

## High Efficiency Snubber Diode

### Features and Benefits

- High Peak Reverse Voltage,  $V_{RM}$ : 800 V
- Low Forward Voltage,  $V_F$ : 0.92 V (max) at  $I_F = 1.2$  A
- Peak Forward Surge Current,  $I_{FSM}$ : 110 A
- Average Forward Current,  $I_{F(AV)}$ : 1.2 A
- Flammability rating UL94V-0 (Equivalent)
- Pins Pb (lead) free

### Package: Axial



### Description

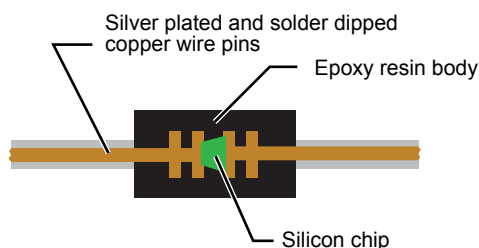
The SARS01 is an 800 V silicon diode designed especially for use in high-efficiency snubber circuits. This diode can sustain a high voltage with low loss, with low-noise rectification.

To suppress surge voltage, conduct the surge voltage and noise into a capacitor via a series resistor,  $R_S$ . Then allow the capacitor to discharge the energy into power supply line with the regenerative circuit operation, shown below in the typical application circuit schematic.

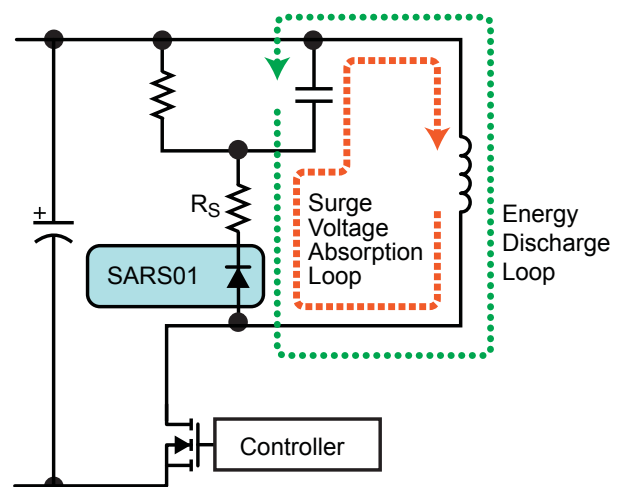
### Applications

- White goods appliances
- Audio-visual equipment
- Light fixtures
- Communication equipment
- Factory automation

### Product Structure



### Typical Application



**Selection Guide**

| Part Number | Packing*                                       |
|-------------|--|
| SARS01      | 1000 pieces per box, bulk                      |
| SARS01V     | 5000 pieces per reel, 52 mm pitch axial taping |
| SARS01V1    | 2000 pieces per box, 52 mm pitch axial taping  |
| SARS01V0    | 2000 pieces per box, 26 mm pitch axial taping  |
| SARS01W     | 4000 pieces per box, radial taping             |

\*See the Packing Options page for details on the packing orientation.

**Absolute Maximum Ratings**

| Characteristic             | Symbol      | Conditions                      | Rating     | Unit |
|----------------------------|-------------|---------------------------------|------------|------|
| Peak Reverse Surge Voltage | $V_{RSM}$   |                                 | 800        | V    |
| Peak Reverse Voltage       | $V_{RM}$    |                                 | 800        | V    |
| Average Forward Current    | $I_{F(AV)}$ | Refer to figure 1               | 1.2        | A    |
| Peak Forward Surge Current | $I_{FSM}$   | 10 ms, half sine wave, one shot | 110        | A    |
| Junction Temperature       | $T_J$       |                                 | −40 to 150 | °C   |
| Storage Temperature        | $T_{stg}$   |                                 | −40 to 150 | °C   |

**Design Notes**

Use a series resistor ( $R_S$  in the typical application circuit schematic), and choose a value for the resistor such that the SARS01 diode saturates at junction temperature,  $T_J \leq 150^\circ\text{C}$ .

Electrical Characteristics valid at  $T_A = 25^{\circ}\text{C}$ , unless otherwise specified

| Characteristic                       | Symbol          | Test Conditions   | Value      | Unit                 |
|--------------------------------------|-----------------|---|------------|----------------------|
| Forward Voltage                      | $V_F$           | $I_F = 1.2\text{ A}$  | 0.92 (max) | V                    |
| Reverse Current                      | $I_R$           | $V_R = V_{RM}$  | 10 (max)   | $\mu\text{A}$        |
| Reverse Current (High Temperature)   | $I_{R(H)}$      | $V_R = V_{RM}, T_j = 100^{\circ}\text{C}$                             | 50 (max)   | $\mu\text{A}$        |
| Reverse Recovery Time                | $t_{rr}$        | $I_F = I_{RP} = 10\text{ mA}$ , 90% recovery point; refer to figure 2 | 2 to 18    | $\mu\text{s}$        |
| Thermal Resistance, Junction to Lead | $R_{\theta JL}$ | Between junction and pin  | 20 (max)   | $^{\circ}\text{C/W}$ |

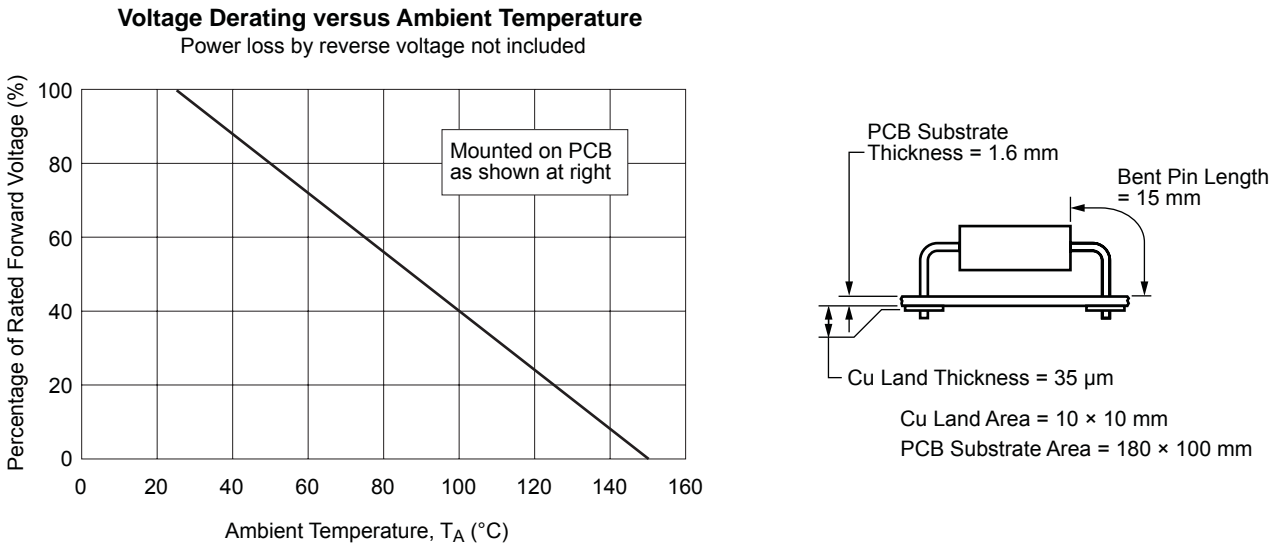


Figure 1. Derating Characteristic and Mounting Conditions

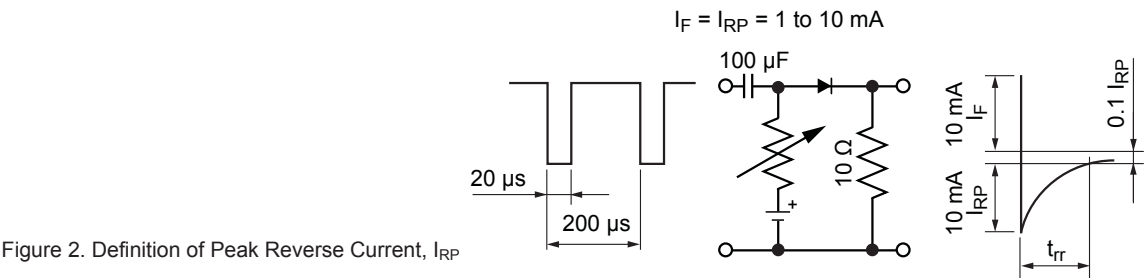
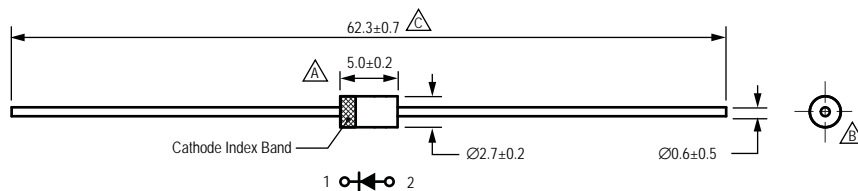


Figure 2. Definition of Peak Reverse Current,  $I_{RP}$

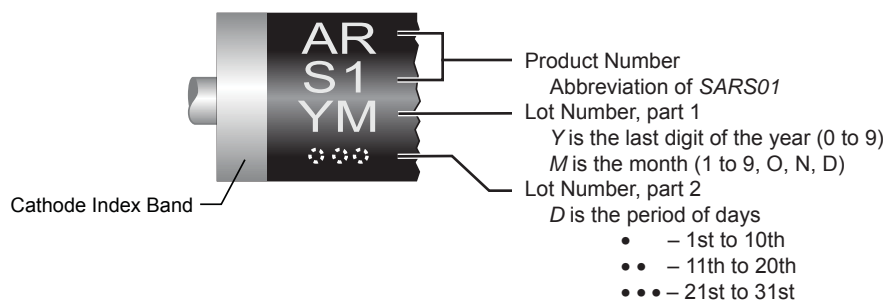
## Package Outline



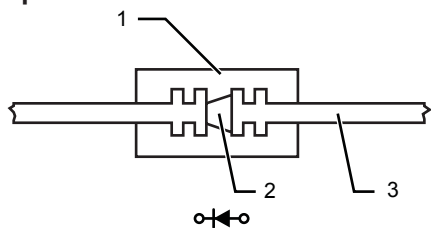
Dimensions in mm

- $\triangle A$  Offset body centerline to pin centerline 0.5 mm maximum
- $\triangle B$  Concentricity body and pin 0.3 mm maximum
- $\triangle C$  Pin dimension does not include trim burr; burr 2 mm maximum

## Package Marking



## Material Composition and Internal Structure



- 1. Body: Plastic, epoxy resin
- 2. Chip: Si
- 3. Pins: Cu wire  
Ag plating  
Solder dipped

Weight: Approximately 0.2 g

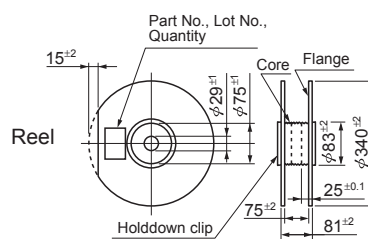
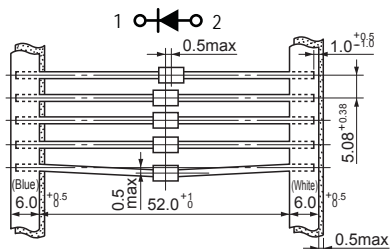


*Pin treatment Pb-free. Device composition compliant with the RoHS directive.*

## Packing Options

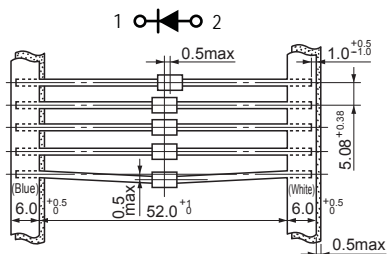
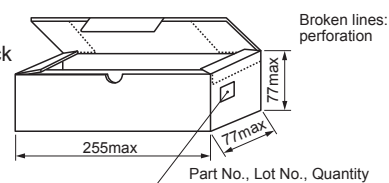
## V orientation

Axial taping  
5,000 pieces  
per reel



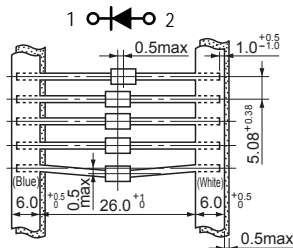
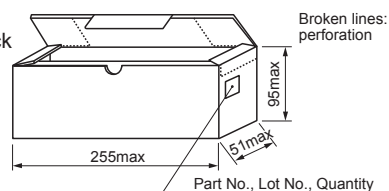
## V1 orientation

Axial taping  
2,000 pieces  
per box

Ammunition  
(Ammo) pack

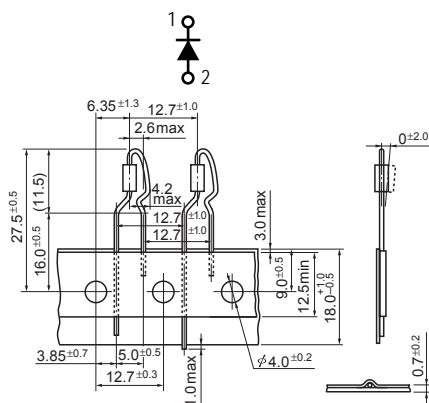
## V0 orientation

Axial taping  
2,000 pieces  
per box

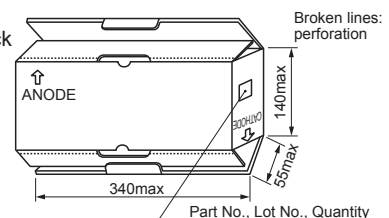
Ammunition  
(Ammo) pack

## W orientation

Radial taping  
4,000 pieces  
per box



Dimensions in mm

Ammunition  
(Ammo) pack

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