

# MBRA210LT3

## Surface Mount Schottky Power Rectifier

### SMA 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. Typical applications are ac/dc and dc-dc converters, reverse battery protection, and "Oring" of multiple supply voltages and any other application where performance and size are critical.

- Ultra Low  $V_F$
- 1st in the Market Place with a 10  $V_R$  Schottky Rectifier
- Compact Package with J-Bend Leads Ideal for Automated Handling
- Highly Stable Oxide Passivated Junction
- Guardring for Over-Voltage Protection
- Optimized for Low Forward Voltage

#### Mechanical Characteristics:

- Case: Molded Epoxy
- Epoxy Meets UL94,  $V_O$  at 1/8"
- Weight: 70 mg (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Polarity: Polarity Band Indicates Cathode Lead
- ESD Ratings: Machine Model = C  
Human Body Model = 3A
- Available in 12 mm Tape, 5000 Units per 13 inch Reel
- Marking: B2L1

#### 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>$V_R$ | 10             | V                |
| Average Rectified Forward Current<br>(At Rated $V_R$ , $T_L = 110^\circ\text{C}$ )                             | $I_O$                           | 2.0            | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions<br>Halfwave, Single Phase, 60 Hz) | $I_{FSM}$                       | 160            | A                |
| Storage/Operating Case Temperature<br>Operating Junction Temperature                                           | $T_{stg}$ , $T_C$<br>$T_J$      | -55 to<br>+125 | $^\circ\text{C}$ |
| Voltage Rate of Change<br>(Rated $V_R$ , $T_J = 25^\circ\text{C}$ )                                            | $dv/dt$                         | 10,000         | V/ $\mu\text{s}$ |



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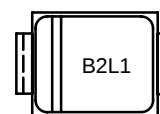
<http://onsemi.com>

### SCHOTTKY BARRIER RECTIFIER 2 AMPERES 10 VOLTS



SMA  
CASE 403D  
PLASTIC

#### MARKING DIAGRAM



B2L1 = Device Code

#### ORDERING INFORMATION

| Device     | Package | Shipping         |
|------------|---------|------------------|
| MBRA210LT3 | SMA     | 5000/Tape & Reel |

# MBRA210LT3

## THERMAL CHARACTERISTICS

| Characteristic                           | Symbol          | Min Pad | 1 Inch Pad | Unit                        |
|------------------------------------------|-----------------|---------|------------|-----------------------------|
| Thermal Resistance - Junction-to-Lead    | $R_{\theta JL}$ | 22      | 15         | $^{\circ}\text{C}/\text{W}$ |
| Thermal Resistance - Junction-to-Ambient | $R_{\theta JA}$ | 150     | 81         |                             |

## ELECTRICAL CHARACTERISTICS

|                                                |       |                            |                             |    |
|------------------------------------------------|-------|----------------------------|-----------------------------|----|
| Maximum Instantaneous Forward Voltage (Note 1) | $V_F$ | $T_J = 25^{\circ}\text{C}$ | $T_J = 100^{\circ}\text{C}$ | V  |
| ( $I_F = 0.1\text{ A}$ )                       |       | 0.260                      | 0.15                        |    |
| ( $I_F = 1.0\text{ A}$ )                       |       | 0.325                      | 0.23                        |    |
| ( $I_F = 2.0\text{ A}$ )                       |       | 0.350                      | 0.26                        |    |
| Maximum Instantaneous Reverse Current          | $I_R$ | $T_J = 25^{\circ}\text{C}$ | $T_J = 100^{\circ}\text{C}$ | mA |
| ( $V_R = 5.0\text{ V}$ )                       |       | 0.25                       | 40                          |    |
| ( $V_R = 10\text{ V}$ )                        |       | 0.70                       | 60                          |    |

1. Pulse Test: Pulse Width  $\leq 250\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

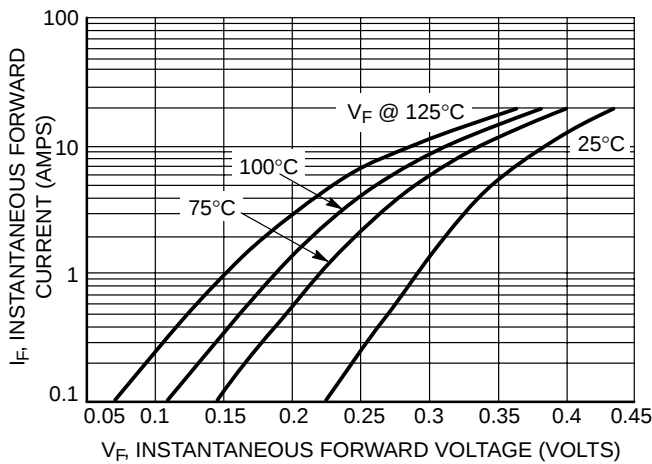


Figure 1. Typical Forward Voltage

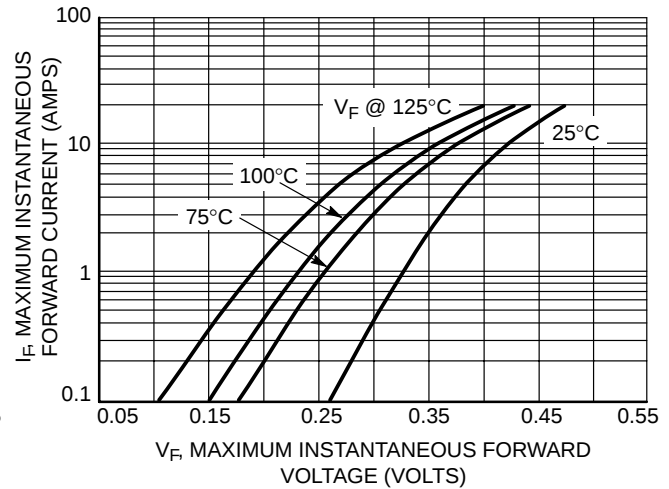


Figure 2. Maximum Forward Voltage

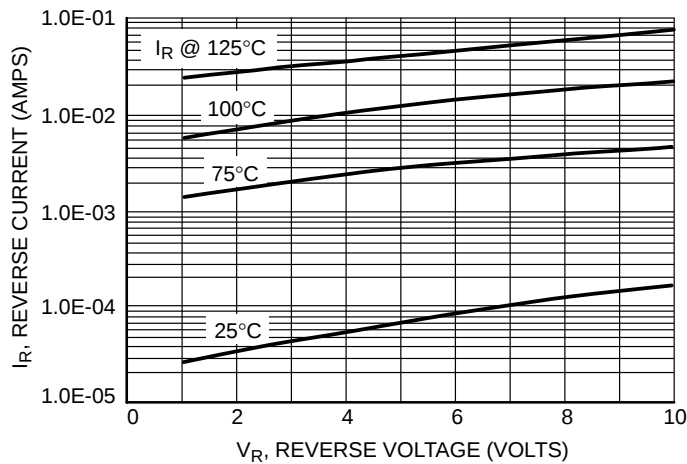


Figure 3. Typical Reverse Current

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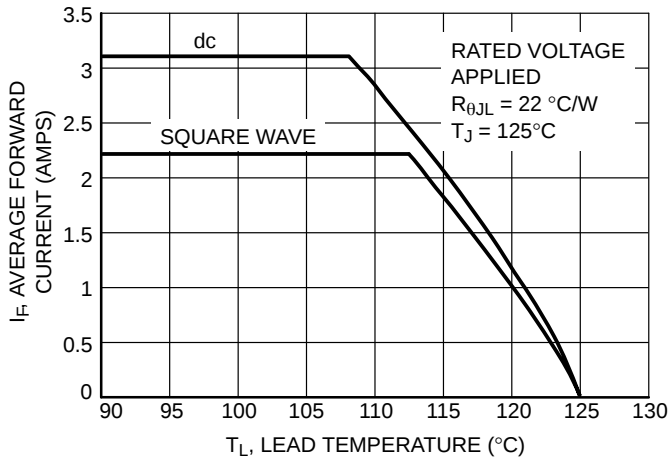


Figure 4. Current Derating - Junction to Lead

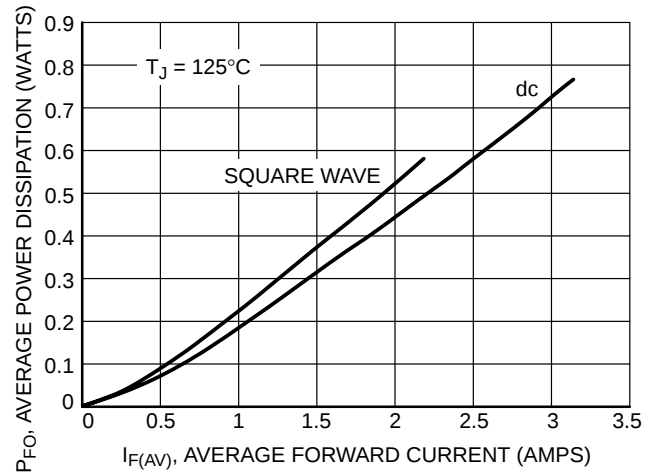


Figure 5. Forward Power Dissipation

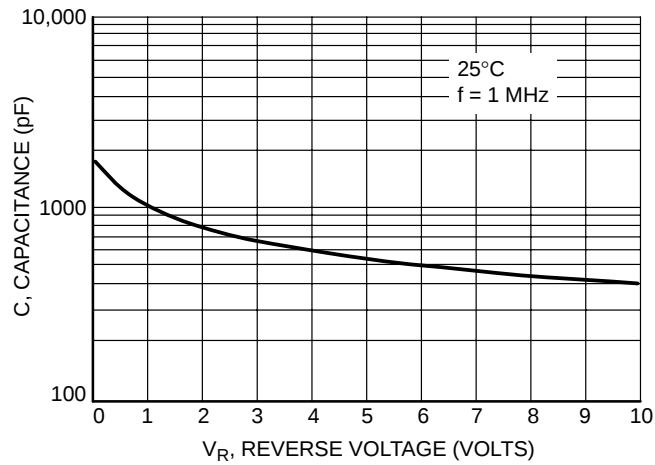


Figure 6. Typical Capacitance

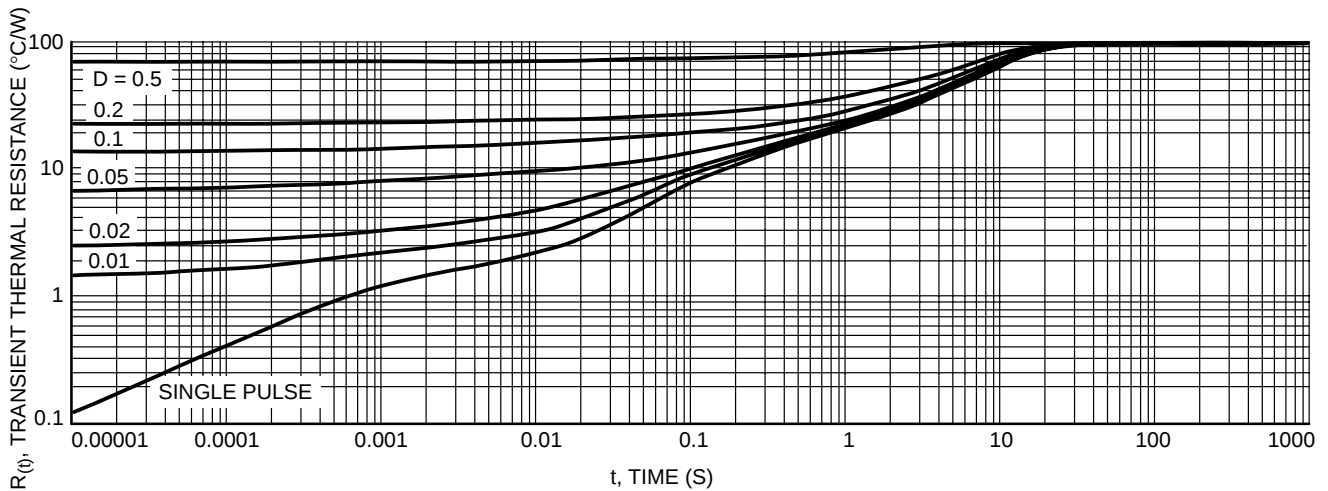


Figure 7. Thermal Response, Junction to Ambient (min pad)

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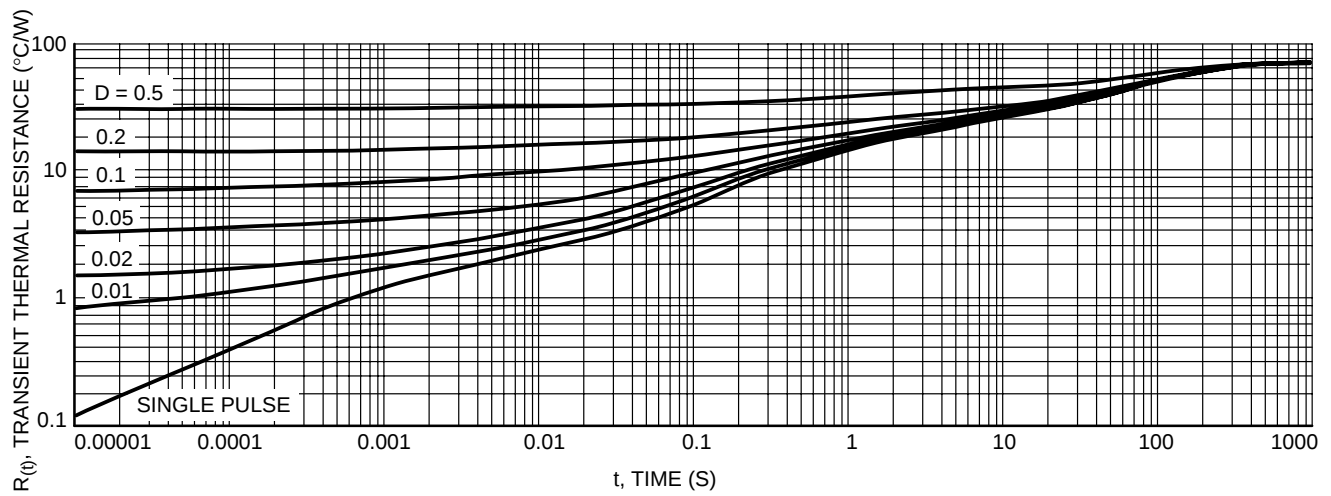
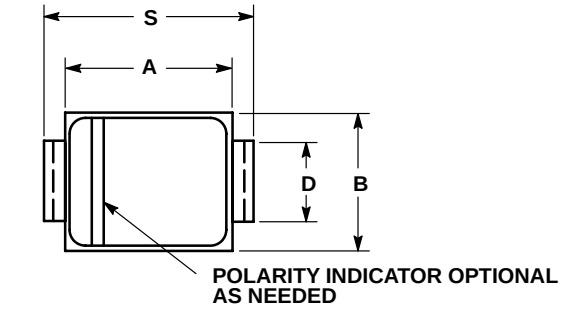


Figure 8. Thermal Response, Junction to Ambient (1 inch pad)

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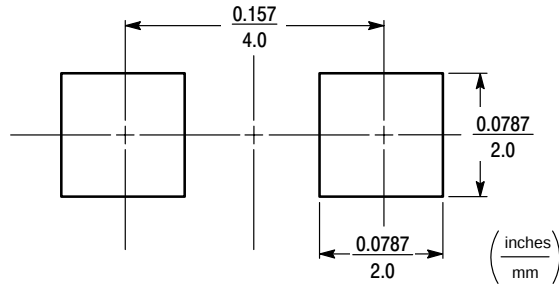
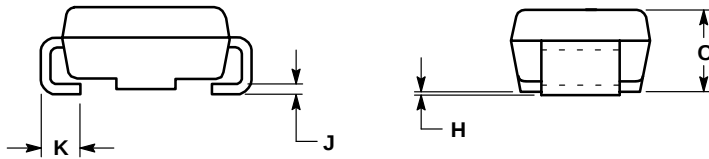
## PACKAGE DIMENSIONS

**SMA**  
CASE 403D-02  
ISSUE A



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. 403D-01 OBSOLETE, NEW STANDARD IS 403D-02.

| DIM | INCHES |       | MILLIMETERS |      |
|-----|--------|-------|-------------|------|
|     | MIN    | MAX   | MIN         | MAX  |
| A   | 0.160  | 0.180 | 4.06        | 4.57 |
| B   | 0.090  | 0.115 | 2.29        | 2.92 |
| C   | 0.075  | 0.095 | 1.91        | 2.41 |
| D   | 0.050  | 0.064 | 1.27        | 1.63 |
| H   | 0.002  | 0.006 | 0.05        | 0.15 |
| J   | 0.006  | 0.016 | 0.15        | 0.41 |
| K   | 0.030  | 0.060 | 0.76        | 1.52 |
| S   | 0.190  | 0.220 | 4.83        | 5.59 |



**SMA FOOTPRINT**

## **Notes**

## **Notes**

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