V_{RM} = 1 kV to 4 kV
High Voltage Rectifier Diode

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

Data Sheet

Description

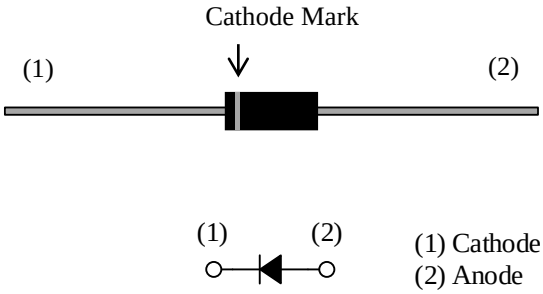
The SHV-02JN, SHV-05J, and SHV-06JN are high voltage rectifier diodes for the ignition coil of automotive electronics unit, and have high surge capability.

Features

- T_J = 175 °C Capability
- Suitable for High Reliability and Automotive Requirement
- High Surge Capability
- Flammability: Equivalent to UL94V-0
- Bare Leads: Pb-free (RoHS Compliant)

Package

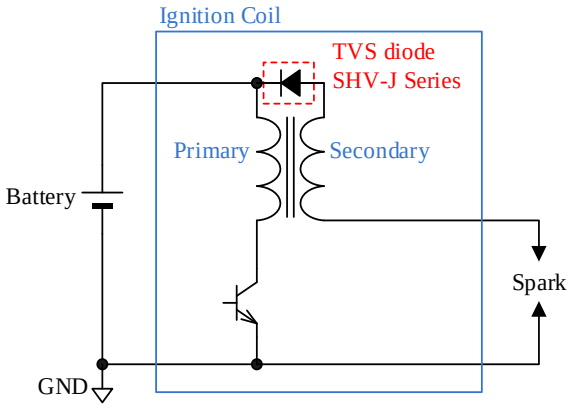
Axial



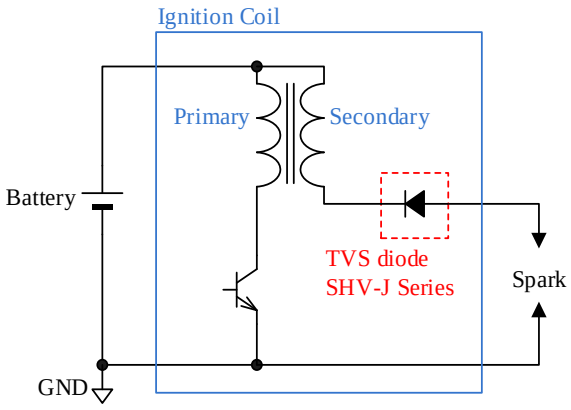
Not to scale

Typical Application

- Typical Application 1



- Typical Application 2



Selection Guide

- Characteristics

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

- Package

Product	Body Diameter (mm)	Body Length (mm)	Lead Width (mm)
SHV-05J	φ2.5	5.0	φ0.5
SHV-02JN	φ2.5	6.5	φ0.5
SHV-06JN			

Application

- Ignition coil of automotive electronics unit

Contents

Absolute Maximum Ratings

Unless otherwise specified, T_A = 25 °C.

Parameter	Symbol	Conditions	Rating	Unit	Remarks
Repetitive Peak Reverse Voltage	V_{RM}	—	1	kV	SHV-02JN
			2.5		SHV-05J
			3		SHV-06JN
Peak Pulse 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, 10 ms, 1 shot	3	A	
Junction Temperature	T_J	—	−40 to 175	°C	
Storage Temperature	T_{STG}	—	−40 to 175	°C	

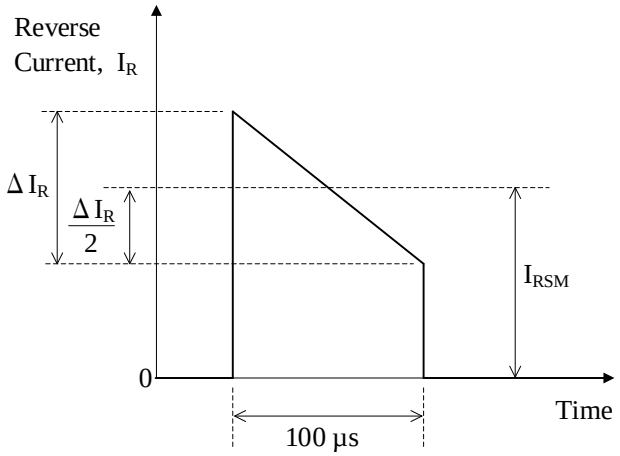


Figure 1. Definition of Peak Pulse Reverse Current, I_{RSM}

Electrical Characteristics

Unless otherwise specified, T_A = 25 °C.

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

Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit	Remarks
Package Weight	—	—	0.16	—	g	SHV-05J
		—	0.17	—	g	SHV-02JN SHV-06JN

SHV-02JN Characteristic Curves

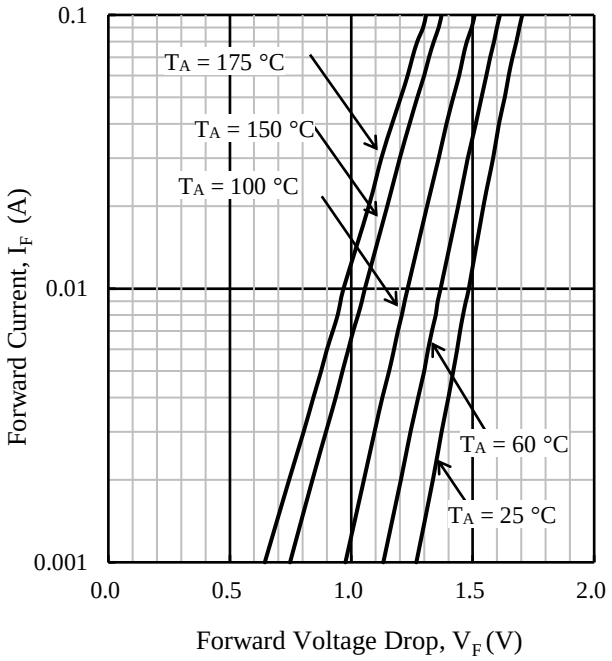


Figure 2. I_F vs. V_F Typical Characteristics

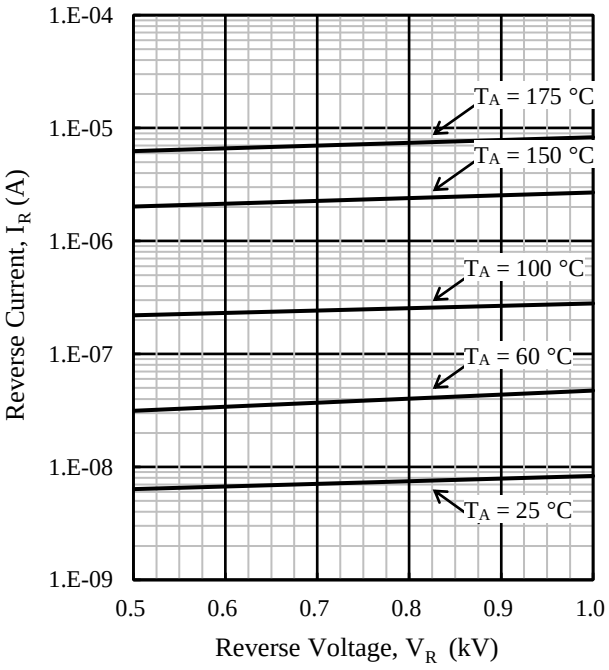


Figure 3. I_R vs. V_R Typical Characteristics

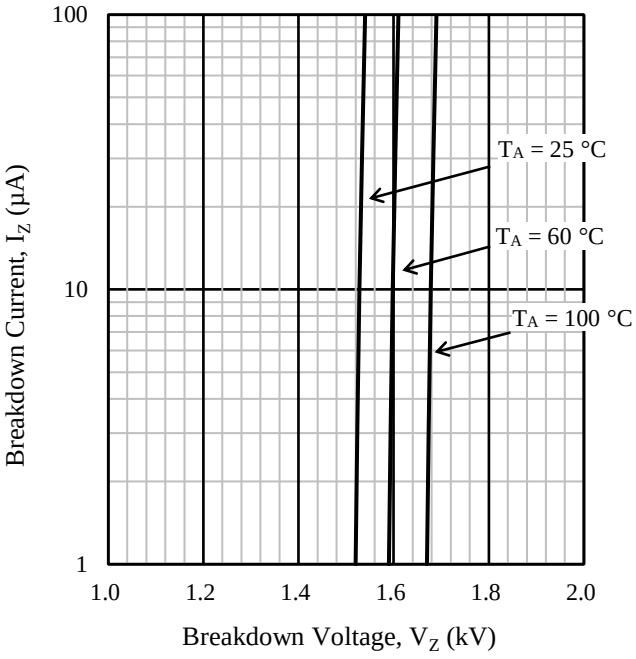


Figure 4. I_Z vs. V_Z (t = 5 s)

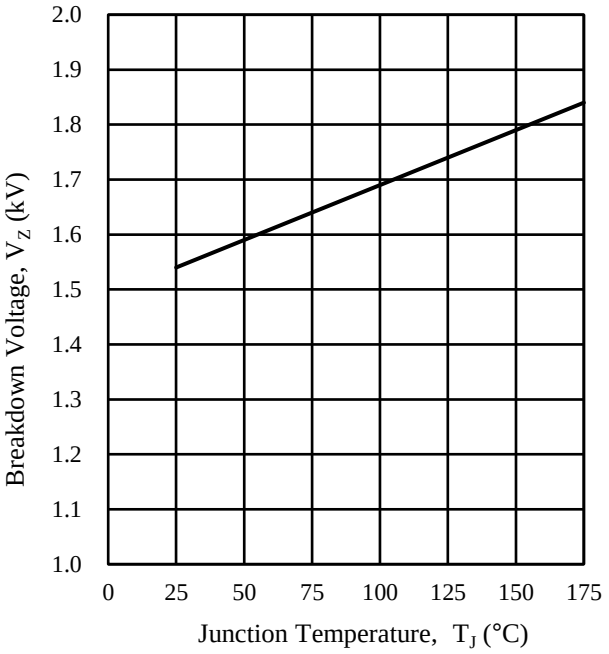


Figure 5. V_Z vs. T_J (I_Z = 100 µA)

SHV-05J Characteristic Curves

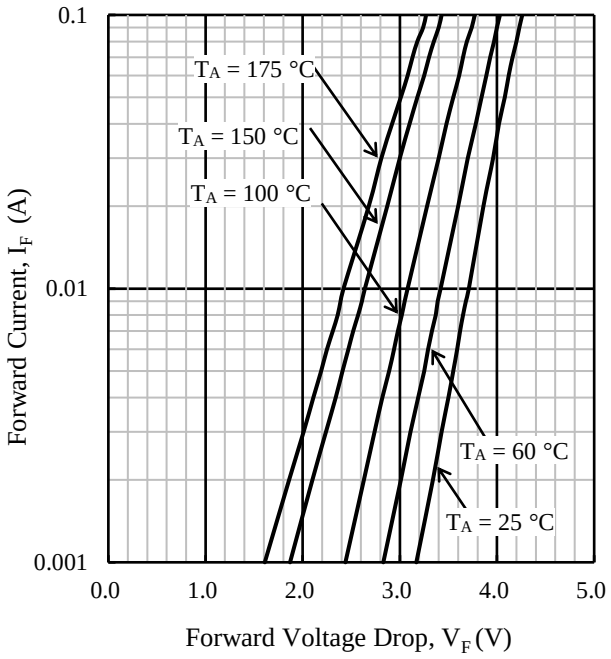


Figure 6. I_F vs. V_F Typical Characteristics

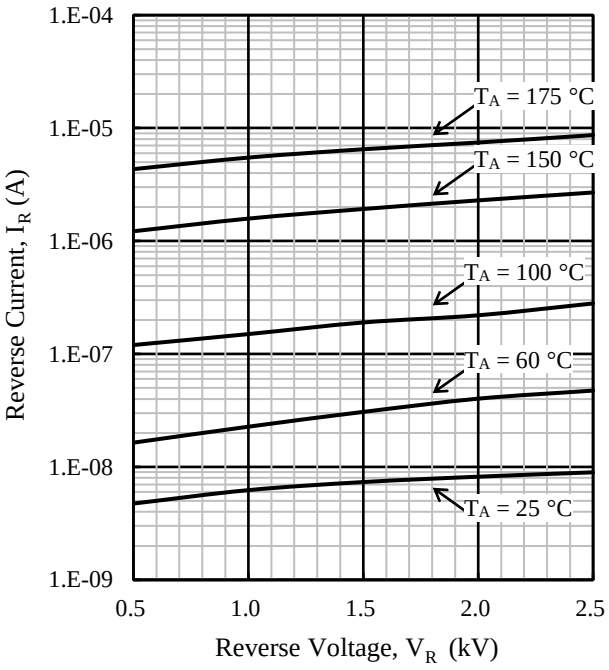


Figure 7. I_R vs. V_R Typical Characteristics

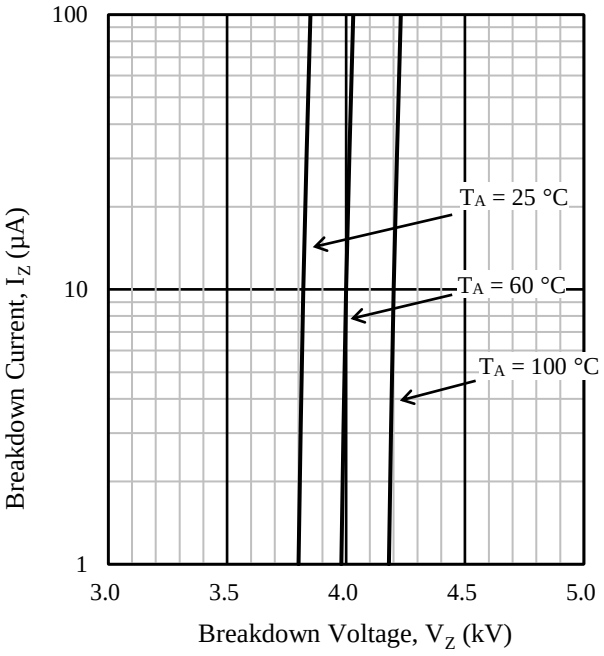


Figure 8. I_Z vs. V_Z (t = 5 s)

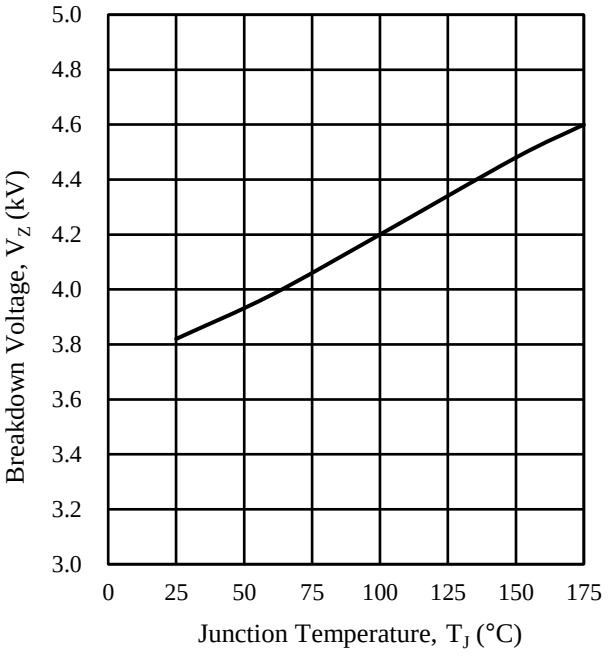


Figure 9. V_Z vs. T_J (I_Z = 100 µA)

SHV-06JN Characteristic Curves

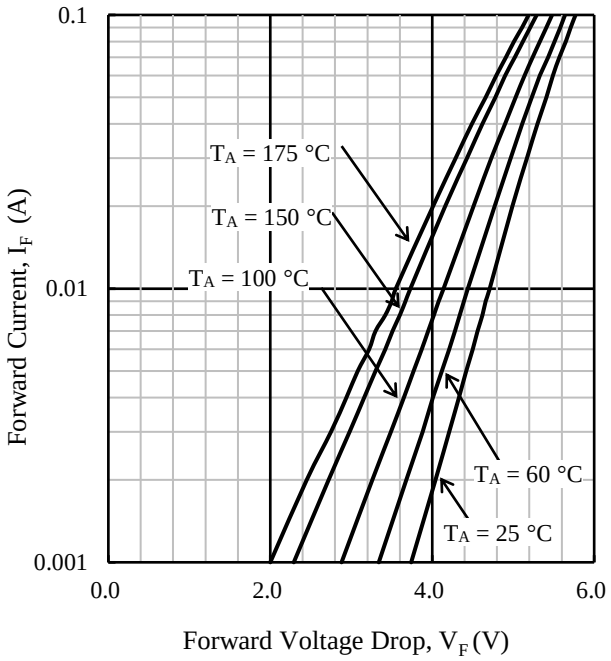


Figure 10. I_F vs. V_F Typical Characteristics

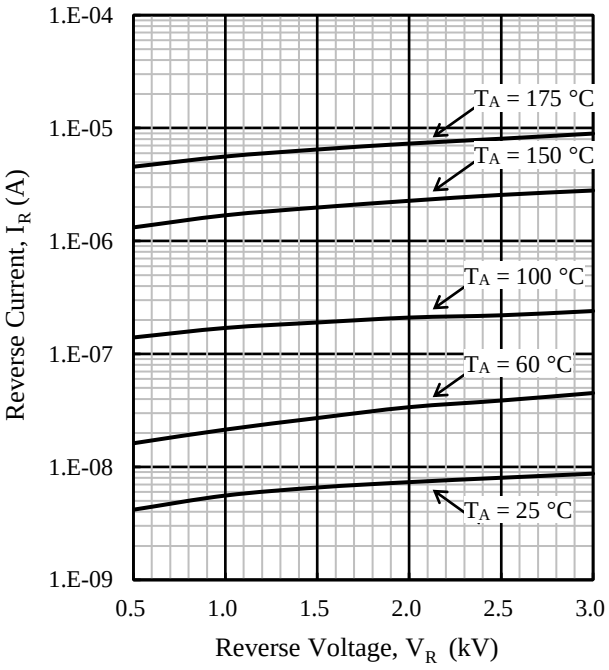


Figure 11. I_R vs. V_R Typical Characteristics

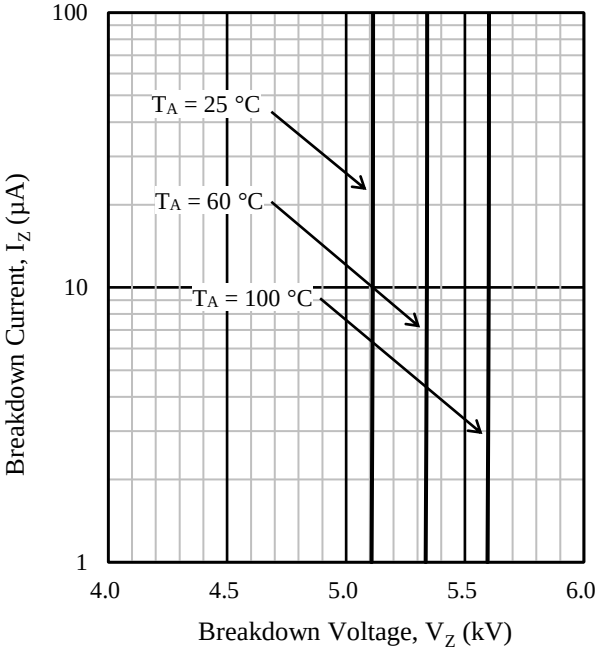


Figure 12. I_Z vs. V_Z (t = 5 s)

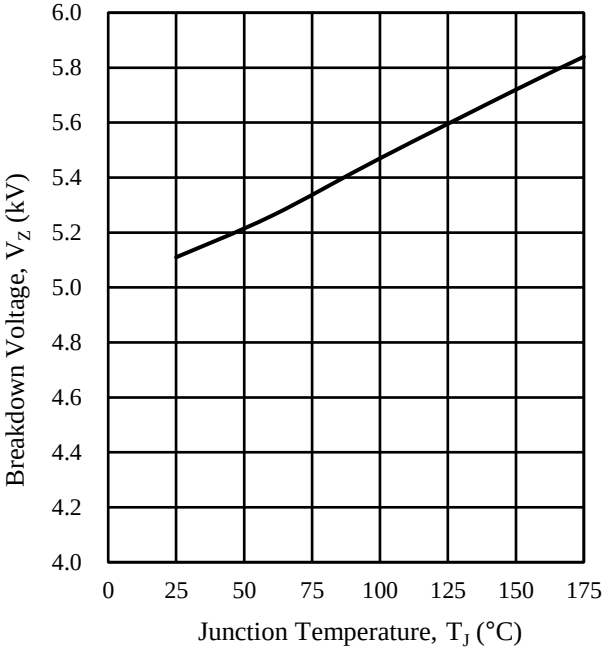
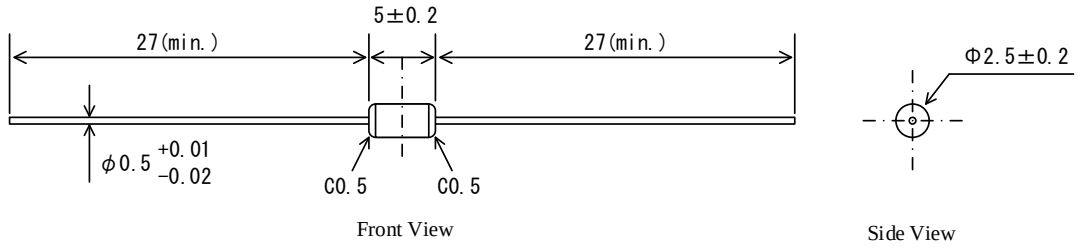


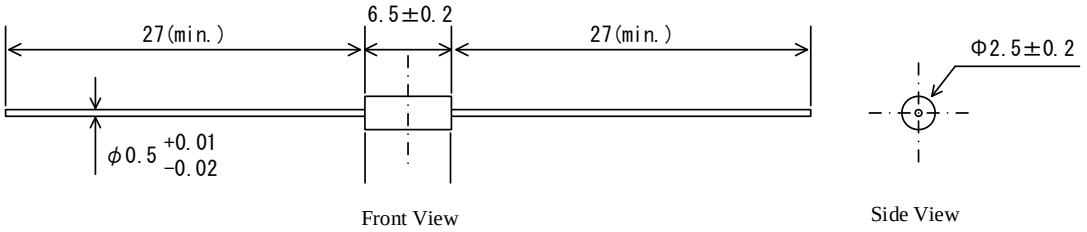
Figure 13. V_Z vs. T_J (I_Z = 100 µA)

Physical Dimensions

- SHV-05J
  Axial (φ2.5 × 5L / φ0.5)



- SHV-02JN, SHV-06JN
  Axial (φ2.5 × 6.5L / φ0.5)

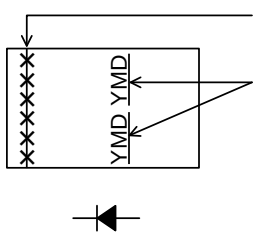


NOTES:

- Dimensions in millimeters
- Bare leads: Pb-free (RoHS compliant)
- Dimensions do not include gate burrs.
- High voltages are applied to the products. To prevent creepage discharge and improve moisture resistance, it is required to coat the product with resin after mounting it on a board (after coating).
- When soldering the products, it is required to minimize the working time within the following limits:
  Flow: 260 °C / 10 s, 1 time
  Soldering Iron: 350 °C / 3.5 s, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the products.)

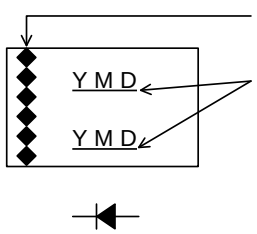
Marking Diagrams

- SHV-05J
  Axial (φ2.5 × 5L / φ0.5)



Lot Number:
Y is the last digit of the year of manufacture (0 to 9)
M is the month of the year (1 to 9, O, N or D)
D is a period of days (A, B or C),
A : 1st to 10th
B : 11th to 20th
C : 21st to 31st

- SHV-02JN
  Axial (φ2.5 × 6.5L / φ0.5)



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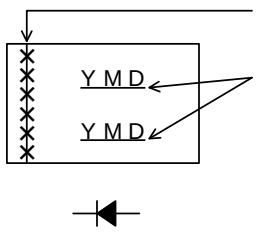
D is a period of days, (A, B or C)
A : 1st to 10th
B : 11th to 20th
C : 21st to 31st

- SHV-06JN
  Axial (φ2.5 × 6.5L / φ0.5)



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