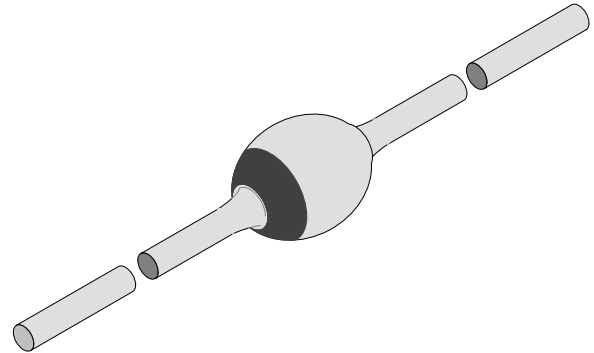


Silicon Mesa Rectifiers

Features

- Controlled avalanche characteristics
- Glass passivated junction
- Hermetically sealed package
- Low reverse current
- High surge current loading
- Electrically equivalent diodes:
 BYW52 – 1N5059 BYW53 – 1N5060
 BYW54 – 1N5061 BYW55 – 1N5062



94 9539

Applications

Rectifier, general purpose

Absolute Maximum Ratings

 $T_j = 25^\circ\text{C}$

| Parameter | Test Conditions | Type | Symbol | Value | Unit |
|--|---|-------|---------------|------------|-----------------------------|
| Reverse voltage =Repetitive peak reverse voltage | | BYW52 | $V_R=V_{RRM}$ | 200 | V |
| | | BYW53 | $V_R=V_{RRM}$ | 400 | V |
| | | BYW54 | $V_R=V_{RRM}$ | 600 | V |
| | | BYW55 | $V_R=V_{RRM}$ | 800 | V |
| | | BYW56 | $V_R=V_{RRM}$ | 1000 | V |
| Peak forward surge current | $t_p=10\text{ms}$, half sinewave | | I_{FSM} | 50 | A |
| Repetitive peak forward current | | | I_{FRM} | 12 | A |
| Average forward current | $\varphi=180^\circ$ | | I_{FAV} | 2 | A |
| Pulse avalanche peak power | $t_p=20\mu\text{s}$ half sinus wave, $T_j=175^\circ\text{C}$ | | P_R | 1000 | W |
| Pulse energy in avalanche mode, non repetitive (inductive load switch off) | $I_{(BR)R}=1\text{A}$, $T_j=175^\circ\text{C}$ | | E_R | 20 | mJ |
| $i^2 \cdot t$ -rating | | | $i^2 \cdot t$ | 8 | $\text{A}^2 \cdot \text{s}$ |
| Junction and storage temperature range | | | $T_j=T_{stg}$ | -55...+175 | $^\circ\text{C}$ |

Maximum Thermal Resistance

 $T_j = 25^\circ\text{C}$

| Parameter | Test Conditions | Symbol | Value | Unit |
|------------------|---|------------|-------|------|
| Junction ambient | $l=10\text{mm}$, $T_L=\text{constant}$ | R_{thJA} | 45 | K/W |
| | on PC board with spacing 25mm | R_{thJA} | 100 | K/W |

Electrical Characteristics

$T_j = 25^\circ\text{C}$

| Parameter | Test Conditions | Type | Symbol | Min | Typ | Max | Unit |
|-------------------------|--|------|------------|-----|-----|------|---------------|
| Forward voltage | $I_F=1\text{A}$ | | V_F | | 0.9 | 1.0 | V |
| Reverse current | $V_R=V_{RRM}$ | | I_R | | 0.1 | 1 | μA |
| | $V_R=V_{RRM}, T_j=100^\circ\text{C}$ | | I_R | | 5 | 10 | μA |
| Breakdown voltage | $I_R=100\mu\text{A}, t_p/T=0.01, t_p=0.3\text{ms}$ | | $V_{(BR)}$ | | | 1600 | V |
| Diode capacitance | $V_R=0, f=0.47\text{MHz}$ | | C_D | | 50 | | pF |
| Reverse recovery time | $I_F=0.5\text{A}, I_R=1\text{A}, i_R=0.25\text{A}$ | | t_{rr} | | | 4 | μs |
| | $I_F=1\text{A}, di/dt=5\text{A}/\mu\text{s}, V_R=50\text{V}$ | | t_{rr} | | | 4 | μs |
| Reverse recovery charge | $I_F=1\text{A}, di/dt=5\text{A}/\mu\text{s}$ | | Q_{rr} | | | 200 | nC |

Characteristics ($T_j = 25^\circ\text{C}$ unless otherwise specified)

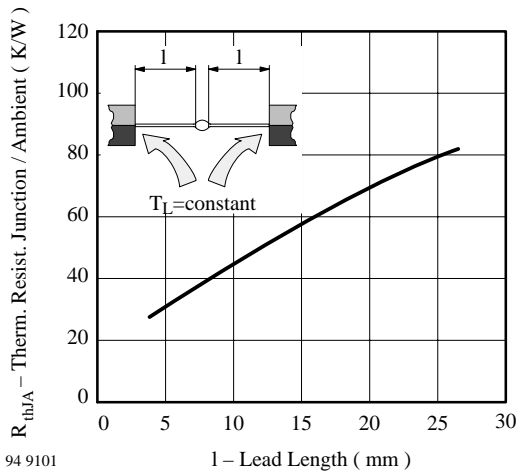


Figure 1. Typ. Thermal Resistance vs. Lead Length

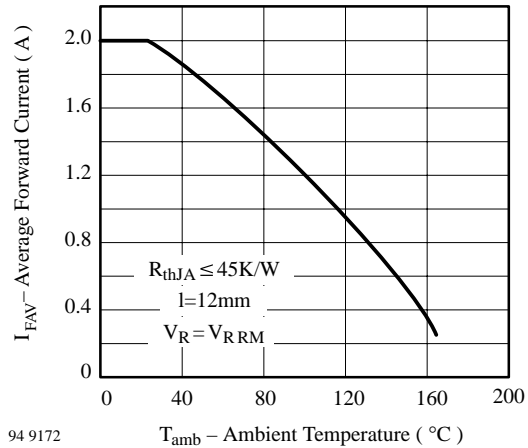


Figure 3. Max. Average Forward Current vs. Ambient Temperature

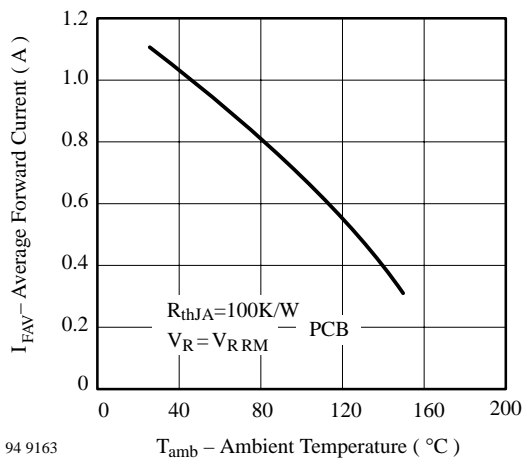


Figure 2. Max. Average Forward Current vs. Ambient Temperature

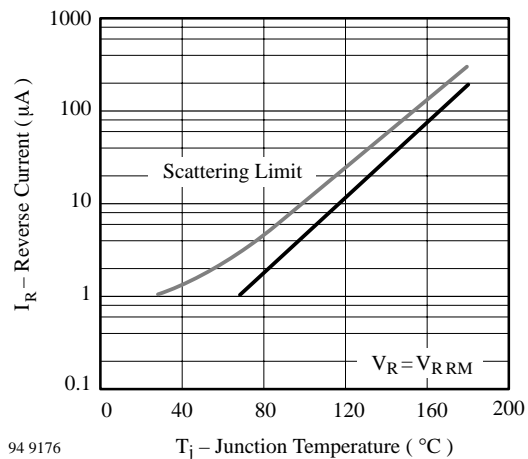
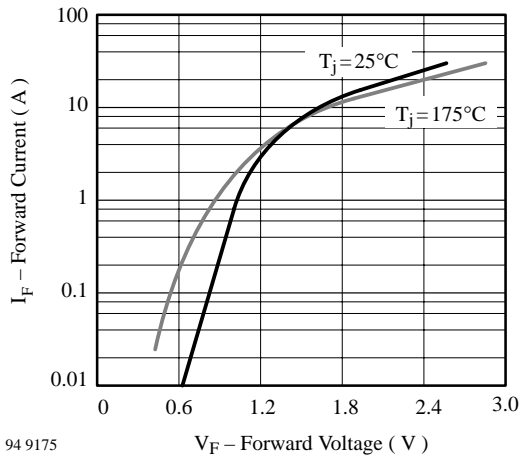
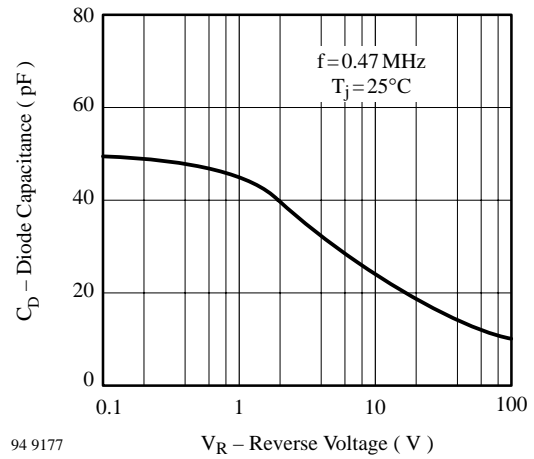


Figure 4. Reverse Current vs. Junction Temperature



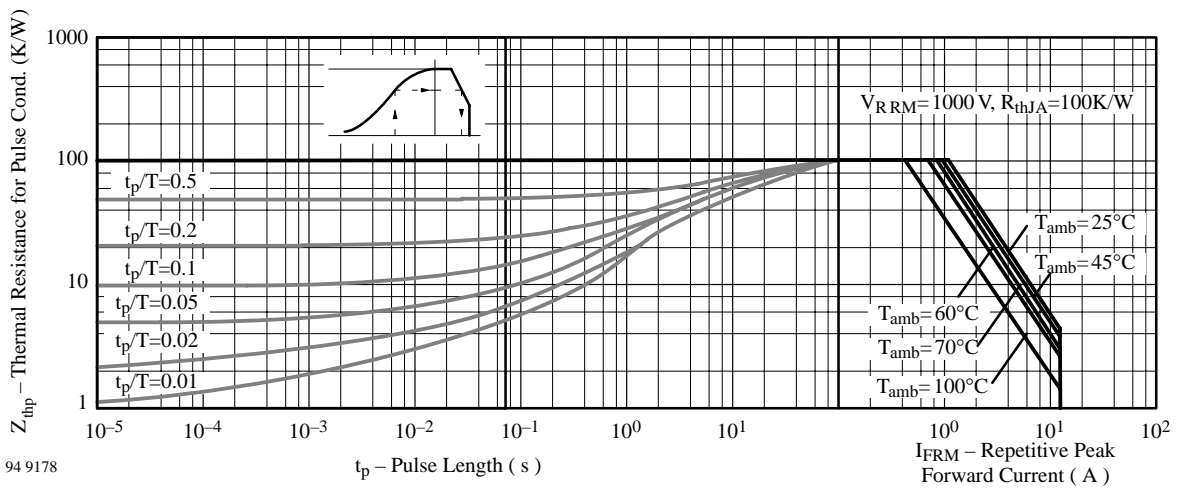
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Figure 5. Typ. Forward Current vs. Forward Voltage



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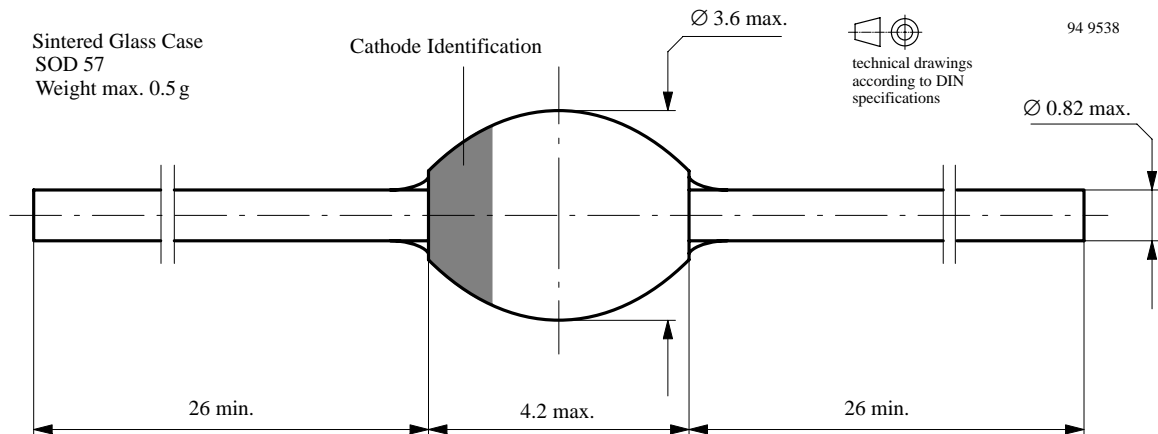
Figure 6. Typ. Diode Capacitance vs. Reverse Voltage



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Figure 7. Thermal Response

Dimensions in mm



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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.

We reserve the right to make changes to improve technical design and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay-Telefunken products for any unintended or unauthorized application, the buyer shall indemnify Vishay-Telefunken against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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