# Small Signal Schottky Diodes

## Features

- The SD103 series is a Metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring.
- The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing and coupling diodes for fast switching and low logic level applications.
- Other applications are click suppression, efficient full wave bridges in telephone subsets, and blocking diodes in rechargeable low voltage battery systems.
- These diodes are also available in the SOD123 and SOD323 case with type designations SD103AW(S)-V...SD103CW(S)-V, and in the MiniMELF case with type designations LL103A thru LL103C.
- For general purpose applications
- Lead (Pb)-free component
- Component in accordance with RoHS2002/95/EC and WEEE 2002/96/EC


## Mechanical Data

**Case:** DO35 Glass case
**Weight:** approx. 125 mg
**Cathode Band Color:** black
**Packaging Codes/Options:**
TR/10 k per 13" reel (52 mm tape), 50 k/box
TAP/10 k per Ammopack (52 mm tape), 50 k/box

## Applications

- HF-Detector
- Protection circuit
- Small battery charger
- AC-DC/DC-DC converters

## Parts Table

| Part | Type differentiation | Ordering code | Type Marking | Remarks |
|---|---|---|---|---|
| SD103A | $V_R$ = 40 V | SD103A-TR or SD103A-TAP | SD103A | Tape and Reel/Ammopack |
| SD103B | $V_R$ = 30 V | SD103B-TR or SD103B-TAP | SD103B | Tape and Reel/Ammopack |
| SD103C | $V_R$ = 20 V | SD103C-TR or SD103C-TAP | SD103C | Tape and Reel/Ammopack |

## Absolute Maximum Ratings

$T_{amb}$ = 25 °C, unless otherwise specified

| Parameter | Test condition | Part | Symbol | Value | Unit |
|---|---|---|---|---|---|
| Peak inverse voltage | | SD103A | $V_R$ | 40 | V |
| | | SD103B | $V_R$ | 30 | V |
| | | SD103C | $V_R$ | 20 | V |
| Power dissipation (infinite heatsink) | | | $P_{tot}$ | 400[1)] | mW |
| Single cycle surge 60 Hz sine wave | | | $I_{FSM}$ | 15 | A |

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

## Thermal Characteristics

$T_{amb}$ = 25 °C, unless otherwise specified

| Parameter | Test condition | Symbol | Value | Unit |
|---|---|---|---|---|
| Thermal resistance junction to ambient air | | $R_{thJA}$ | 310[1)] | K/W |
| Junction temperature | | $T_j$ | 125[1)] | °C |
| Storage temperature range | | $T_{stg}$ | - 55 to + 150[1)] | °C |

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

## Electrical Characteristics

$T_{amb}$ = 25 °C, unless otherwise specified

| Parameter | Test condition | Part | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Reverse Breakdown Voltage | $I_R$ = 50 µA | SD103A | $V_{(BR)}$ | 40 | | | V |
| | | SD103B | $V_{(BR)}$ | 30 | | | V |
| | | SD103C | $V_{(BR)}$ | 20 | | | V |
| Leakage current | $V_R$ = 30 V | SD103A | $I_R$ | | | 5 | µA |
| | $V_R$ = 20 V | SD103B | $I_R$ | | | 5 | µA |
| | $V_R$ = 10 V | SD103C | $I_R$ | | | 5 | µA |
| Forward voltage drop | $I_F$ = 20 mA | | $V_F$ | | | 370 | mV |
| | $I_F$ = 200 mA | | $V_F$ | | | 600 | mV |
| Diode capacitance | $V_R$ = 0 V, f = 1 MHz | | $C_D$ | | 50 | | pF |
| Reverse recovery time | $I_F$ = $I_R$ = 50 to 200 mA, recover to 0.1 $I_R$ | | $t_{rr}$ | | 10 | | ns |

## Typical Characteristics

$T_{amb}$ = 25 °C, unless otherwise specified

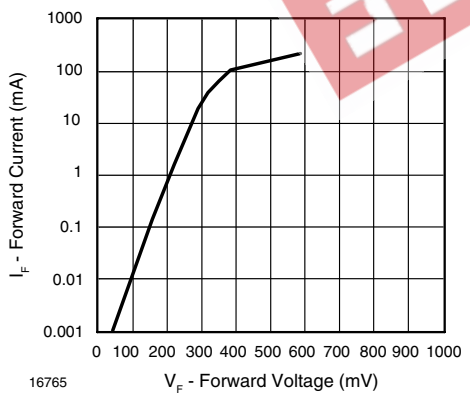



Figure 1. Forward Current vs. Forward Voltage

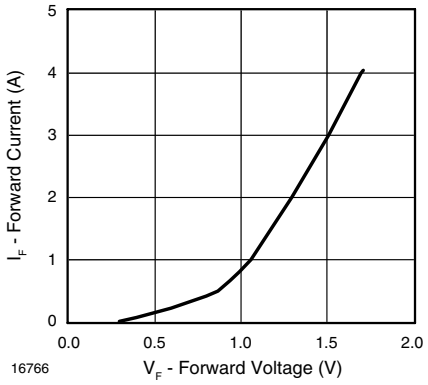



Figure 2. Forward Current vs. Forward Voltage

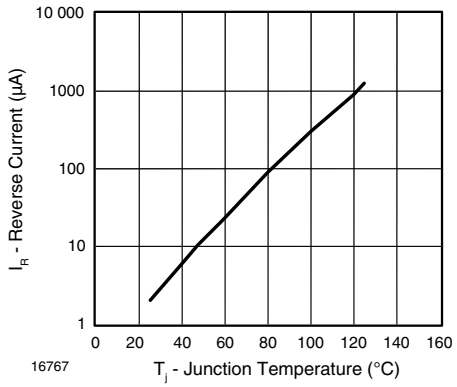



Figure 3. Reverse Current vs. Junction Temperature

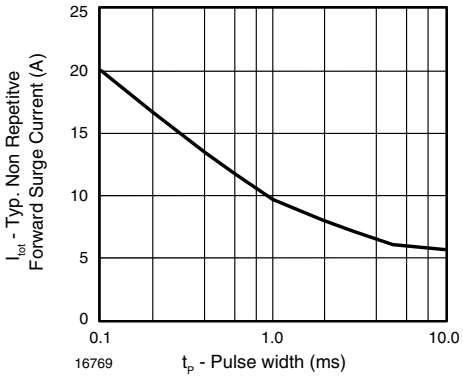



Figure 5. Typ. Non Repetitive Forward Surge Current vs. Pulse Width

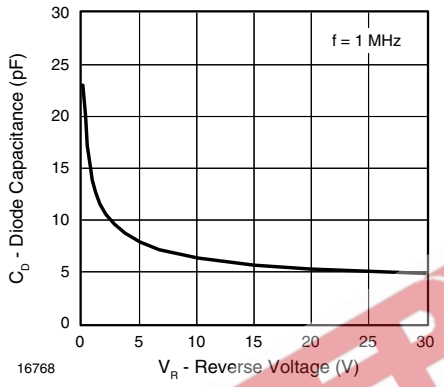
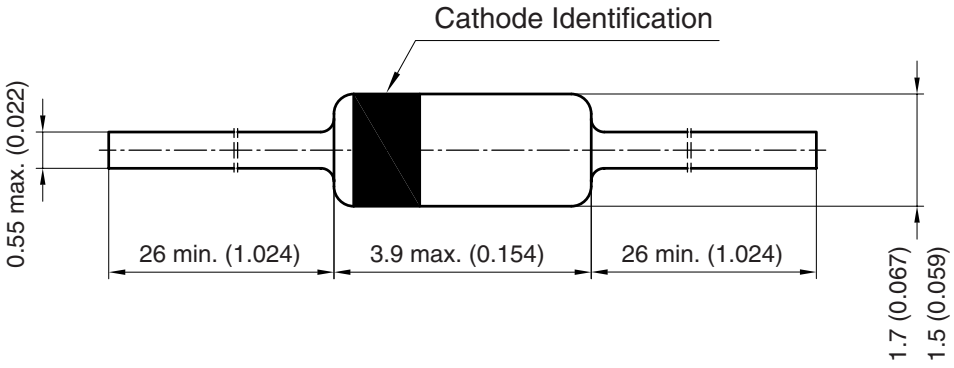



Figure 4. Diode Capacitance vs. Reverse Voltage



## Package Dimensions in millimeters (inches): DO35




Rev. 6 - Date: 29. January 2007
Document no.: 6.560-5004.02-4
94 9366

## Ozone Depleting Substances Policy Statement

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.



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