

# MBR1020VL

## Surface Mount Schottky Power Rectifier

### Features

- Ultra Thin Profile – Maximum Height of 1.08 mm
- High Surge Capacity
- UL Flammability 94V-0 Classification
- MSL 1
- Green Mold Compound
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant

### Specifications

**ABSOLUTE MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

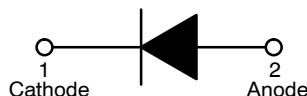
| Symbol      | Parameter                                                                                                      | Value       | Unit             |
|-------------|----------------------------------------------------------------------------------------------------------------|-------------|------------------|
| $V_{RRM}$   | Peak Repetitive Reverse Voltage                                                                                | 20          | V                |
| $I_{F(AV)}$ | Average Rectified Forward Current                                                                              | 1.0         | A                |
| $I_{FSM}$   | Non-Repetitive Peak Surge Current:<br>Surge Applied at Rated Load Conditions,<br>Half Wave, Single Phase, 60Hz | 45          | A                |
| dv/dt       | Voltage Rate of Change                                                                                         | 1000        | V/ $\mu\text{s}$ |
| $T_J$       | Operating Junction Temperature Range                                                                           | -55 to +125 | $^\circ\text{C}$ |
| $T_{STG}$   | Storage Temperature Range                                                                                      | -55 to +125 | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

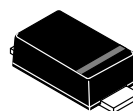


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Schottky Power Rectifier



SOD-123F  
CASE 425AD

### MARKING DIAGRAM



Band Indicates Cathode

&Y = Binary Calendar Year Coding Scheme  
&Z = Assembly Plant Code  
RL = Specific Device Code  
&G = Single Digit Weekly Data Code

### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

# MBR1020VL

## THERMAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Symbol          | Characteristic                                             | Value | Unit               |
|-----------------|------------------------------------------------------------|-------|--------------------|
| $R_{\theta JA}$ | Typical Thermal Resistance, Junction-to-Ambient (Note 1)   | 200   | $^\circ\text{C/W}$ |
| $\Psi_{JL}$     | Typical Thermal Characteristics, Junction-to-Lead (Note 2) | 70    | $^\circ\text{C/W}$ |

1. Mounted with minimum recommended pad size, PC board FR4.
2. Mounted on a FR4 PCB, single-sided copper, with 10 cm \* 10 cm copper pad area.

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Symbol   | Parameter                                                  | Conditions                                                       | Min | Typ  | Max   | Unit |
|----------|------------------------------------------------------------|------------------------------------------------------------------|-----|------|-------|------|
| $V_F$    | Instantaneous Forward Voltage (Note 3)                     | $I_F = 0.1\text{ A}$                                             | –   | –    | 0.275 | V    |
|          |                                                            | $I_F = 0.1\text{ A}, T_A = 85^\circ\text{C}$                     | –   | –    | 0.205 |      |
|          |                                                            | $I_F = 0.5\text{ A}$                                             | –   | –    | 0.315 |      |
|          |                                                            | $I_F = 0.5\text{ A}, T_A = 85^\circ\text{C}$                     | –   | –    | 0.270 |      |
|          |                                                            | $I_F = 1.0\text{ A}$                                             | –   | –    | 0.340 |      |
|          |                                                            | $I_F = 1.0\text{ A}, T_A = 85^\circ\text{C}$                     | –   | –    | 0.300 |      |
| $I_R$    | Instantaneous Reverse Current at Rated DC Voltage (Note 3) | $T_A = 25^\circ\text{C}$                                         | –   | –    | 0.60  | mA   |
|          |                                                            | $T_A = 85^\circ\text{C}$                                         | –   | –    | 15    |      |
| $T_{rr}$ | Reverse Recovery Time                                      | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$ | –   | 12.4 | –     | ns   |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Pulse test: pulse width = 300  $\mu\text{s}$ , duty cycle < 2%

## ORDERING INFORMATION

| Part Number | Top Mark | Package                            | Shipping <sup>†</sup> |
|-------------|----------|------------------------------------|-----------------------|
| MBR1020VL   | RL       | SOD-123F<br>(Pb-Free/Halogen Free) | 3000 / Tape & Reel    |

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

TYPICAL PERFORMANCE CHARACTERISTICS

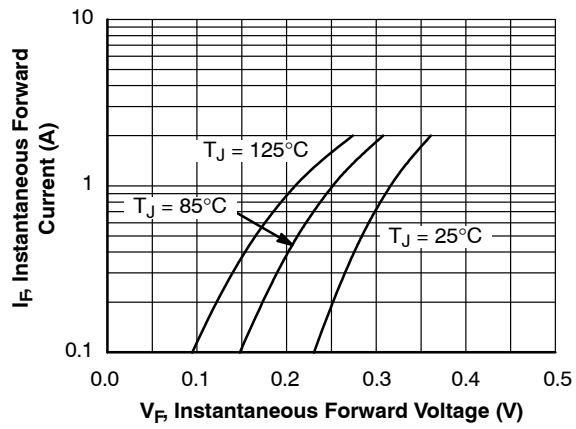


Figure 1. Typical Forward Characteristics

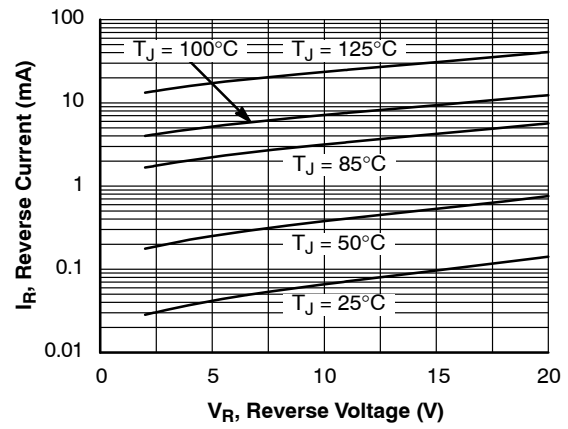


Figure 2. Typical Reverse Characteristics

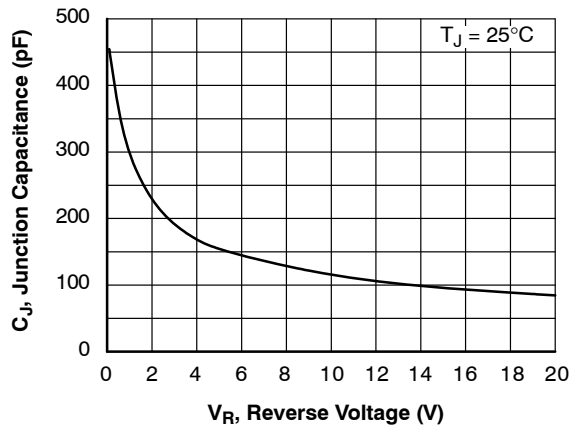
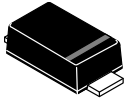


Figure 3. Capacitance



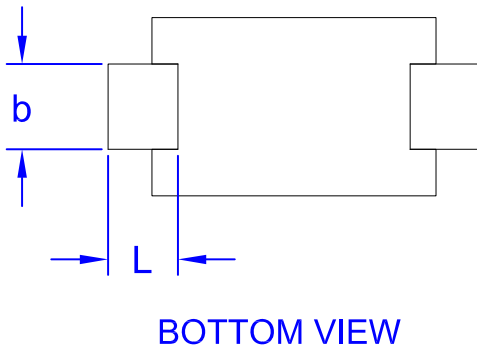
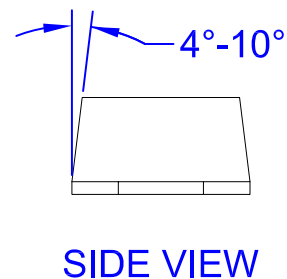
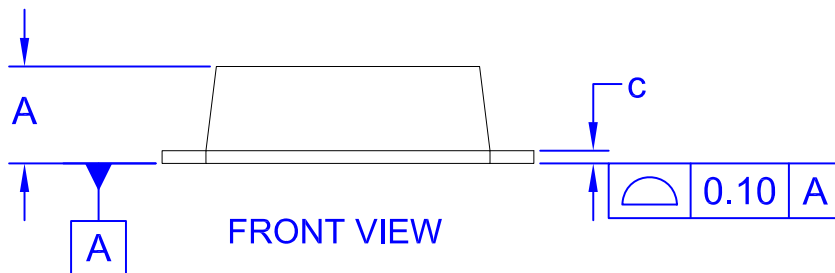
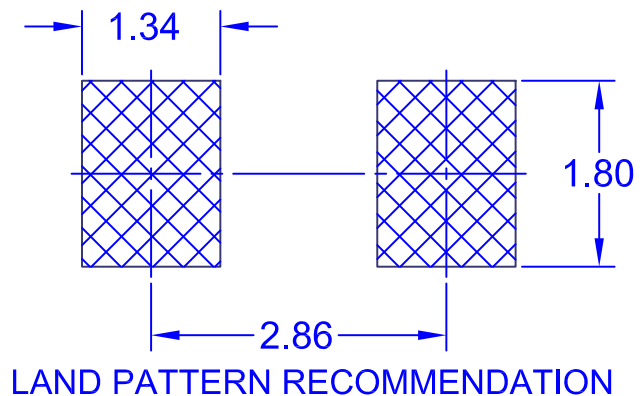
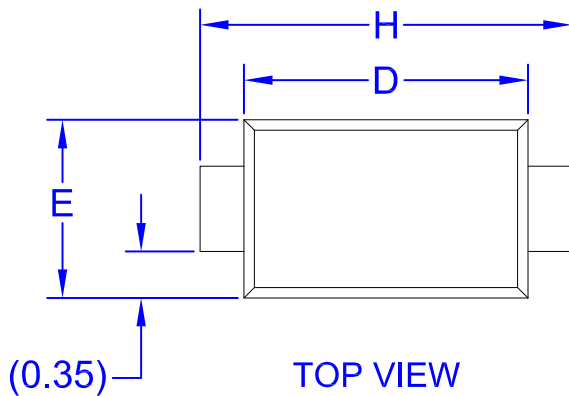
SCALE 4:1

**SOD-123FL**  
**CASE 425AD**  
**ISSUE A**

DATE 04 AUG 2017

**NOTES:**

- A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
- B. ALL DIMENSIONS ARE IN MILLIMETERS
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.



| DIM | INCHES |       | MILLIMETERS |      |
|-----|--------|-------|-------------|------|
|     | MIN    | MAX   | MIN         | MAX  |
| A   | 0.031  | 0.043 | 0.80        | 1.08 |
| b   | 0.020  | 0.045 | 0.50        | 1.15 |
| c   | 0.002  | 0.008 | 0.05        | 0.20 |
| D   | 0.098  | 0.118 | 2.50        | 3.00 |
| E   | 0.059  | 0.077 | 1.50        | 1.95 |
| H   | 0.130  | 0.154 | 3.30        | 3.90 |
| L   | 0.018  | 0.035 | 0.45        | 0.90 |

|                         |                    |                                                                                                                                                                                     |
|-------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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