

MBRS1100T3, MBRS190T3

Preferred Devices

Schottky Power Rectifier

Surface Mount Power Package

Schottky Power Rectifiers employ the use of the Schottky Barrier principle in a large area metal-to-silicon power diode. State-of-the-art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for low voltage, high frequency rectification, or as free wheeling and polarity protection diodes, in surface mount applications where compact size and weight are critical to the system. These state-of-the-art devices have the following features:

Features

- Pb-Free Packages are Available
- Small Compact Surface Mountable Package with J-Bend Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- High Blocking Voltage – 100 Volts
- 175°C Operating Junction Temperature
- Guardring for Stress Protection

Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 95 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
- Shipped in 12 mm Tape and Reel, 2500 units per reel
- Cathode Polarity Band

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|-------------|-------------|------|
| Peak Repetitive Reverse Voltage | V_{RRM} | | V |
| Working Peak Reverse Voltage | V_{RWM} | | |
| DC Blocking Voltage MBRS190T3 | V_R | 90 | |
| MBRS1100T3 | | 100 | |
| Average Rectified Forward Current | $I_{F(AV)}$ | | A |
| $T_L = 163^\circ\text{C}$ | | 1.0 | |
| $T_L = 148^\circ\text{C}$ | | 2.0 | |
| Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | I_{FSM} | 50 | A |
| Operating Junction Temperature (Note 1) | T_J | -65 to +175 | °C |
| Voltage Rate of Change | dv/dt | 10 | V/ns |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.



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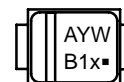
<http://onsemi.com>

**SCHOTTKY BARRIER
RECTIFIER
1.0 AMPERE
90, 100 VOLTS**



**SMB
CASE 403A
PLASTIC**

MARKING DIAGRAM



- B1 = Device Code
- x = C for MBRS1100T3
9 for MBRS190T3
- A = Assembly Location
- Y = Year
- W = Work Week
- = Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

MBRS1100T3, MBR5190T3

THERMAL CHARACTERISTICS

| Rating | Symbol | Value | Unit |
|--|-----------------|-------|--------------------|
| Thermal Resistance – Junction-to-Lead ($T_L = 25^\circ\text{C}$) | $R_{\theta JL}$ | 22 | $^\circ\text{C/W}$ |

ELECTRICAL CHARACTERISTICS

| | | | |
|---|-------|------------|----|
| Maximum Instantaneous Forward Voltage (Note 1) ($i_F = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$) | V_F | 0.75 | V |
| Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_J = 25^\circ\text{C}$) (Rated dc Voltage, $T_J = 100^\circ\text{C}$) | I_R | 0.5 5.0 | mA |

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

ORDERING INFORMATION

| Device | Marking | Package | Shipping† |
|-------------|---------|------------------|------------------|
| MBRS1100T3 | B1C | SMB | 2500 Tape & Reel |
| MBRS1100T3G | B1C | SMB (Pb-Free) | 2500 Tape & Reel |
| MBRS190T3 | B19 | SMB | 2500 Tape & Reel |
| MBRS190T3G | B19 | 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.

MBRS1100T3, MBR5190T3

TYPICAL ELECTRICAL CHARACTERISTICS

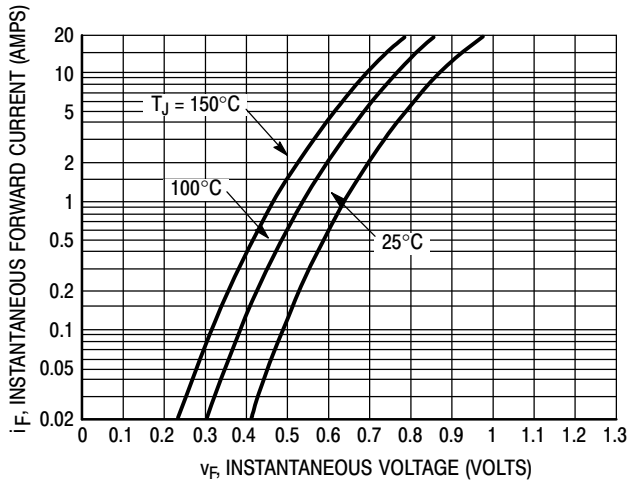


Figure 1. Typical Forward Voltage

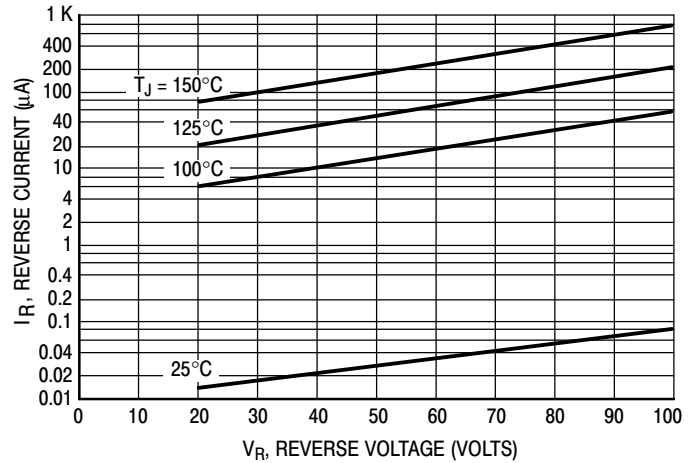


Figure 2. Typical Reverse Current*

*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if V_R is sufficient below rated V_R .

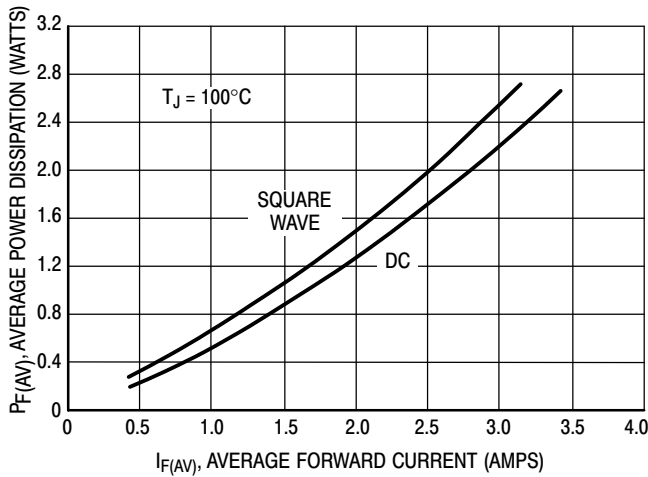


Figure 3. Power Dissipation

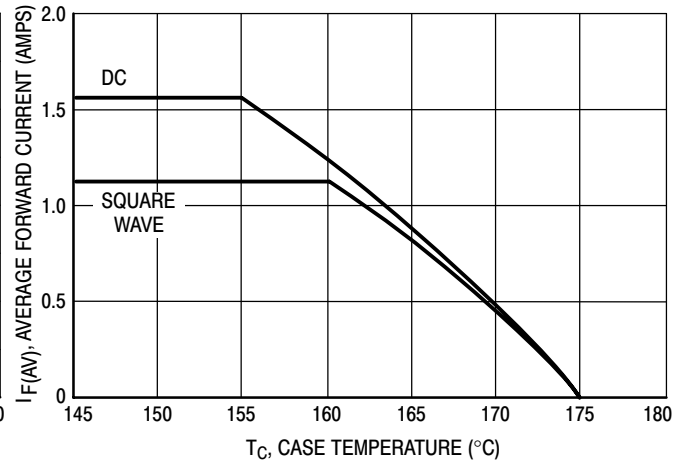


Figure 4. Current Derating, Case, Per Leg

TYPICAL ELECTRICAL CHARACTERISTICS

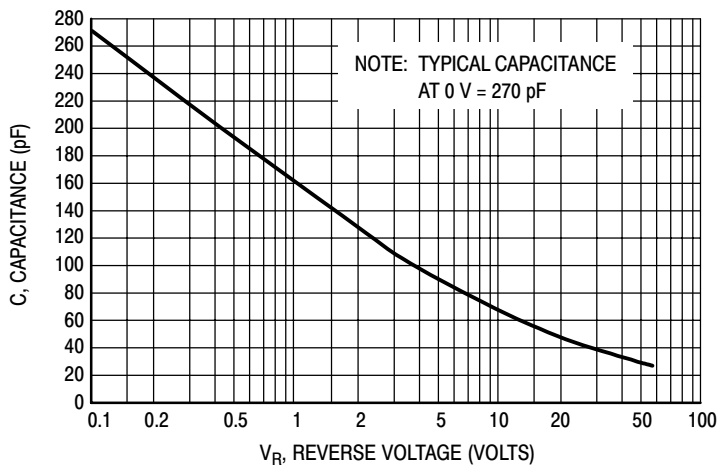
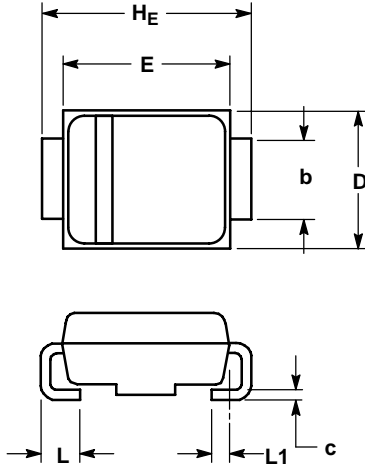


Figure 5. Typical Capacitance

MBRS1100T3, MBR5190T3

PACKAGE DIMENSIONS

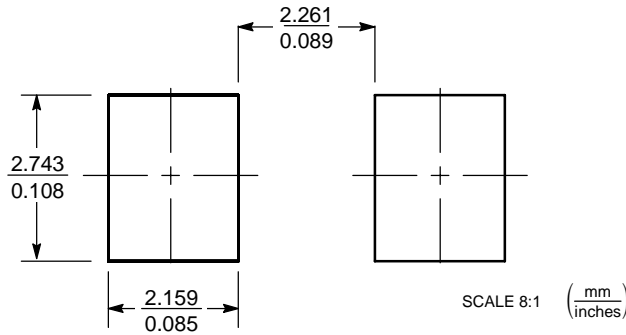
SMB PLASTIC PACKAGE CASE 403A-03 ISSUE F



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

| DIM | MILLIMETERS | | | INCHES | | |
|-------|-------------|------|------|-----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.90 | 2.13 | 2.45 | 0.075 | 0.084 | 0.096 |
| A1 | 0.05 | 0.10 | 0.20 | 0.002 | 0.004 | 0.008 |
| b | 1.96 | 2.03 | 2.20 | 0.077 | 0.080 | 0.087 |
| c | 0.15 | 0.23 | 0.31 | 0.006 | 0.009 | 0.012 |
| D | 3.30 | 3.56 | 3.95 | 0.130 | 0.140 | 0.156 |
| E | 4.06 | 4.32 | 4.60 | 0.160 | 0.170 | 0.181 |
| H_E | 5.21 | 5.44 | 5.60 | 0.205 | 0.214 | 0.220 |
| L | 0.76 | 1.02 | 1.60 | 0.030 | 0.040 | 0.063 |
| L1 | 0.51 REF | | | 0.020 REF | | |

SOLDERING FOOTPRINT*



*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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MBRS1100T3/D