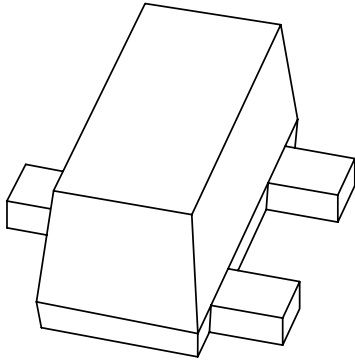


# DATA SHEET



**1PS89SS04; 1PS89SS05;  
1PS89SS06**

**High-speed double diodes**

Product specification  
Supersedes data of 1999 June 08

2001 Jan 09

High-speed double diodes

1PS89SS04; 1PS89SS05; 1PS89SS06

FEATURES

- Power dissipation comparable to SOT23
- Ultra small plastic SMD package
- High switching speed: max. 4 ns
- Continuous reverse voltage: max. 80 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 500 mA.

APPLICATIONS

- High speed switching in e.g. surface mounted circuits.

DESCRIPTION

Two high-speed switching diodes in planar technology, with different configurations, in an ultra small SC-89 (SOT490) SMD plastic package.

PINNING

PIN	1PS89SS..		
	04	05	06
1	a <sub>1</sub>	a <sub>1</sub>	k <sub>1</sub>
2	k <sub>2</sub>	a <sub>2</sub>	k <sub>2</sub>
3	k <sub>1</sub> , a <sub>2</sub>	k <sub>1</sub> , k <sub>2</sub>	a <sub>1</sub> , a <sub>2</sub>

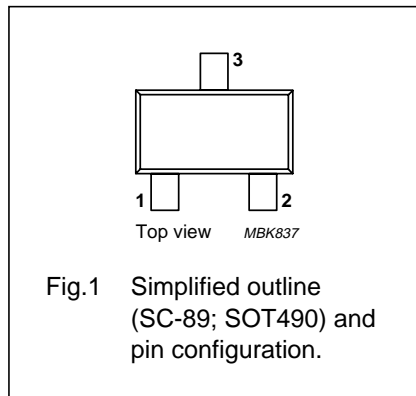


Fig.1 Simplified outline (SC-89; SOT490) and pin configuration.

MARKING

TYPE NUMBER	MARKING CODE
1PS89SS04	S4
1PS89SS05	S5
1PS89SS06	S6

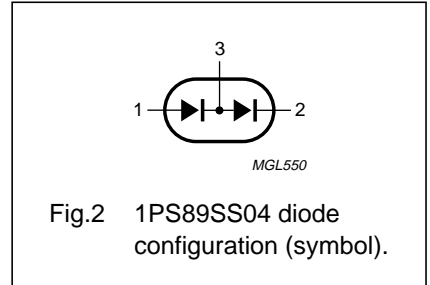


Fig.2 1PS89SS04 diode configuration (symbol).

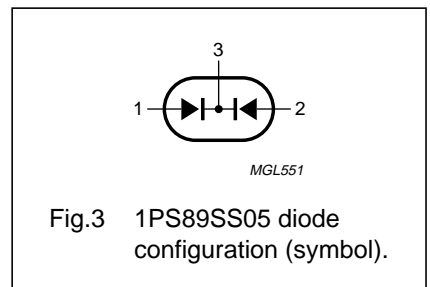


Fig.3 1PS89SS05 diode configuration (symbol).

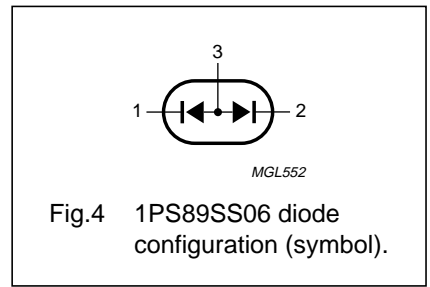


Fig.4 1PS89SS06 diode configuration (symbol).

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
<b>Per diode unless otherwise specified</b>					
V <sub>RRM</sub>	repetitive peak reverse voltage		–	85	V
V <sub>R</sub>	continuous reverse voltage		–	80	V
I <sub>F</sub>	continuous forward current	T <sub>amb</sub> = 25 °C; note 1; see Fig.5 single diode loaded both diodes loaded	–	200 125	mA mA
I <sub>FRM</sub>	repetitive peak forward current		–	500	mA
I <sub>FSM</sub>	non-repetitive peak forward current	square wave; T <sub>j</sub> = 25 °C prior to surge; see Fig.7 t = 1 μs t = 1 s	–	4 0.5	A A

## High-speed double diodes

## 1PS89SS04; 1PS89SS05; 1PS89SS06

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$P_{tot}$	total power dissipation (per package)	$T_{amb} \leq 25\text{ °C}$ ; note 1	–	250	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	+150	°C

**Note**

1. Refer to SC-89 (SOT490) standard mounting conditions.

**ELECTRICAL CHARACTERISTICS**

$T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
<b>Per diode</b>					
$V_F$	forward voltage	see Fig.6 $I_F = 1\text{ mA}$ $I_F = 10\text{ mA}$ $I_F = 50\text{ mA}$ $I_F = 100\text{ mA}$	610 740 – –	– – 1 1.2	mV mV V V
$I_R$	reverse current	see Fig.8 $V_R = 25\text{ V}$ $V_R = 80\text{ V}$ $V_R = 25\text{ V}; T_j = 150\text{ °C}$ $V_R = 80\text{ V}; T_j = 150\text{ °C}$	– – – –	30 0.5 30 100	nA $\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
$C_d$	diode capacitance 1PS89SS04 1PS89SS05 1PS89SS06	$f = 1\text{ MHz}; V_R = 0$ ; see Fig.9	– – –	1.5 1.5 2	pF pF pF
$t_{rr}$	reverse recovery time	switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}$ ; $R_L = 100\ \Omega$ ; measured at $I_R = 1\text{ mA}$ ; see Fig.10	–	4	ns
$V_{fr}$	forward recovery voltage	switched to $I_F = 10\text{ mA}$ ; $t_r = 20\text{ ns}$ ; see Fig.11	–	1.75	V

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-s}$	thermal resistance from junction to soldering point 1PS89SS04 1PS89SS05 1PS89SS06	both diodes loaded	55 70 70	K/W K/W K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

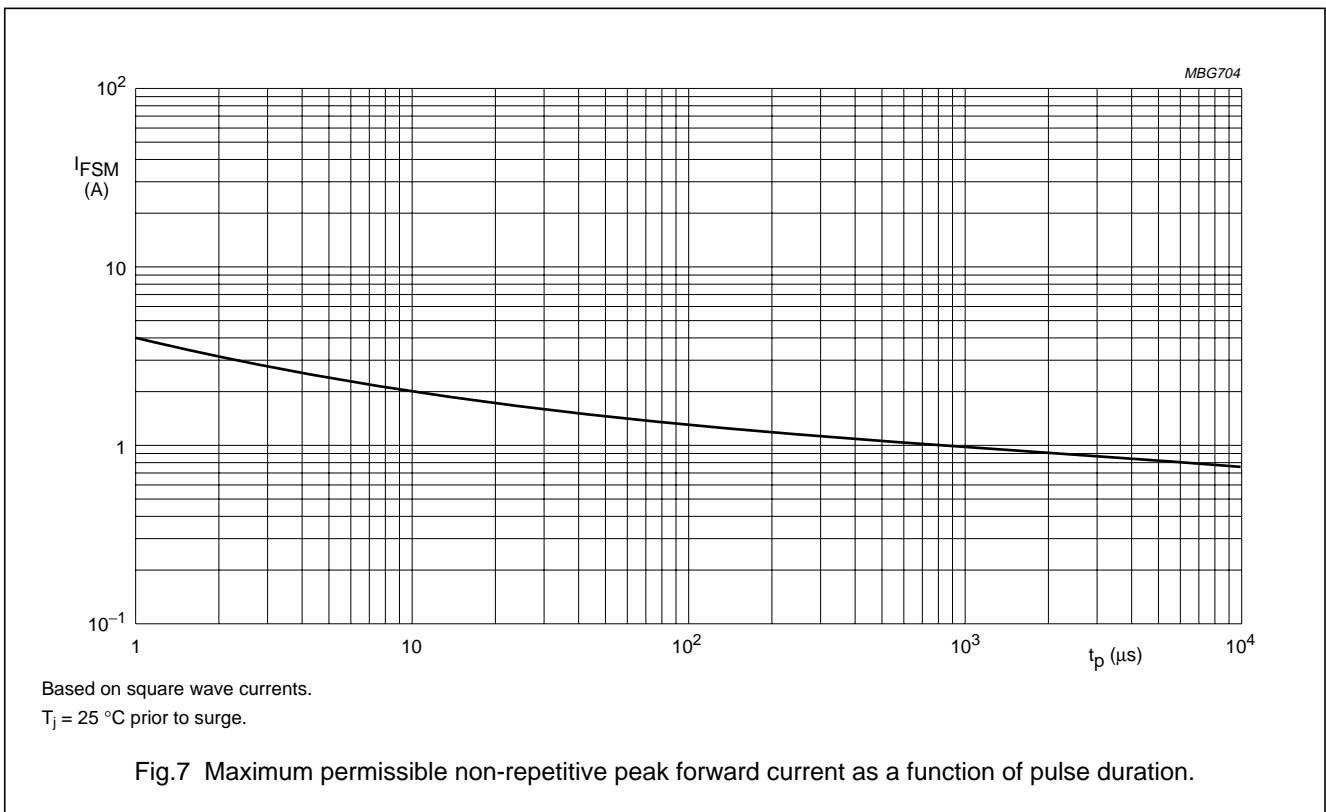
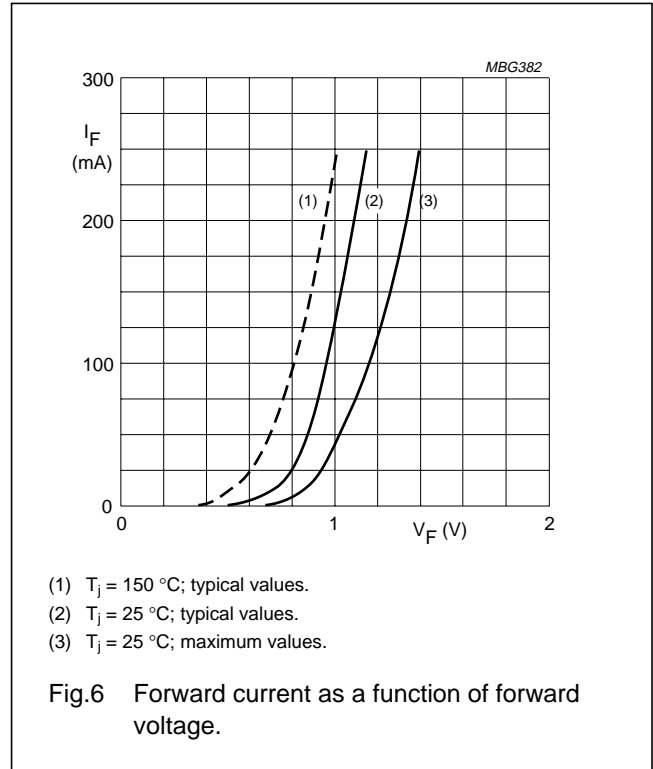
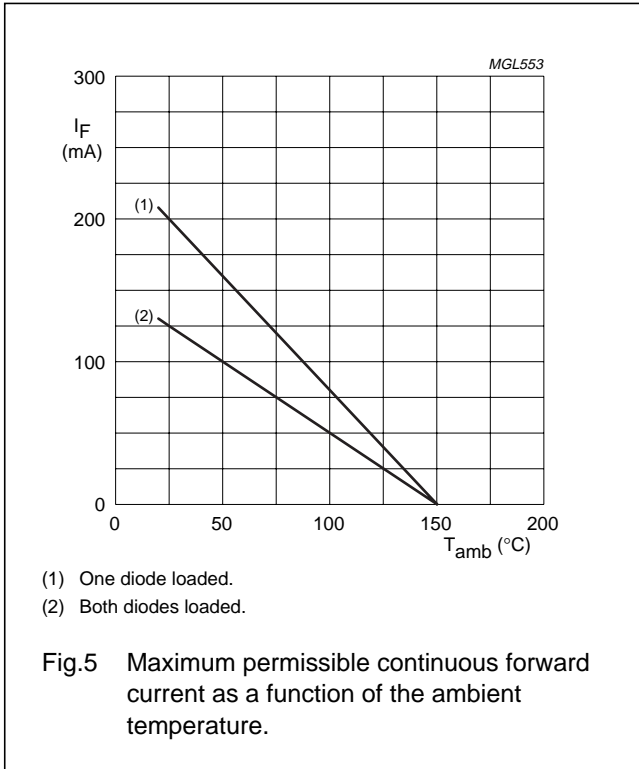
**Note**

1. Refer to SC-89 (SOT490) standard mounting conditions.

High-speed double diodes

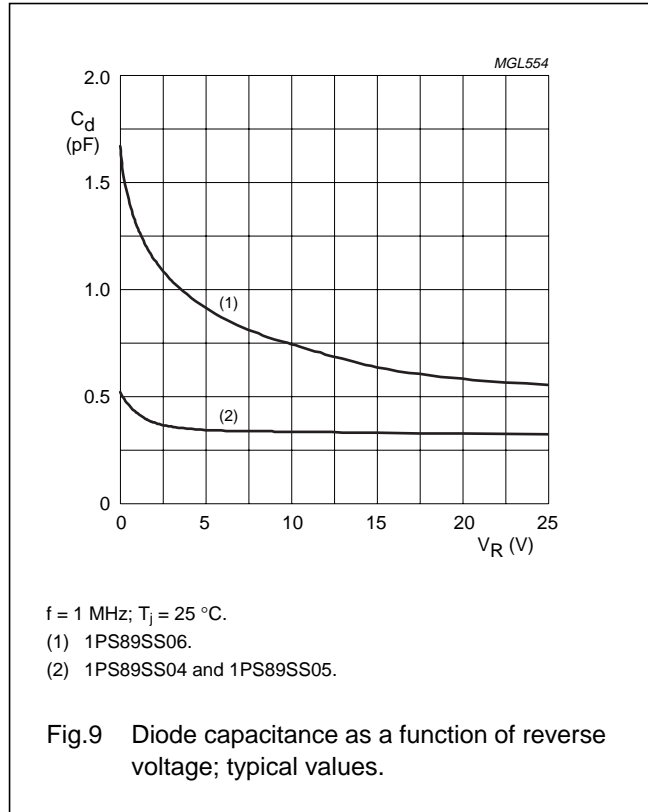
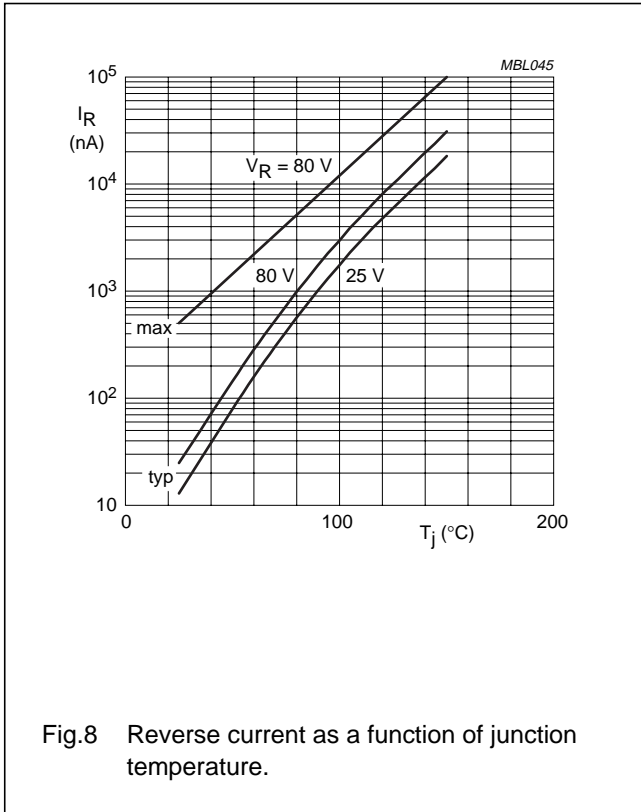
1PS89SS04; 1PS89SS05; 1PS89SS06

GRAPHICAL DATA



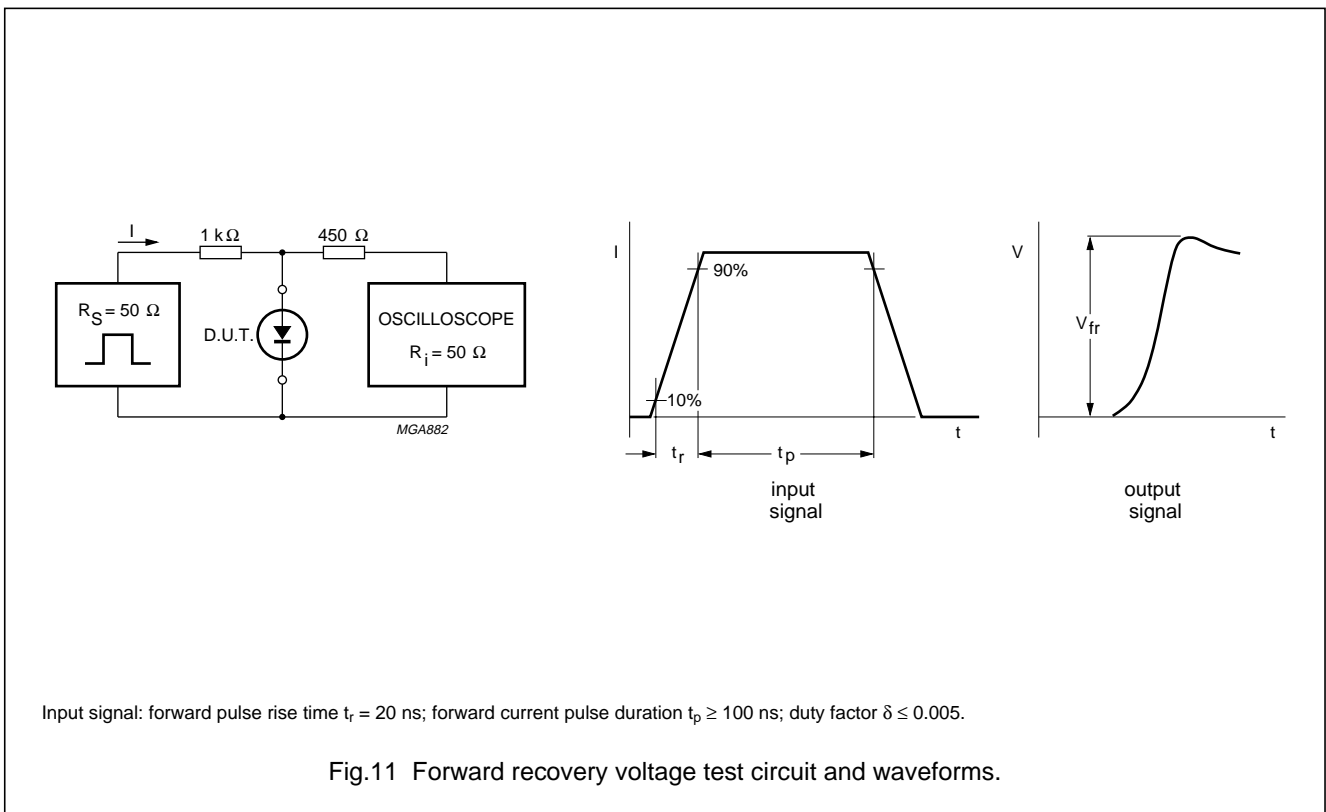
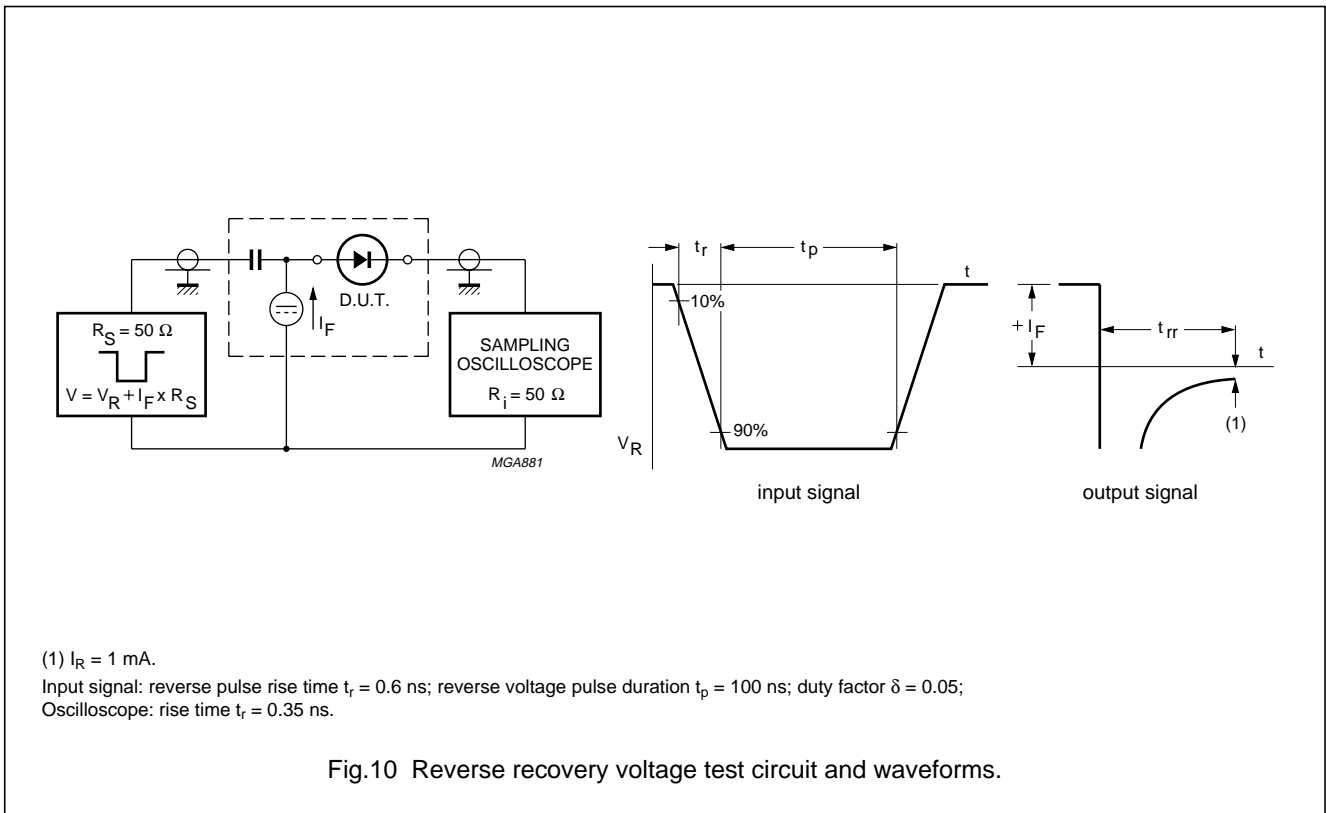
High-speed double diodes

1PS89SS04; 1PS89SS05; 1PS89SS06



High-speed double diodes

1PS89SS04; 1PS89SS05; 1PS89SS06



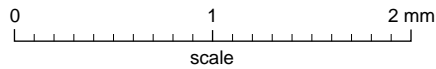
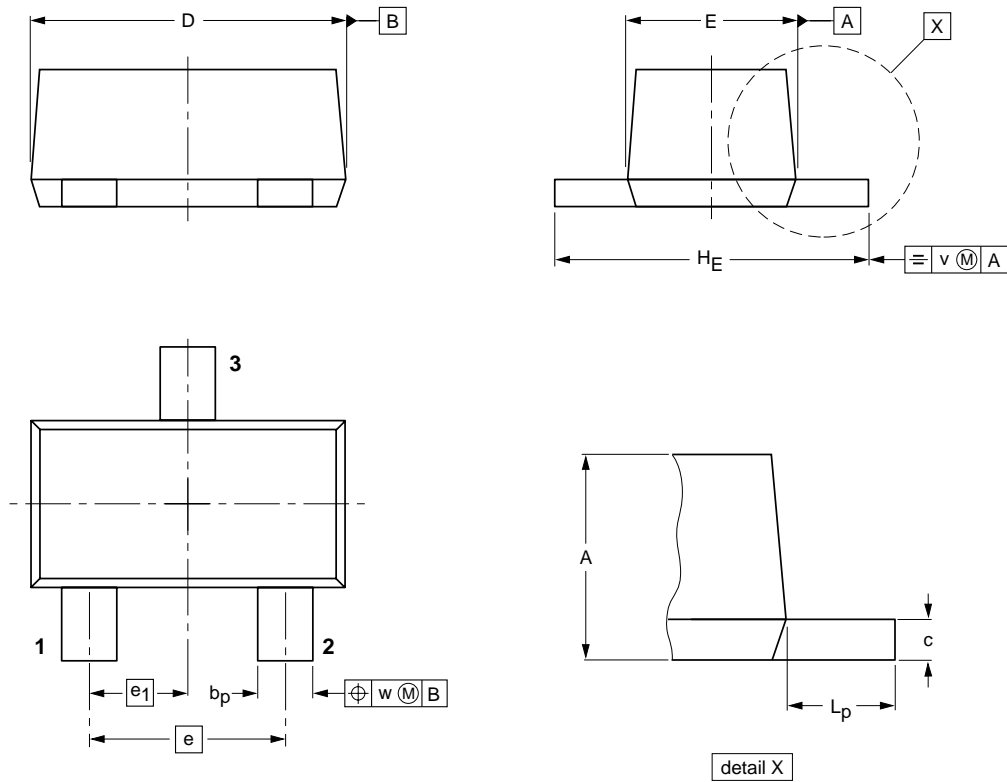
High-speed double diodes

1PS89SS04; 1PS89SS05; 1PS89SS06

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT490



DIMENSIONS (mm are the original dimensions)

UNIT	A	$b_p$	c	D	E	e	$e_1$	$H_E$	$L_p$	v	w
mm	0.8 0.6	0.33 0.23	0.2 0.1	1.7 1.5	0.95 0.75	1.0	0.5	1.7 1.5	0.5 0.3	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT490			SC-89			98-10-23

## High-speed double diodes

## 1PS89SS04; 1PS89SS05; 1PS89SS06

## DATA SHEET STATUS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS <sup>(1)</sup>
Objective specification	Development	This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.
Preliminary specification	Qualification	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

## Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

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

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High-speed double diodes

1PS89SS04; 1PS89SS05; 1PS89SS06

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**NOTES**

High-speed double diodes

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**NOTES**

High-speed double diodes

1PS89SS04; 1PS89SS05; 1PS89SS06

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**NOTES**

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