

$V_{RM} = 1 \text{ kV to } 4 \text{ kV}$
High Voltage Rectifier Diode
SHV-02JN, SHV-05J, SHV-06JN, SHV-08J

Description

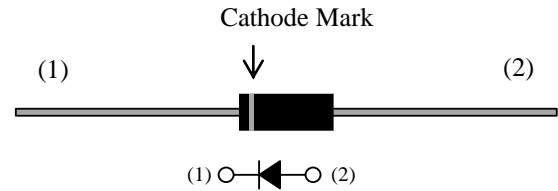
The SHV-02JN, SHV-05J, SHV-06JN, and SHV-08J are high voltage rectifier diodes for the ignition coil of automotive electronics unit, and have high surge capability.

Features

- High Reliability ($T_J = 175 \text{ }^{\circ}\text{C}$)
- Meets Automotive Requirement
- High Surge Capability
- Flammability UL94V-0 (Equivalent)
- RoHS Compliant

Package

Axial

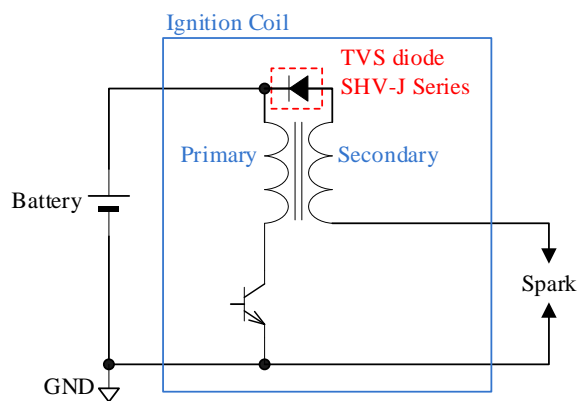


(1) Cathode
(2) Anode

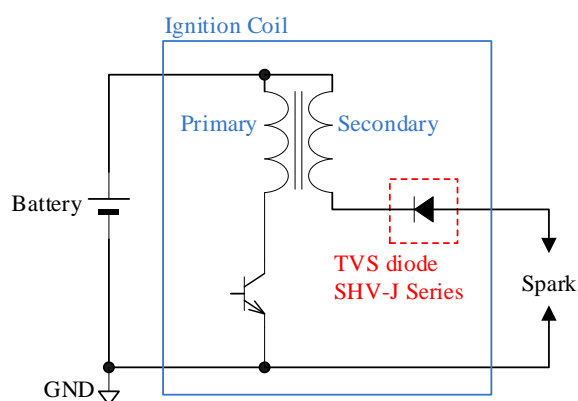
Not to scale

Typical Application

- Typical Application 1



- Typical Application 2



Selection Guide

- Characteristics

| Product | $V_{RM} \text{ (max.)}$ | I_{RSM} | Typical Application |
|----------|-------------------------|-----------|---------------------|
| SHV-02JN | 1 kV | 30 mA | 1 |
| SHV-05J | 2.5 kV | | 1 and 2 |
| SHV-06JN | 3 kV | | 2 |
| SHV-08J | 4 kV | | 2 |

- Package

| Product | Body Diameter (mm) | Body Length (mm) | Lead Width (mm) |
|----------|--------------------|------------------|-----------------|
| SHV-05J | $\phi 2.5$ | 5.0 | $\phi 0.5$ |
| SHV-02JN | $\phi 2.5$ | 6.5 | $\phi 0.5$ |
| SHV-06JN | | | |
| SHV-08J | $\phi 3.0$ | 8.0 | $\phi 0.6$ |

Application

- Ignition coil of automotive electronics unit

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SHV-02JN, SHV-05J, SHV-06JN, SHV-08J Series

Absolute Maximum Ratings

Unless otherwise specified, $T_A = 25\text{ }^{\circ}\text{C}$.

| Parameter | Symbol | Conditions | Rating | Unit | Remarks |
|---------------------------------|-------------|---|------------|--------------------|----------|
| Peak Repetitive Reverse Voltage | V_{RM} | — | 1 | kV | SHV-02JN |
| | | | 2.5 | | SHV-05J |
| | | | 3 | | SHV-06JN |
| | | | 4 | | SHV-08J |
| Surge Reverse Current | I_{RSM} | See Figure 1, single pulse | 30 | mA | |
| Average Forward Current | $I_{F(AV)}$ | — | 30 | mA | |
| Surge Forward Current | I_{FSM} | Half cycle sine-wave, positive side, 10ms, 1 shot | 3 | A | |
| Junction Temperature | T_J | — | -40 to 175 | $^{\circ}\text{C}$ | |
| Storage Temperature | T_{STG} | — | -40 to 175 | $^{\circ}\text{C}$ | |

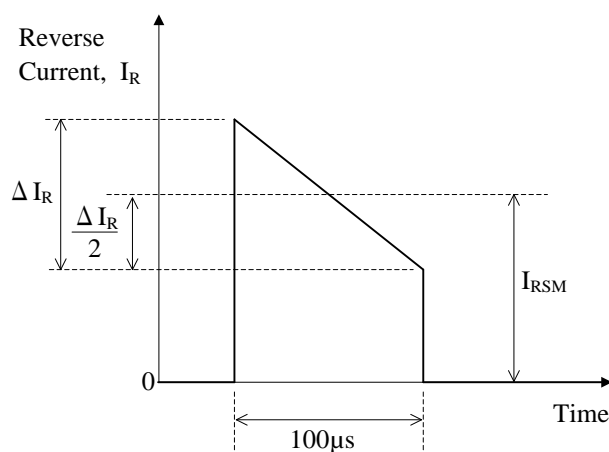


Figure 1. Definition of Surge Reverse Current, I_{RSM}

SHV-02JN, SHV-05J, SHV-06JN, SHV-08J Series

Electrical Characteristics

Unless otherwise specified, $T_A = 25\text{ }^{\circ}\text{C}$.

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit | Remarks |
|-------------------------|--------|--------------------------------|------|------|------|---------------|----------|
| Forward Voltage Drop | V_F | $I_F = 10\text{ mA}$ | — | — | 2 | V | SHV-02JN |
| | | | — | — | 5 | | SHV-05J |
| | | | — | — | 6 | | SHV-06JN |
| | | | — | — | 8 | | SHV-08J |
| Reverse Leakage Current | I_R | $V_R = V_{RM}$ | — | — | 10 | μA | |
| Breakdown Voltage | V_Z | $I_Z = 100\text{ }\mu\text{A}$ | 1.1 | — | 2 | V | SHV-02JN |
| | | | 2.6 | — | 5 | | SHV-05J |
| | | | 3.2 | — | 6 | | SHV-06JN |
| | | | 4.5 | — | 8 | | SHV-08J |

SHV-02JN Rating and Characteristic Curves

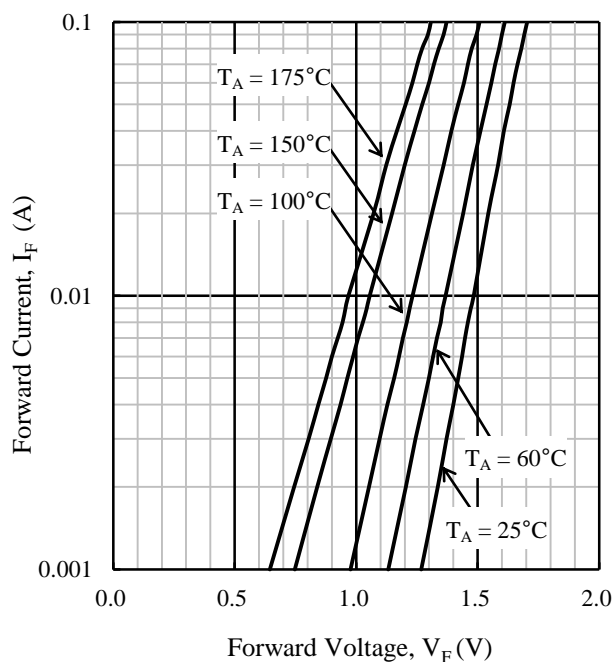


Figure 2. $I_F - V_F$ Typical Characteristics

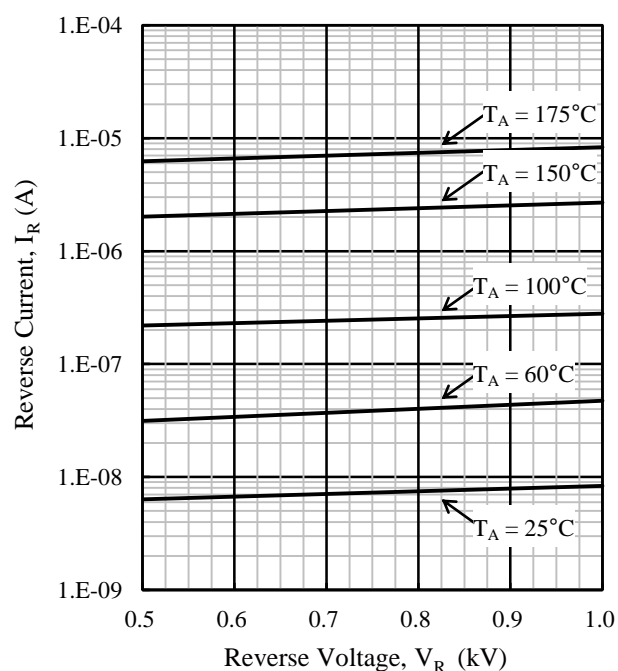


Figure 3. $I_R - V_R$ Typical Characteristics

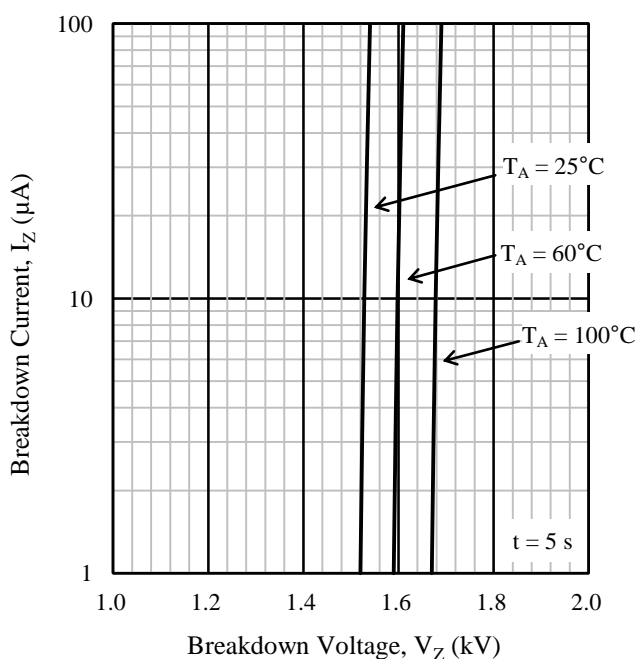


Figure 4. $I_Z - V_Z$ Typical Characteristics

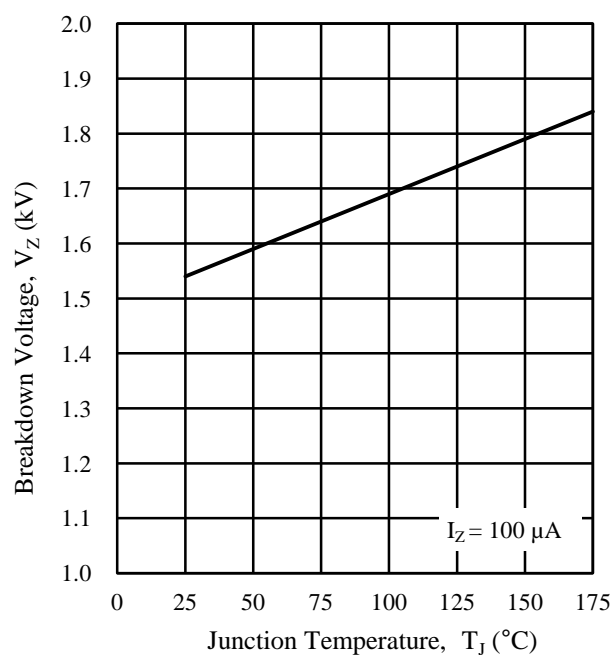


Figure 5. $V_Z - T_J$ Typical Characteristics

SHV-05J Rating and Characteristic Curves

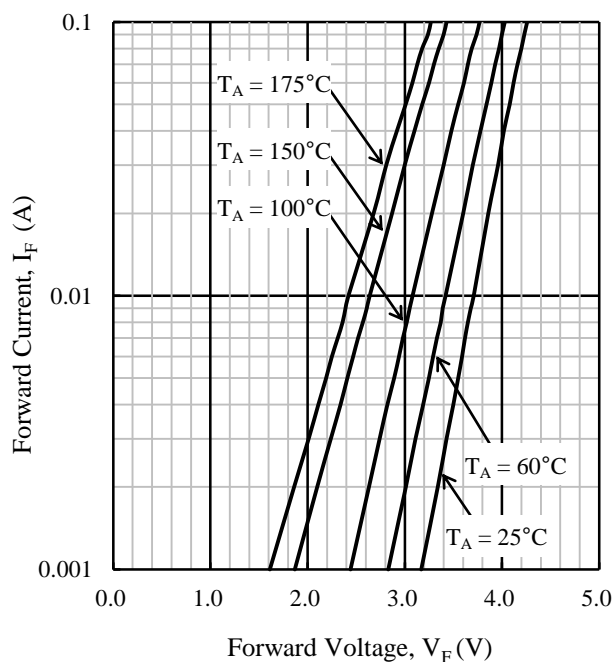


Figure 6. $I_F - V_F$ Typical Characteristics

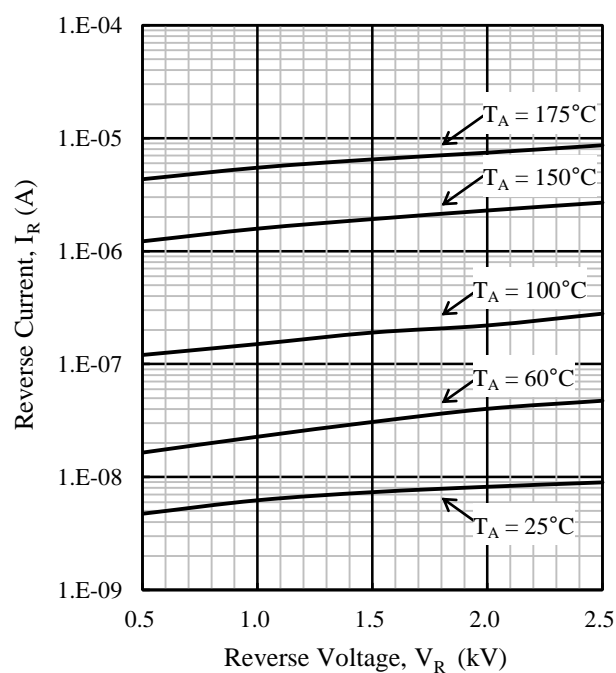


Figure 7. $I_R - V_R$ Typical Characteristics

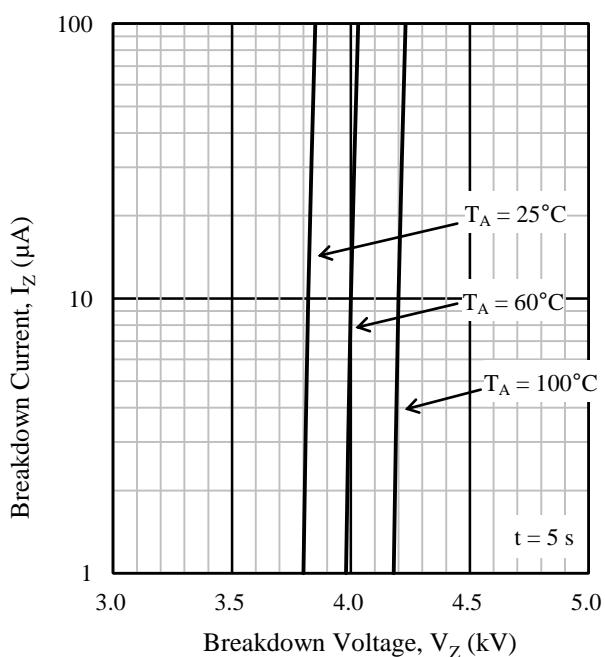


Figure 8. $I_Z - V_Z$ Typical Characteristics

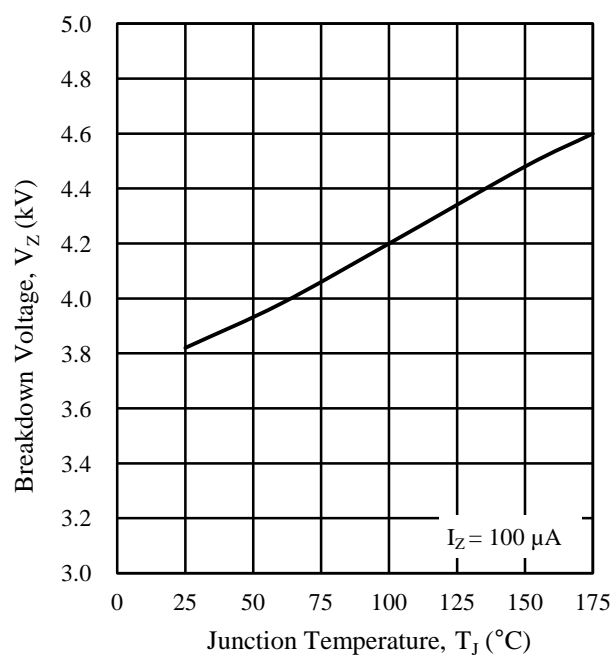


Figure 9. $V_Z - T_J$ Typical Characteristics

SHV-06JN Rating and Characteristic Curves

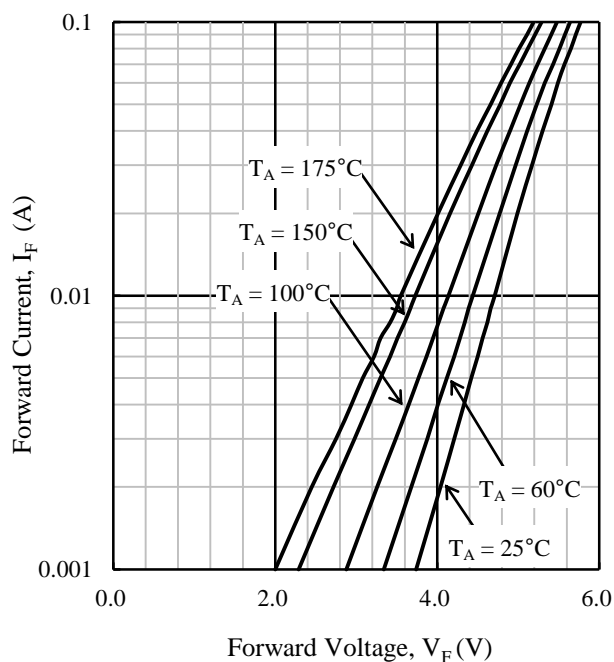


Figure 10. $I_F - V_F$ Typical Characteristics

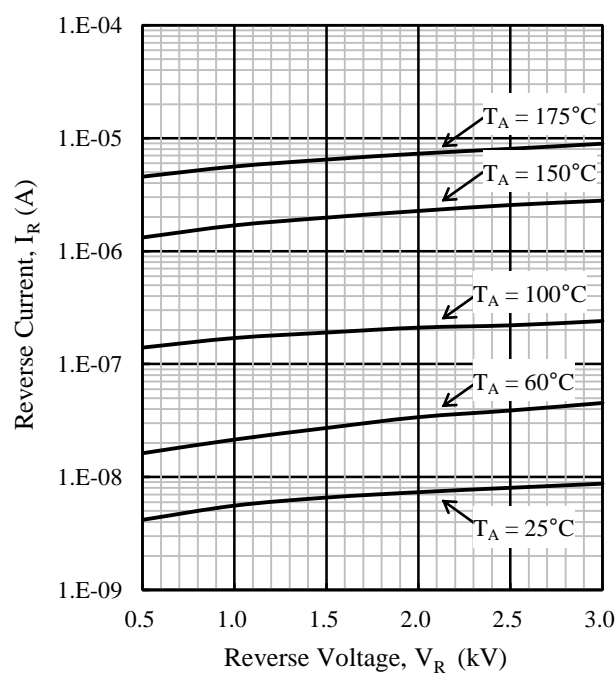


Figure 11. $I_R - V_R$ Typical Characteristics

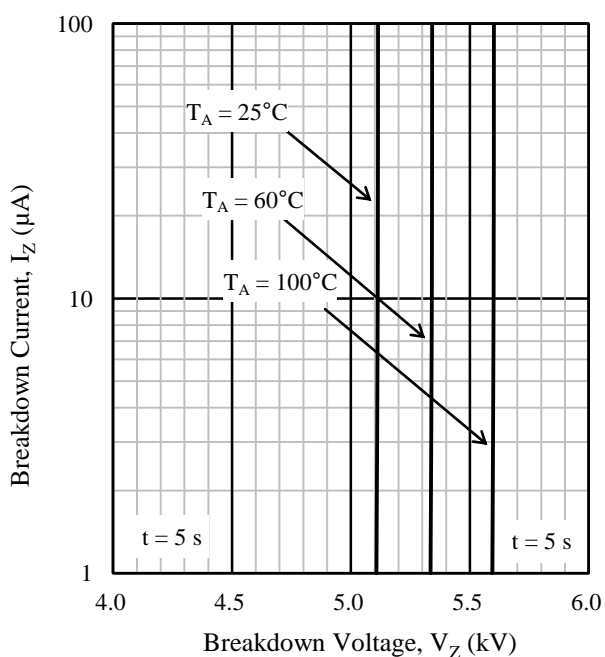


Figure 12. $I_Z - V_Z$ Typical Characteristics

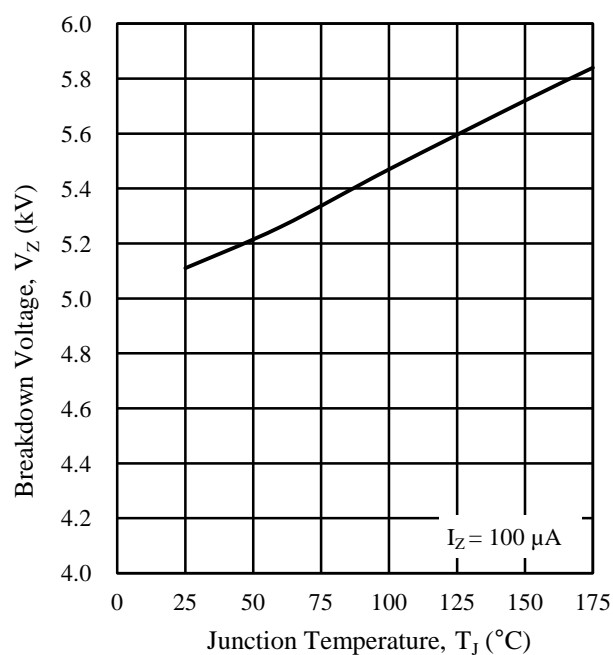


Figure 13. $V_Z - T_J$ Typical Characteristics

SHV-08J Rating and Characteristic Curves

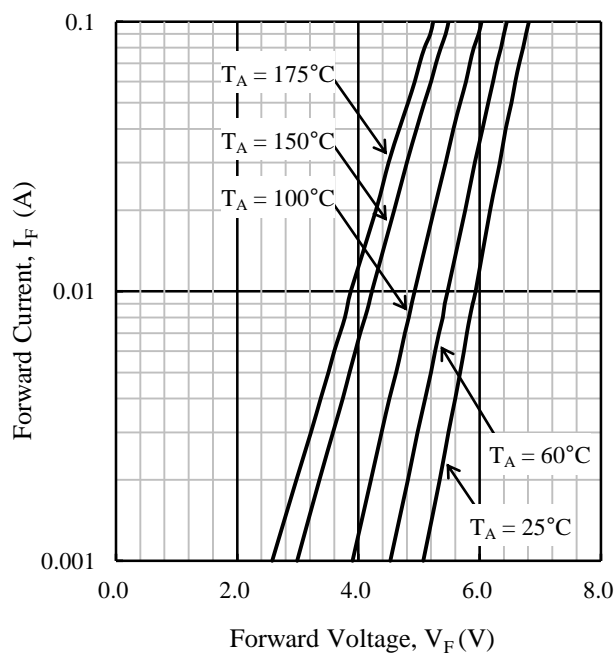


Figure 14. $I_F - V_F$ Typical Characteristics

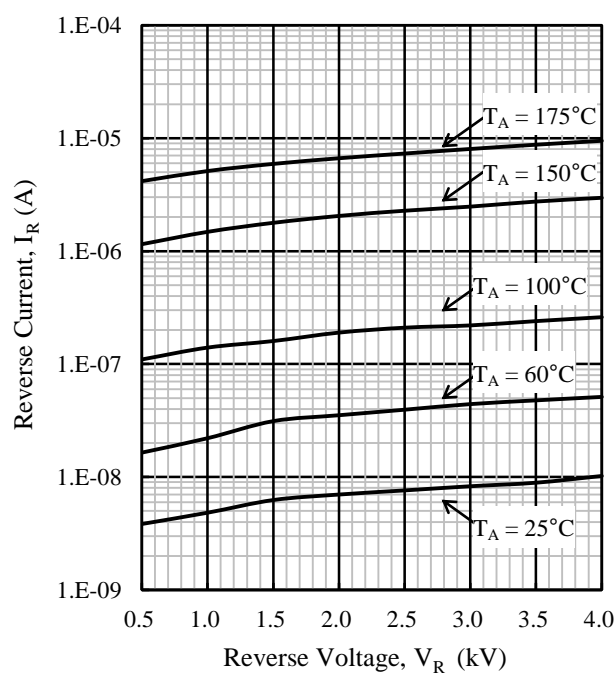


Figure 15. $I_R - V_R$ Typical Characteristics

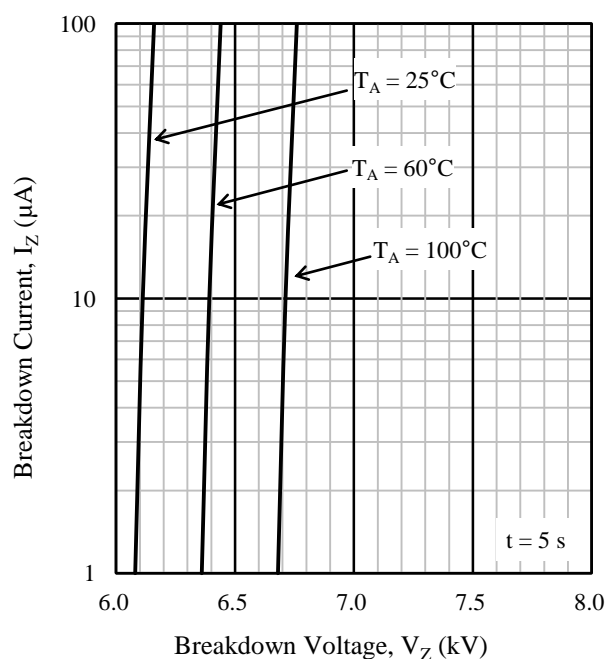


Figure 16. $I_Z - V_Z$ Typical Characteristics

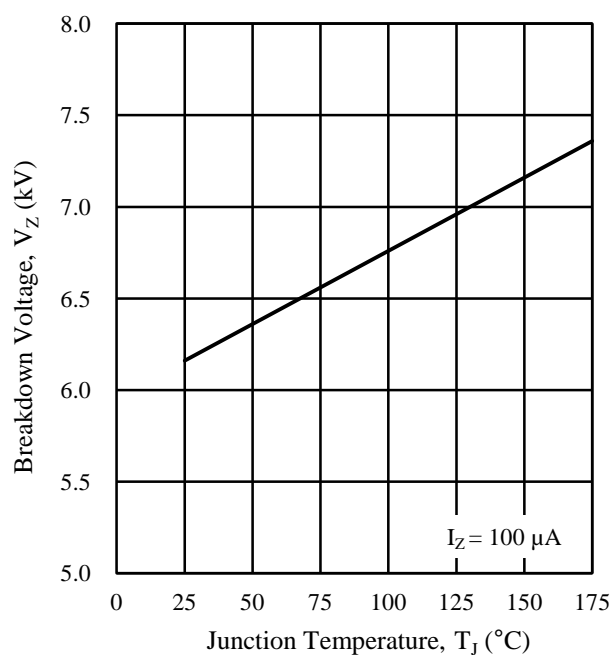


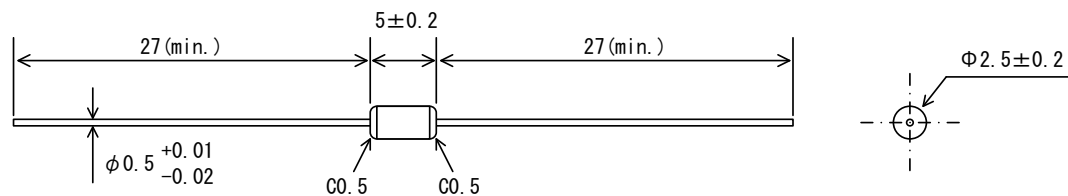
Figure 17. $V_Z - T_J$ Typical Characteristics

SHV-02JN, SHV-05J, SHV-06JN, SHV-08J Series

Physical Dimensions

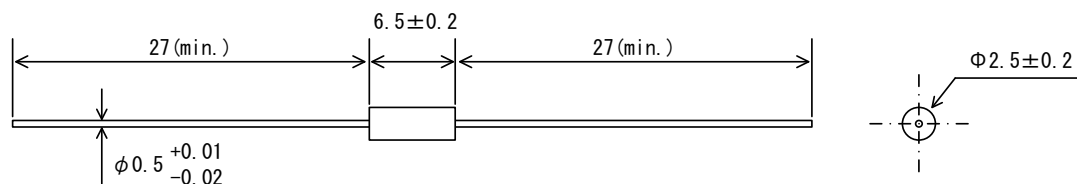
- SHV-05J

Axial ($\phi 2.5 \times 5L / \phi 0.5$)



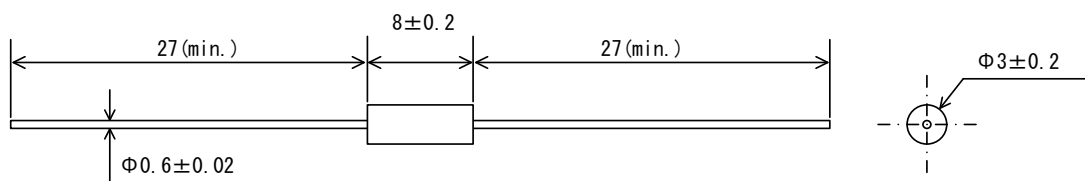
- SHV-02JN, SHV-06JN

Axial ($\phi 2.5 \times 6.5L / \phi 0.5$)



- SHV-08J

Axial ($\phi 3 \times 8L / \phi 0.6$)



NOTES for Axial Packages above:

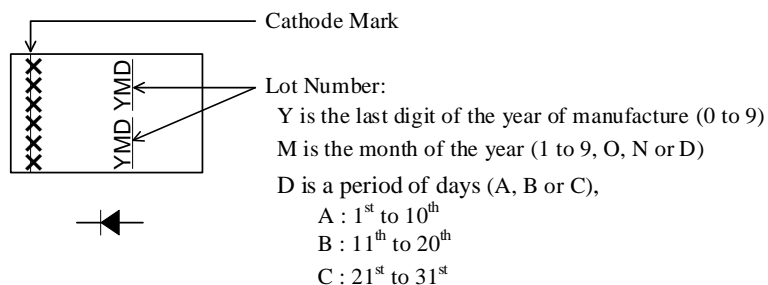
- Dimensions in millimeters
- Bare leads: Pb-free (RoHS compliant)
- When soldering the products, be sure to minimize the working time, within the following limits:
 - Flow: 260 ± 5 °C / 10 ± 1 s, 2 times
 - Soldering Iron: 380 ± 10 °C / 3.5 ± 0.5 s, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the products.)

SHV-02JN, SHV-05J, SHV-06JN, SHV-08J Series

Marking Diagrams

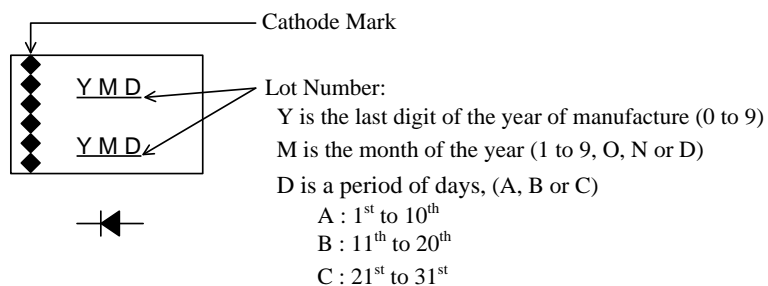
- SHV-05J

Axial ($\phi 2.5 \times 5L / \phi 0.5$)



- SHV-02JN

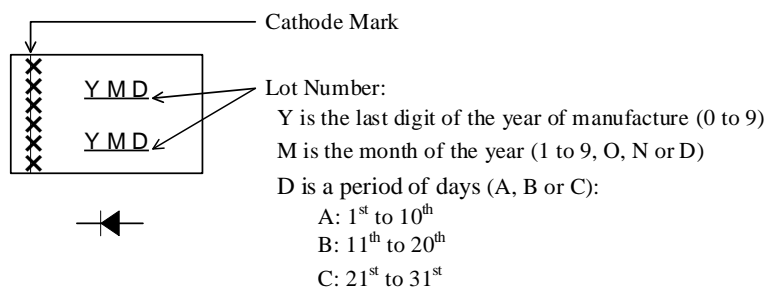
Axial ($\phi 2.5 \times 6.5L / \phi 0.5$)



- SHV-06JN, SHV-08J

SHV-06JN: Axial ($\phi 2.5 \times 6.5L / \phi 0.5$)

SHV-08J: Axial ($\phi 3 \times 8L / \phi 0.6$)



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