

## Features

- Halogen Free. "Green" Device (Note 1)
- AEC-Q101 Qualified
- Silicon Epitaxial Planar Diodes
- For General Purpose
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

- Operating Junction Temperature Range: -65°C to +150°C
- Storage Temperature Range: -65°C to +150°C
- Thermal Resistance: 500°C/W Junction to Ambient (Note 2)

| MCC Part Number | Repetitive Peak Reverse Voltage<br>$V_{RRM}$ | RMS Reverse Voltage<br>$V_{R(RMS)}$ | DC Blocking Voltage<br>$V_R$ |
|-----------------|----------------------------------------------|-------------------------------------|------------------------------|
| BAV19WSHE3      | 120V                                         | 85V                                 | 120V                         |
| BAV20WSHE3      | 200V                                         | 141V                                | 200V                         |
| BAV21WSHE3      | 250V                                         | 177V                                | 250V                         |

## Electrical Characteristics @ 25°C Unless Otherwise Specified

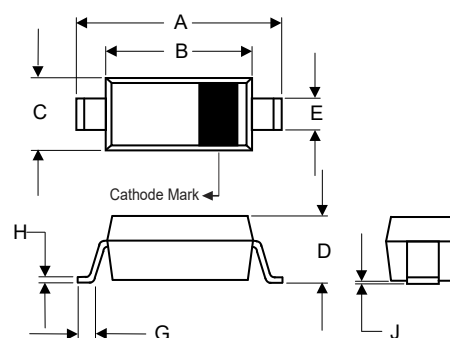
|                                           |             |              |                        |
|-------------------------------------------|-------------|--------------|------------------------|
| Average Rectified Forward Current         | $I_{F(AV)}$ | 200mA        | (Note 2)               |
| Peak Forward Current                      | $I_{FM}$    | 400mA        |                        |
| Non-Repetitive Peak Forward Surge Current | $I_{FSM}$   | 9.0A<br>0.5A | @ t=1us<br>@ t=1s      |
| Repetitive Peak Forward Current           | $I_{FRM}$   | 625mA        |                        |
| Power Dissipation                         | $P_{TOT}$   | 250mW        | $T_A=25^\circ\text{C}$ |

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

2. Mounted on FR-4 board with recommended pad layout.

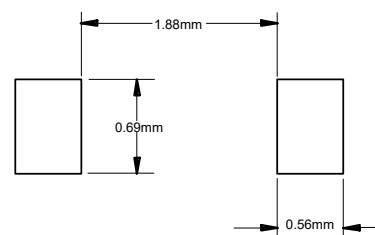
# 250mW Small Signal Diodes 120 to 250 Volts

## SOD-323

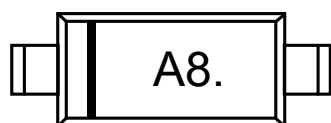


| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | 0.090  | 0.107 | 2.30 | 2.70 |      |
| B   | 0.063  | 0.071 | 1.60 | 1.80 |      |
| C   | 0.045  | 0.053 | 1.15 | 1.35 |      |
| D   | 0.031  | 0.045 | 0.80 | 1.15 |      |
| E   | 0.010  | 0.016 | 0.25 | 0.40 |      |
| G   | 0.004  | 0.018 | 0.10 | 0.45 |      |
| H   | 0.004  | 0.010 | 0.10 | 0.25 |      |
| J   | ----   | 0.006 | ---- | 0.15 |      |

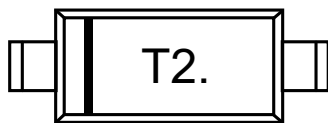
## Suggested Solder Pad Layout



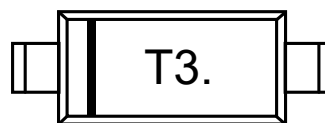
## Internal Structure and Marking Code



BAV19WSHE3



BAV20WSHE3



BAV21WSHE3

## Electrical Characteristics @ 25°C (Unless Otherwise Specified)

### BAV19WSHE3

| Parameter                 | Symbol   | Conditions                                     | Min. | Typ. | Max. | Units   |
|---------------------------|----------|------------------------------------------------|------|------|------|---------|
| Reverse Breakdown Voltage | $V_{BR}$ | $I_R=100\mu A$                                 | 120  |      |      | V       |
| Forward Voltage           | $V_F$    | $I_F=100mA$                                    |      |      | 1.00 | V       |
|                           |          | $I_F=200mA$                                    |      |      | 1.25 | V       |
| Reverse Current           | $I_R$    | $V_R=100V$                                     |      |      | 100  | nA      |
|                           |          | $V_R=100V, T_J=100^\circ C$                    |      |      | 15   | $\mu A$ |
| Junction Capacitance      | $C_J$    | $V_R = 0V, f = 1MHz$                           |      | 1.5  | 2.0  | pF      |
| Reverse Recovery Time     | $t_{rr}$ | $I_F=I_R=30mA,$<br>$I_{rr}=3mA, R_L=100\Omega$ |      |      | 50   | ns      |

### BAV20WSHE3

| Parameter                 | Symbol   | Conditions                                     | Min. | Typ. | Max. | Units   |
|---------------------------|----------|------------------------------------------------|------|------|------|---------|
| Reverse Breakdown Voltage | $V_{BR}$ | $I_R=100\mu A$                                 | 200  |      |      | V       |
| Forward Voltage           | $V_F$    | $I_F=100mA$                                    |      |      | 1.00 | V       |
|                           |          | $I_F=200mA$                                    |      |      | 1.25 | V       |
| Reverse Current           | $I_R$    | $V_R=150V$                                     |      |      | 100  | nA      |
|                           |          | $V_R=150V, T_J=100^\circ C$                    |      |      | 15   | $\mu A$ |
| Junction Capacitance      | $C_J$    | $V_R = 0V, f = 1MHz$                           |      | 1.5  | 2.0  | pF      |
| Reverse Recovery Time     | $t_{rr}$ | $I_F=I_R=30mA,$<br>$I_{rr}=3mA, R_L=100\Omega$ |      |      | 50   | ns      |

BAV21WSHE3

| Parameter                 | Symbol   | Conditions                                     | Min. | Typ. | Max. | Units   |
|---------------------------|----------|------------------------------------------------|------|------|------|---------|
| Reverse Breakdown Voltage | $V_{BR}$ | $I_R=100\mu A$                                 | 250  |      |      | V       |
| Forward Voltage           | $V_F$    | $I_F=100mA$                                    |      |      | 1.00 | V       |
|                           |          | $I_F=200mA$                                    |      |      | 1.25 | V       |
| Reverse Current           | $I_R$    | $V_R=200V$                                     |      |      | 100  | nA      |
|                           |          | $V_R=200V, T_J=100^\circ C$                    |      |      | 15   | $\mu A$ |
| Junction Capacitance      | $C_J$    | $V_R = 0V, f = 1MHz$                           |      | 1.5  | 2.0  | pF      |
| Reverse Recovery Time     | $t_{rr}$ | $I_F=I_R=30mA,$<br>$I_{rr}=3mA, R_L=100\Omega$ |      |      | 50   | ns      |

## Curve Characteristics

Fig. 1 - Typical Instantaneous Forward Characteristics

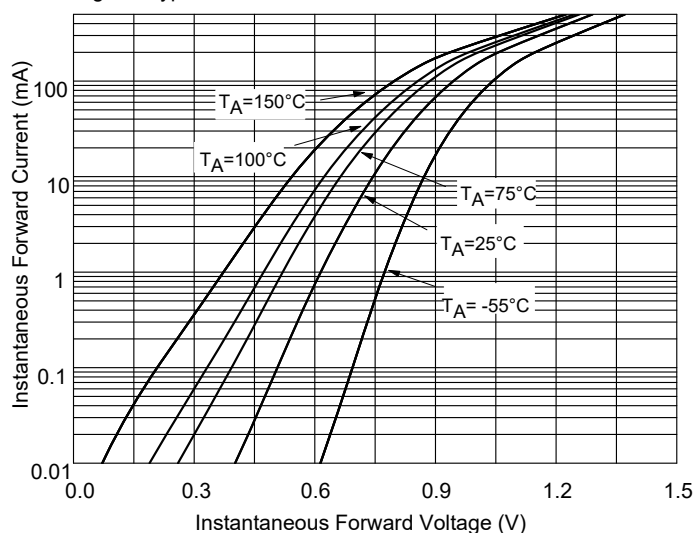


Fig. 2 - Typical Reverse Leakage Characteristics

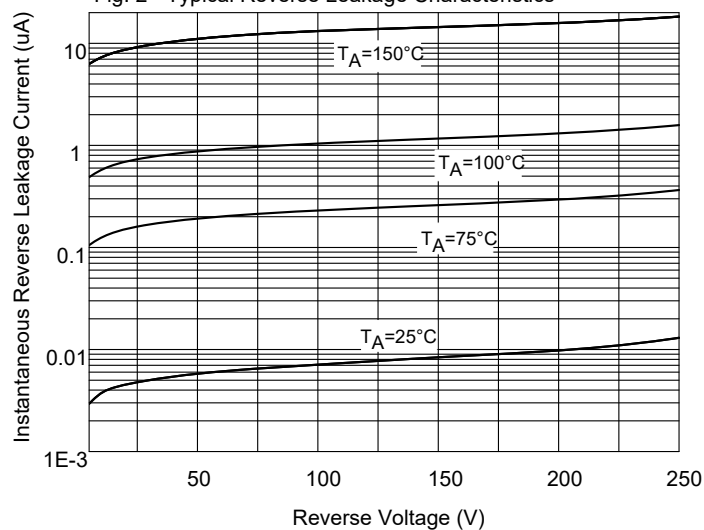


Fig. 3 - Capacitance Characteristics

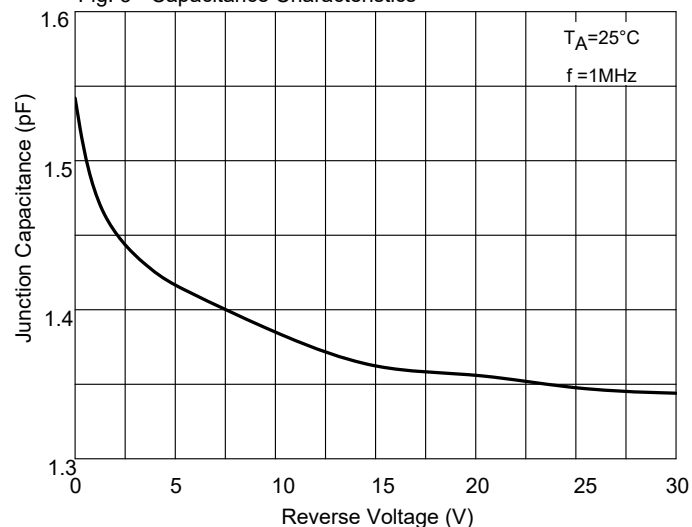
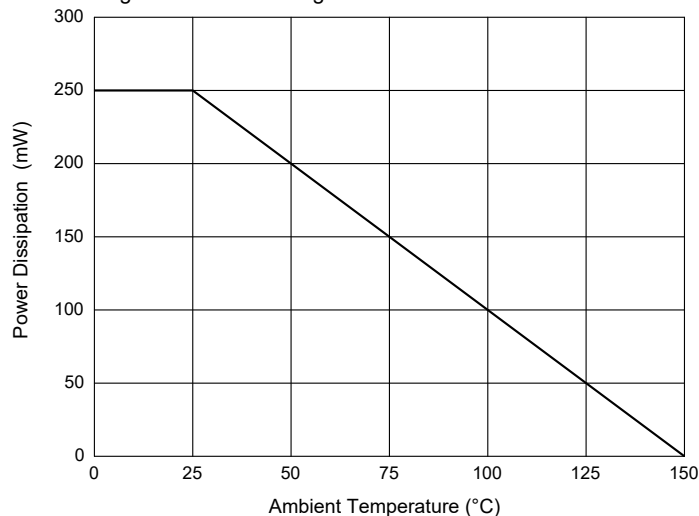


Fig. 4 - Power Derating Curve



## Ordering Information

| Device          | Packing                |
|-----------------|------------------------|
| Part Number-TP  | Tape&Reel: 3Kpcs/Reel  |
| Part Number-13P | Tape&Reel: 10Kpcs/Reel |

For packaging details, go to our website at <https://www.mccsemi.com/pdf/productpackaging/SOD-323%20Package.pdf>

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