

# SB520E-G Thru. SB5100E-G

Voltage: 20 to 100 V

Current: 5.0 A

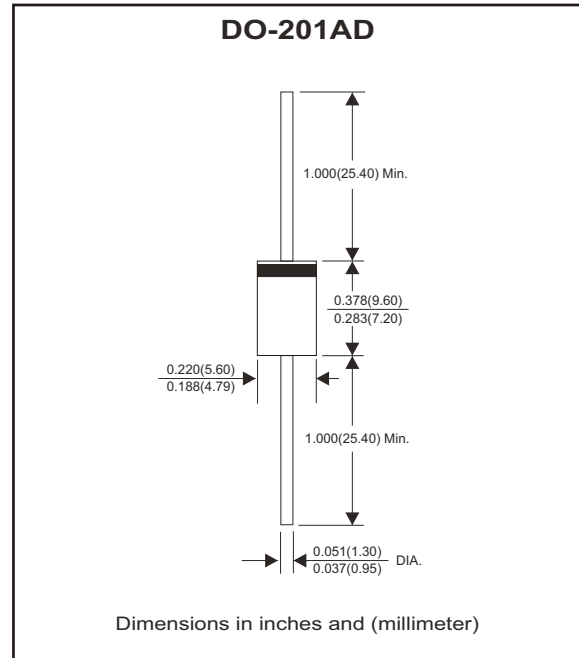
RoHS Device

## Features

- Low drop down voltage.
- 5.0A operation at  $T_A=75^{\circ}\text{C}$  with no thermal runaway
- For use in low voltage, high frequency invertors free wheeling and polarity protection.
- Silicon epitaxial planar chips.
- ESD test under IEC6100-4-2 :  
Standard: >15KV(Air) & 8KV(Contact)
- Lead-free part, meet RoHS requirements.

## Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case: Molded plastic body DO-201AD
- Terminals: Solderable per MIL-STD-750 Method 2026
- Polarity: Color band denotes cathode end
- Mounting Position: Any
- Weight: 1.12 grams(approx.).



## Circuit Diagram



## Electrical Characteristics (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Ratings at  $25^{\circ}\text{C}$  ambient temperature unless otherwise specified.

| Parameter                                                                                                                    | Symbol            | SB 520E-G   | SB 540E-G | SB 545E-G | SB 550E-G   | SB 560E-G | SB 580E-G | SB 5100E-G | Unit |
|------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|-----------|-----------|-------------|-----------|-----------|------------|------|
| Maximum recurrent peak reverse voltage                                                                                       | V <sub>RRM</sub>  | 20          | 40        | 45        | 50          | 60        | 80        | 100        | V    |
| Maximum RMS voltage                                                                                                          | V <sub>RMS</sub>  | 14          | 28        | 30        | 35          | 42        | 56        | 70         | V    |
| Maximum DC blocking voltage                                                                                                  | V <sub>DC</sub>   | 20          | 40        | 45        | 50          | 60        | 80        | 100        | V    |
| Maximum average forward rectified current<br>0.5" (12.7mm) lead length at T <sub>A</sub> =75°C, See Figure 1                 | I <sub>(AV)</sub> | 5.0         |           |           |             |           |           |            | A    |
| Peak forward surge current<br>8.3ms single half sine-wave superimposed on rated load<br>(JEDEC method) T <sub>L</sub> =110°C | I <sub>FSM</sub>  | 150         |           |           | 125         |           |           |            | A    |
| Maximum forward voltage at 5.0A (Note 1)                                                                                     | V <sub>F</sub>    | 0.55        |           |           | 0.70        |           | 0.85      |            | V    |
| Maximum DC reverse current      T <sub>J</sub> =25°C<br>At rated DC blocking voltage      T <sub>J</sub> =100°C              | I <sub>R</sub>    | 0.5         |           |           |             |           |           |            | mA   |
|                                                                                                                              |                   | 50          |           |           | 30          |           |           |            |      |
| Typical junction capacitance (Note 2)                                                                                        | C <sub>J</sub>    | 500         |           |           |             |           |           |            | pF   |
| Typical thermal resistance (Note 3)                                                                                          | R <sub>θJA</sub>  | 35.0        |           |           |             |           |           |            | °C/W |
|                                                                                                                              | R <sub>θJL</sub>  | 15.0        |           |           |             |           |           |            |      |
| Operating junction temperature range                                                                                         | T <sub>J</sub>    | -65 to +125 |           |           | -65 to +150 |           |           |            | °C   |
| Storage temperature range                                                                                                    | T <sub>STG</sub>  | -65 to +150 |           |           |             |           |           |            | °C   |

### NOTES:

1. Pulse test : 300 $\mu\text{s}$  pulse width, 1% duty cycle.
2. Measured at 1.0MHz and applied reverse voltage of 4.0 Volts.
3. Thermal resistance from junction to ambient and from junction to lead P.C.B. mounted 0.500" (12.7mm) lead length with 2.5x2.5" (63.5x63.5mm) copper pad.

Company reserves the right to improve product design , functions and reliability without notice.

REV:C

## RATING AND CHARACTERISTIC CURVES (SB520E-G Thru. SB5100E-G)

Fig.1 - Forward Current Derating Curve

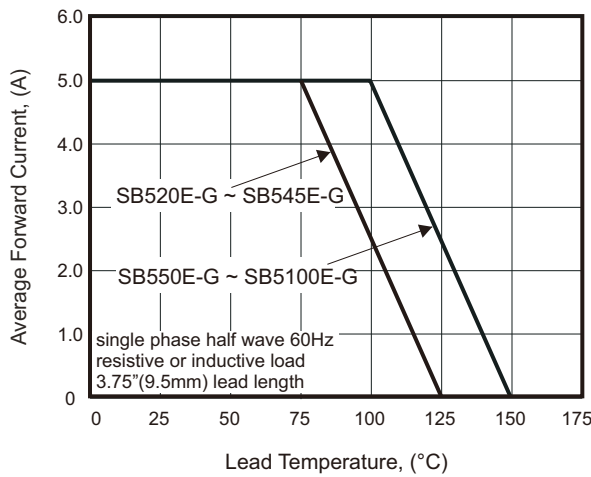


Fig.2 - Maximum Non-repetitive Peak Forward Surge Current

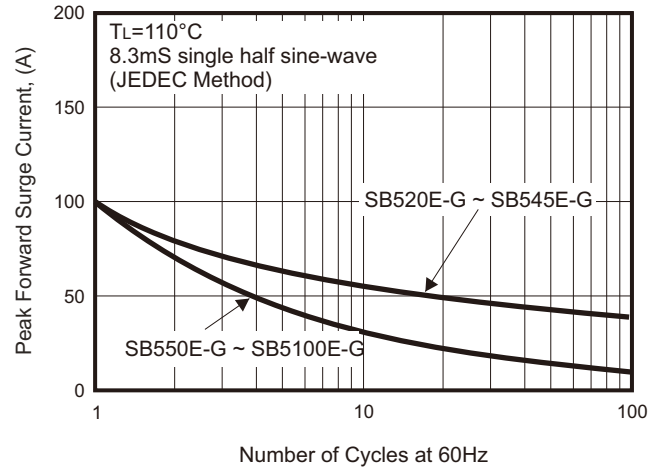


Fig.3 - Typical Instantaneous Forward Characteristics

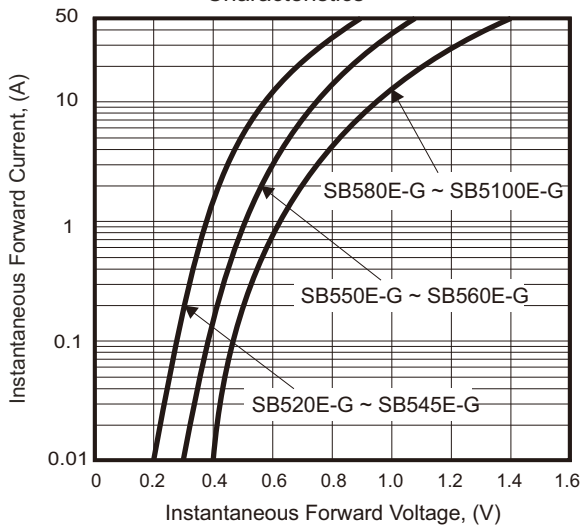


Fig.4A - Typical Reverse Characteristics

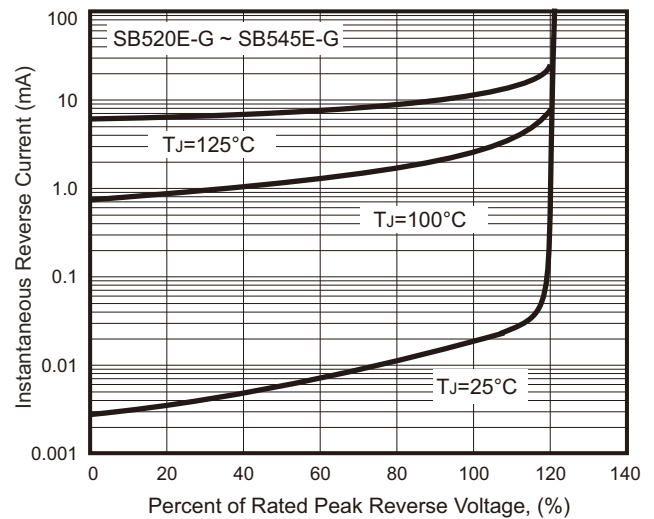


Fig.5 - Typical Junction Capacitance per leg

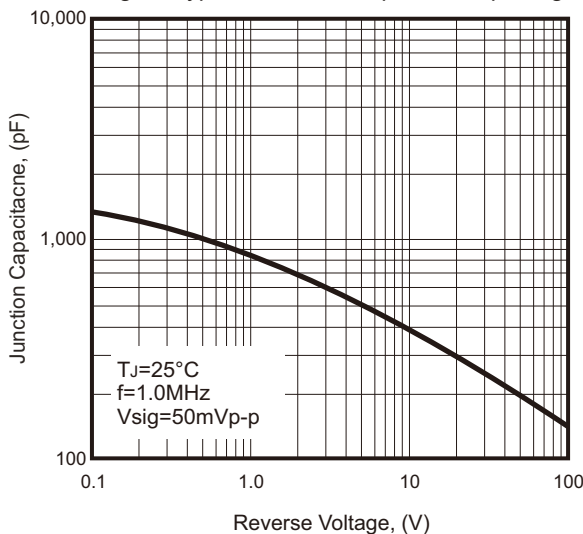
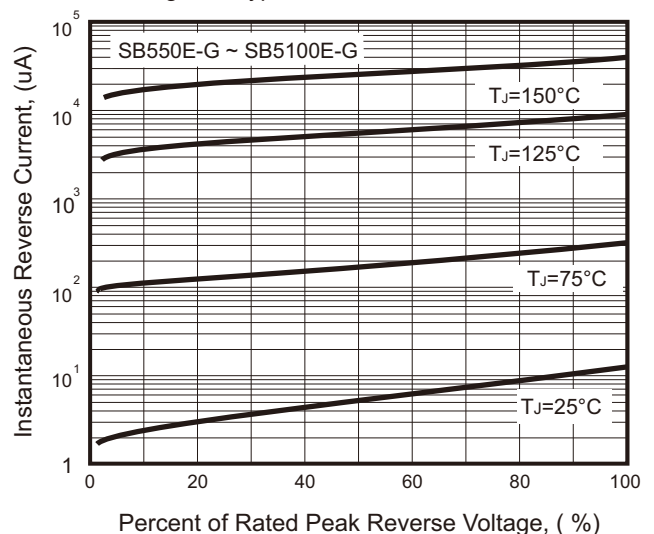
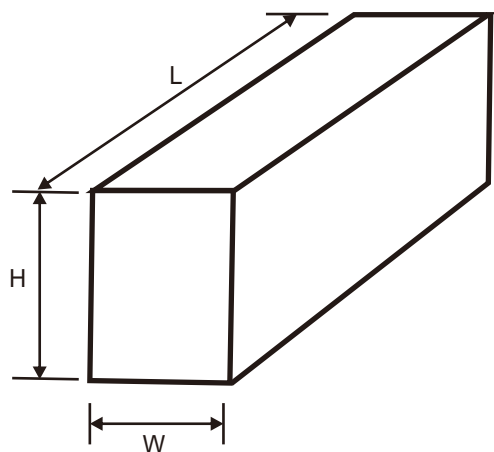
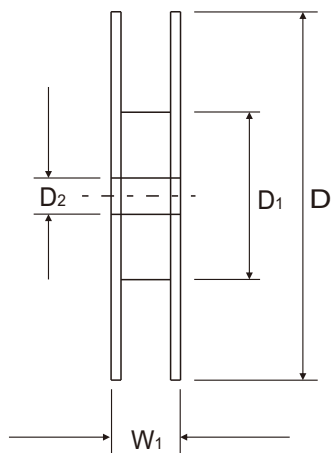
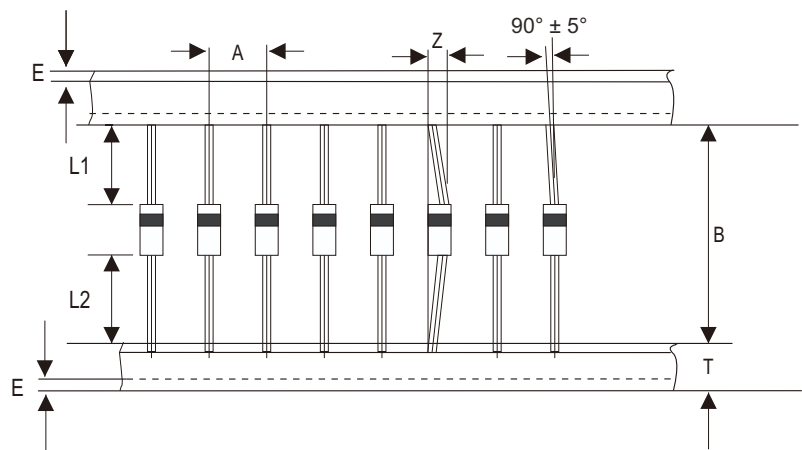


Fig.4B - Typical Reverse Characteristic



Taping Specification For Axial Lead Diodes

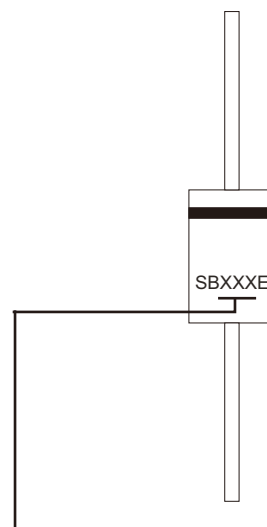


| DO-210AD | SYMBOL | A             | B                        | Z           | T             | E           | L1-L2       |
|----------|--------|---------------|--------------------------|-------------|---------------|-------------|-------------|
|          | (mm)   | 10.00 ± 0.50  | 52.40 + 1.50<br>- 0.40   | 1.20 (max)  | 6.00 ± 0.40   | 0.80 (max)  | 1.00 (max)  |
|          | (inch) | 0.394 ± 0.020 | 2.063 + 0.059<br>- 0.016 | 0.047 (max) | 0.236 ± 0.016 | 0.031 (max) | 0.039 (max) |

| DO-210AD | SYMBOL | L              | W             | H             | D      | D1            | D2            | W1            |
|----------|--------|----------------|---------------|---------------|--------|---------------|---------------|---------------|
|          | (mm)   | 255.00 ± 5.00  | 75.00 ± 5.00  | 150.00 ± 5.00 | 330    | 85.70 ± 0.30  | 16.60 ± 0.40  | 79.00 ± 1.00  |
|          | (inch) | 10.039 ± 0.197 | 2.953 ± 0.197 | 5.906 ± 0.197 | 12.992 | 3.374 ± 0.012 | 0.654 ± 0.016 | 3.110 ± 0.039 |

## Marking Code

| Part Number | Marking code | Packaging |
|-------------|--------------|-----------|
| SB520ET-G   | SB520E       | REEL      |
| SB540ET-G   | SB540E       | REEL      |
| SB545ET-G   | SB545E       | REEL      |
| SB550ET-G   | SB550E       | REEL      |
| SB560ET-G   | SB560E       | REEL      |
| SB580ET-G   | SB580E       | REEL      |
| SB5100ET-G  | SB5100E      | REEL      |
| SB520EA-G   | SB520E       | AMMO      |
| SB540EA-G   | SB540E       | AMMO      |
| SB545EA-G   | SB545E       | AMMO      |
| SB550EA-G   | SB550E       | AMMO      |
| SB560EA-G   | SB560E       | AMMO      |
| SB580EA-G   | SB580E       | AMMO      |
| SB5100EA-G  | SB5100E      | AMMO      |
| SB520EB-G   | SB520E       | BULK      |
| SB540EB-G   | SB540E       | BULK      |
| SB545EB-G   | SB545E       | BULK      |
| SB550EB-G   | SB550E       | BULK      |
| SB560EB-G   | SB560E       | BULK      |
| SB580EB-G   | SB580E       | BULK      |
| SB5100EB-G  | SB5100E      | BULK      |



XXX / XXXX = Product type marking code

Note:

1) Suffix code after part number to specify packaging item .

| Packaging | Code |
|-----------|------|
| REEL PACK | T    |
| AMMO PACK | A    |
| BULK PACK | B    |

## Standard Packaging

| Case Type | REEL PACK       |                     |
|-----------|-----------------|---------------------|
|           | REEL<br>( pcs ) | Reel Size<br>(inch) |
| DO-201AD  | 1,200           | 13                  |

| Case Type | BULK PACK      |  |
|-----------|----------------|--|
|           | BOX<br>( pcs ) |  |
| DO-201AD  | 200            |  |

| Case Type | AMMO PACK      |  |
|-----------|----------------|--|
|           | BOX<br>( pcs ) |  |
| DO-201AD  | 1,200          |  |

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