

74LVC1G34

Single buffer

Rev. 7 — 8 June 2018

Product data sheet

1 General description

The 74LVC1G34 provides a low-power, low-voltage single buffer.

The input can be driven from either 3.3 V or 5 V devices. This feature allows the use of this device in a mixed 3.3 V and 5 V environment.

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

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

2 Features and benefits

- Wide supply voltage range from 1.65 V to 5.5 V
- 5 V tolerant inputs for interfacing with 5 V logic
- High noise immunity
- Complies with JEDEC standard:
 - JESD8-7 (1.65 V to 1.95 V)
 - JESD8-5 (2.3 V to 2.7 V)
 - JESD8-B/JESD36 (2.7 V to 3.6 V).
- ESD protection:
 - HBM: ANSI/ESDA/JEDEC JS-001 Class 2 exceeds 2000 V
 - MM: JESD22-A115-A exceeds 200 V
- ± 24 mA output drive ($V_{CC} = 3.0$ V)
- CMOS low power consumption
- Latch-up performance exceeds 250 mA
- Direct interface with TTL levels
- Inputs accept voltages up to 5 V
- Multiple package options
- Specified from -40 °C to +85 °C and -40 °C to +125 °C

nexperia

3 Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
74LVC1G34GW	-40 °C to +125 °C	TSSOP5	plastic thin shrink small outline package; 5 leads; body width 1.25 mm	SOT353-1
74LVC1G34GV	-40 °C to +125 °C	SC-74A	plastic surface-mounted package; 5 leads	SOT753
74LVC1G34GM	-40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 x 1.45 x 0.5 mm	SOT886
74LVC1G34GF	-40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 x 1 x 0.5 mm	SOT891
74LVC1G34GN	-40 °C to +125 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body 0.9 x 1.0 x 0.35 mm	SOT1115
74LVC1G34GS	-40 °C to +125 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body 1.0 x 1.0 x 0.35 mm	SOT1202
74LVC1G34GX	-40 °C to +125 °C	X2SON5	plastic thermal enhanced extremely thin small outline package; no leads; 5 terminals; body 0.8 x 0.8 x 0.35 mm	SOT1226
74LVC1G34GX4	-40 °C to +125 °C	X2SON4	plastic thermal enhanced extremely thin small outline package; no leads; 4 terminals; body 0.6 x 0.6 x 0.32 mm	SOT1269-2

4 Marking

Table 2. Marking

Type number	Marking code ^[1]
74LVC1G34GW	YN
74LVC1G34GV	YN
74LVC1G34GM	YN
74LVC1G34GF	YN
74LVC1G34GN	YN
74LVC1G34GS	YN
74LVC1G34GX	YN
74LVC1G34GX4	YN

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

5 Functional diagram

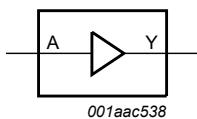


Figure 1. Logic symbol



Figure 2. IEC logic symbol

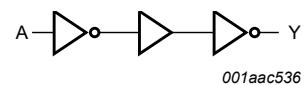


Figure 3. Logic diagram

6 Pinning information

6.1 Pinning

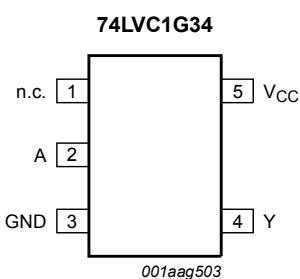


Figure 4. Pin configuration SOT353-1 and SOT753

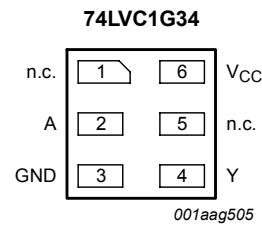


Figure 5. Pin configuration SOT886, SOT891, SOT1115 and SOT1202 (XSON6)

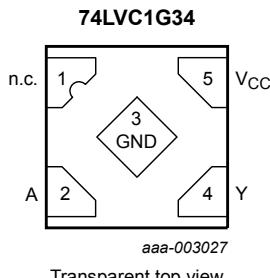


Figure 6. Pin configuration SOT1226 (X2SON5)

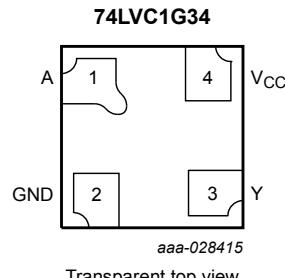


Figure 7. Pin configuration SOT1269-2 (X2SON4)

6.2 Pin description

Table 3. Pin description

Symbol	Pin			Description
		TSSOP5, SC-74A and X2SON5	XSON6	
n.c.	1		1, 5	-
A	2		2	data input
GND	3		3	ground (0 V)
Y	4		4	data output
V _{CC}	5		6	supply voltage

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}	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 > V _{CC} or V _O < 0 V	-	±50	mA	
V _O	output voltage	Active mode	[1]	-0.5	V _{CC} + 0.5	V
		Power-down mode; V _{CC} = 0 V	[1]	-0.5	+6.5	V
I _O	output current	V _O = 0 V to V _{CC}	-	±50	mA	
I _{CC}	supply current		-	100	mA	
I _{GND}	ground current		-100	-	mA	
T _{stg}	storage temperature		-65	+150	°C	
P _{tot}	total power dissipation	T _{amb} = -40 °C to +125 °C				
		TSSOP5, SC-74A, XSON6 and X2SON5 package	[2]	-	250 mW	
		X2SON4 package	[3]	-	150 mW	

[1] The minimum input and output voltage ratings may be exceeded if the input and output current ratings are observed.

[2] For TSSOP5 and SC-74A packages: above 87.5 °C the value of P_{tot} derates linearly with 4.0 mW/K.

For XSON6 and X2SON5 package: above 118 °C the value of P_{tot} derates linearly with 7.8 mW/K.

[3] For X2SON4 package: above 57 °C the value of P_{tot} derates linearly with 1.7 mW/K.

9 Recommended operating conditions

Table 6. Recommended operating conditions

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _{CC}	supply voltage		1.65	-	5.5	V
V _I	input voltage		0	-	5.5	V
V _O	output voltage	Active mode	0	-	V _{CC}	V _O
		Power-down mode; V _{CC} = 0 V	0	-	5.5	V _O
T _{amb}	ambient temperature		-40	-	+125	°C
Δt/ΔV	input transition rise and fall rate	V _{CC} = 1.65 V to 2.7 V	-	-	20	ns/V
		V _{CC} = 2.7 V to 5.5 V	-	-	10	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 ^[1]	Max	Unit
T_{amb} = -40 °C to +85 °C						
V _{IH}	HIGH-level input voltage	V _{CC} = 1.65 V to 1.95 V	0.65 × V _{CC}	-	-	V
		V _{CC} = 2.3 V to 2.7 V	1.7	-	-	V
		V _{CC} = 2.7 V to 3.6 V	2.0	-	-	V
		V _{CC} = 4.5 V to 5.5 V	0.7 × V _{CC}	-	-	V
V _{IL}	LOW-level input voltage	V _{CC} = 1.65 V to 1.95 V	-	-	0.35 × V _{CC}	V
		V _{CC} = 2.3 V to 2.7 V	-	-	0.7	V
		V _{CC} = 2.7 V to 3.6 V	-	-	0.8	V
		V _{CC} = 4.5 V to 5.5 V	-	-	0.3 × V _{CC}	V
V _{OH}	HIGH-level output voltage	V _I = V _{IH} or V _{IL}				
		I _O = -100 μA; V _{CC} = 1.65 V to 5.5 V	V _{CC} - 0.1	-	-	V
		I _O = -4 mA; V _{CC} = 1.65 V	1.2	1.54	-	V
		I _O = -8 mA; V _{CC} = 2.3 V	1.9	2.15	-	V
		I _O = -12 mA; V _{CC} = 2.7 V	2.2	2.50	-	V
		I _O = -24 mA; V _{CC} = 3.0 V	2.3	2.62	-	V
		I _O = -32 mA; V _{CC} = 4.5 V	3.8	4.11	-	V
V _{OL}	LOW-level output voltage	V _I = V _{IH} or V _{IL}				
		I _O = 100 μA; V _{CC} = 1.65 V to 5.5 V	-	-	0.10	V
		I _O = 4 mA; V _{CC} = 1.65 V	-	0.07	0.45	V
		I _O = 8 mA; V _{CC} = 2.3 V	-	0.12	0.30	V
		I _O = 12 mA; V _{CC} = 2.7 V	-	0.17	0.40	V
		I _O = 24 mA; V _{CC} = 3.0 V	-	0.33	0.55	V
		I _O = 32 mA; V _{CC} = 4.5 V	-	0.39	0.55	V

Symbol	Parameter	Conditions	Min	Typ ^[1]	Max	Unit
I _I	input leakage current	V _{CC} = 0 V to 5.5 V; V _I = 5.5 V or GND ^[2]	-	±0.1	±1	µA
I _{OFF}	power-off leakage current	V _{CC} = 0 V; V _I or V _O = 5.5 V	-	±0.1	±2	µA
I _{CC}	supply current	V _{CC} = 1.65 V to 5.5 V; I _O = 0 A; V _I = 5.5 V or GND ^[2]	-	0.1	4	µA
ΔI _{CC}	additional supply current	V _{CC} = 2.3 V to 5.5 V; V _I = V _{CC} - 0.6 V; I _O = 0 A ^[2]	-	5	500	µA
C _I	input capacitance	V _{CC} = 3.3 V; V _I = GND to V _{CC}	-	4	-	pF
T_{amb} = -40 °C to +125 °C						
V _{IH}	HIGH-level input voltage	V _{CC} = 1.65 V to 1.95 V	0.65 × V _{CC}	-	-	V
		V _{CC} = 2.3 V to 2.7 V	1.7	-	-	V
		V _{CC} = 2.7 V to 3.6 V	2.0	-	-	V
		V _{CC} = 4.5 V to 5.5 V	0.7 × V _{CC}	-	-	V
V _{IL}	LOW-level input voltage	V _{CC} = 1.65 V to 1.95 V	-	-	0.35 × V _{CC}	V
		V _{CC} = 2.3 V to 2.7 V	-	-	0.7	V
		V _{CC} = 2.7 V to 3.6 V	-	-	0.8	V
		V _{CC} = 4.5 V to 5.5 V	-	-	0.3 × V _{CC}	V
V _{OH}	HIGH-level output voltage	V _I = V _{IH} or V _{IL}				
		I _O = -100 µA; V _{CC} = 1.65 V to 5.5 V	V _{CC} - 0.1	-	-	V
		I _O = -4 mA; V _{CC} = 1.65 V	0.95	-	-	V
		I _O = -8 mA; V _{CC} = 2.3 V	1.7	-	-	V
		I _O = -12 mA; V _{CC} = 2.7 V	1.9	-	-	V
		I _O = -24 mA; V _{CC} = 3.0 V	2.0	-	-	V
		I _O = -32 mA; V _{CC} = 4.5 V	3.4	-	-	V
V _{OL}	LOW-level output voltage	V _I = V _{IH} or V _{IL}				
		I _O = 100 µA; V _{CC} = 1.65 V to 5.5 V	-	-	0.10	V
		I _O = 4 mA; V _{CC} = 1.65 V	-	-	0.70	V
		I _O = 8 mA; V _{CC} = 2.3 V	-	-	0.45	V
		I _O = 12 mA; V _{CC} = 2.7 V	-	-	0.60	V
		I _O = 24 mA; V _{CC} = 3.0 V	-	-	0.80	V
		I _O = 32 mA; V _{CC} = 4.5 V	-	-	0.80	V
I _I	input leakage current	V _{CC} = 0 V to 5.5 V; V _I = 5.5 V or GND	-	-	±1	µA
I _{OFF}	power-off leakage current	V _{CC} = 0 V; V _I or V _O = 5.5 V	-	-	±2	µA
I _{CC}	supply current	V _{CC} = 1.65 V to 5.5 V; I _O = 0 A; V _I = 5.5 V or GND	-	-	4	µA
ΔI _{CC}	additional supply current	V _{CC} = 2.3 V to 5.5 V; V _I = V _{CC} - 0.6 V; I _O = 0 A	-	-	500	µA

[1] All typical values are measured at T_{amb} = 25 °C.[2] These typical values are measured at V_{CC} = 3.3 V.

11 Dynamic characteristics

Table 8. Dynamic characteristics

Voltages are referenced to GND (ground = 0 V). For test circuit see [Figure 9](#).

Symbol	Parameter	Conditions	-40 °C to +85 °C			-40 °C to +125 °C		Unit
			Min	Typ ^[1]	Max	Min	Max	
t_{pd}	propagation delay	A to Y; see Figure 8 ^[2]						
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$	1.0	4.0	8.6	1.0	11.0	ns
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	0.5	2.6	4.4	0.5	5.6	ns
		$V_{CC} = 2.7 \text{ V}$	0.5	2.3	4.5	0.5	5.6	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$	0.5	2.0	4.1	0.5	5.2	ns
		$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$	0.5	1.6	3.2	0.5	4.1	ns
C_{PD}	power dissipation capacitance	$V_I = \text{GND to } V_{CC}; V_{CC} = 3.3 \text{ V}$ ^[3]	-	15	-	-	-	pF

[1] Typical values are measured at $T_{amb} = 25 \text{ °C}$ and $V_{CC} = 1.8 \text{ V}, 2.5 \text{ V}, 2.7 \text{ V}, 3.3 \text{ V}$, and 5.0 V respectively.

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

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

$$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \sum(C_L \times V_{CC}^2 \times f_o)$$

where:
 f_i = input frequency in MHz;

f_o = output frequency in MHz;

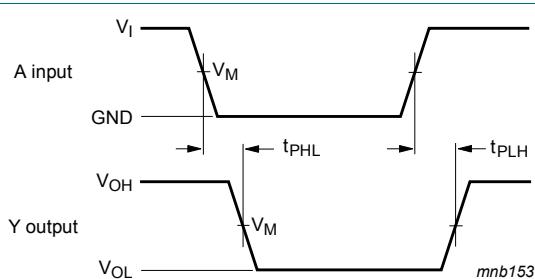
C_L = output load capacitance in pF;

V_{CC} = supply voltage in V;

N = number of inputs switching;

$\sum(C_L \times V_{CC}^2 \times f_o)$ = sum of outputs.

11.1 Waveform and test circuit



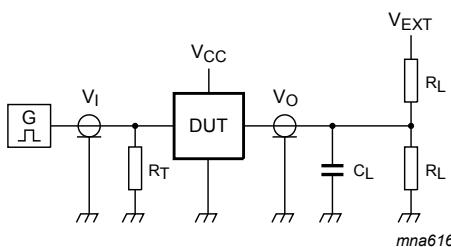
Measurement points are given in [Table 9](#).

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

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

Table 9. Measurement points

Supply voltage	Input	Output
V_{CC}	V_M	V_M
1.65 V to 1.95 V	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$
2.3 V to 2.7 V	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$
2.7 V	1.5 V	1.5 V
3.0 V to 3.6 V	1.5 V	1.5 V
4.5 V to 5.5 V	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$



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.

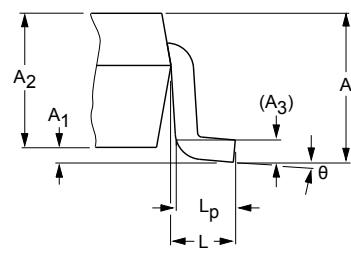
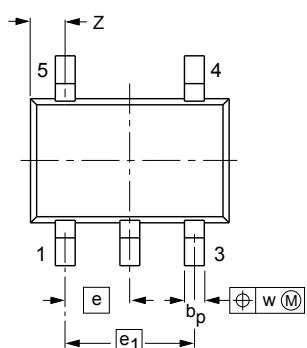
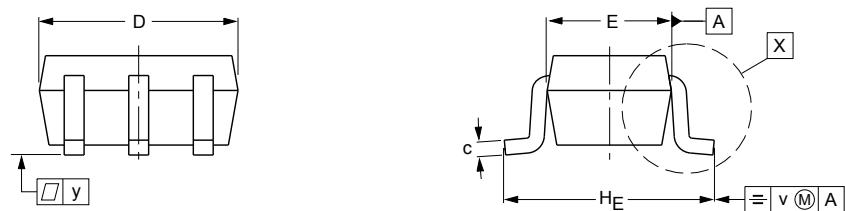
Figure 9. Test circuit for measuring switching times**Table 10. Test data**

Supply voltage	Input	Load			V_{EXT}
V_{CC}	V_I	$t_r = t_f$	C_L	R_L	t_{PLH}, t_{PHL}
1.65 V to 1.95 V	V_{CC}	≤ 2.0 ns	30 pF	1 k Ω	open
2.3 V to 2.7 V	V_{CC}	≤ 2.0 ns	30 pF	500 Ω	open
2.7 V	2.7 V	≤ 2.5 ns	50 pF	500 Ω	open
3.0 V to 3.6 V	2.7 V	≤ 2.5 ns	50 pF	500 Ω	open
4.5 V to 5.5 V	V_{CC}	≤ 2.5 ns	50 pF	500 Ω	open

12 Package outline

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

SOT353-1



0 1.5 3 mm
scale

DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A ₁	A ₂	A ₃	b _p	c	D ⁽¹⁾	E ⁽¹⁾	e	e ₁	H _E	L	L _p	v	w	y	Z ⁽¹⁾	θ
mm	1.1	0.10	1.0	0.15	0.30	0.25	2.25	1.35	0.65	1.3	2.25	0.425	0.46	0.3	0.1	0.1	0.60	7°

Note

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

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

Figure 10. Package outline SOT353-1 (TSSOP5)

Plastic surface-mounted package; 5 leads

SOT753

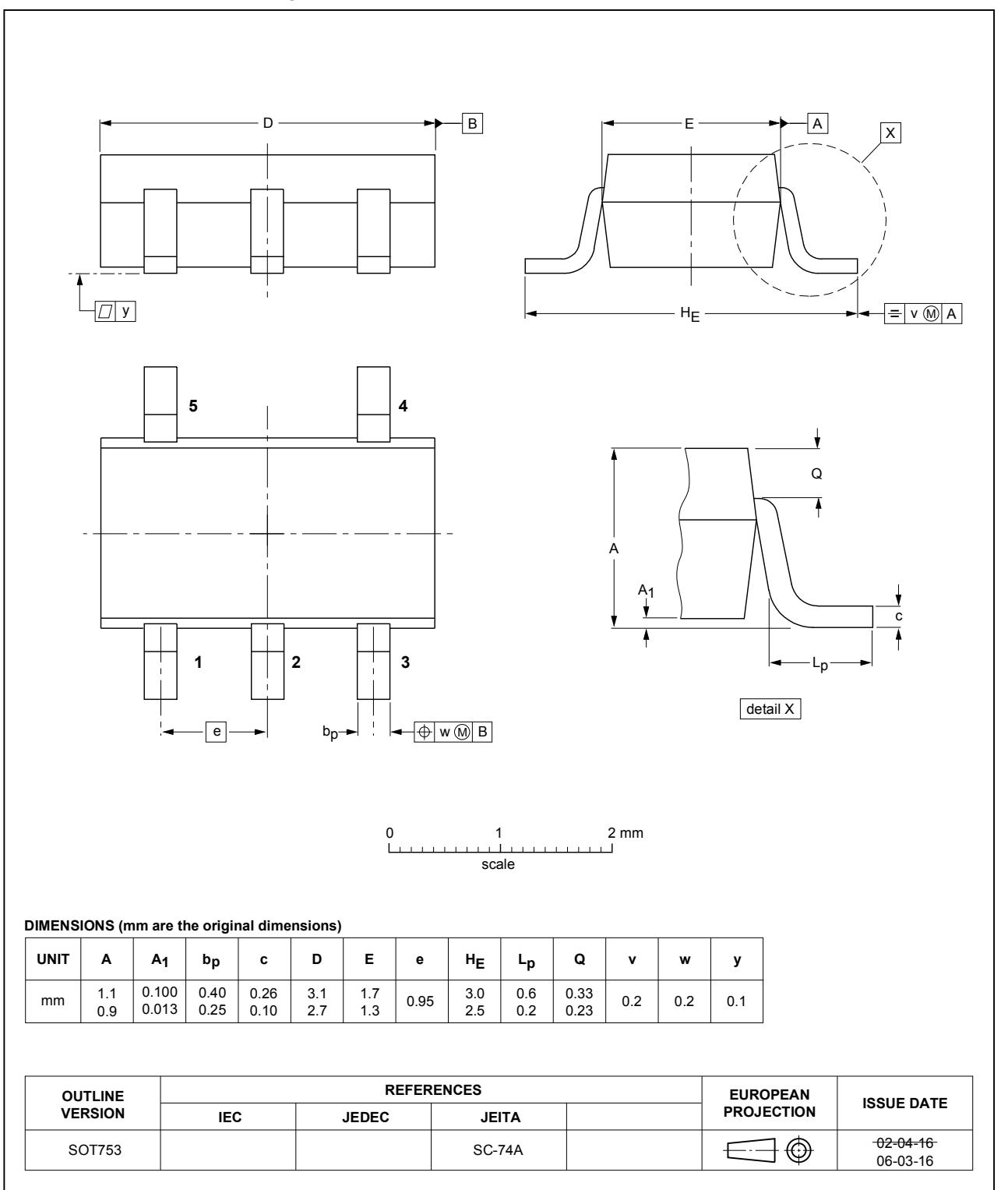
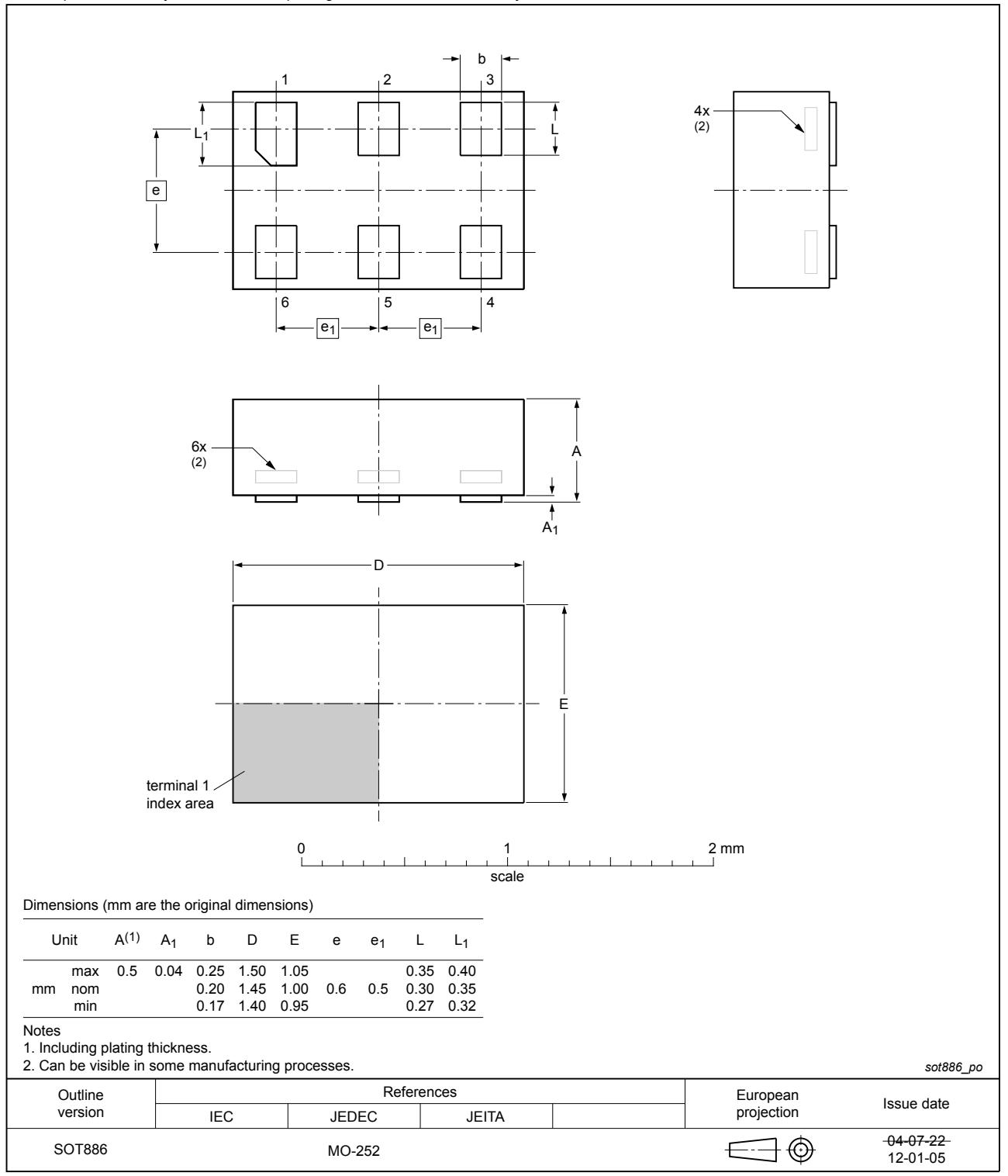


Figure 11. Package outline SOT753 (SC-74A)

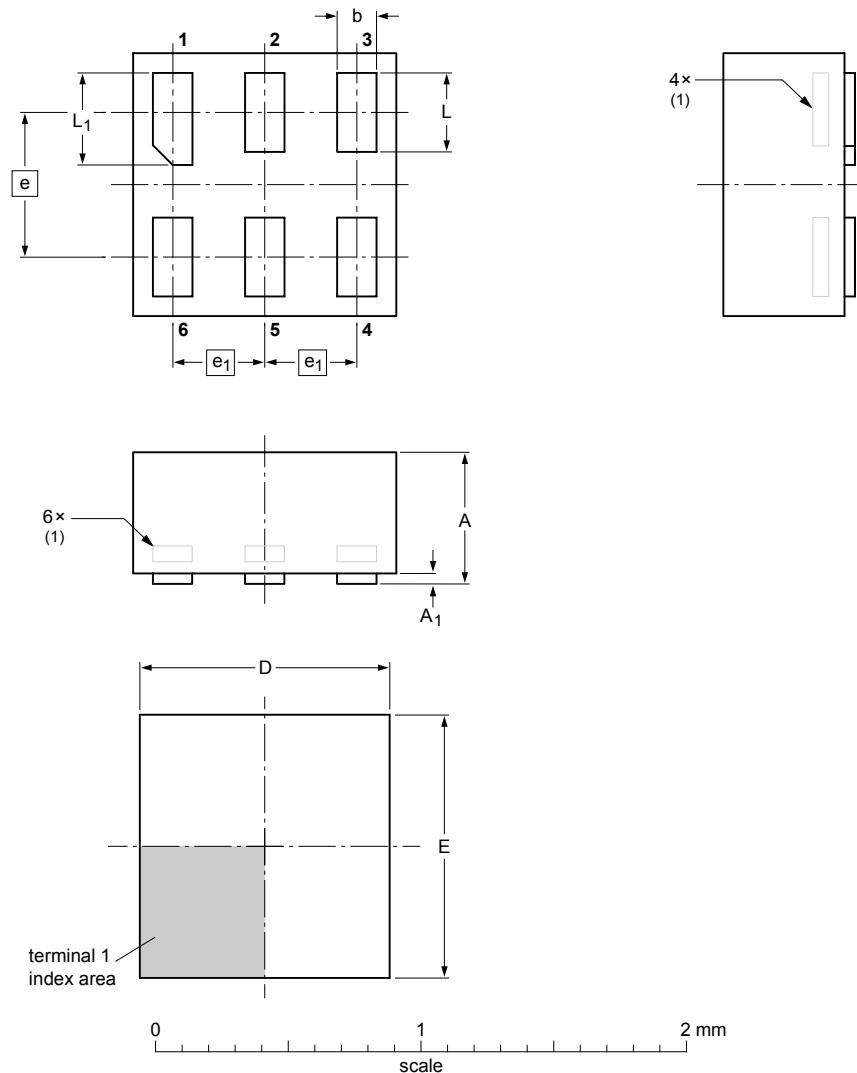
XSON6: plastic extremely thin small outline package; no leads; 6 terminals; body 1 x 1.45 x 0.5 mm

SOT886

**Figure 12. Package outline SOT886 (XSON6)**

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

SOT891



DIMENSIONS (mm are the original dimensions)

UNIT	A max	A ₁ max	b	D	E	e	e ₁	L	L ₁
mm	0.5	0.04	0.20 0.12	1.05 0.95	1.05 0.95	0.55	0.35	0.35 0.27	0.40 0.32

Note

1. Can be visible in some manufacturing processes.

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
SOT891					-05-04-06 07-05-15

Figure 13. 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

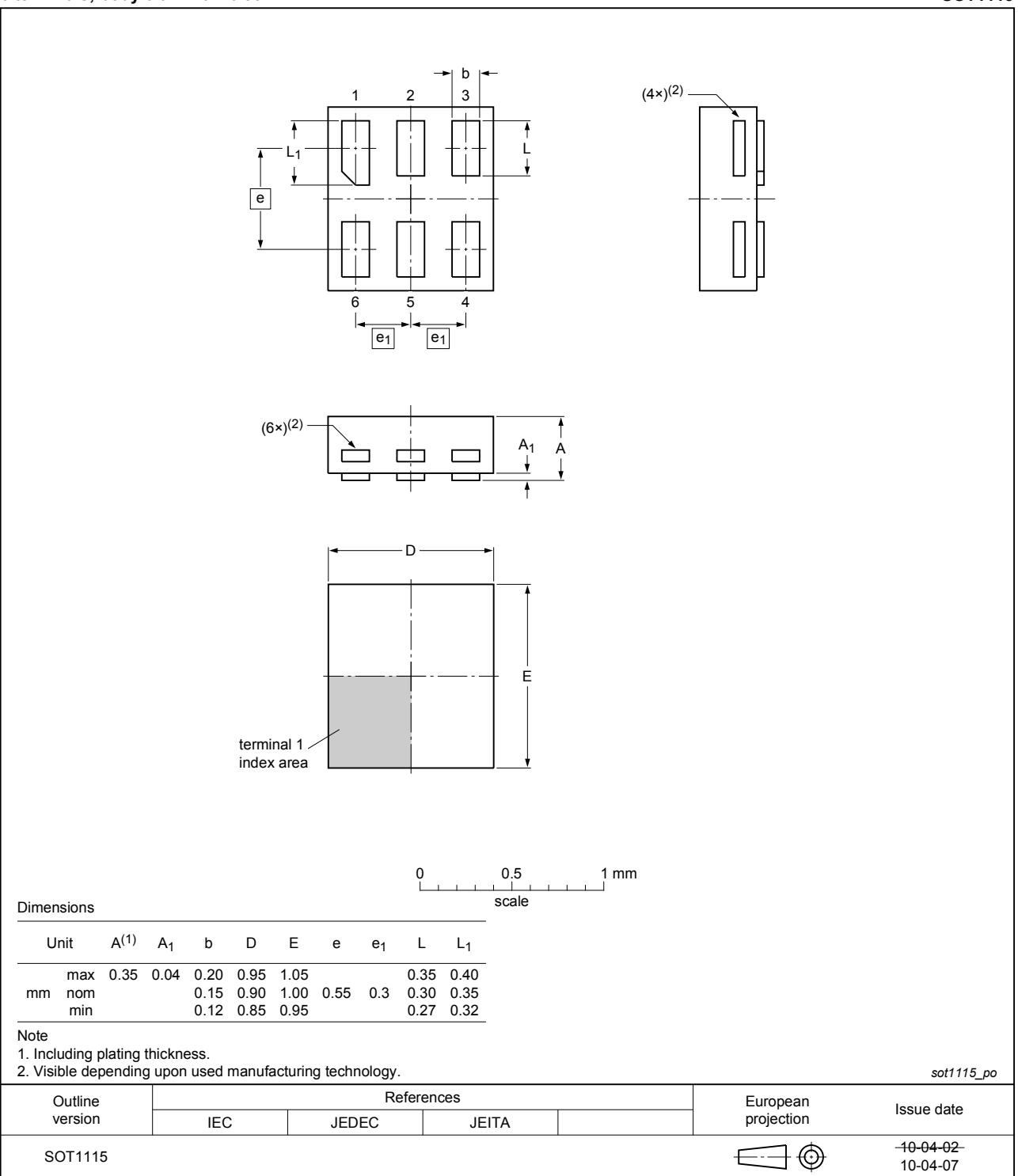
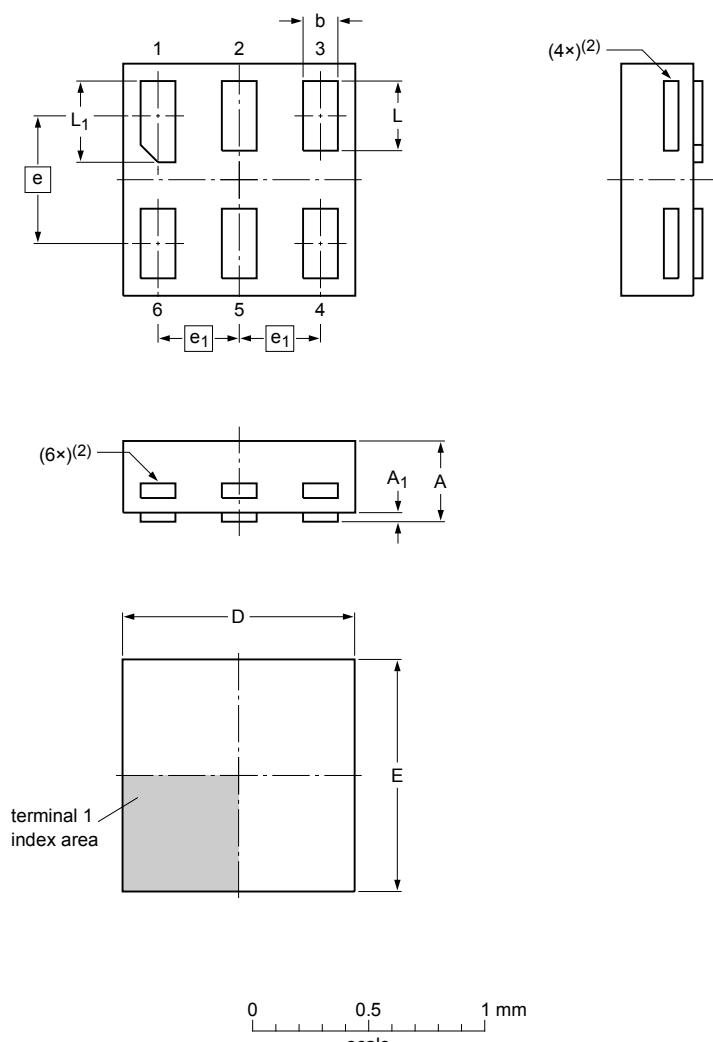


Figure 14. Package outline SOT1115 (XSON6)

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
mm	nom			0.15	1.00	1.00	0.55	0.35	0.35
mm	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

Figure 15. 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

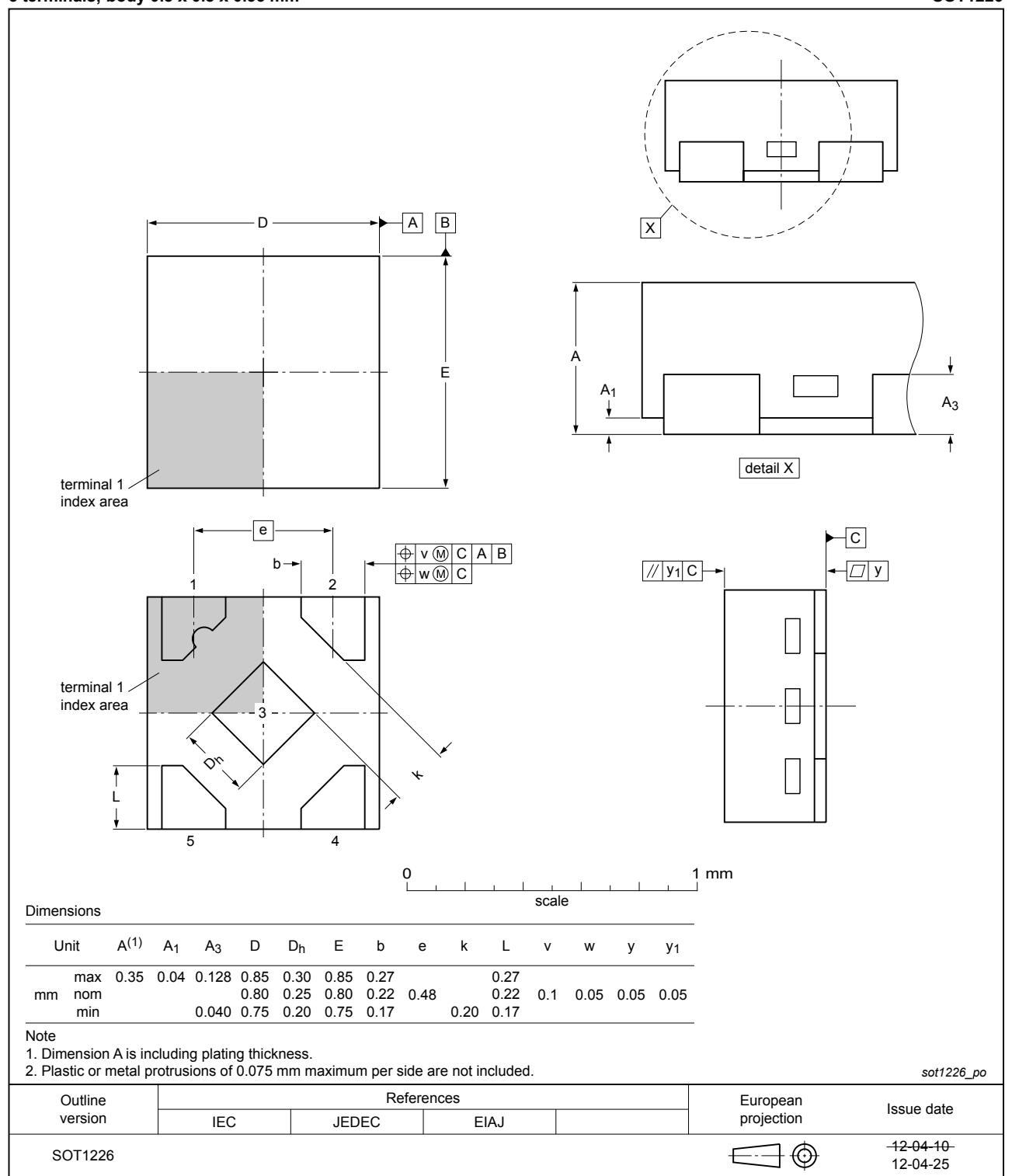
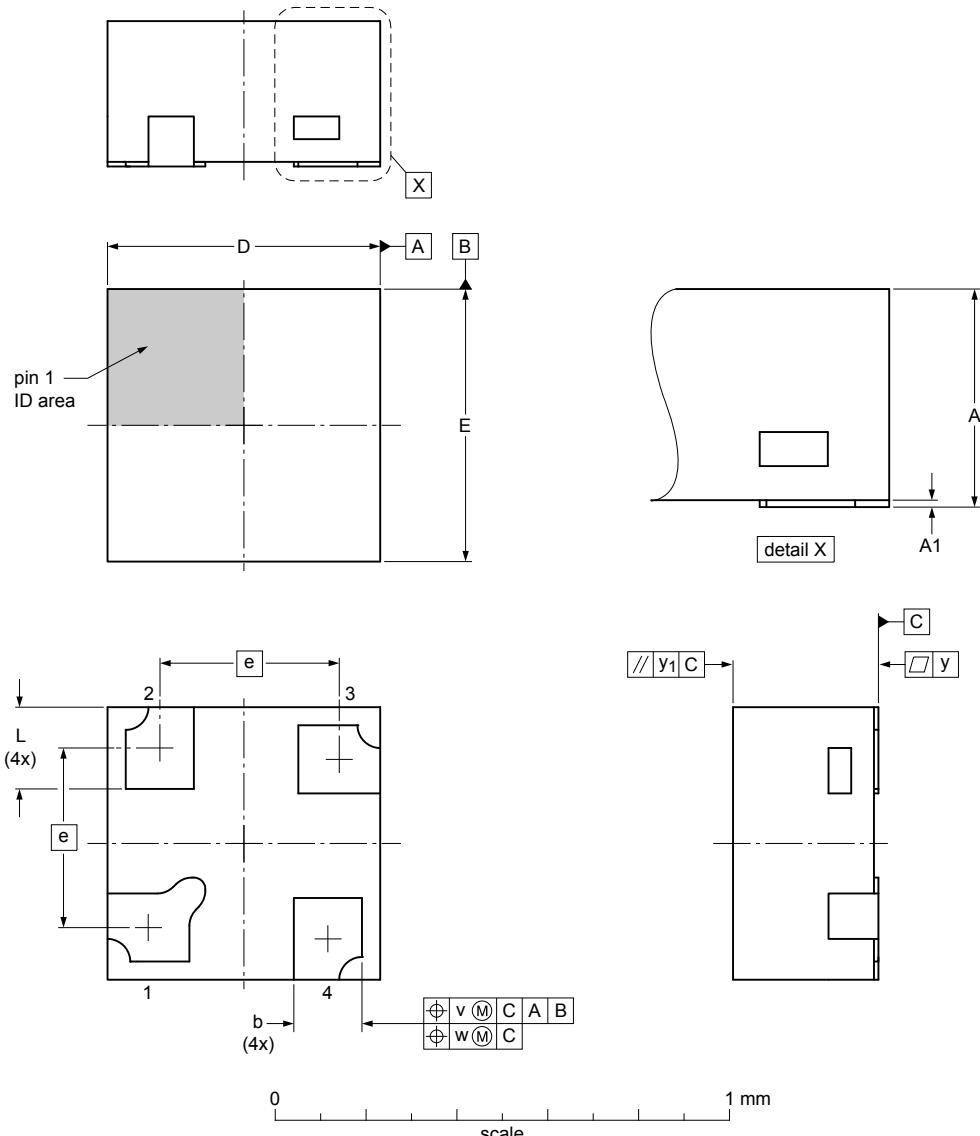


Figure 16. Package outline SOT1226 (X2SON5)

X2SON4: plastic thermal enhanced extremely thin small outline package; no leads;
4 terminals; body 0.6 x 0.6 x 0.32 mm

SOT1269-2



Dimensions (mm are the original dimensions)

Unit	A	A ₁	D	E	b	e	L	v	w	y	y ₁
max	0.35	0.04	0.65	0.65	0.20		0.23				
mm nom	0.32	0.02	0.60	0.60	0.15	0.40	0.18	0.10	0.05	0.05	0.05
min	0.30	0.00	0.55	0.55	0.10		0.13				

sot1269-2_po

Outline version	References			European projection	Issue date
	IEC	JEDEC	JEITA		
SOT1269-2	---				17-04-07 17-06-30

Figure 17. Package outline SOT1269-2 (X2SON4)

13 Abbreviations

Table 11. Abbreviations

Acronym	Description
CMOS	Complementary Metal-Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
HBM	Human Body Model
MM	Machine Model
TTL	Transistor-Transistor Logic

14 Revision history

Table 12. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74LVC1G34 v.7	20180608	Product data sheet	-	74LVC1G34 v.6
Modifications:	<ul style="list-style-type: none"> 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. Added type number 74LVC1G34GX4 (SOT1269-2) 			
74LVC1G34 v.6	20161205	Product data sheet	-	74LVC1G34 v.5
Modifications:	<ul style="list-style-type: none"> Section 10: The maximum limits for leakage current and supply current have changed. 			
74LVC1G34 v.5	20120702	Product data sheet	-	74LVC1G34 v.4
Modifications:	<ul style="list-style-type: none"> Added type number 74LVC1G34GX (SOT1226) Package outline drawing of SOT886 (Figure 12) modified. 			
74LVC1G34 v.4	20111206	Product data sheet	-	74LVC1G34 v.3
Modifications:	<ul style="list-style-type: none"> Legal pages updated 			
74LVC1G34 v.3	20100902	Product data sheet	-	74LVC1G34 v.2
74LVC1G34 v.2	20070521	Product data sheet	-	74LVC1G34 v.1
74LVC1G34 v.1	20050907	Product data sheet	-	-

15 Legal information

15.1 Data sheet status

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

[1] Please consult the most recently issued document before initiating or completing a design.

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

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nexperia.com>.

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Please be aware that important notices concerning this document and the product(s) described herein, have been included in section 'Legal information'.