

## Important notice

Dear Customer,

On 7 February 2017 the former NXP Standard Product business became a new company with the tradename **Nexperia**. Nexperia is an industry leading supplier of Discrete, Logic and PowerMOS semiconductors with its focus on the automotive, industrial, computing, consumer and wearable application markets

In data sheets and application notes which still contain NXP or Philips Semiconductors references, use the references to Nexperia, as shown below.

Instead of <http://www.nxp.com>, <http://www.philips.com/> or <http://www.semiconductors.philips.com/>, use <http://www.nexperia.com>

Instead of [sales.addresses@www.nxp.com](mailto:sales.addresses@www.nxp.com) or [sales.addresses@www.semiconductors.philips.com](mailto:sales.addresses@www.semiconductors.philips.com), use [salesaddresses@nexperia.com](mailto:salesaddresses@nexperia.com) (email)

Replace the copyright notice at the bottom of each page or elsewhere in the document, depending on the version, as shown below:

- © NXP N.V. (year). All rights reserved or © Koninklijke Philips Electronics N.V. (year). All rights reserved

Should be replaced with:

- © **Nexperia B.V. (year). All rights reserved.**

If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via [salesaddresses@nexperia.com](mailto:salesaddresses@nexperia.com)). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

# PDTA115T series

PNP resistor-equipped transistors; R1 = 100 k $\Omega$ , R2 = open

Rev. 05 — 2 September 2009

Product data sheet

## 1. Product profile

### 1.1 General description

PNP resistor-equipped transistors.

Table 1. Product overview

Type number	Package		NPN complement
	NXP	JEITA	
PDTA115TE	SOT416	SC-75	PDTC115TE
PDTA115TK	SOT346	SC-59	PDTC115TK
PDTA115TM	SOT883	SC-101	PDTC115TM
PDTA115TS <sup>[1]</sup>	SOT54 (TO-92)	SC-43A	PDTC115TS
PDTA115TT	SOT23	-	PDTC115TT
PDTA115TU	SOT323	SC-70	PDTC115TU

[1] Also available in SOT54A and SOT54 variant packages (see [Section 2](#))

### 1.2 Features

- Built-in bias resistors
- Simplifies circuit design
- Reduces component count
- Reduces pick and place costs

### 1.3 Applications

- General purpose switching and amplification
- Inverter and interface circuits
- Circuit drivers

### 1.4 Quick reference data

Table 2. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CE0}$	collector-emitter voltage	open base	-	-	-50	V
$I_O$	output current (DC)		-	-	-100	mA
R1	bias resistor 1 (input)		70	100	130	k $\Omega$

**2. Pinning information**

**Table 3. Pinning**

Pin	Description	Simplified outline	Symbol
<b>SOT54</b>			
1	input (base)		
2	output (collector)		
3	GND (emitter)		
<b>SOT54A</b>			
1	input (base)		
2	output (collector)		
3	GND (emitter)		
<b>SOT54 variant</b>			
1	input (base)		
2	output (collector)		
3	GND (emitter)		
<b>SOT23, SOT323, SOT346, SOT416</b>			
1	input (base)		
2	GND (emitter)		
3	output (collector)		
<b>SOT883</b>			
1	input (base)		
2	GND (emitter)		
3	output (collector)		

### 3. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
PDTA115TE	SC-75	plastic surface mounted package; 3 leads	SOT416
PDTA115TK	SC-59	plastic surface mounted package; 3 leads	SOT346
PDTA115TM	SC-101	leadless ultra small plastic package; 3 solder lands; body 1.0 × 0.6 × 0.5 mm	SOT883
PDTA115TS <sup>[1]</sup>	SC-43A	plastic single-ended leaded (through hole) package; 3 leads	SOT54
PDTA115TT	-	plastic surface mounted package; 3 leads	SOT23
PDTA115TU	SC-70	plastic surface mounted package; 3 leads	SOT323

[1] Also available in SOT54A and SOT54 variant packages (see [Section 2](#) and [Section 9](#)).

### 4. Marking

Table 5. Marking codes

Type number	Marking code <sup>[1]</sup>
PDTA115TE	12
PDTA115TK	11
PDTA115TM	E8
PDTA115TS	TA115T
PDTA115TT	*AC
PDTA115TU	*11

[1] \* = -: made in Hong Kong  
 \* = p: made in Hong Kong  
 \* = t: made in Malaysia  
 \* = W: made in China

## 5. Limiting values

**Table 6. Limiting values**

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>CBO</sub>	collector-base voltage	open emitter	-	-50	V
V <sub>CEO</sub>	collector-emitter voltage	open base	-	-50	V
V <sub>EBO</sub>	emitter-base voltage	open collector	-	-5	V
I <sub>O</sub>	output current (DC)		-	-100	mA
I <sub>CM</sub>	peak collector current		-	-100	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C			
	SOT416		[1] -	150	mW
	SOT346		[1] -	250	mW
	SOT883		[2][3] -	250	mW
	SOT54		[1] -	500	mW
	SOT23		[1] -	250	mW
	SOT323		[1] -	200	mW
T <sub>stg</sub>	storage temperature		-65	+150	°C
T <sub>j</sub>	junction temperature		-	150	°C
T <sub>amb</sub>	ambient temperature		-65	+150	°C

[1] Refer to standard mounting conditions.

[2] Reflow soldering is the only recommended soldering method.

[3] Refer to SOT883 standard mounting conditions; FR4 printed-circuit board with 60  $\mu$ m copper strip line.

## 6. Thermal characteristics

**Table 7. Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air				
	SOT416		[1] -	-	833	K/W
	SOT346		[1] -	-	500	K/W
	SOT883		[2][3] -	-	500	K/W
	SOT54		[1] -	-	250	K/W
	SOT23		[1] -	-	500	K/W
	SOT323		[1] -	-	625	K/W

[1] Refer to standard mounting conditions.

[2] Reflow soldering is the only recommended soldering method.

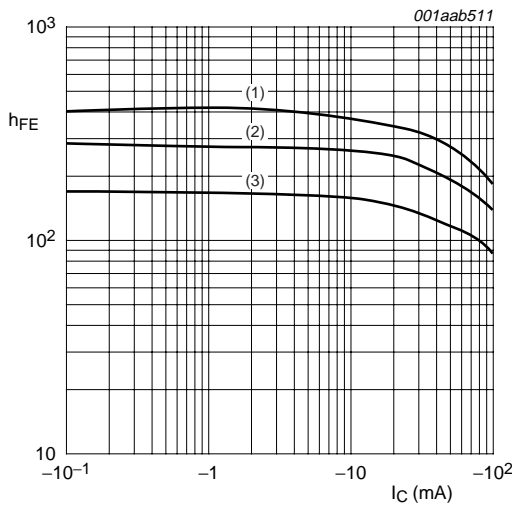
[3] Refer to SOT883 standard mounting conditions; FR4 printed-circuit board with 60  $\mu$ m copper strip line.

**7. Characteristics**

**Table 8. Characteristics**

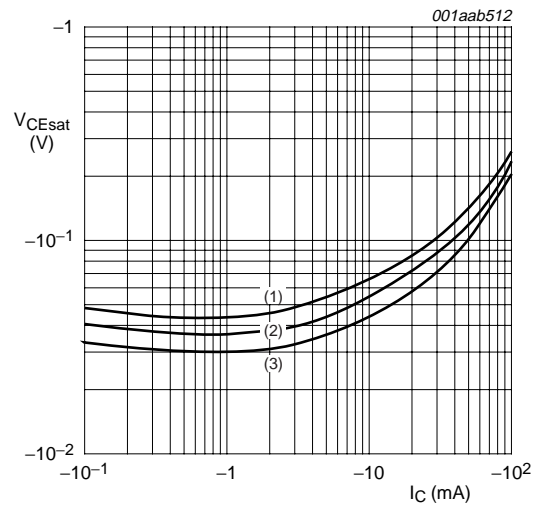
*T<sub>amb</sub> = 25 °C unless otherwise specified*

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I <sub>CBO</sub>	collector-base cut-off current	V <sub>CB</sub> = -50 V; I <sub>E</sub> = 0 A	-	-	-100	nA
I <sub>CEO</sub>	collector-emitter cut-off current	V <sub>CE</sub> = -30 V; I <sub>B</sub> = 0 A	-	-	-1	μA
		V <sub>CE</sub> = -30 V; I <sub>B</sub> = 0 A; T <sub>j</sub> = 150 °C	-	-	-50	μA
I <sub>EBO</sub>	emitter-base cut-off current	V <sub>EB</sub> = -5 V; I <sub>C</sub> = 0 A	-	-	-100	nA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = -5 V; I <sub>C</sub> = -1 mA	100	-	-	
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = -5 mA; I <sub>B</sub> = -0.25 mA	-	-	-150	mV
R1	bias resistor 1 (input)		70	100	130	kΩ
C <sub>c</sub>	collector capacitance	V <sub>CB</sub> = -10 V; I <sub>E</sub> = i <sub>e</sub> = 0 A; f = 1 MHz	-	-	3	pF



V<sub>CE</sub> = -5 V.  
 (1) T<sub>amb</sub> = 100 °C.  
 (2) T<sub>amb</sub> = 25 °C.  
 (3) T<sub>amb</sub> = -40 °C.

**Fig 1. DC current gain as a function of collector current; typical values**



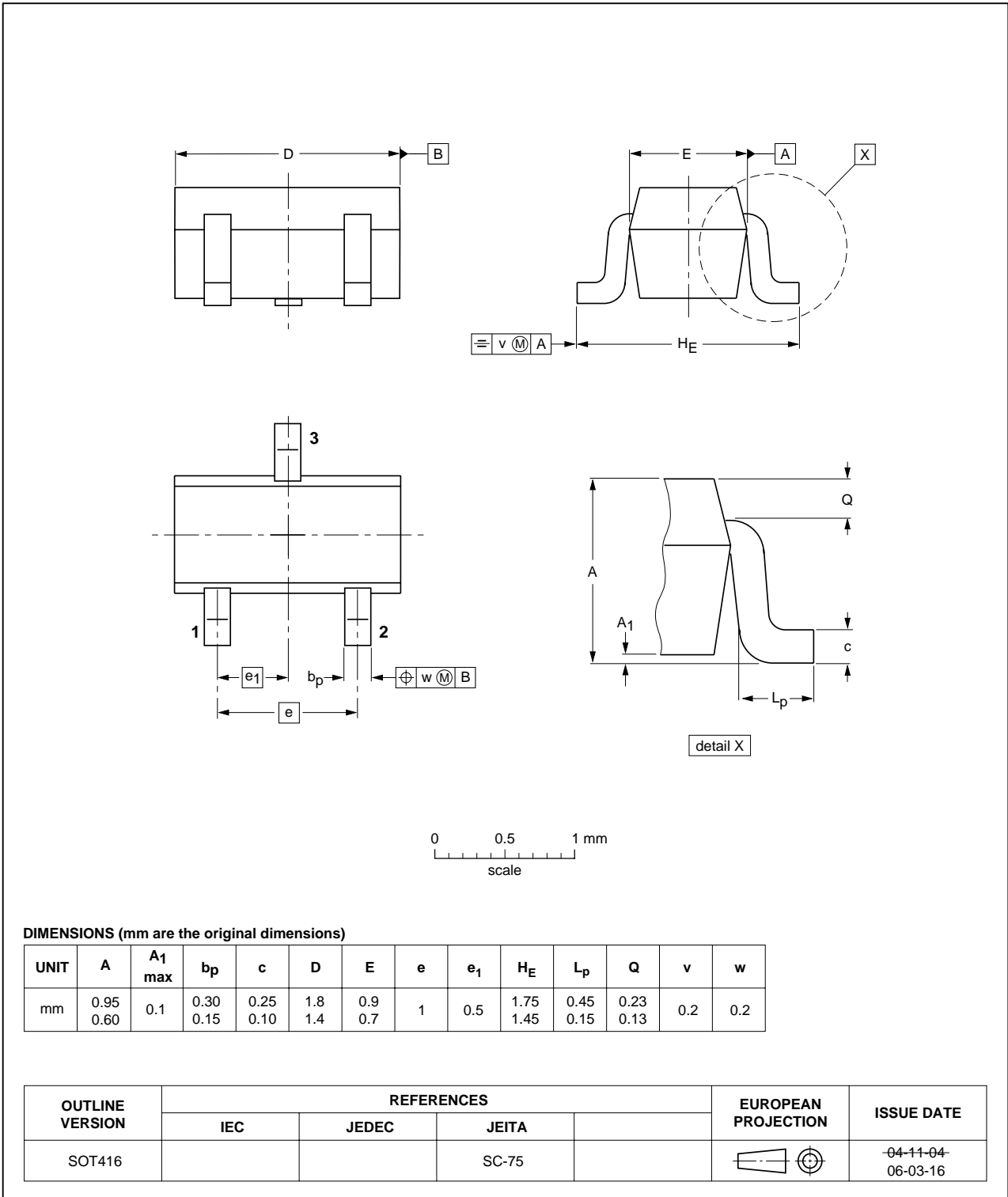
I<sub>C</sub>/I<sub>B</sub> = 20.  
 (1) T<sub>amb</sub> = 100 °C.  
 (2) T<sub>amb</sub> = 25 °C.  
 (3) T<sub>amb</sub> = -40 °C.

**Fig 2. Collector-emitter saturation voltage as a function of collector current; typical values**

**8. Package outline**

Plastic surface-mounted package; 3 leads

SOT416



**Fig 3. Package outline SOT416 (SC-75)**

Plastic surface-mounted package; 3 leads

SOT346

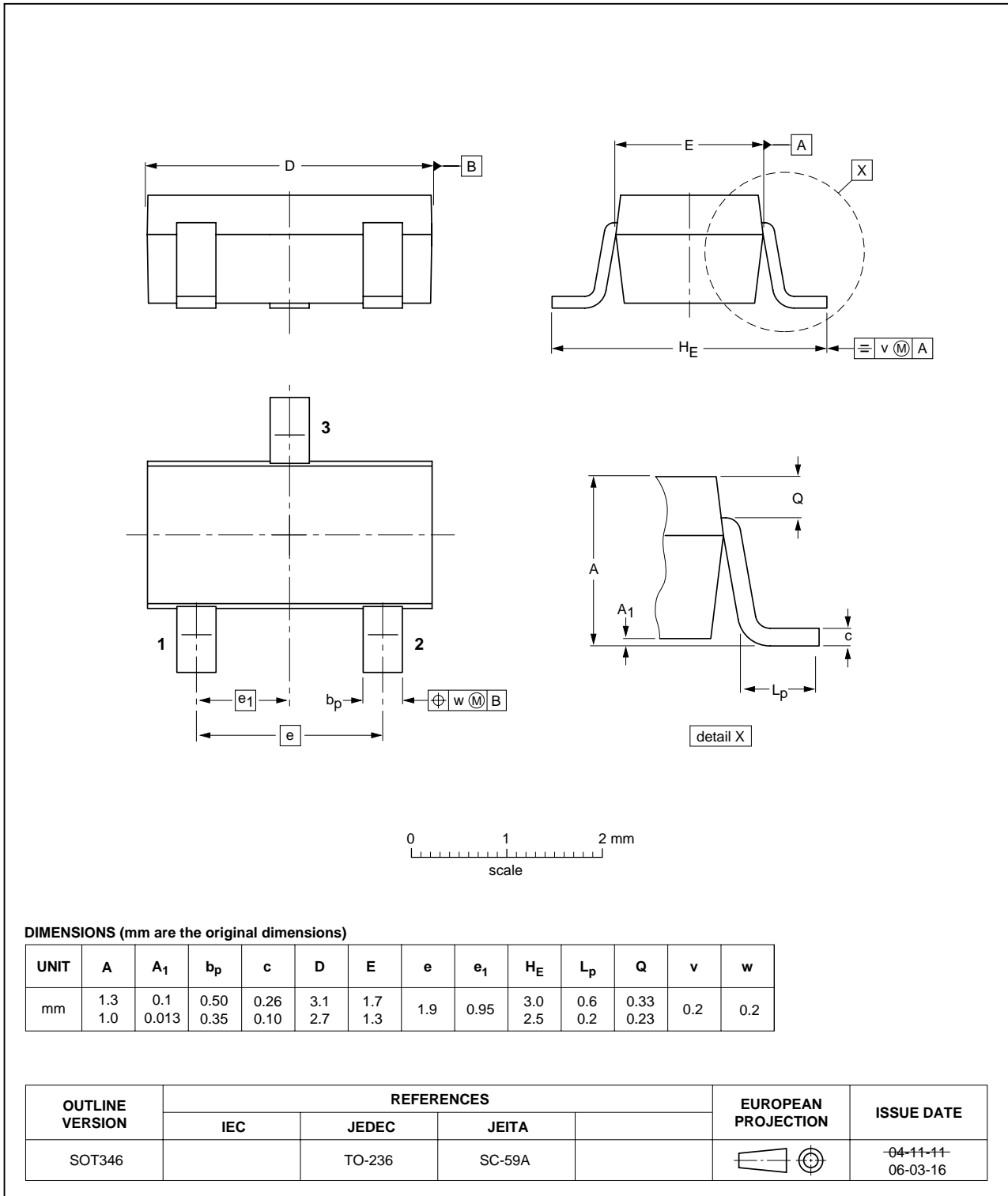


Fig 4. Package outline SOT346 (SC-59/TO-236)



Leadless ultra small plastic package; 3 solder lands; body 1.0 x 0.6 x 0.5 mm

SOT883

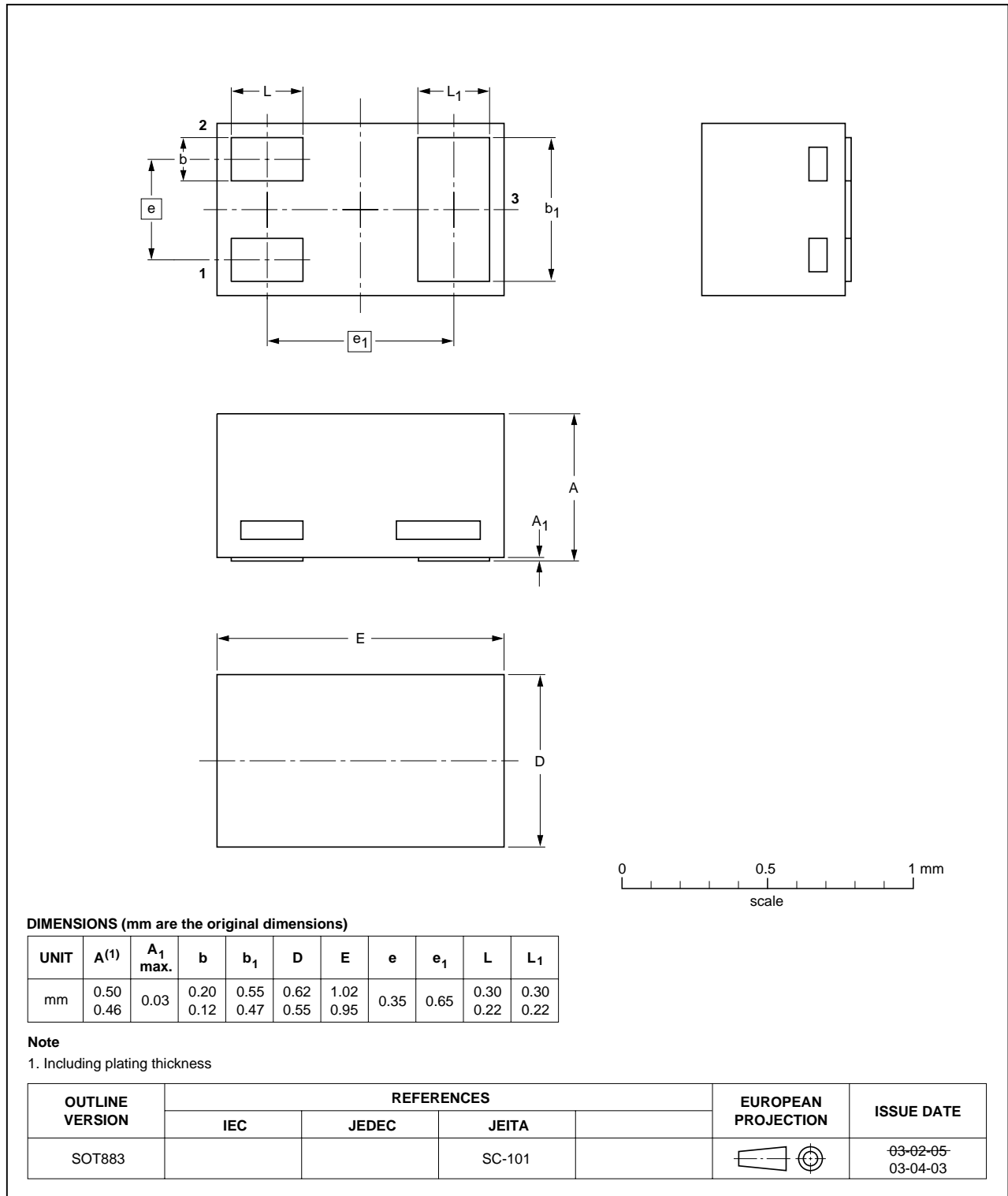


Fig 5. Package outline SOT883 (SC-101)

Plastic single-ended leaded (through hole) package; 3 leads

SOT54

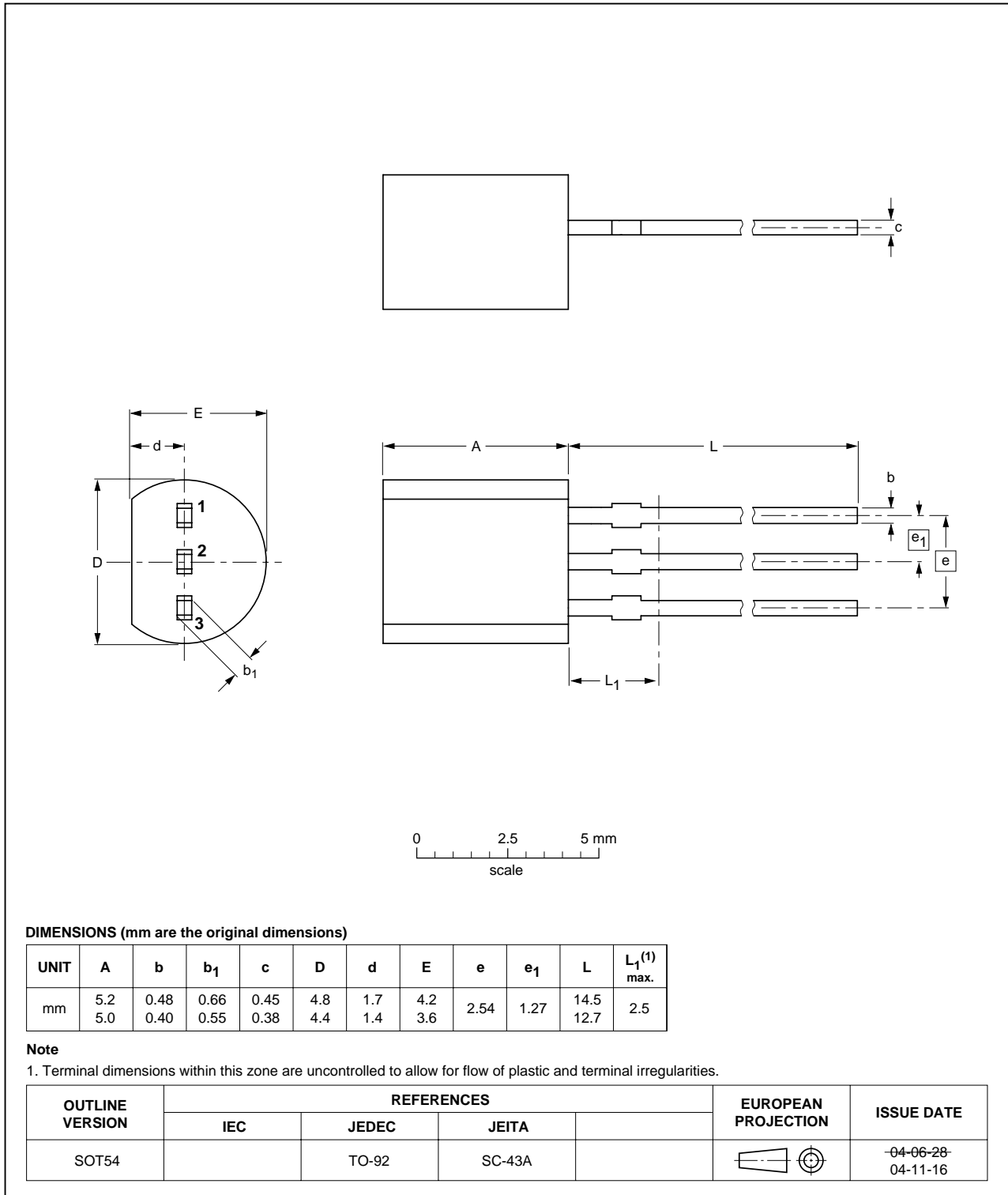


Fig 6. Package outline SOT54 (SC-43A/TO-92)

Plastic single-ended leaded (through hole) package; 3 leads (wide pitch)

SOT54A

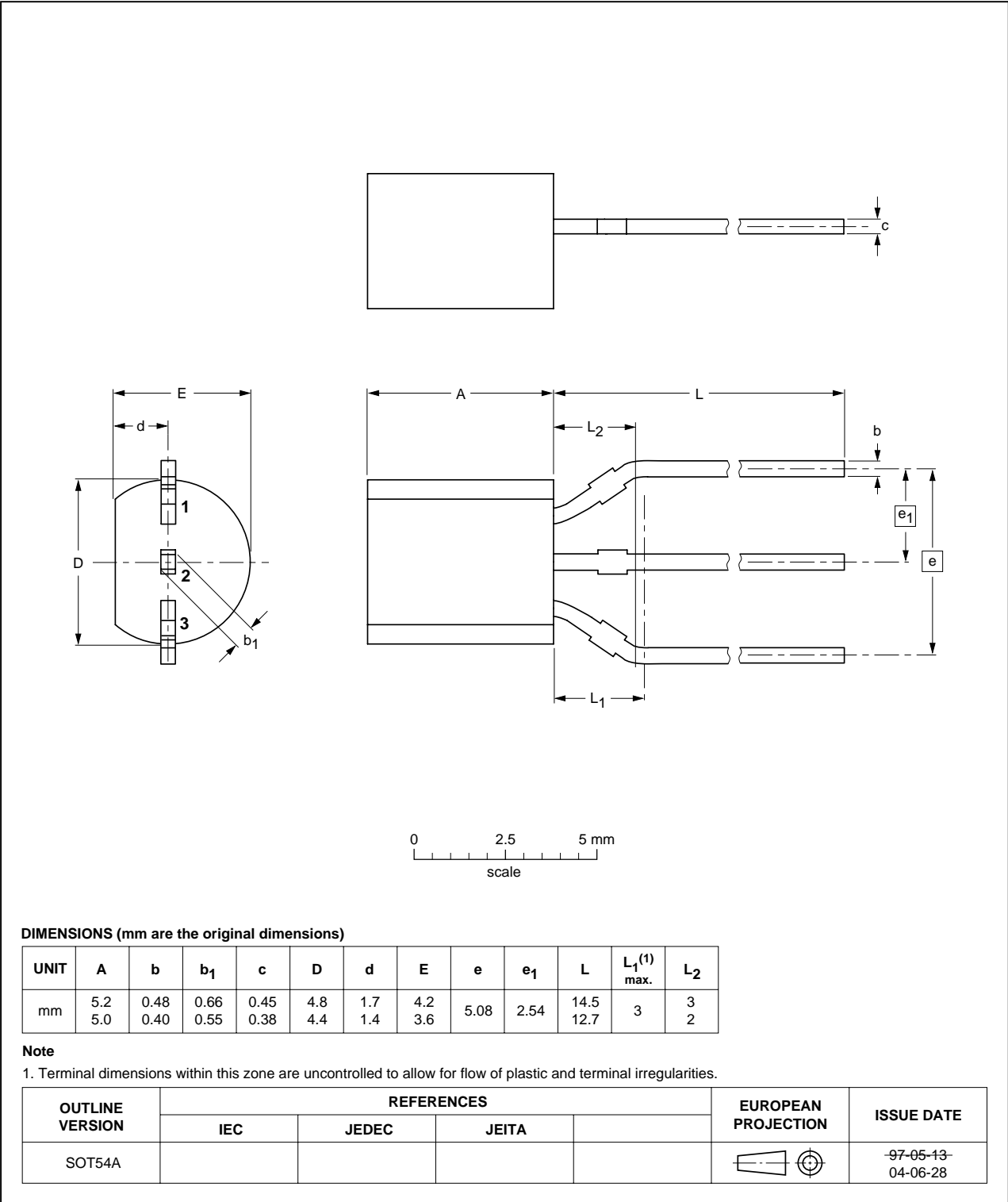


Fig 7. Package outline SOT54A

Plastic single-ended leaded (through hole) package; 3 leads (on-circle)

SOT54 variant

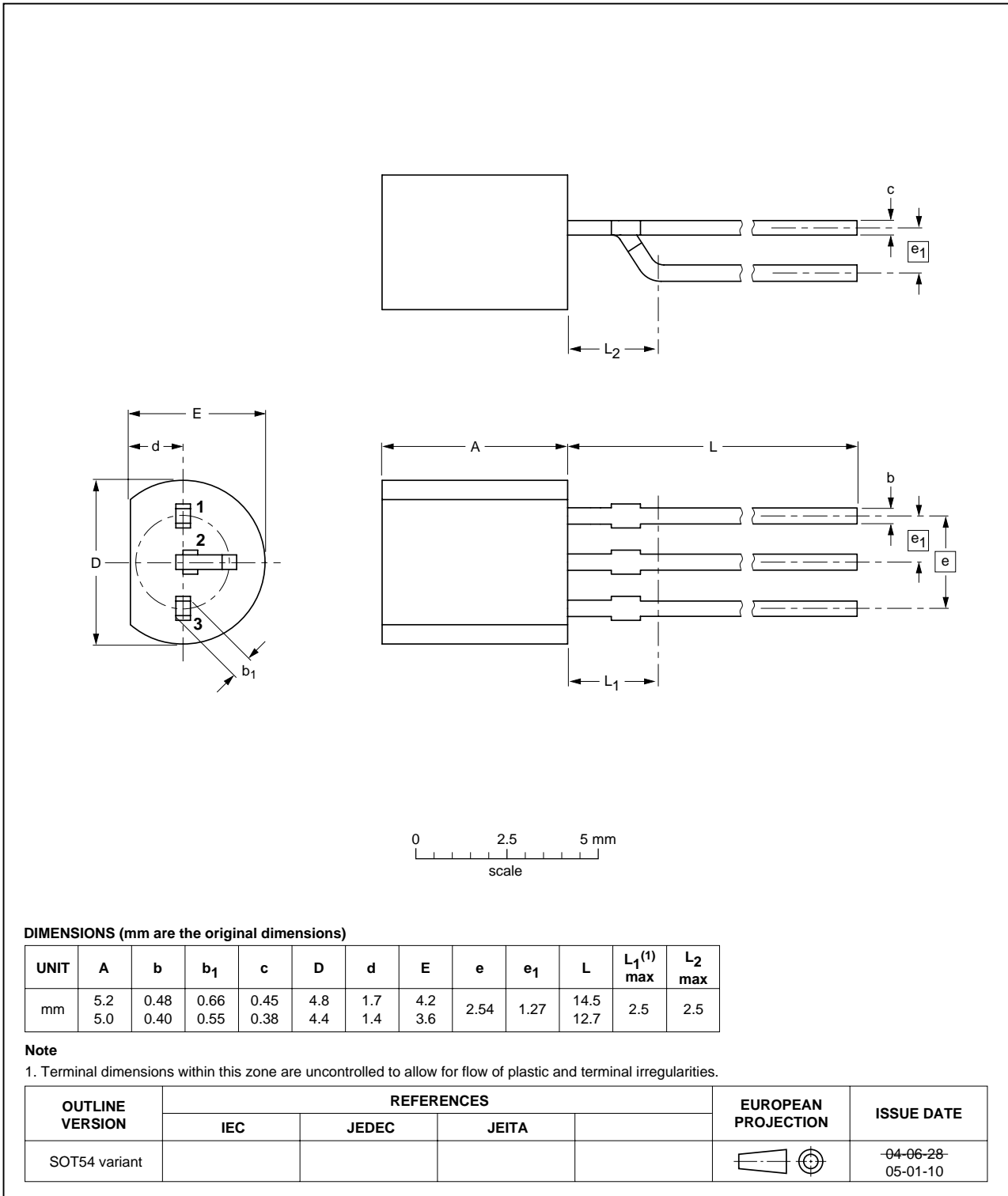


Fig 8. Package outline SOT54 variant

Plastic surface-mounted package; 3 leads

SOT23

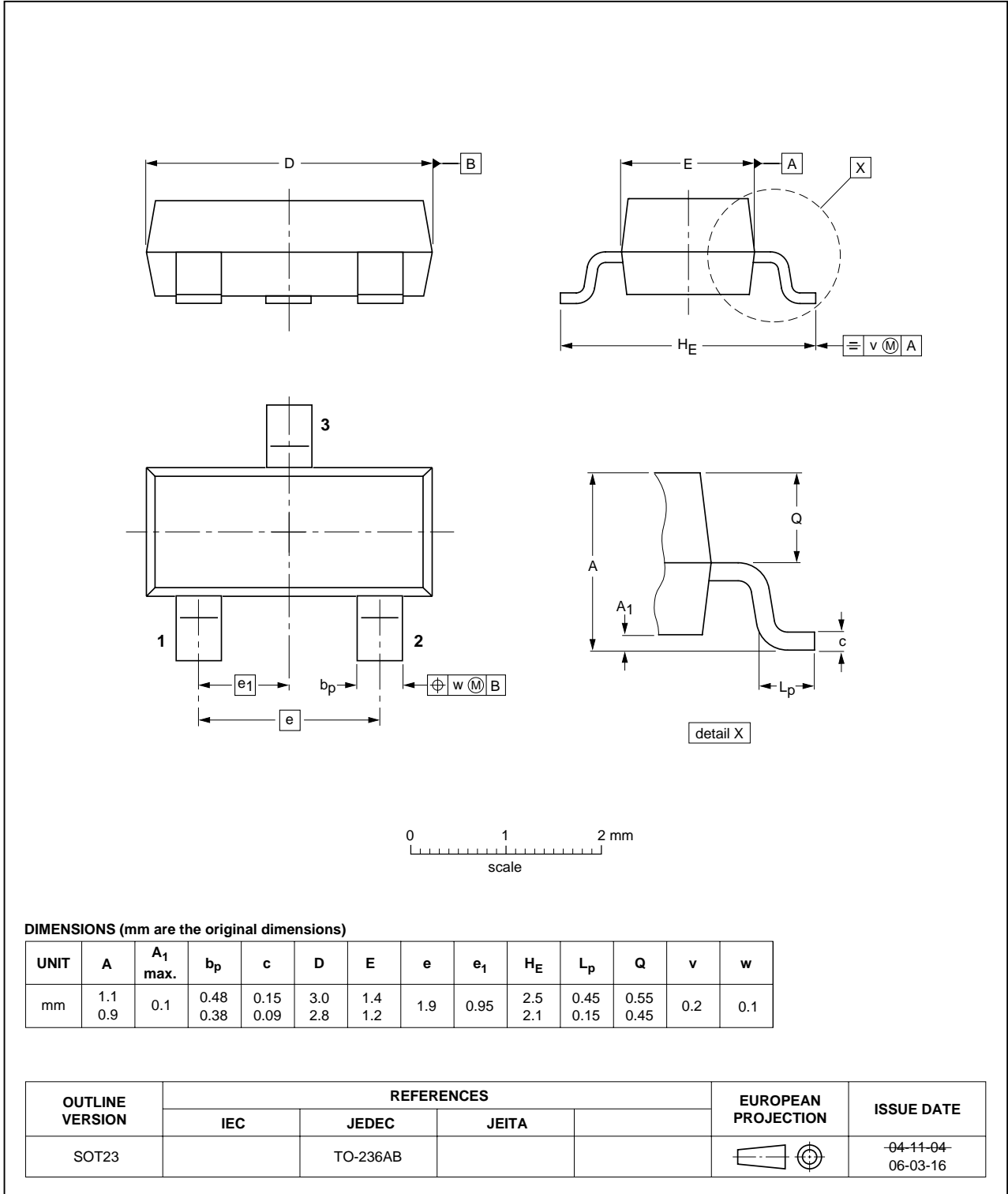


Fig 9. Package outline SOT23 (TO-236AB)

Plastic surface-mounted package; 3 leads

SOT323

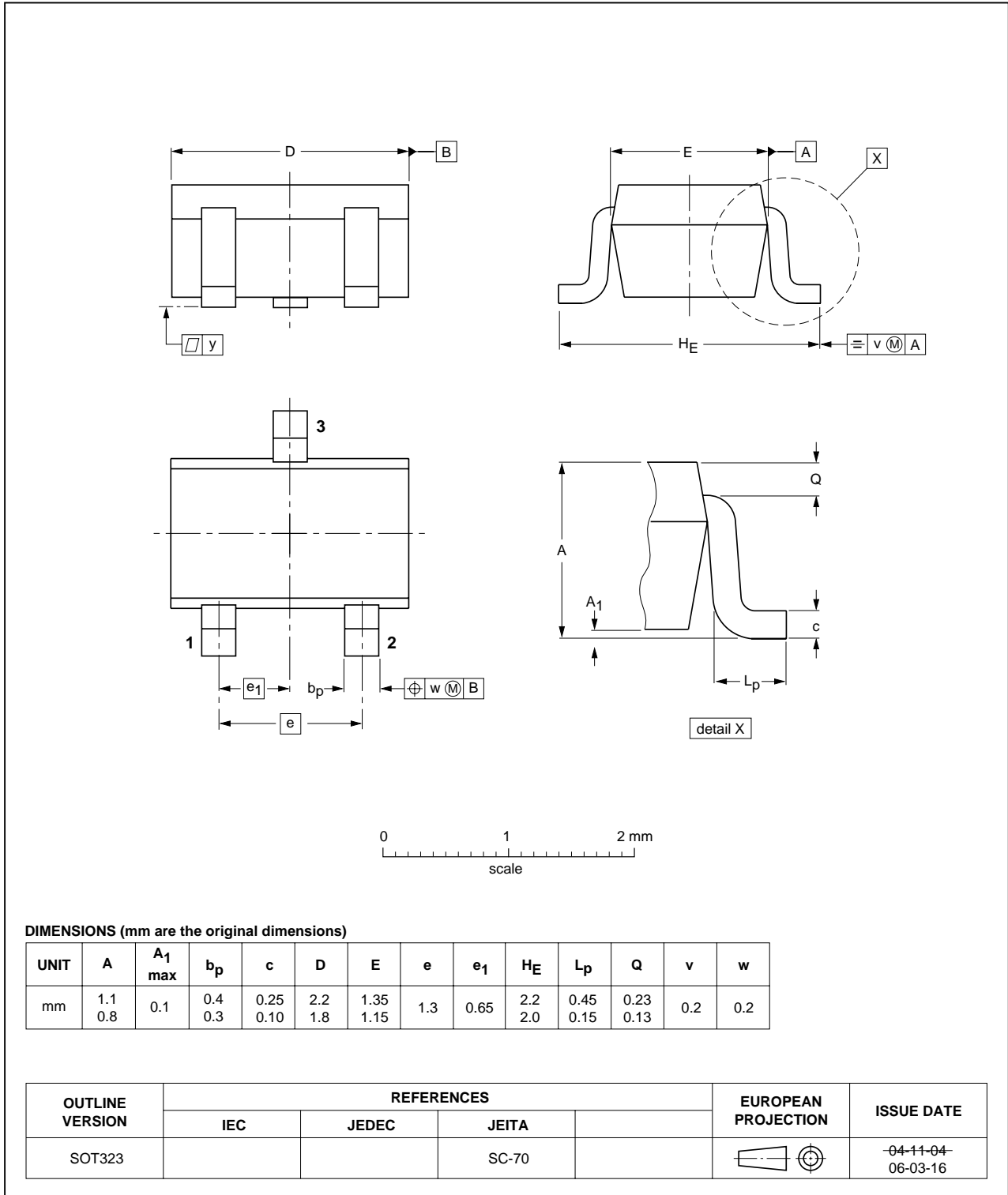


Fig 10. Package outline SOT323 (SC-70)

## 9. Packing information

**Table 9. Packing methods**

The indicated -xxx are the last three digits of the 12NC ordering code. [1]

Type number	Package	Description	Packing quantity		
			3000	5000	10000
PDTA115TE	SOT416	4 mm pitch, 8 mm tape and reel	-115	-	-135
PDTA115TK	SOT346	4 mm pitch, 8 mm tape and reel	-115	-	-135
PDTA115TM	SOT883	2 mm pitch, 8 mm tape and reel	-	-	-315
PDTA115TS	SOT54	bulk, straight leads	-	-412	-
	SOT54A	tape and reel, wide pitch	-	-	-116
	SOT54A	tape ammopack, wide patch	-	-	-126
	SOT54 variant	bulk, delta pinning	-	-112	-
PDTA115TT	SOT23	4 mm pitch, 8 mm tape and reel	-215	-	-235
PDTA115TU	SOT323	4 mm pitch, 8 mm tape and reel	-115	-	-135

[1] For further information and the availability of packing methods, see [Section 12](#).

## 10. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PDTA115T_SER_5	20090902	Product data sheet	-	PDTA115T_SER_4
Modifications:		<ul style="list-style-type: none"> <li>This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content.</li> <li><a href="#">Figure 3 "Package outline SOT416 (SC-75)": updated</a></li> <li><a href="#">Figure 4 "Package outline SOT346 (SC-59/TO-236)": updated</a></li> <li><a href="#">Figure 9 "Package outline SOT23 (TO-236AB)": updated</a></li> <li><a href="#">Figure 10 "Package outline SOT323 (SC-70)": updated</a></li> </ul>		
PDTA115T_SER_4	20050405	Product data sheet	-	PDTA115TT_3
PDTA115TT_3	20040907	Objective data sheet	-	PDTA115TT_2
PDTA115TT_2	20040518	Objective data sheet	-	PDTA115TT_1
PDTA115TT_1	20040323	Objective data sheet	-	-



## 11. Legal information

### 11.1 Data sheet status

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

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

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

[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.nxp.com>.

### 11.2 Definitions

**Draft** — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

**Short data sheet** — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local NXP Semiconductors sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

### 11.3 Disclaimers

**General** — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

**Right to make changes** — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

**Suitability for use** — NXP Semiconductors products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of an NXP Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental

damage. NXP Semiconductors accepts no liability for inclusion and/or use of NXP Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

**Applications** — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

**Limiting values** — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) may cause permanent damage to the device. Limiting values are stress ratings only and operation of the device at these or any other conditions above those given in the Characteristics sections of this document is not implied. Exposure to limiting values for extended periods may affect device reliability.

**Terms and conditions of sale** — NXP Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at <http://www.nxp.com/profile/terms>, including those pertaining to warranty, intellectual property rights infringement and limitation of liability, unless explicitly otherwise agreed to in writing by NXP Semiconductors. In case of any inconsistency or conflict between information in this document and such terms and conditions, the latter will prevail.

**No offer to sell or license** — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

**Export control** — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from national authorities.

**Quick reference data** — The Quick reference data is an extract of the product data given in the Limiting values and Characteristics sections of this document, and as such is not complete, exhaustive or legally binding.

### 11.4 Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

## 12. Contact information

For more information, please visit: <http://www.nxp.com>

For sales office addresses, please send an email to: [salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)

**13. Contents**

**1 Product profile . . . . . 1**

1.1 General description. . . . . 1

1.2 Features . . . . . 1

1.3 Applications . . . . . 1

1.4 Quick reference data. . . . . 1

**2 Pinning information. . . . . 2**

**3 Ordering information. . . . . 3**

**4 Marking. . . . . 3**

**5 Limiting values. . . . . 4**

**6 Thermal characteristics. . . . . 4**

**7 Characteristics. . . . . 5**

**8 Package outline . . . . . 6**

**9 Packing information. . . . . 14**

**10 Revision history. . . . . 15**

**11 Legal information. . . . . 16**

11.1 Data sheet status . . . . . 16

11.2 Definitions . . . . . 16

11.3 Disclaimers . . . . . 16

11.4 Trademarks. . . . . 16

**12 Contact information. . . . . 16**

**13 Contents . . . . . 17**

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



© NXP B.V. 2009.

All rights reserved.

For more information, please visit: <http://www.nxp.com>

For sales office addresses, please send an email to: [salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)

Date of release: 2 September 2009

Document identifier: PDTA115T\_SER\_5

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Bipolar Transistors - Pre-Biased](#) category:*

*Click to view products by [Nexperia](#) manufacturer:*

Other Similar products are found below :

[RN1607\(TE85L,F\)](#) [DTA124GKAT146](#) [DTA144WETL](#) [DTA144WKAT146](#) [DTC113EET1G](#) [DTC115TETL](#) [DTC115TKAT146](#)  
[DTC124TETL](#) [DTC144ECA-TP](#) [DTC144VUAT106](#) [MUN5241T1G](#) [BCR158WH6327XTSA1](#) [NSBA114TDP6T5G](#) [NSBA143ZF3T5G](#)  
[NSBC114YF3T5G](#) [NSBC123TF3T5G](#) [SMUN5235T1G](#) [SMUN5330DW1T1G](#) [SSVMUN5312DW1T2G](#) [RN1303\(TE85L,F\)](#)  
[RN4605\(TE85L,F\)](#) [TTEPROTOTYPE79](#) [DDTC114EUAQ-7-F](#) [EMH15T2R](#) [SMUN2214T3G](#) [SMUN5335DW1T1G](#) [NSBC114TF3T5G](#)  
[NSBC143ZPDP6T5G](#) [NSVMUN5113DW1T3G](#) [SMUN5230DW1T1G](#) [SMUN5133T1G](#) [SMUN2214T1G](#) [DTC114EUA-TP](#)  
[NSBA144EF3T5G](#) [NSVDTA114EET1G](#) [2SC2223-T1B-A](#) [2SC3912-TB-E](#) [SMUN5237DW1T1G](#) [SMUN5213DW1T1G](#)  
[SMUN5114DW1T1G](#) [SMUN2111T1G](#) [NSVDTC144EM3T5G](#) [DTC124ECA-TP](#) [DTC123TM3T5G](#) [DTA114ECA-TP](#) [DTA113EM3T5G](#)  
[DCX115EK-7-F](#) [DTC113EM3T5G](#) [NSVMUN5135DW1T1G](#) [NSVMUN2237T1G](#)