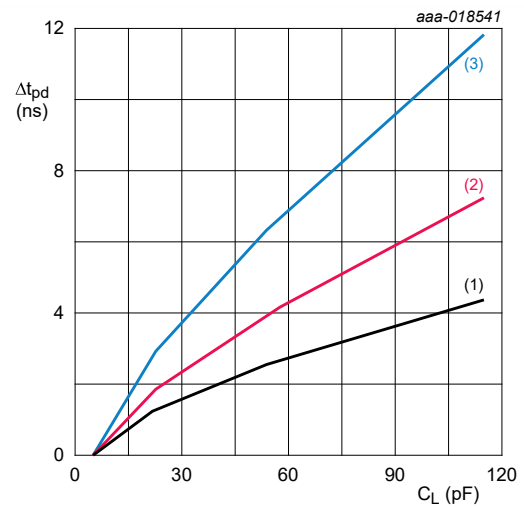
$T_{amb} = -40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ unless otherwise specified.
For t_{PLH} , t_{PHL} , t_{PZH} and t_{PZL}
(1) Minimum: $V_{CCO} = 3.6\text{ V}$
(2) Typical: $T_{amb} = 25\text{ }^{\circ}\text{C}$; $V_{CCO} = 3.3\text{ V}$
(3) Maximum: $V_{CCO} = 3\text{ V}$

Fig. 8. Additional propagation delay versus load capacitance



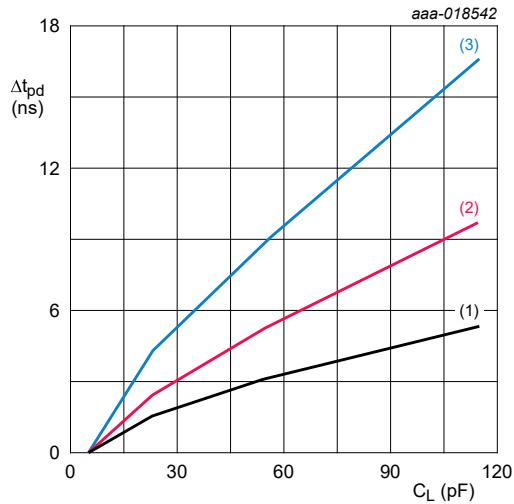
$T_{amb} = -40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ unless otherwise specified.
For t_{PLH} , t_{PHL} , t_{PZH} and t_{PZL}
(1) Minimum: $V_{CCO} = 2.7\text{ V}$
(2) Typical: $T_{amb} = 25\text{ }^{\circ}\text{C}$; $V_{CCO} = 2.5\text{ V}$
(3) Maximum: $V_{CCO} = 2.3\text{ V}$

Fig. 9. Additional propagation delay versus load capacitance



$T_{amb} = -40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ unless otherwise specified.
For t_{PLH} , t_{PHL} , t_{PZH} and t_{PZL}
(1) Minimum: $V_{CCO} = 1.95\text{ V}$
(2) Typical: $T_{amb} = 25\text{ }^{\circ}\text{C}$; $V_{CCO} = 1.8\text{ V}$
(3) Maximum: $V_{CCO} = 1.65\text{ V}$

Fig. 10. Additional propagation delay versus load capacitance



$T_{amb} = -40\text{ °C to }+85\text{ °C}$ unless otherwise specified.

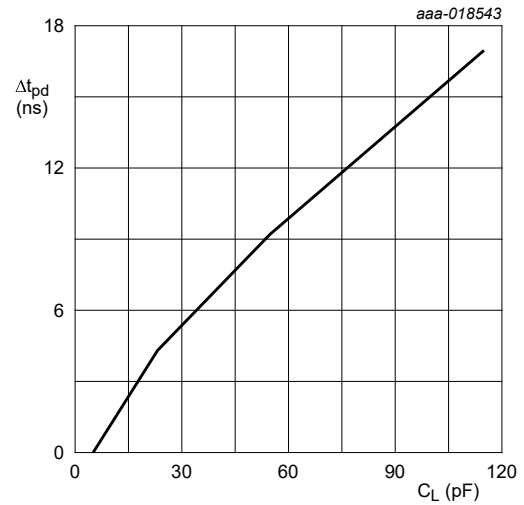
For t_{PLH} , t_{PHL} , t_{PZH} and t_{PZL}

(1) Minimum: $V_{CCO} = 1.6\text{ V}$

(2) Typical: $T_{amb} = 25\text{ °C}$; $V_{CCO} = 1.5\text{ V}$

(3) Maximum: $V_{CCO} = 1.4\text{ V}$

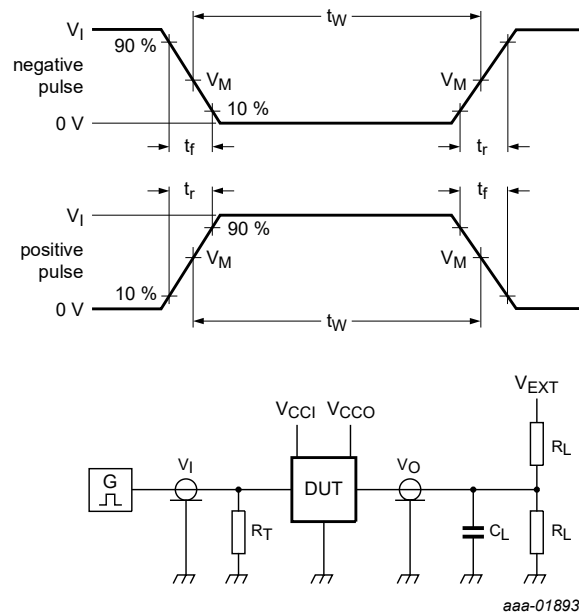
Fig. 11. Additional propagation delay versus load capacitance



$T_{amb} = 25\text{ °C}$; $V_{CCO} = 1.2\text{ V}$.

For t_{PLH} , t_{PHL} , t_{PZH} and t_{PZL}

Fig. 12. Additional propagation delay versus load capacitance



Test data is given in [Table 14](#).

Definitions test circuit:

R_T = termination resistance should be equal to output impedance Z_o of the pulse generator.

C_L = load capacitance including jig and probe capacitance.

R_L = Load resistance.

Fig. 13. Test circuit for measuring switching times

Table 14. Test data

Supply voltage		Load		Input		V_{EXT}		
V_{CCI}	V_{CCO}	C_L	R_L	t_r, t_f	V_I	t_{PLH}, t_{PHL}	t_{PZH}, t_{PHZ}	t_{PZL}, t_{PLZ}
0.75 V to 2.7 V	1.2 V to 5.5 V	5 pF	10 kΩ	$\leq 3.0\text{ ns}$	V_{CCI}	GND	GND	$2V_{CCO}$

12. Package outline

XSON6: plastic extremely thin small outline package; no leads; 6 terminals; body 1 x 1.45 x 0.5 mm SOT886

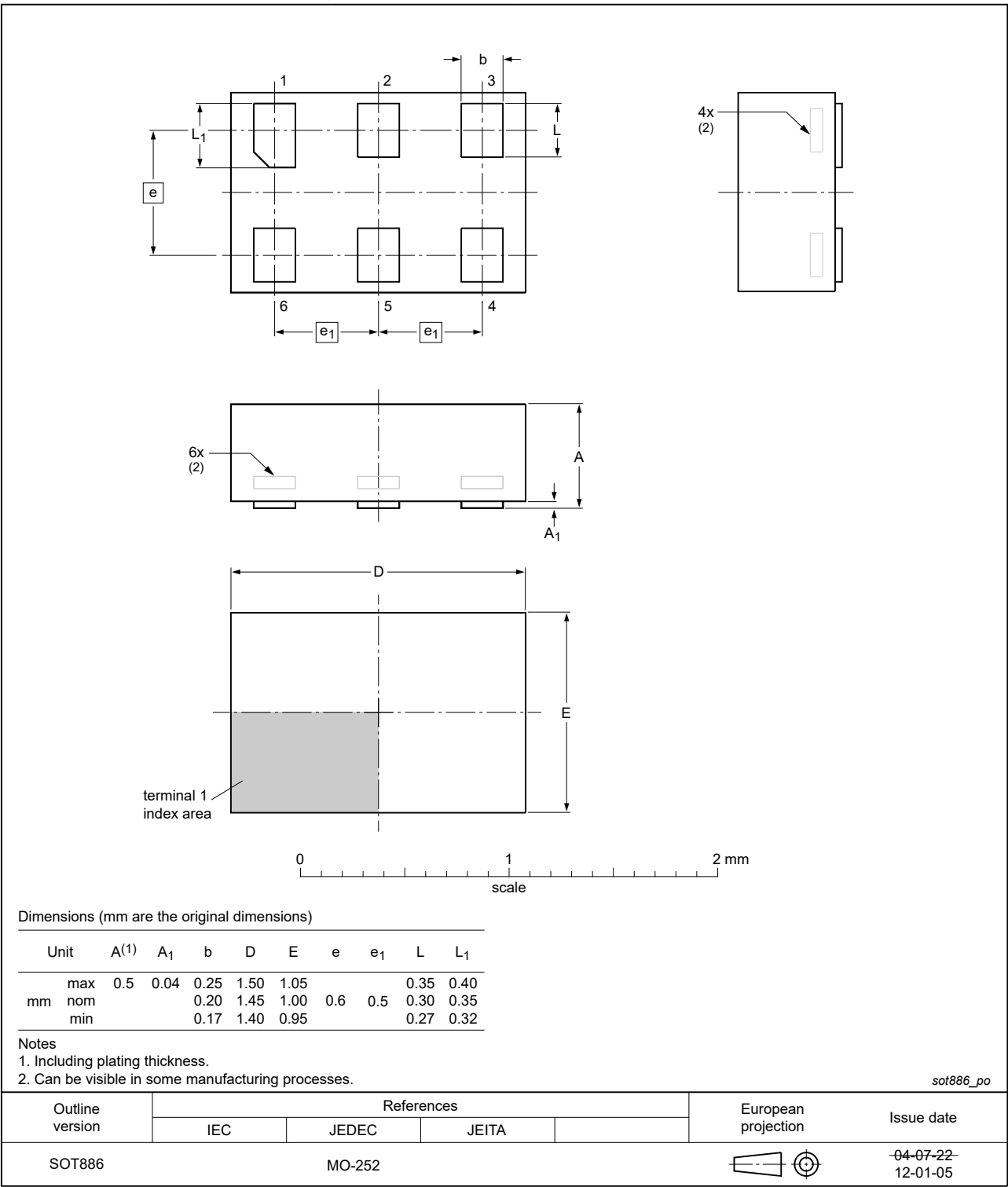


Fig. 14. Package outline SOT886 (XSON6)

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

SOT1115

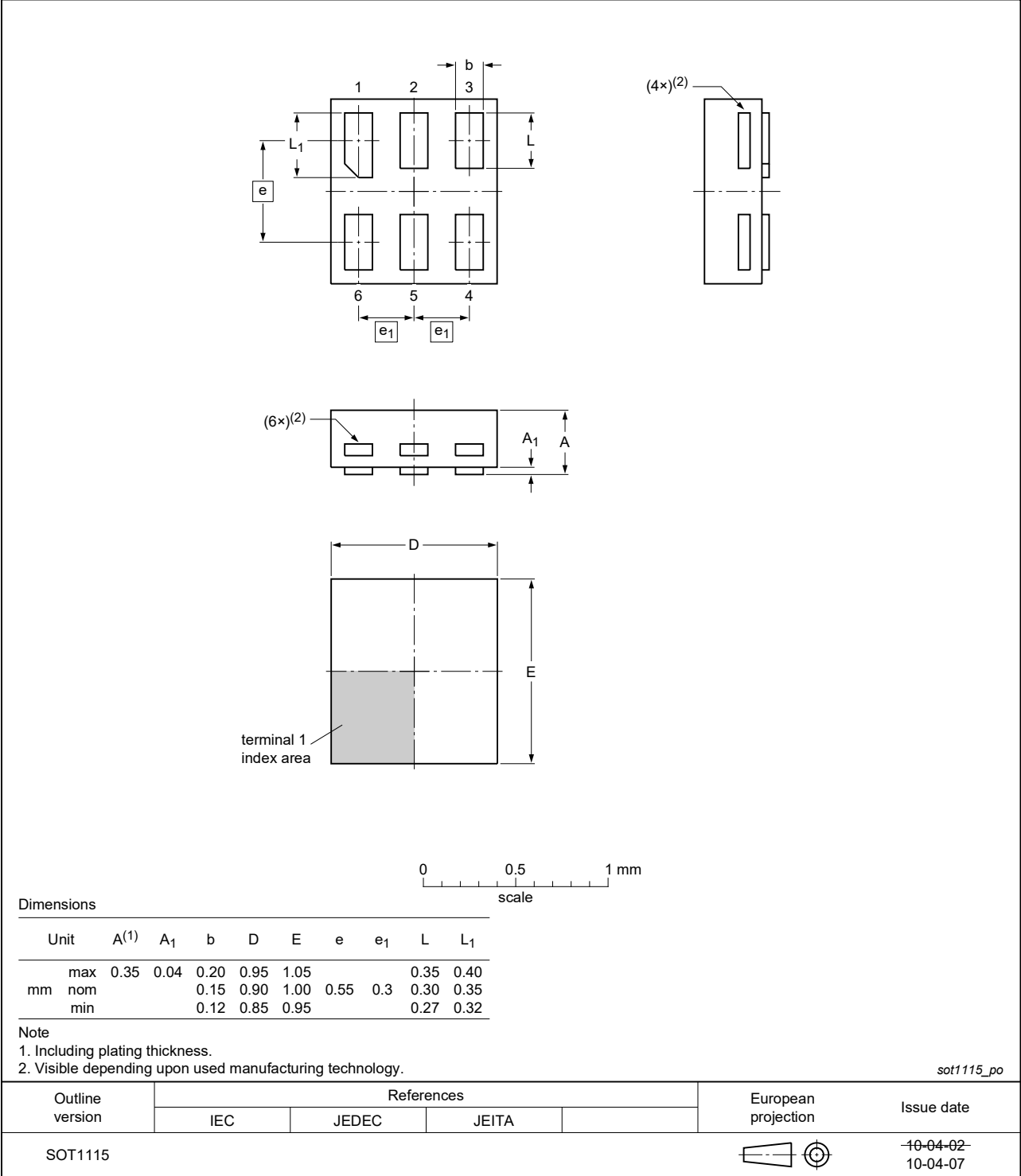
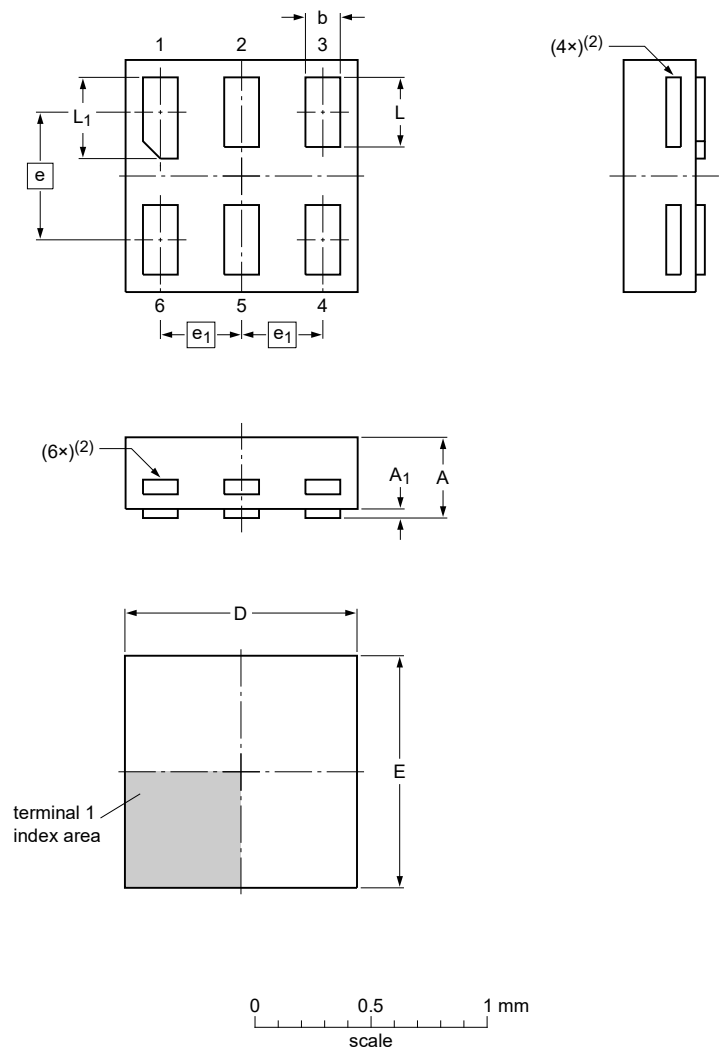


Fig. 15. Package outline SOT1115 (XSON6)

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

SOT1202



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	0.30	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. 16. Package outline SOT1202 (XSON6)

X2SON6: plastic thermal enhanced extremely thin small outline package; no leads;
6 terminals; body 1.0 x 0.8 x 0.32 mm

SOT1255-2

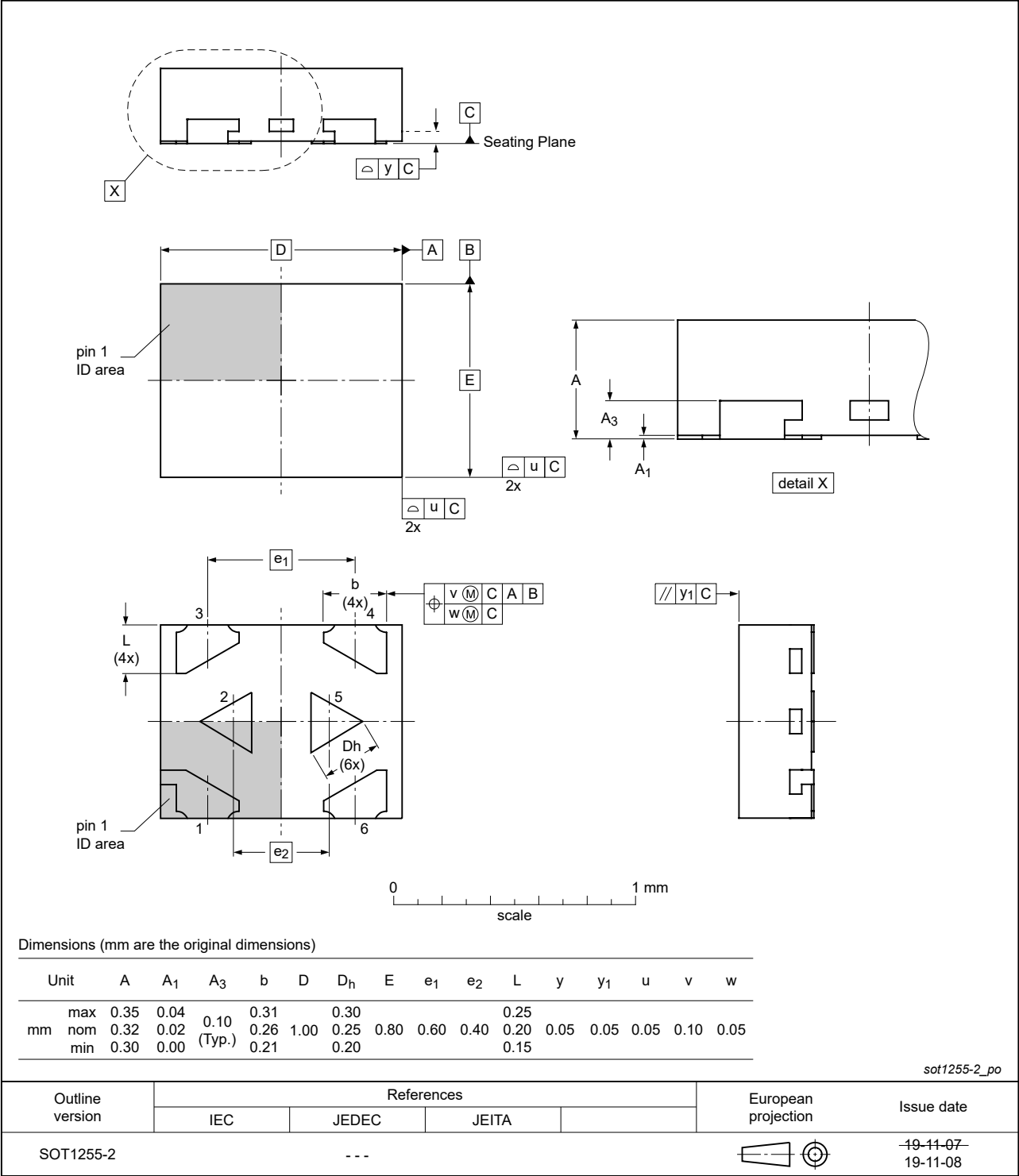


Fig. 17. Package outline SOT1255-2 (X2SON6)

13. Abbreviations

Table 15. Abbreviations

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

14. Revision history

Table 16. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74AXP1T125 v.3	20211103	Product data sheet	-	74AXP1T125 v.2
Modifications:	- Type number 74AXP1T125GX (SOT1255-2/X2SON6) added. Section 8: Derating values for P_{tot} total power dissipation updated.			
74AXP1T125 v.2	20190322	Product data sheet	-	74AXP1T125 v.1
Modifications:	- The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia. - Legal texts have been adapted to the new company name where appropriate. - Type number 74AXP1T125GW (SOT363) removed.			
74AXP1T125 v.1	20151221	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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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