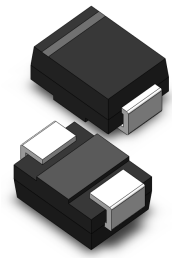
# SMF301B - SMF307B

## SURFACE MOUNT FAST RECOVERY RECTIFIER DIODES

**VOLTAGE RANGE: 50V-1000 V**
**CURRENT: 3.0 A**



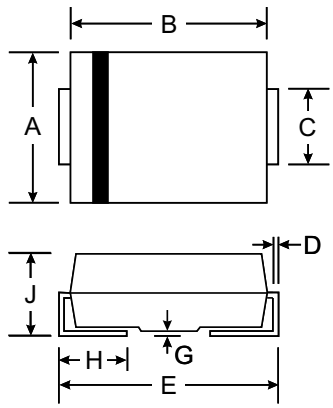
## Features

- Glass Passivated Die Construction
- Fast Recovery Time for High Efficiency
- Low Forward Voltage Drop and High Current Capability
- Ideally Suited for Automatic Assembly
- Plastic Material: UL Flammability
- Classification Rating 94V-0

## Mechanical Data

- Case: SMB/DO-214AA, Molded Plastic
- Terminals: Solder Plated, Solderable per MIL-STD-750, Method 2026
- Polarity: Cathode Band or Cathode Notch
- Marking: Type Number
- Weight: 0.093 grams (approx.)

RoHS COMPLIANT



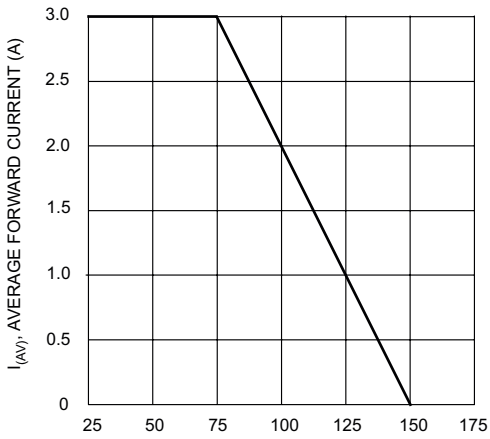

| SMB(DO-214AA) | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 3.30 | 3.94 |
| **B** | 4.06 | 4.70 |
| **C** | 1.91 | 2.21 |
| **D** | 0.15 | 0.31 |
| **E** | 5.00 | 5.59 |
| **G** | 0.10 | 0.20 |
| **H** | 0.76 | 1.52 |
| **J** | 2.00 | 2.62 |
| **All Dimensions in mm** | | |

## Maximum Ratings and Electrical Characteristics $T_A$ = 25°C unless otherwise specified

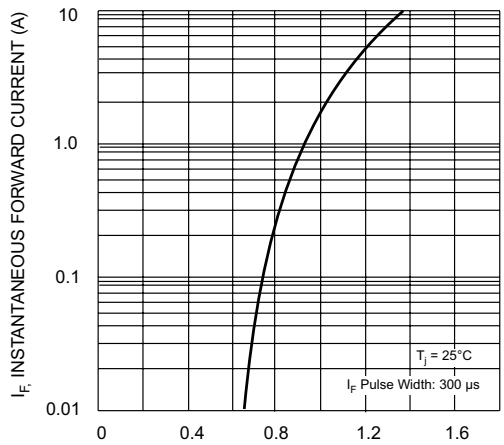
Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.

| Characteristic | Symbol | SMF301B | SMF302B | SMF303B | SMF304B | SMF305B | SMF306B | SMF307B | Unit |
|---|---|---|---|---|---|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| Average Rectified Output Current @ $T_T$ = 75°C | $I_O$ | 3.0 | | | | | | | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load (JEDEC Method) | $I_{FSM}$ | 100 | | | | | | | A |
| Forward Voltage @ $I_F$ = 3.0A | $V_{FM}$ | 1.3 | | | | | | | V |
| Peak Reverse Current @ $T_A$ = 25°C<br>at Rated DC Blocking Voltage @ TA = 125°C | $I_{RM}$ | 5.0<br>250 | | | | | | | μA |
| Maximum Recovery Time (Note 3) | $t_{rr}$ | 150 | | | | 250 | 500 | | ns |
| Typical Junction Capacitance (Note 2) | $C_j$ | 50 | | | | | | | pF |
| Typical Thermal Resistance Junction to Terminal (Note 1) | $R_{\theta JT}$ | 25 | | | | | | | K/W |
| Operating and Storage Temperature Range | $T_j$, $T_{STG}$ | -65 to +150 | | | | | | | °C |

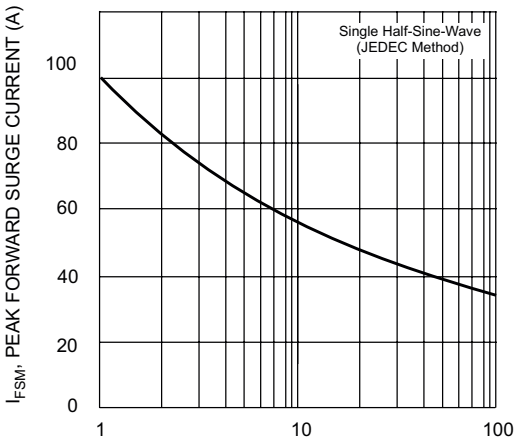
Notes:
1. Thermal resistance: junction to terminal, unit mounted on PC board with 5.0 $mm^2$ (0.013 mm thick) copper pad as heat sink.
2. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
3. Reverse recovery test conditions: $I_F$ = 0.5A, $I_R$ = 1.0A, $I_{rr}$ = 0.25A. See figure 5.



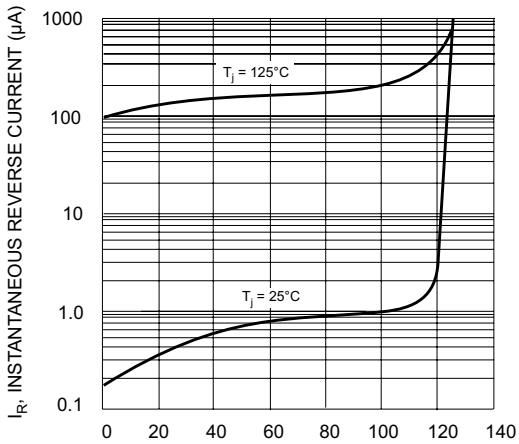

$T_T$, TERMINAL TEMPERATURE (°C)
Fig. 1 Forward Current Derating Curve



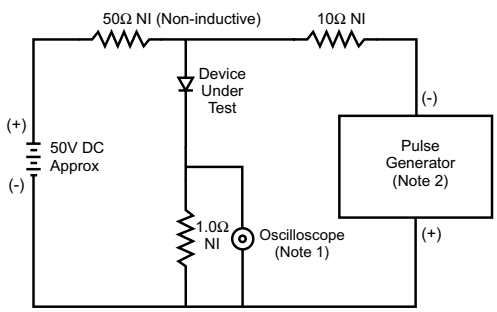

$V_F$, INSTANTANEOUS FORWARD VOLTAGE (V)
Fig. 2 Typical Forward Characteristics



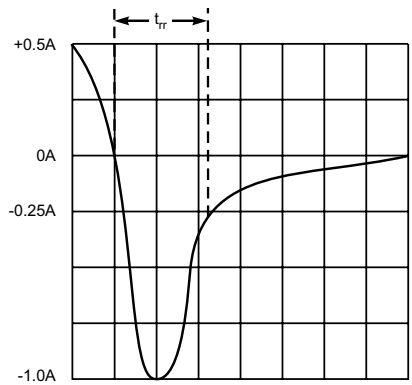

NUMBER OF CYCLES AT 60 Hz
Fig. 3 Forward Surge Current Derating Curve




PERCENT OF RATED PEAK REVERSE VOLTAGE (%)
Fig. 4 Typical Reverse Characteristics




Notes:
1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
2. Rise Time = 10ns max. Input Impedance = 50Ω.




Set time base for 50/100 ns/cm

Fig. 5 Reverse Recovery Time Characteristic and Test Circuit