Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

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**

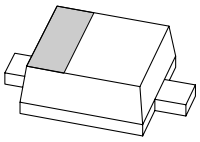
Instead of sales.addresses@www.nxp.com or sales.addresses@www.semiconductors.philips.com, use **salesaddresses@nexperia.com** (email)

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**). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia



PZUxB series

Single Zener diodes in a SOD323F package

Rev. 02 — 15 November 2009 Product data sheet

1. Product profile

1.1 General description

General-purpose Zener diodes in a SOD323F (SC-90) very small and flat lead Surface Mounted Device (SMD) plastic package.

1.2 Features

- Total power dissipation: ≤ 310 mW
- Tolerance series: B: approximately ±5 %; B1, B2, B3: sequential, approximately ±2 %
- Small plastic package suitable for surface mounted design
- Wide working voltage range: nominal 2.4 V to 36 V

1.3 Applications

- General regulation functions

1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 100 mA	[1]	-	-	1.1	V
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[2]	-	-	310	mW
			[3]	-	-	550	mW

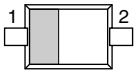
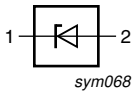
[1] Pulse test: $t_p \leq 300$ μs; $\delta \leq 0.02$

[2] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1cm^2.

2. Pinning information

Table 2. Pinning

Pin	Description		Simplified outline	Symbol
1	cathode	[1]		
2	anode			

sym068

[1] The marking bar indicates the cathode

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PZU2.4B to PZU36B[1]	SC-90	plastic surface mounted package; 2 leads	SOD323F

[1] The series consists of 97 types with nominal working voltages from 2.4 V to 36 V.

4. Marking

Table 4. Marking codes

Type number	Marking code				Type number	Marking code			
	B	B1	B2	B3		B	B1	B2	B3
PZU2.4	G3	-	-	-	PZU10	GJ	FH	HF	KB
PZU2.7	G4	F3	H1	-	PZU11	GK	FJ	HG	KC
PZU3.0	G5	F4	H2	-	PZU12	GL	FK	HH	KD
PZU3.3	G6	F5	H3	-	PZU13	GM	FL	HJ	KE
PZU3.6	G7	F6	H4	-	PZU14	-	-	HK	-
PZU3.9	G8	F7	H5	-	PZU15	GN	FM	HL	KF
PZU4.3	G9	F8	H6	HS	PZU16	GP	FN	HM	KG
PZU4.7	GA	F9	H7	HT	PZU18	GQ	FP	HN	KH
PZU5.1	GB	FA	H8	HU	PZU20	GR	FQ	HP	KJ
PZU5.6	GC	FB	H9	HV	PZU22	GS	FR	HQ	KK
PZU6.2	GD	FC	HA	HW	PZU24	GT	FS	HR	KL
PZU6.8	GE	FD	HB	HX	PZU27	GU	-	-	-
PZU7.5	GF	FE	HC	HY	PZU30	GV	-	-	-
PZU8.2	GG	FF	HD	HZ	PZU33	GW	-	-	-
PZU9.1	GH	FG	HE	KA	PZU36	GX	-	-	-

5. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
I_F	forward current			-	200	mA
I_{ZSM}	non-repetitive peak reverse current			-	see Table 8 and 9	
P_{ZSM}	non-repetitive peak reverse power dissipation		[1]	-	40	W
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[2]	-	310	mW
			[3]	-	550	mW
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			−65	+150	°C
T_{stg}	storage temperature			−65	+150	°C

[1] $t_p = 100$ µs; square wave; $T_j = 25$ °C prior to surge

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1cm^2.

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	400	K/W
			[2]	-	-	230	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[3]	-	-	55	K/W

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1cm^2.

[3] Soldering point of cathode tab

7. Characteristics

Table 7. Characteristics

$T_j = 25$ °C unless otherwise specified

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 10$ mA	[1]	-	-	0.9	V
		$I_F = 100$ mA	[1]	-	-	1.1	V

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$

Table 8. Characteristics per type; PZU2.4B to PZU5.6B3

T_j = 25 °C unless otherwise specified

PZU xxx	Sel	Working voltage V_Z (V); I_Z = 5 mA		Maximum differential resistance r_{dif} (Ω)		Reverse current I_R (μA)		Temperature coefficient S_Z (mV/K); I_Z = 5 mA	Diode capacitance C_d (pF)[1]	Non-repetitive peak reverse current I_{ZSM} (A)[2]
		Min	Max	I_Z = 0.5 mA	I_Z = 5 mA	Max	V_R (V)	Typ	Max	Max
2.4	B	2.3	2.6	1000	100	50	1	−1.6	450	8
2.7	B	2.5	2.9	1000	100	20	1	−2.0	440	8
	B1	2.5	2.75							
	B2	2.65	2.9							
3.0	B	2.80	3.20	1000	95	10	1	−2.1	425	8
	B1	2.80	3.05							
	B2	2.95	3.20							
3.3	B	3.10	3.50	1000	95	5	1	−2.4	410	8
	B1	3.10	3.35							
	B2	3.25	3.50							
3.6	B	3.40	3.80	1000	90	5	1	−2.4	390	8
	B1	3.40	3.65							
	B2	3.55	3.80							
3.9	B	3.70	4.10	1000	90	3	1	−2.5	370	8
	B1	3.70	3.97							
	B2	3.87	4.10							
4.3	B	4.01	4.48	1000	90	3	1	−2.5	350	8
	B1	4.01	4.21							
	B2	4.15	4.34							
	B3	4.28	4.48							
4.7	B	4.42	4.90	800	80	2	1	−1.4	325	8
	B1	4.42	4.61							
	B2	4.55	4.75							
	B3	4.69	4.90							
5.1	B	4.84	5.37	250	60	2	1.5	0.3	300	5.5
	B1	4.84	5.04							
	B2	4.98	5.20							
	B3	5.14	5.37							
5.6	B	5.31	5.92	100	40	1	2.5	1.9	275	5.5
	B1	5.31	5.55							
	B2	5.49	5.73							
	B3	5.67	5.92							

[1] f = 1 MHz; V_R = 0 V

[2] t_p = 100 μs; square wave; T_j = 25 °C prior to surge

Table 9. Characteristics per type; PZU6.2B to PZU36B

T_j = 25 °C unless otherwise specified

PZU xxx	Sel	Working voltage V_Z (V); I_Z = 5 mA		Maximum differential resistance r_{dif} (Ω)		Reverse current I_R (nA)		Temperature coefficient S_Z (mV/K); I_Z = 5 mA	Diode capacitance C_d (pF)[1]	Non-repetitive peak reverse current I_{ZSM} (A)[2]
		Min	Max	I_Z = 0.5 mA	I_Z = 5 mA	Max	V_R (V)	Typ	Max	Max
6.2	B	5.86	6.53	80	30	500	3	2.7	250	5.5
	B1	5.86	6.12							
	B2	6.06	6.33							
	B3	6.26	6.53							
6.8	B	6.47	7.14	60	20	500	3.5	3.4	215	5.5
	B1	6.47	6.73							
	B2	6.65	6.93							
	B3	6.86	7.14							
7.5	B	7.06	7.84	60	10	500	4	4.0	170	3.5
	B1	7.06	7.36							
	B2	7.28	7.60							
	B3	7.52	7.84							
8.2	B	7.76	8.64	60	10	500	5	4.6	150	3.5
	B1	7.76	8.10							
	B2	8.02	8.36							
	B3	8.28	8.64							
9.1	B	8.56	9.55	60	10	500	6	5.5	120	3.5
	B1	8.56	8.93							
	B2	8.85	9.23							
	B3	9.15	9.55							
10	B	9.45	10.55	60	10	100	7	6.4	110	3.5
	B1	9.45	9.87							
	B2	9.77	10.21							
	B3	10.11	10.55							
11	B	10.44	11.56	60	10	100	8	7.4	108	3
	B1	10.44	10.88							
	B2	10.76	11.22							
	B3	11.10	11.56							
12	B	11.42	12.60	80	10	100	9	8.4	105	3
	B1	11.42	11.90							
	B2	11.74	12.24							
	B3	12.08	12.60							
13	B	12.47	13.96	80	10	100	10	9.4	103	2.5
	B1	12.47	13.03							
	B2	12.91	13.49							
	B3	13.37	13.96							
14	B2	13.70	14.30	80	10	100	11	10.4	101	2

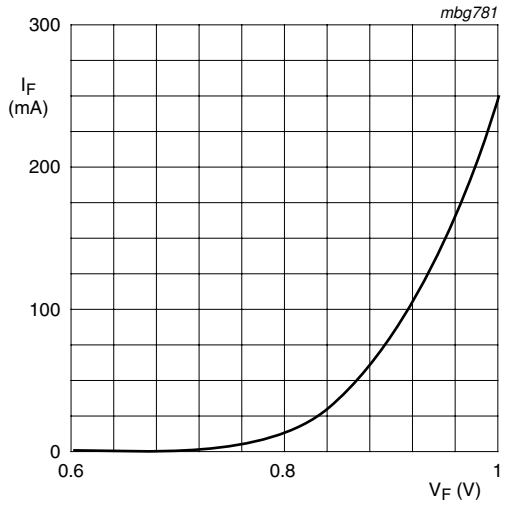
Table 9. Characteristics per type; PZU6.2B to PZU36B *…continued*

T_j = 25 °C unless otherwise specified

PZU xxx	Sel	Working voltage V_Z (V); I_Z = 5 mA		Maximum differential resistance r_{dif} (Ω)		Reverse current I_R (nA)		Temperature coefficient S_Z (mV/K); I_Z = 5 mA	Diode capacitance C_d (pF)[1]	Non-repetitive peak reverse current I_{ZSM} (A)[2]
		Min	Max	I_Z = 0.5 mA	I_Z = 5 mA	Max	V_R (V)	Typ	Max	Max
15	B	13.84	15.52	80	15	50	11	11.4	99	2
	B1	13.84	14.46							
	B2	14.34	14.98							
	B3	14.85	15.52							
16	B	15.37	17.09	80	20	50	12	12.4	97	1.5
	B1	15.37	16.01							
	B2	15.85	16.51							
	B3	16.35	17.09							
18	B	16.94	19.03	80	20	50	13	14.4	93	1.5
	B1	16.94	17.70							
	B2	17.56	18.35							
	B3	18.21	19.03							
20	B	18.86	21.08	100	20	50	15	16.4	88	1.5
	B1	18.86	19.70							
	B2	19.52	20.39							
	B3	20.21	21.08							
22	B	20.88	23.17	100	25	50	17	18.4	84	1.3
	B1	20.88	21.77							
	B2	21.54	22.47							
	B3	22.23	23.17							
24	B	22.93	25.57	120	30	50	19	20.4	80	1.3
	B1	22.93	23.96							
	B2	23.72	24.78							
	B3	24.54	25.57							
27	B	25.1	28.9	150	40	50	21	23.4	73	1
30	B	28	32	200	40	50	23	26.6	66	1
33	B	31	35	250	40	50	25	29.7	60	0.9
36	B	34	38	300	60	50	27	33.0	59	0.8

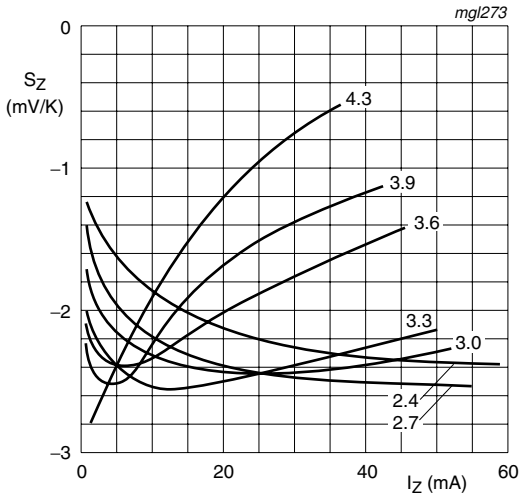
[1] f = 1 MHz; V_R = 0 V

[2] t_p = 100 µs; square wave; T_j = 25 °C prior to surge



T_j = 25 °C

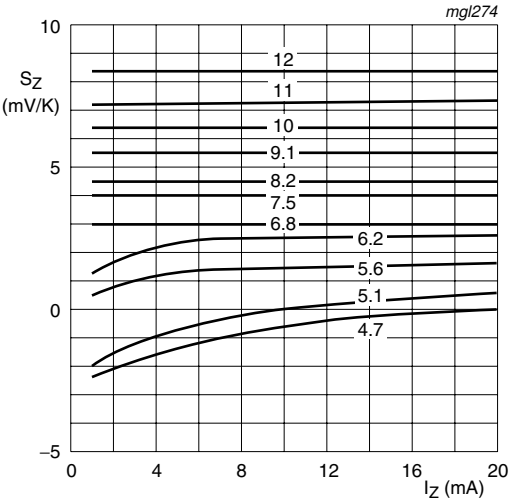
Fig 1. Forward current as a function of forward voltage; typical values



PZU2.4B to PZU4.3B

T_j = 25 °C to 150 °C

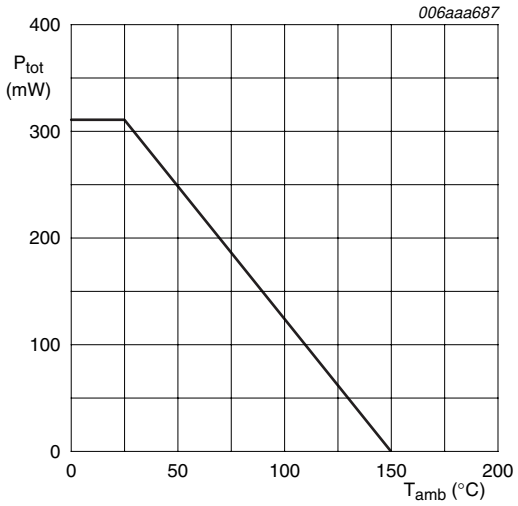
Fig 2. Temperature coefficient as a function of working current; typical values



PZU4.7B to PZU12B

T_j = 25 °C to 150 °C

Fig 3. Temperature coefficient as a function of working current; typical values



FR4 PCB, standard footprint

Fig 4. Power derating curve

8. Package outline

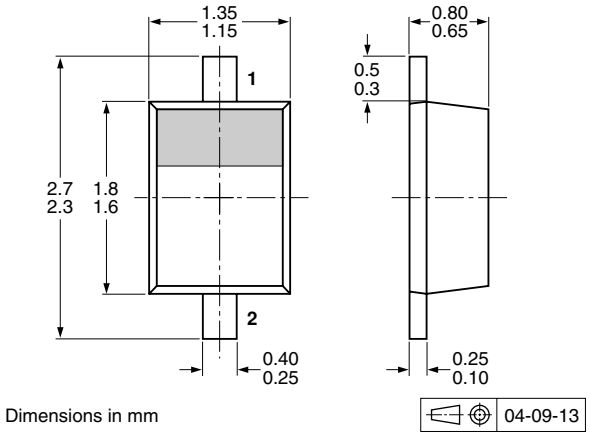


Fig 5. Package outline SOD323F (SC-90)

9. Packing information

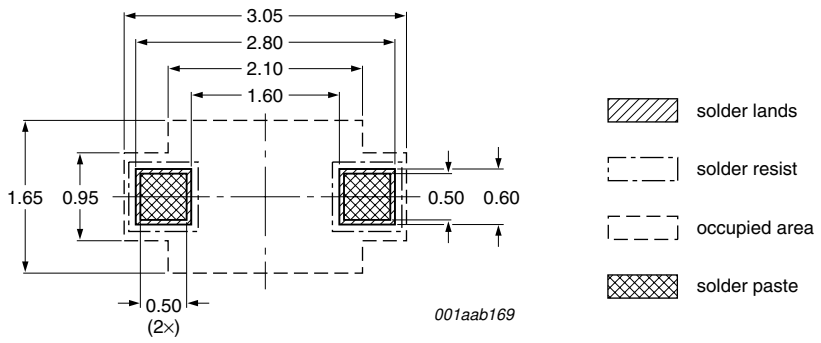
Table 10. Packing methods

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

Type number	Package	Description	Packing quantity	
			3000	10000
PZU2.4B to PZU36B	SOD323F	4 mm pitch, 8 mm tape and reel	-115	-135

[1] For further information and the availability of packing methods, see Section 14.

10. Soldering

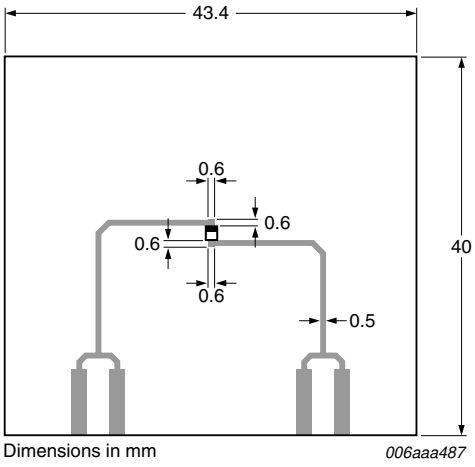


Reflow soldering is the only recommended soldering method.

Dimensions in mm

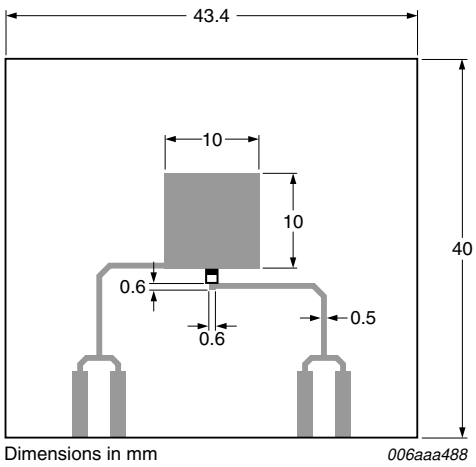
Fig 6. Reflow soldering footprint SOD323F (SC-90)

11. Mounting



PCB thickness = 1.6 mm

Fig 7. FR4 PCB, standard footprint



PCB thickness = 1.6 mm

Fig 8. FR4 PCB, mounting pad for cathode 1cm^2

12. Revision history

Table 11. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PZUXB_SER_2	20091115	Product data sheet	-	PZUXB_SER_1
Modifications:	• 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.			
PZUXB_SER_1	20060307	Product data sheet	-	-

13. Legal information

13.1 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.nxp.com.

13.2 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.

13.3 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.

13.4 Trademarks

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

14. Contact information

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

For sales office addresses, please send an email to: **salesaddresses@nxp.com**

15. Contents

For more information, please visit: http://www.nxp.com
For sales office addresses, please send an email to: salesaddresses@nxp.com

Date of release: 15 November 2009
Document identifier: PZUXB_SER_2