

MBRS230LT3

Surface Mount Schottky Power Rectifier

SMB Power Surface Mount Package

This device employs 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.

Features

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

Mechanical Characteristics

- Case: Molded Epoxy
- Epoxy Meets UL 94, V-0 @ 0.125 in.
- Weight: 95 mg (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- 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
- Cathode Polarity Band



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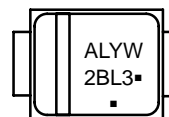
<http://onsemi.com>

**SCHOTTKY BARRIER
RECTIFIER
2.0 AMPERES
30 VOLTS**



**SMB
CASE 403A
PLASTIC**

MARKING DIAGRAM



A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

| Device | Package | Shipping† |
|-------------|------------------|------------------|
| MBRS230LT3 | SMB | 2500/Tape & Reel |
| MBRS230LT3G | SMB (Pb-Free) | 2500/Tape & Reel |

†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.

MBRS230LT3

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 30 | V |
| Average Rectified Forward Current (At Rated V_R , $T_C = 110^\circ\text{C}$) | I_O | 2.0 | A |
| Peak Repetitive Forward Current (At Rated V_R , Square Wave, 20 kHz, $T_C = 105^\circ\text{C}$) | I_{FRM} | 4.0 | A |
| Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions, Halfwave, Single Phase, 60 Hz) | I_{FSM} | 40 | A |
| Storage/Operating Case Temperature | T_{stg}, T_C | -55 to +175 | $^\circ\text{C}$ |
| 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 | V/ μs |

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------|--------------------|
| Thermal Resistance, Junction-to-Lead (Note 1) | $R_{\theta JL}$ | 18.6 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 1) | $R_{\theta JA}$ | 135 | |

ELECTRICAL CHARACTERISTICS

| | | | | |
|--|-------|--------------------------|---------------------------|----|
| Maximum Instantaneous Forward Voltage (Note 2) see Figure 2 ($I_F = 2.0 \text{ A}$) ($I_F = 4.0 \text{ A}$) | V_F | $T_J = 25^\circ\text{C}$ | $T_J = 125^\circ\text{C}$ | V |
| | | 0.50 0.60 | 0.45 0.63 | |
| Maximum Instantaneous Reverse Current (Note 2) see Figure 4 ($V_R = 30 \text{ V}$) ($V_R = 15 \text{ V}$) | I_R | $T_J = 25^\circ\text{C}$ | $T_J = 125^\circ\text{C}$ | mA |
| | | 1 0.31 | 75 35 | |

1. Minimum pad size (0.108" X 0.085") for each lead on FR4 board.
2. Pulse Test: Pulse Width $\leq 250 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

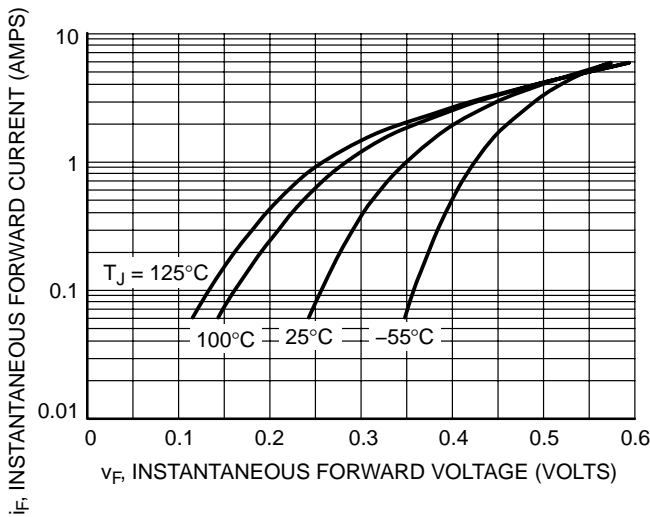


Figure 1. Typical Forward Voltage

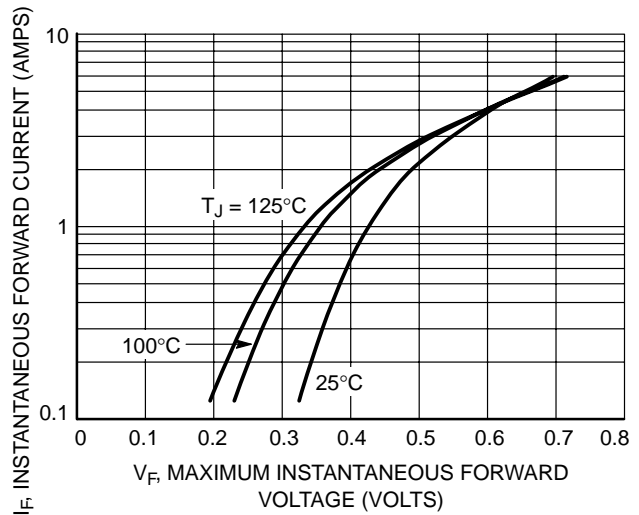


Figure 2. Maximum Forward Voltage

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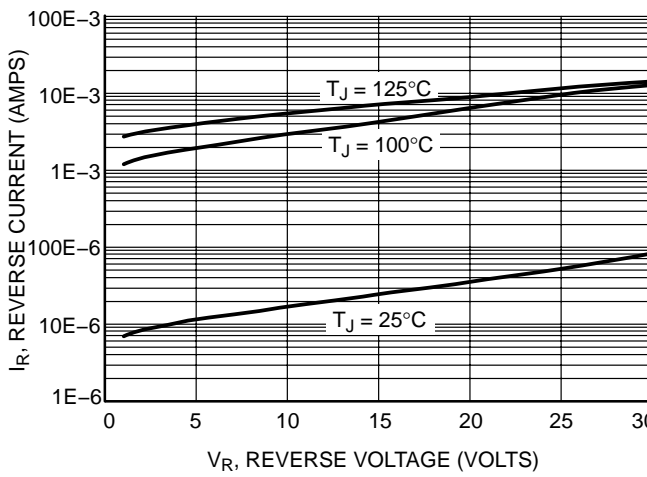


Figure 3. Typical Reverse Current

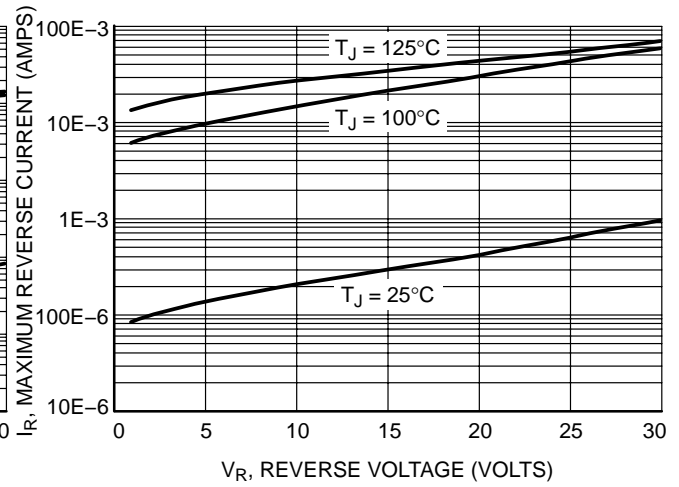


Figure 4. Maximum Reverse Current

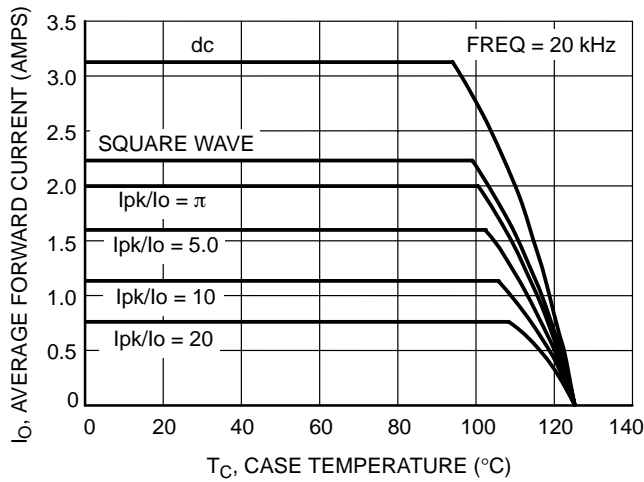


Figure 5. Current Derating Per Leg

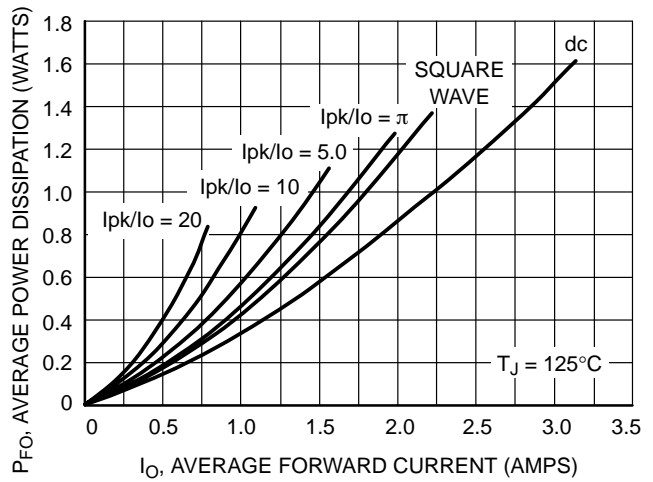


Figure 6. Forward Power Dissipation Per Leg

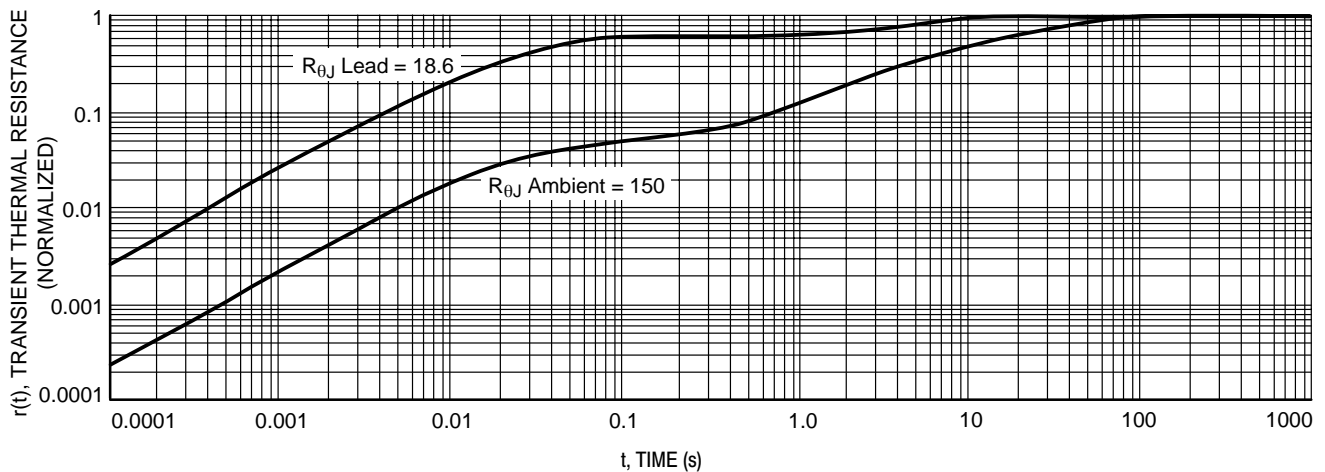
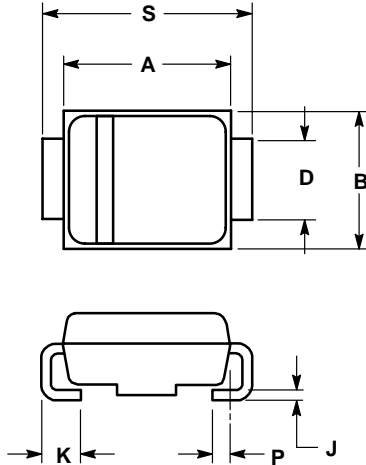


Figure 7. Thermal Response

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PACKAGE DIMENSIONS

SMB PLASTIC PACKAGE CASE 403A-03 ISSUE D

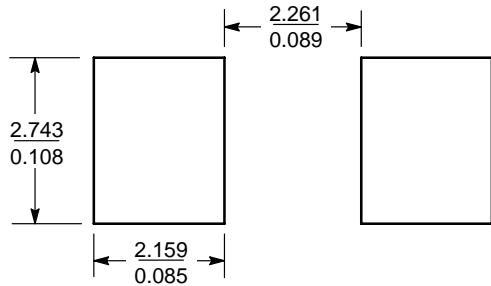


NOTES:

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 |

SOLDERING FOOTPRINT*



SCALE 8:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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