

## Advance Information

# Surface Mount Schottky Power Rectifier

## SMB Power Surface Mount Package

... employing the Schottky Barrier principle in a metal-to-silicon power rectifier. Features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for low voltage, high frequency switching power supplies; free wheeling diodes and polarity protection diodes.

- Compact Package with J-Bend Leads Ideal for Automated Handling
- Highly Stable Oxide Passivated Junction
- Guardring for Over-Voltage Protection
- Low Forward Voltage Drop

### Mechanical Characteristics:

- Case: Molded Epoxy
- Epoxy Meets UL94, VO at 1/8"
- Weight: 95 mg (approximately)
- Polarity: Notch in Plastic Body Indicates Cathode Lead
- Maximum Temperature of 260°C/10 Seconds for Soldering
- Available in 12 mm Tape, 2500 Units per 13" Reel, Add "T3" Suffix to Part Number
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Marking: 2BL4

### MAXIMUM RATINGS

| Rating                                                                                                       | Symbol                          | Value        | Unit                   |
|--------------------------------------------------------------------------------------------------------------|---------------------------------|--------------|------------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                       | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 40           | Volts                  |
| Average Rectified Forward Current (At Rated $V_R$ , $T_C = 100^\circ\text{C}$ )                              | $I_O$                           | 2.0          | Amps                   |
| Peak Repetitive Forward Current<br>(At Rated $V_R$ , Square Wave, 20 kHz, $T_C = 105^\circ\text{C}$ )        | $I_{FRM}$                       | 4.0          | Amps                   |
| Non-Repetitive Peak Surge Current<br>(Surge applied at rated load conditions, halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 25           | Amps                   |
| Storage / Operating Case Temperature                                                                         | $T_{stg}, T_C$                  | - 55 to +150 | $^\circ\text{C}$       |
| Operating Junction Temperature                                                                               | $T_J$                           | - 55 to +125 | $^\circ\text{C}$       |
| Voltage Rate of Change (Rated $V_R$ , $T_J = 25^\circ\text{C}$ )                                             | $dv/dt$                         | 10,000       | $\text{V}/\mu\text{s}$ |

### THERMAL CHARACTERISTICS

|                                              |                 |    |                           |
|----------------------------------------------|-----------------|----|---------------------------|
| Thermal Resistance — Junction-to-Lead (2)    | $R_{\theta JL}$ | 18 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance — Junction-to-Ambient (3) | $R_{\theta JA}$ | 78 |                           |

### ELECTRICAL CHARACTERISTICS

|                                                                                                                   |       |                          |                           |       |
|-------------------------------------------------------------------------------------------------------------------|-------|--------------------------|---------------------------|-------|
| Maximum Instantaneous Forward Voltage (1), see Figure 2<br>( $I_F = 2.0 \text{ A}$ )<br>( $I_F = 4.0 \text{ A}$ ) | $V_F$ | $T_J = 25^\circ\text{C}$ | $T_J = 125^\circ\text{C}$ | Volts |
|                                                                                                                   |       | 0.43<br>0.54             | 0.375<br>0.55             |       |
| Maximum Instantaneous Reverse Current, see Figure 4<br>( $V_R = 40 \text{ V}$ )<br>( $V_R = 20 \text{ V}$ )       | $I_R$ | $T_J = 25^\circ\text{C}$ | $T_J = 100^\circ\text{C}$ | mA    |
|                                                                                                                   |       | 2.0<br>0.50              | 60<br>40                  |       |

This document contains information on a new product. Specifications and information herein are subject to change without notice.

- (1) Pulse Test: Pulse Width  $\leq 250 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .  
 (2) Mounted with minimum recommended pad size, PC Board FR4.  
 (3) 1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board.

**MBRS240LT3**

**SCHOTTKY BARRIER  
RECTIFIER  
2.0 AMPERES  
40 VOLTS**



**CASE 403A-03  
SMB**



## MBRS240LT3

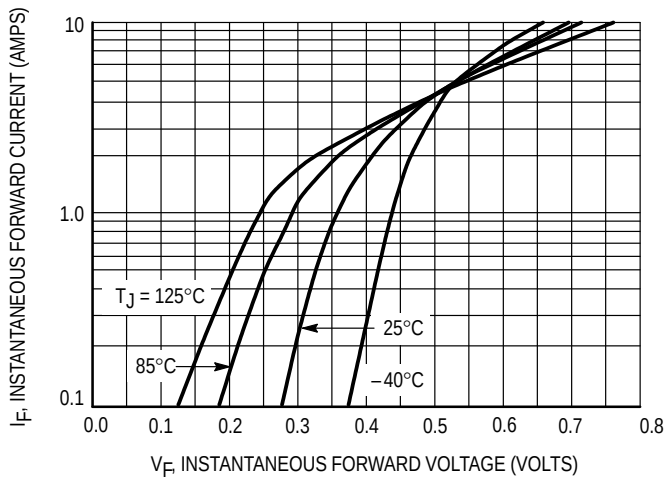


Figure 1. Typical Forward Voltage

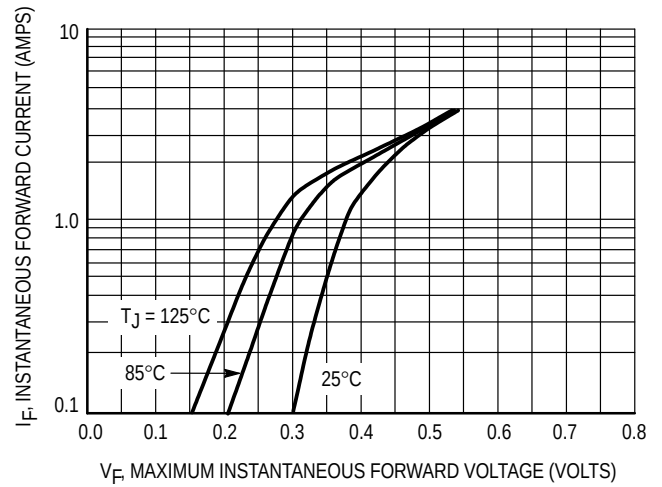


Figure 2. Maximum Forward Voltage

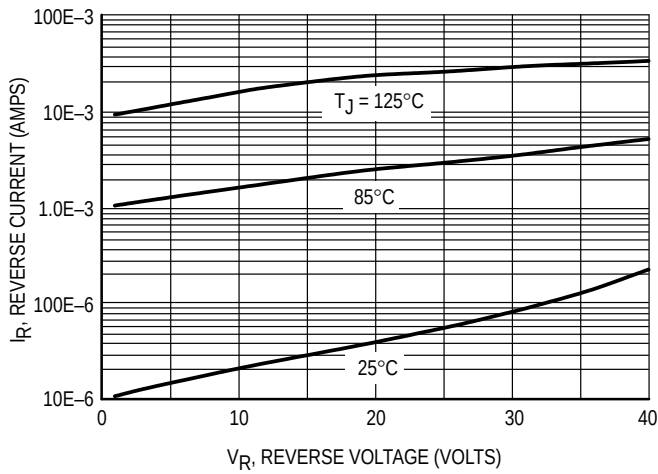


Figure 3. Typical Reverse Current

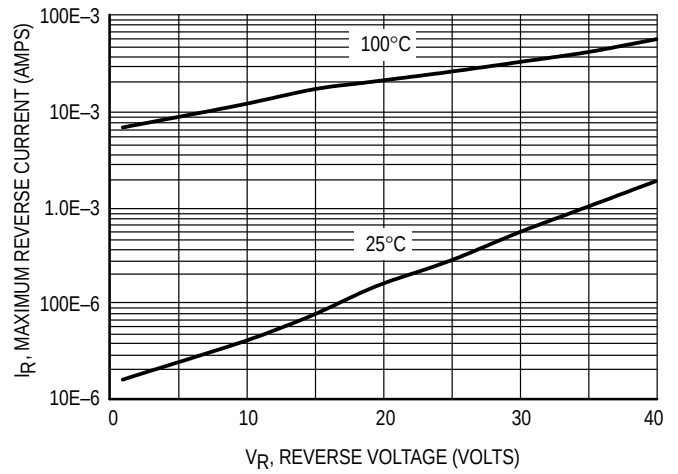


Figure 4. Maximum Reverse Current

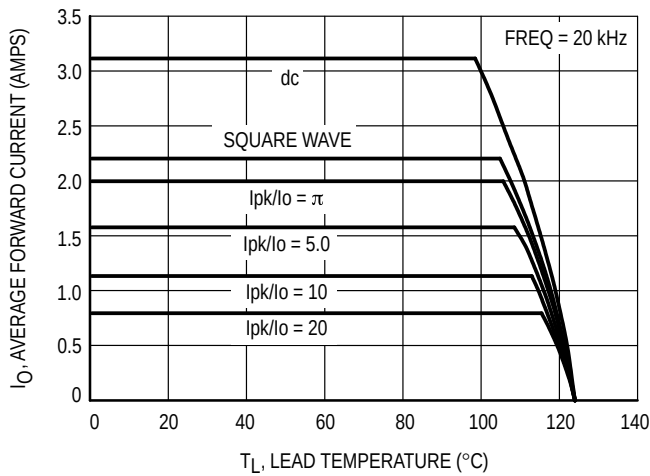


Figure 5. Current Derating

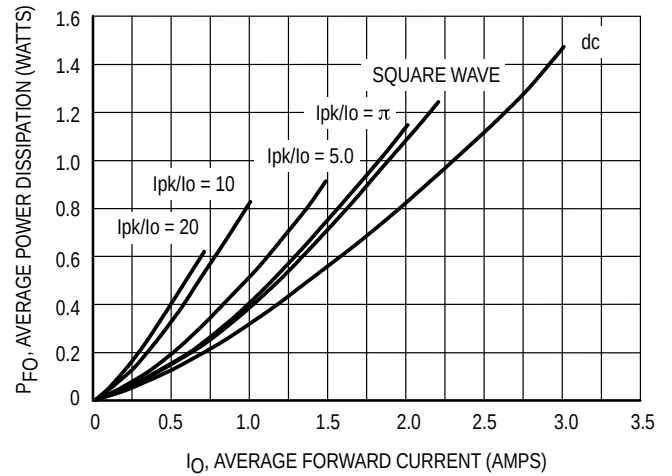


Figure 6. Forward Power Dissipation

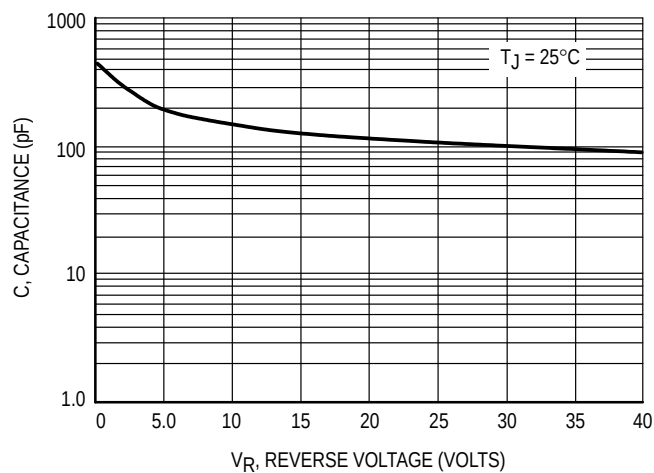


Figure 7. Capacitance

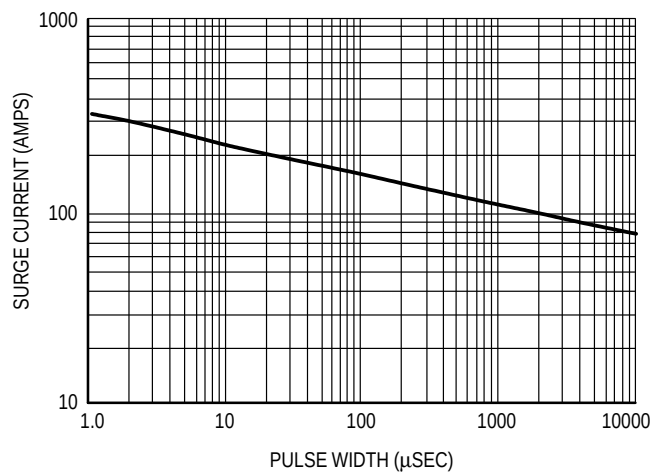


Figure 8. Maximum Non-Repetitive Forward Surge Current

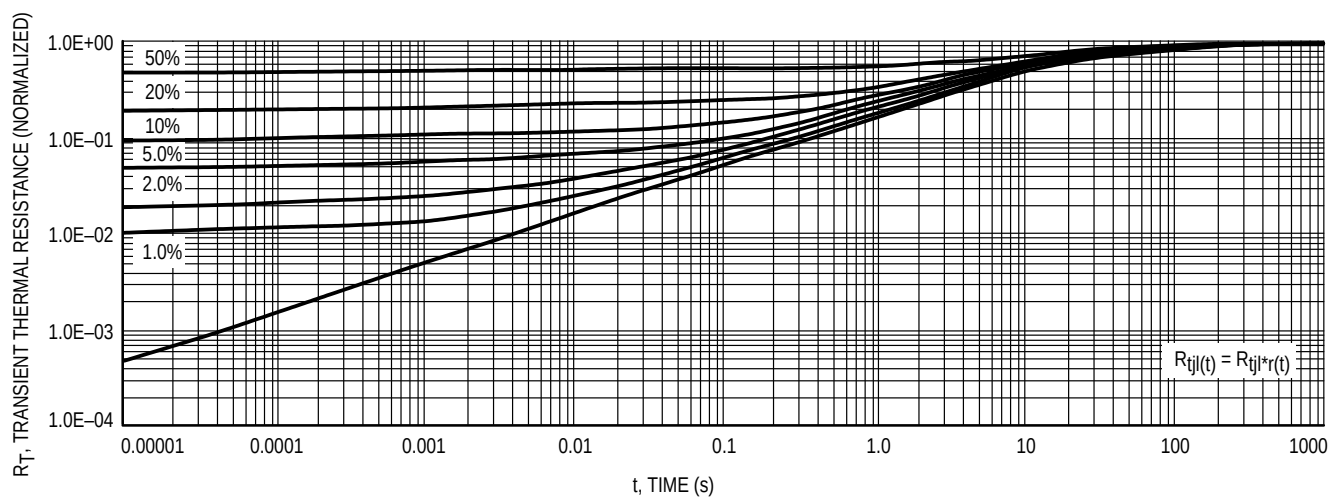
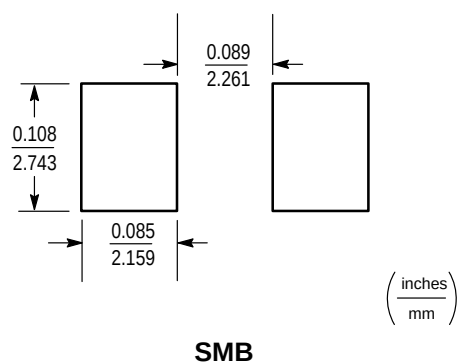
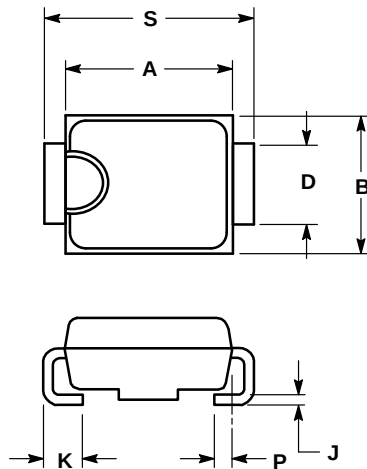


Figure 9. Thermal Response



## PACKAGE DIMENSIONS



## NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.

| DIM | INCHES    |        | MILLIMETERS |       |
|-----|-----------|--------|-------------|-------|
|     | MIN       | MAX    | MIN         | MAX   |
| A   | 0.160     | 0.180  | 4.06        | 4.57  |
| B   | 0.130     | 0.150  | 3.30        | 3.81  |
| C   | 0.075     | 0.095  | 1.90        | 2.41  |
| D   | 0.077     | 0.083  | 1.96        | 2.11  |
| H   | 0.0020    | 0.0060 | 0.051       | 0.152 |
| J   | 0.006     | 0.012  | 0.15        | 0.30  |
| K   | 0.030     | 0.050  | 0.76        | 1.27  |
| P   | 0.020 REF |        | 0.51 REF    |       |
| S   | 0.205     | 0.220  | 5.21        | 5.59  |

CASE 403A-03  
ISSUE C

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