

MBRS410LT3

Preferred Device

Surface Mount Schottky Power Rectifier

This device employs 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. 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.

Features

- Ultra Low V_F
- 1st in the Market Place with a 10 V_R Schottky Rectifier
- Small Compact Surface Mountable Package with J-Bend Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- Very Low Forward Voltage Drop
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Guard-Ring for Stress Protection
- Pb-Free Package is Available

Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 217 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: Notch in Plastic Body Indicates Cathode Lead
- ESD Ratings: Machine Model = C
Human Body Model = 3B

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|---------------------------------|-------------|------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 10 | V |
| Average Rectified Forward Current (@ $T_L = 110^\circ\text{C}$) | I_O | 4.0 | A |
| Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | I_{FSM} | 150 | A |
| Operating Junction Temperature | T_J | -65 to +125 | °C |

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.



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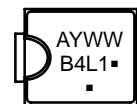
<http://onsemi.com>

**SCHOTTKY BARRIER
RECTIFIERS
4.0 AMPERES, 10 VOLTS**



SMC
CASE 403
PLASTIC

MARKING DIAGRAM



B4L1 = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

| Device | Package | Shipping† |
|-------------|------------------|------------------|
| MBRS410LT3 | SMC | 2500/Tape & Reel |
| MBRS410LT3G | SMC (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 Specification Brochure, BRD8011/D.

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

MBRS410LT3

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Min Pad (Note 2) | 1 Inch Pad | Unit |
|--|-----------------|------------------|------------|-----------------------------|
| Thermal Resistance, Junction-to-Lead | $R_{\theta JL}$ | 12 | 7.0 | $^{\circ}\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 109 | 59 | |

ELECTRICAL CHARACTERISTICS

| | | | | |
|---|-------|----------------------------|-----------------------------|----|
| Maximum Instantaneous Forward Voltage (Note 1) ($I_F = 2.0 \text{ A}$) ($I_F = 4.0 \text{ A}$) ($I_F = 8.0 \text{ A}$) | V_F | $T_J = 25^{\circ}\text{C}$ | $T_J = 100^{\circ}\text{C}$ | V |
| | | 0.31 | 0.200 | |
| | | 0.33 | 0.225 | |
| Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $V_R = 5.0 \text{ V}$) (Rated dc Voltage, $V_R = 10 \text{ V}$) | I_R | $T_J = 25^{\circ}\text{C}$ | $T_J = 100^{\circ}\text{C}$ | mA |
| | | 2.0 | 100 | |
| | | 5.0 | 200 | |

1. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.
2. Mounted with Minimum Recommended Pad Size, PC Board FR4.

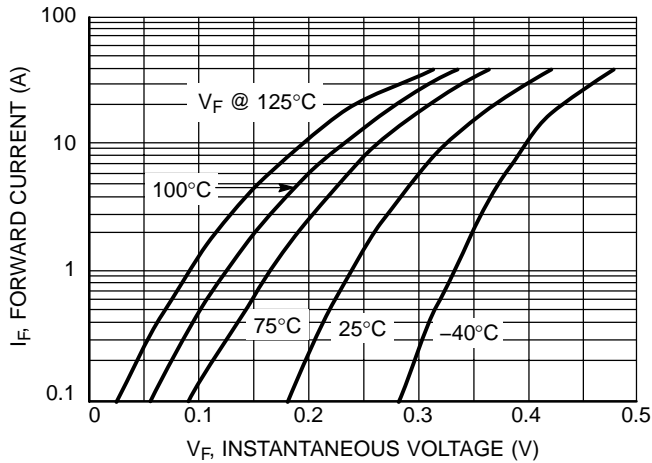


Figure 1. Typical Forward Voltage

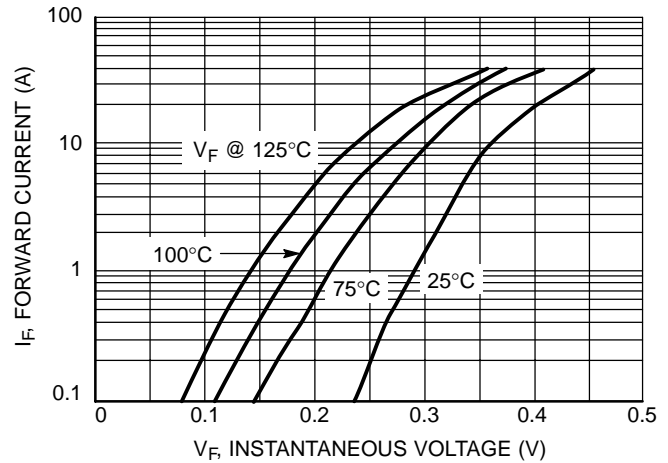


Figure 2. Maximum Forward Voltage

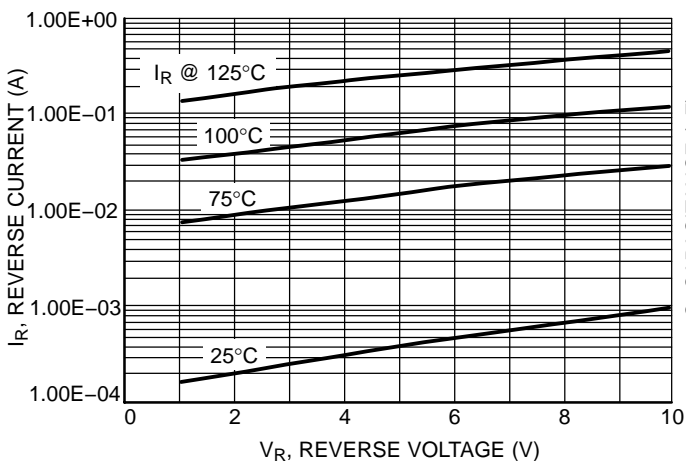


Figure 3. Typical Reverse Current

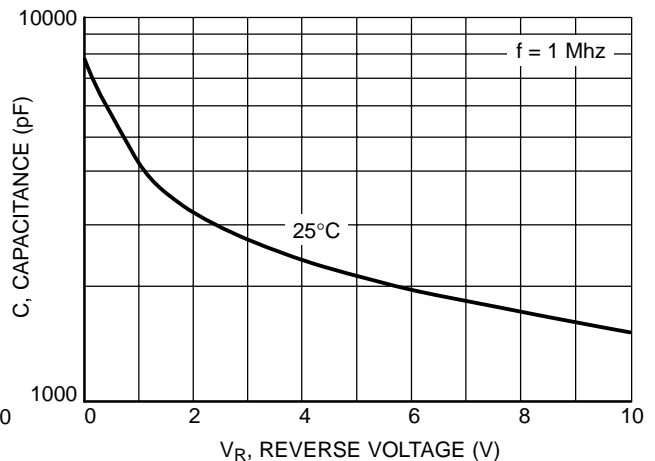


Figure 4. Typical Capacitance

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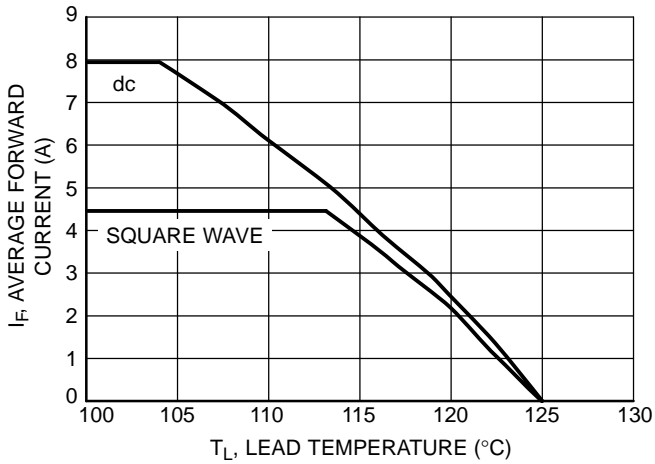


Figure 5. Current Derating (Junction-to-Lead)

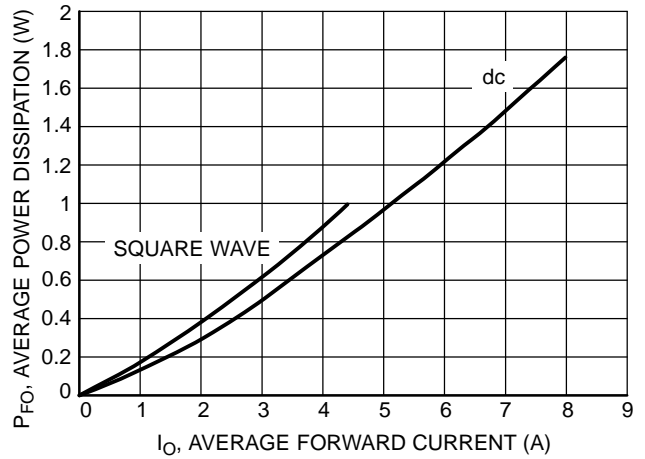


Figure 6. Forward Power Dissipation

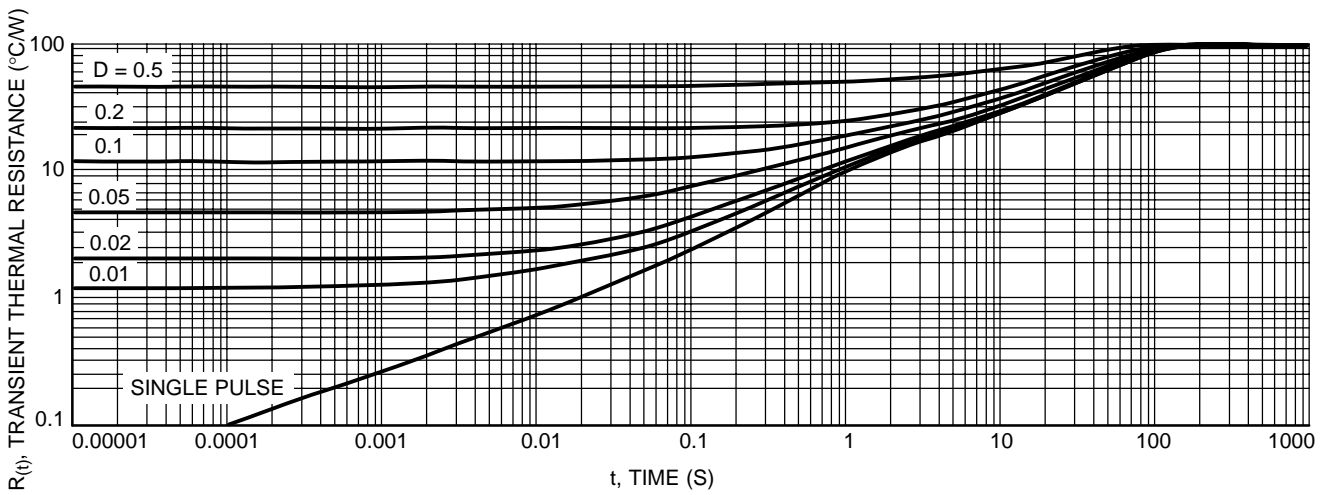


Figure 7. Thermal Response, Junction-to-Ambient (min pad)

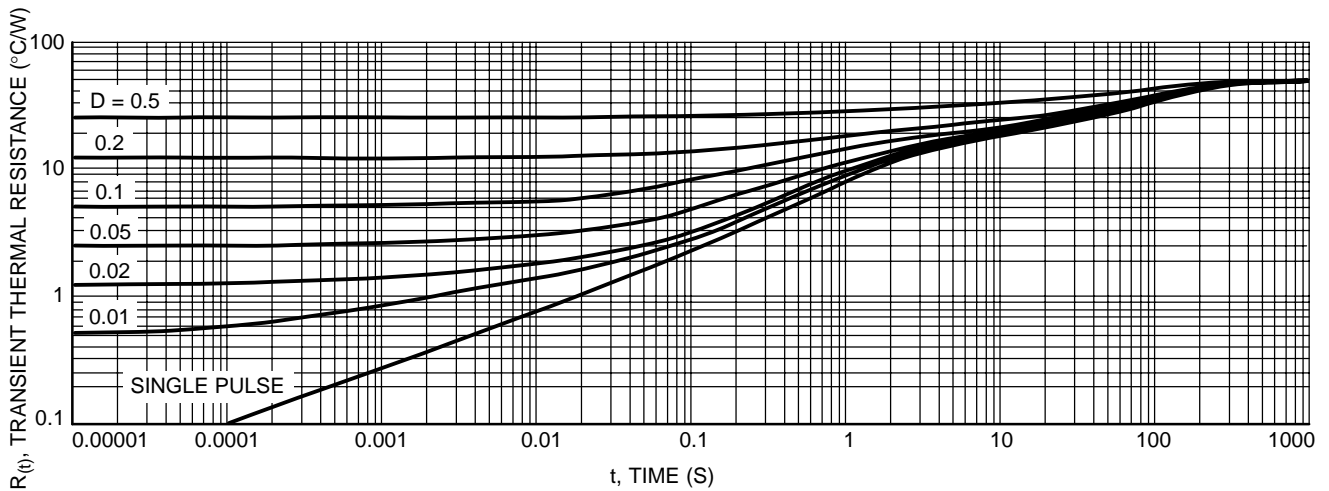
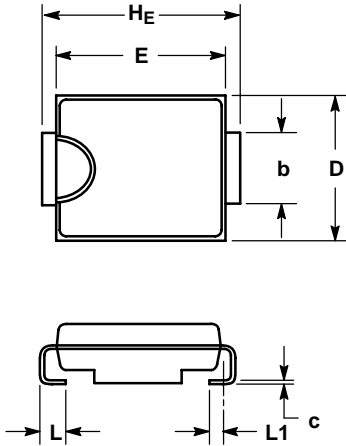


Figure 8. Thermal Response, Junction-to-Ambient (1 inch pad)

MBRS410LT3

PACKAGE DIMENSIONS

SMC
PLASTIC PACKAGE
CASE 403-03
ISSUE E

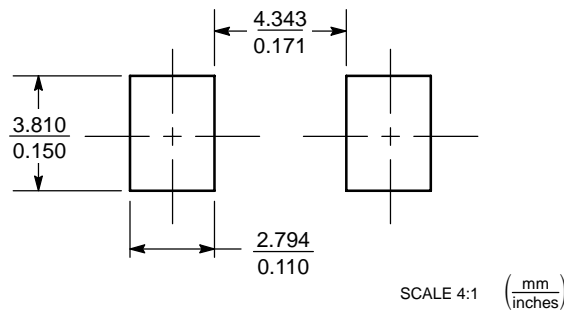


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.
4. 403-01 THRU -02 OBSOLETE, NEW STANDARD 403-03.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|-----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.90 | 2.13 | 2.41 | 0.075 | 0.084 | 0.095 |
| A1 | 0.05 | 0.10 | 0.15 | 0.002 | 0.004 | 0.006 |
| b | 2.92 | 3.00 | 3.07 | 0.115 | 0.118 | 0.121 |
| c | 0.15 | 0.23 | 0.30 | 0.006 | 0.009 | 0.012 |
| D | 5.59 | 5.84 | 6.10 | 0.220 | 0.230 | 0.240 |
| E | 6.60 | 6.86 | 7.11 | 0.260 | 0.270 | 0.280 |
| HE | 7.75 | 7.94 | 8.13 | 0.305 | 0.313 | 0.320 |
| L | 0.76 | 1.02 | 1.27 | 0.030 | 0.040 | 0.050 |
| 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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