# 200mA, 120 - 250V High Voltage SMD Switching Diode

## FEATURES

- Low power loss, high efficiency
- Ideal for automated placement
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

## APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

## MECHANICAL DATA

- Case: SOD-323F
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: Indicated by cathode band
- Weight: 4.50mg (approximately)

| KEY PARAMETERS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| $I_F$ | 200 | mA |
| $V_{RRM}$ | 120 - 250 | V |
| $I_{FSM}$ | 2.5 | A |
| $V_F$ at $I_F$ = 200mA | 1.25 | V |
| $T_{J\ MAX}$ | 150 | °C |
| Package | SOD-323F | |
| Configuration | Single die | |

Pb-Free RoHS COMPLIANT

**SOD-323F**


| **ABSOLUTE MAXIMUM RATINGS** ($T_A$ = 25°C unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | | **SYMBOL** | **BAV19WS** | **BAV20WS** | **BAV21WS** | **UNIT** |
| Marking code on the device | | | S5 | S6 | S7 | |
| Power dissipation | | $P_D$ | 200 | | | mW |
| Average forward current | | $I_F$ | 200 | | | mA |
| Repetitive peak reverse voltage | | $V_{RRM}$ | 120 | 200 | 250 | V |
| Peak forward surge current | Pulse Width = 1s , Square Wave | $I_{FSM}$ | 0.5 | | | A |
| | Pulse Width = 1μs , Square Wave | | 2.5 | | | |
| Junction temperature range | | $T_J$ | -65 to +150 | | | °C |
| Storage temperature range | | $T_{STG}$ | -65 to +150 | | | °C |

## ELECTRICAL SPECIFICATIONS ($T_A$ = 25°C unless otherwise noted)

| PARAMETER | | CONDITIONS | SYMBOL | MIN | MAX | UNIT |
|---|---|---|---|---|---|---|
| Forward voltage[1] | | $I_F$ = 100mA, $T_J$ = 25°C | $V_F$ | - | 1.00 | V |
| | | $I_F$ = 200mA, $T_J$ = 25°C | | - | 1.25 | V |
| Reverse voltage | BAV19WS | $I_R$ = 100μA, $T_J$ = 25°C | $V_R$ | 120 | - | V |
| | BAV20WS | | | 200 | - | V |
| | BAV21WS | | | 250 | - | V |
| Reverse current[2] | BAV19WS | $V_R$ = 100V $T_J$ = 25°C | $I_R$ | - | 0.1 | μA |
| | BAV20WS | $V_R$ = 150V $T_J$ = 25°C | | - | 0.1 | μA |
| | BAV21WS | $V_R$ = 200V $T_J$ = 25°C | | - | 0.1 | μA |
| Junction capacitance | | 1MHz, $V_R$ = 0V | $C_J$ | - | 5 | pF |
| Reverse recovery time | | $I_F$ = $I_R$ = 30mA, $R_L$ = 100Ω, $I_{rr}$ = 3mA | $t_{rr}$ | - | 50 | ns |

**Notes:**

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

## ORDERING INFORMATION

| ORDERING CODE[1][2] | PACKAGE | PACKING |
|---|---|---|
| BAVxWS RR | SOD-323F | 3K / 7" Reel |
| BAVxWS RRG | SOD-323F | 3K / 7" Reel |
| BAVxWS R9 | SOD-323F | 10K / 13" Reel |
| BAVxWS R9G | SOD-323F | 10K / 13" Reel |

**Notes:**

1. "x" is device code from "19"(BAV19WS) to "21"(BAV21WS)
2. "G" means green compound (halogen-free)

## CHARACTERISTICS CURVES

($T_A$ = 25°C unless otherwise noted)

**Fig.1 Typical Forward Characteristics**

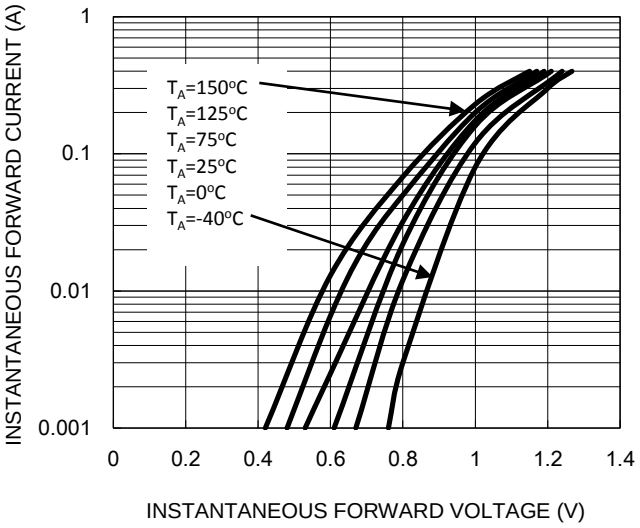



**Fig.2 Typical Reverse Characteristics**

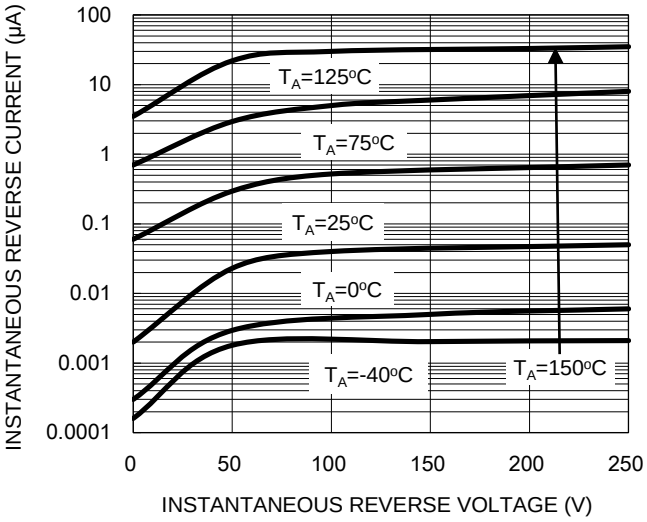



**Fig.3 Typical Capacitance VS. Reverse Voltage**

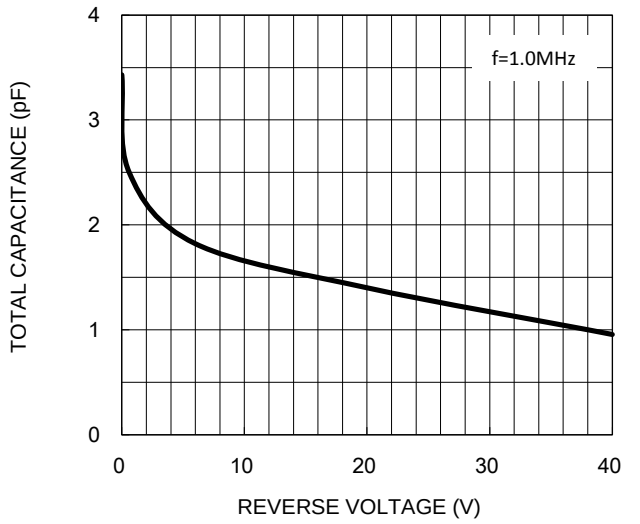
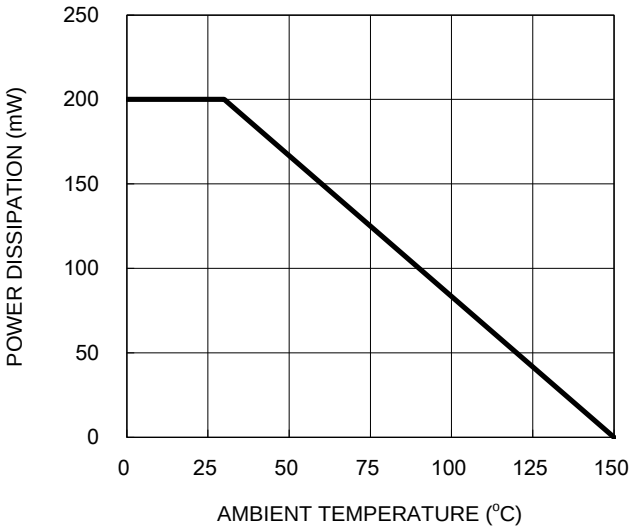
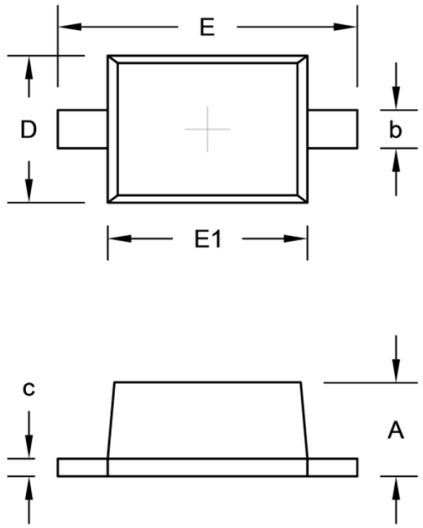



**Fig.4 Power Derating Curve**



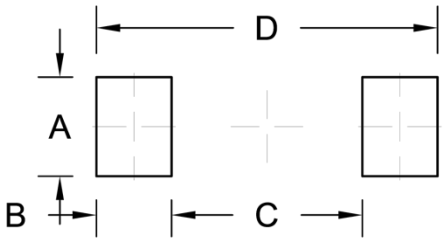
## PACKAGE OUTLINE DIMENSION

**SOD-323F**




| DIM. | Unit (mm) | | Unit (inch) | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.60 | 1.00 | 0.024 | 0.039 |
| b | 0.25 | 0.40 | 0.010 | 0.016 |
| c | 0.05 | 0.25 | 0.002 | 0.010 |
| D | 1.15 | 1.35 | 0.045 | 0.053 |
| E | 2.30 | 2.80 | 0.091 | 0.110 |
| E1 | 1.60 | 1.80 | 0.063 | 0.071 |

## SUGGEST PAD LAYOUT




| Symbol | Unit (mm) | Unit (inch) |
|---|---|---|
| A | 0.83 | 0.033 |
| B | 0.63 | 0.025 |
| C | 1.60 | 0.063 |
| D | 2.86 | 0.113 |

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