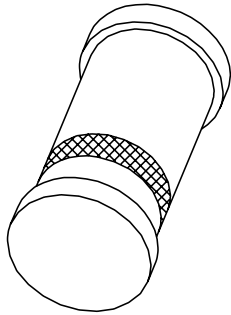


# DATA SHEET



Datasheet.Live

**PMLL4150; PMLL4151;  
PMLL4153**  
High-speed diodes

Product data sheet  
Supersedes data of April 1996

1996 Sep 18

# High-speed diodes

# PMLL4150; PMLL4151; PMLL4153

## FEATURES

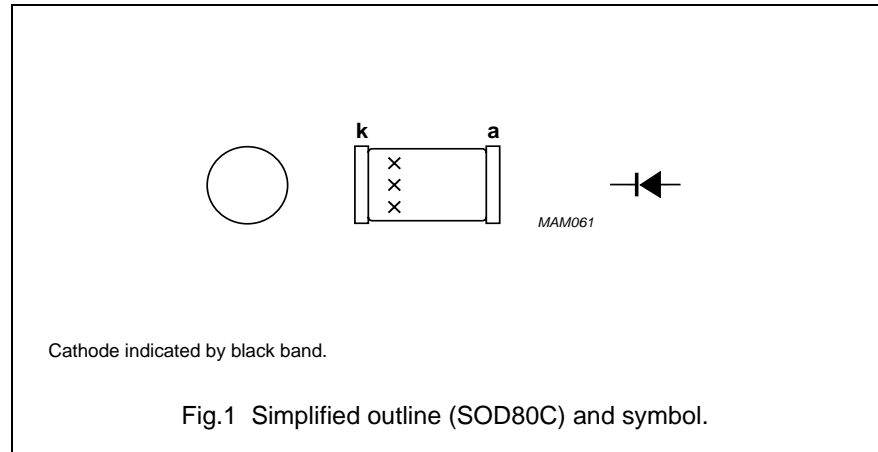
- Small hermetically sealed glass SMD package
- High switching speed: max. 4 ns
- General application
- Continuous reverse voltage: max. 50 V
- Repetitive peak reverse voltage: max. 75 V
- Repetitive peak forward current: max. 600 mA and 450 mA respectively.

## APPLICATIONS

- High-speed switching
- The PMLL4150 is primarily intended for general purpose use in computer and industrial applications.
- The PMLL4151 and PMLL4153 are intended for military and industrial applications.

## DESCRIPTION

The PMLL4150, PMLL4151, PMLL4153 are high-speed switching diodes fabricated in planar technology, and encapsulated in small hermetically sealed glass SOD80C SMD packages.



## High-speed diodes

PMLL4150; PMLL4151;  
PMLL4153**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>RRM</sub>	repetitive peak reverse voltage				
	PMLL4151		–	75	V
	PMLL4153		–	75	V
V <sub>R</sub>	continuous reverse voltage		–	50	V
I <sub>F</sub>	continuous forward current	see Fig.2; note 1			
	PMLL4150		–	300	mA
	PMLL4151		–	200	mA
	PMLL4153		–	200	mA
I <sub>FRM</sub>	repetitive peak forward current				
	PMLL4150		–	600	mA
	PMLL4151		–	450	mA
	PMLL4153		–	450	mA
I <sub>FSM</sub>	non-repetitive peak forward current	square wave; T <sub>j</sub> = 25 °C prior to surge; see Fig.4			
		t = 1 μs	–	4	A
		t = 1 ms	–	1	A
		t = 1 s	–	0.5	A
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> = 25 °C; note 1	–	500	mW
T <sub>stg</sub>	storage temperature		–65	+200	°C
T <sub>j</sub>	junction temperature		–	200	°C

**Note**

1. Device mounted on an FR4 printed-circuit board.

## High-speed diodes

PMLL4150; PMLL4151;  
PMLL4153**ELECTRICAL CHARACTERISTICS**T<sub>j</sub> = 25 °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>F</sub>	forward voltage PMLL4150  PMLL4151 PMLL4153	see Fig.3			
		I <sub>F</sub> = 1 mA	540	620	mV
		I <sub>F</sub> = 10 mA	660	740	mV
		I <sub>F</sub> = 50 mA	760	860	mV
		I <sub>F</sub> = 100 mA	820	920	mV
		I <sub>F</sub> = 200 mA	870	1000	mV
		I <sub>F</sub> = 50 mA	–	1000	mV
		I <sub>F</sub> = 0.1 mA	490	550	mV
		I <sub>F</sub> = 0.25 mA	530	590	mV
		I <sub>F</sub> = 1 mA	590	670	mV
		I <sub>F</sub> = 2 mA	620	700	mV
		I <sub>F</sub> = 10 mA	700	810	mV
I <sub>F</sub> = 50 mA	740	880	mV		
I <sub>R</sub>	reverse current PMLL4150 PMLL4151 PMLL4153	V <sub>R</sub> = 50 V; see Fig.5			
			–	0.1	μA
			–	0.05	μA
I <sub>R</sub>	reverse current PMLL4150 PMLL4151 PMLL4153	V <sub>R</sub> = 50 V; T <sub>j</sub> = 150 °C; see Fig.5			
			–	100	μA
			–	50	μA
C <sub>d</sub>	diode capacitance PMLL4150 PMLL4151 PMLL4153	f = 1 MHz; V <sub>R</sub> = 0; see Fig.6			
			–	2.5	pF
			–	2	pF
				2	pF

## High-speed diodes

PMLL4150; PMLL4151;  
PMLL4153

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$t_{rr}$	reverse recovery time PMLL4150	when switched from $I_F = 10$ mA to $I_R = 1$ mA; $R_L = 100 \Omega$ ; measured at $I_R = 0.1$ mA; see Fig.7	–	6	ns
		when switched from $I_F = 10$ mA to 200 mA to $I_R = 10$ mA to 200 mA; $R_L = 100 \Omega$ ; measured at $I_R = 0.1 \times I_F$ ; see Fig.7	–	4	ns
		when switched from $I_F = 200$ mA to 400 mA to $I_R = 200$ mA to 400 mA; $R_L = 100 \Omega$ ; measured at $I_R = 0.1 \times I_F$ ; see Fig.7	–	6	ns
$t_{rr}$	reverse recovery time PMLL4151	when switched from $I_F = 10$ mA to $I_R = 10$ mA; $R_L = 100 \Omega$ ; measured at $I_R = 1$ mA; see Fig.7	–	4	ns
		when switched from $I_F = 10$ mA to $I_R = 60$ mA; $R_L = 100 \Omega$ ; measured at $I_R = 1$ mA; see Fig.7	–	2	ns
$t_{rr}$	reverse recovery time PMLL4153	when switched from $I_F = 10$ mA to $I_R = 10$ mA; $R_L = 100 \Omega$ ; measured at $I_R = 1$ mA; see Fig.7	–	4	ns
		when switched from $I_F = 10$ mA to $I_R = 60$ mA; $R_L = 100 \Omega$ ; measured at $I_R = 1$ mA; see Fig.7	–	2	ns
$t_{fr}$	forward recovery time	when switched to $I_F = 200$ mA; $t_r = 0.4$ ns; measured at $V_F = 1$ V; see Fig.8	–	10	ns

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		300	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	350	K/W

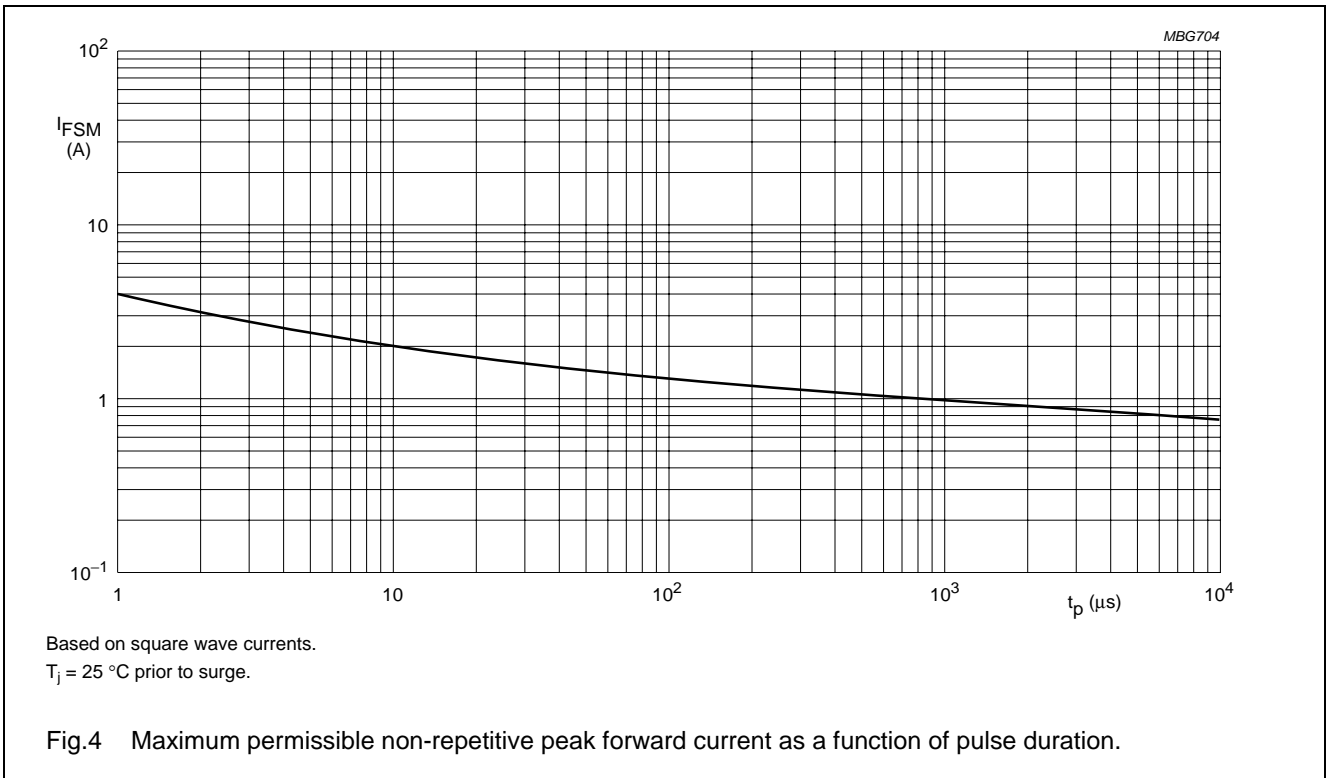
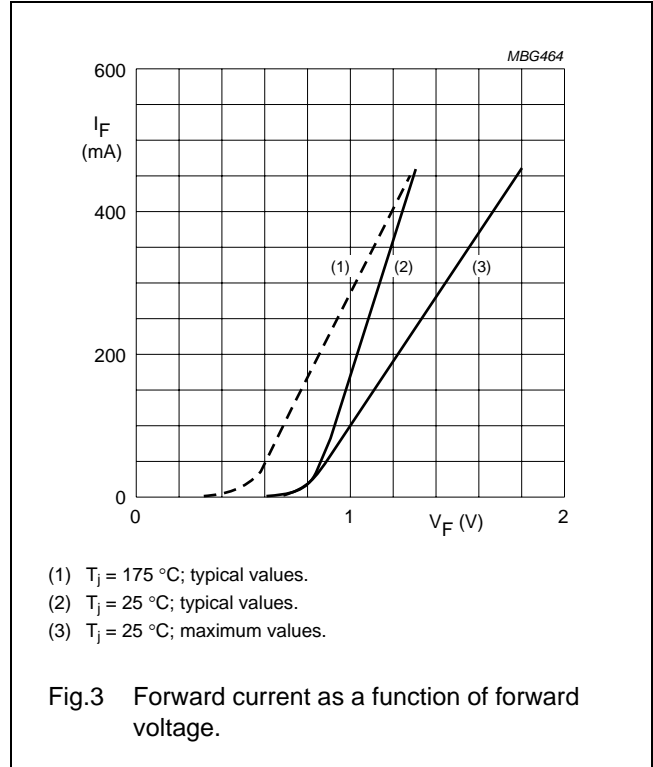
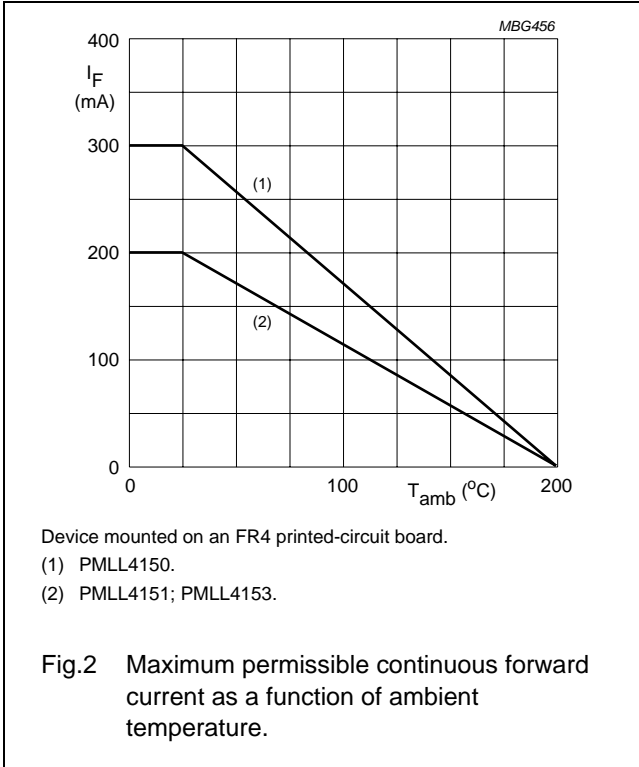
## Note

1. Device mounted on an FR4 printed-circuit board.

High-speed diodes

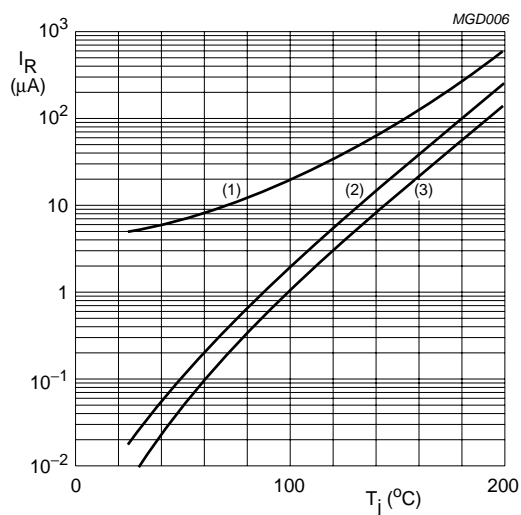
PMLL4150; PMLL4151;  
PMLL4153

GRAPHICAL DATA



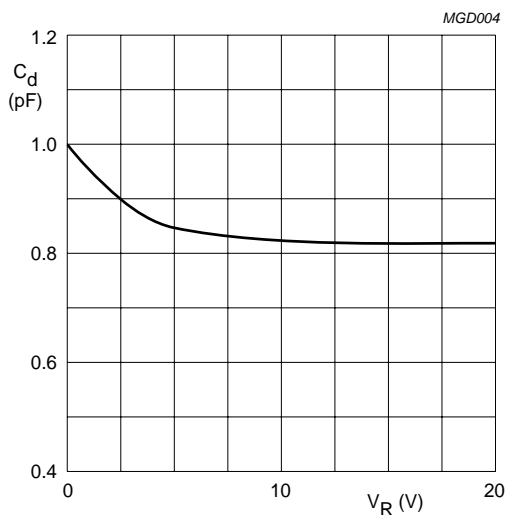
High-speed diodes

PMLL4150; PMLL4151;  
PMLL4153



- (1)  $V_R = 75\text{ V}$ ; maximum values.
- (2)  $V_R = 75\text{ V}$ ; typical values.
- (3)  $V_R = 20\text{ V}$ ; typical values.

Fig.5 Reverse current as a function of junction temperature.

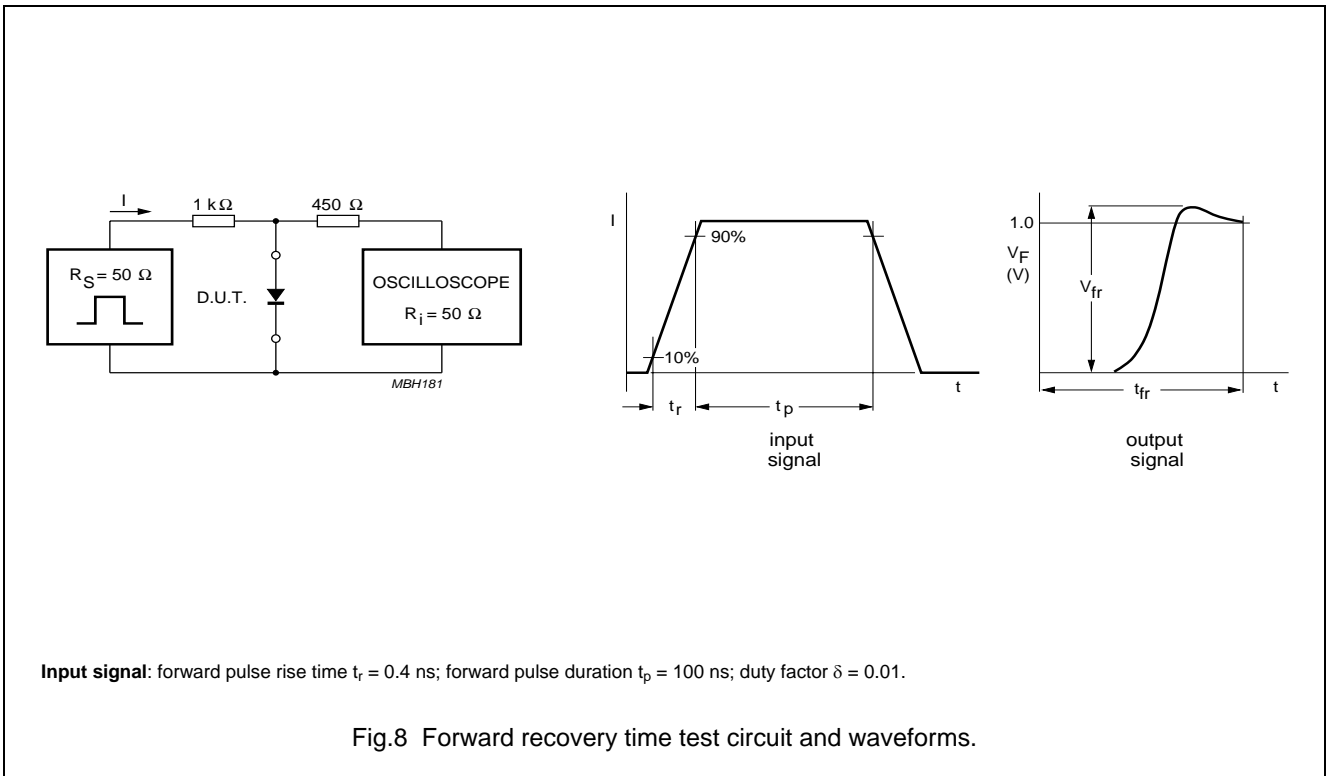
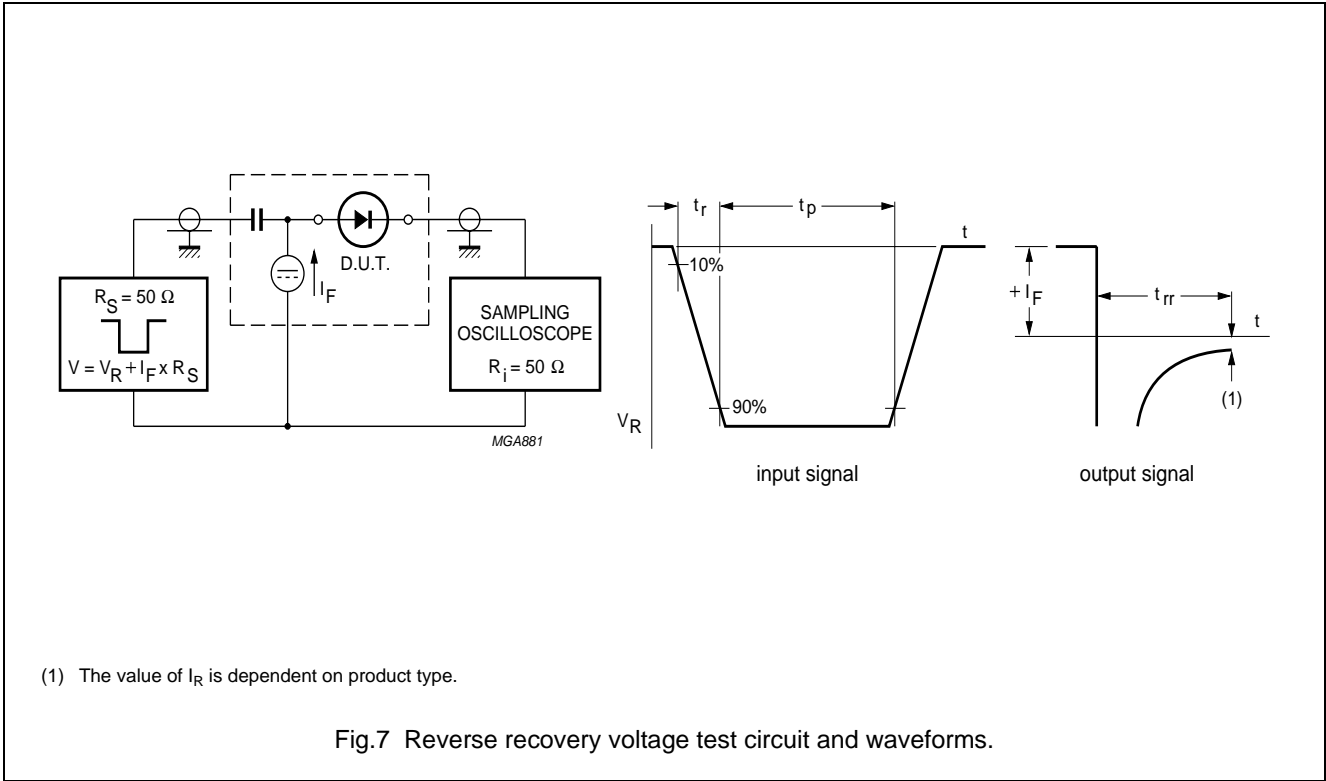


f = 1 MHz;  $T_j = 25\text{ }^{\circ}\text{C}$ .

Fig.6 Diode capacitance as a function of reverse voltage; typical values.

High-speed diodes

PMLL4150; PMLL4151;  
PMLL4153

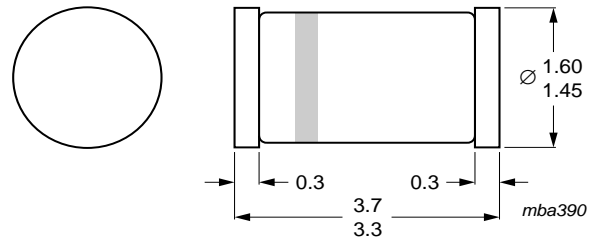




High-speed diodes

PMLL4150; PMLL4151;  
PMLL4153

PACKAGE OUTLINE



Dimensions in mm.

Fig.9 SOD80C.

## High-speed diodes

PMLL4150; PMLL4151;  
PMLL4153

## DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

## Notes

1. Please consult the most recently issued document before initiating or completing a design.
2. 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>.

## 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.

# ***NXP Semiconductors***

## **Customer notification**

This data sheet was changed to reflect the new company name NXP Semiconductors. No changes were made to the content, except for the legal definitions and disclaimers.

## **Contact information**

For additional information please visit: **<http://www.nxp.com>**

For sales offices addresses send e-mail to: **[salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)**

© NXP B.V. 2009

All rights are reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.

The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Printed in The Netherlands

1996 Sep 18

