

MBRA210ET3

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.

- Low I_R , Extends Battery Life
- 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 Leakage Current

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 = 3B
- Available in 12 mm Tape, 5000 Units per 13 inch Reel

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 (At Rated V_R , $T_C = 125^\circ\text{C}$) | I_O | 2.0 | A |
| Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | I_{FSM} | 100 | A |
| Storage/Operating Case Temperature | T_{stg} , T_C | -65 to +150 | $^\circ\text{C}$ |
| Operating Junction Temperature | T_J | -65 to +150 | $^\circ\text{C}$ |
| Voltage Rate of Change (Rated V_R , $T_J = 25^\circ\text{C}$) | dv/dt | 10,000 | V/ μs |



ON Semiconductor®

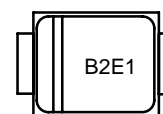
<http://onsemi.com>

**SCHOTTKY BARRIER
RECTIFIER
2 AMPERES
10 VOLTS**



SMA
CASE 403D
PLASTIC

MARKING DIAGRAM



B2E1 = Device Code

ORDERING INFORMATION

| Device | Package | Shipping |
|------------|---------|------------------|
| MBRA210ET3 | SMA | 5000/Tape & Reel |

MBRA210ET3

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS

| | | | | |
|--|-------|---------------------|----------------------|---------|
| Maximum Instantaneous Forward Voltage (Note 2) ($I_F = 0.1$ A) ($I_F = 1.0$ A) ($I_F = 2.0$ A) | V_F | $T_J = 25^{\circ}C$ | $T_J = 100^{\circ}C$ | V |
| | | 0.405 | 0.275 | |
| | | 0.480 | 0.355 | |
| Maximum Instantaneous Reverse Current ($V_R = 10$ V) ($V_R = 5.0$ V) | I_R | $T_J = 25^{\circ}C$ | $T_J = 100^{\circ}C$ | μA |
| | | 15 | 200 | |
| | | 50 | 500 | |

- Mounted on a 3" square FR4 PC Board with min. pads or 1" square copper heat spreader.
- Pulse Test: Pulse Width $\leq 250 \mu s$, Duty Cycle $\leq 2\%$.

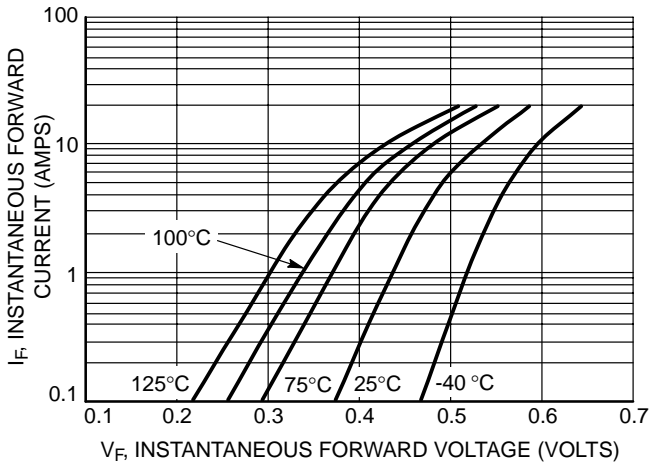


Figure 1. Typical Forward Voltage

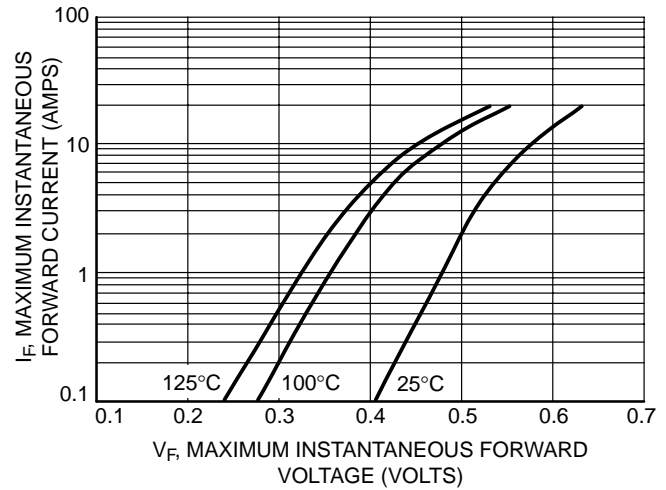


Figure 2. Maximum Forward Voltage

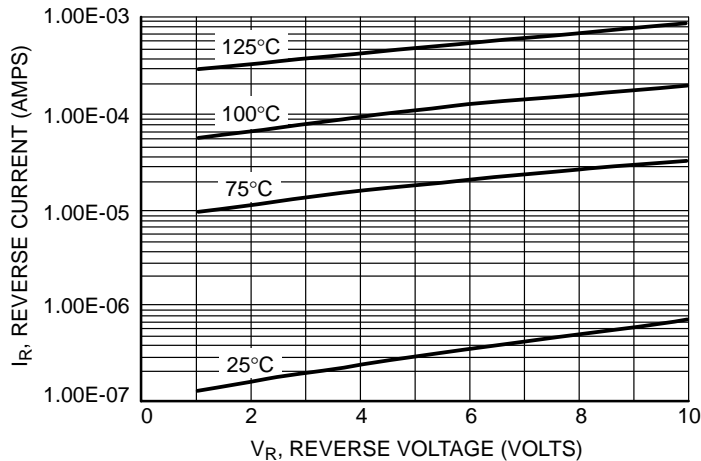


Figure 3. Typical Reverse Current

MBRA210ET3

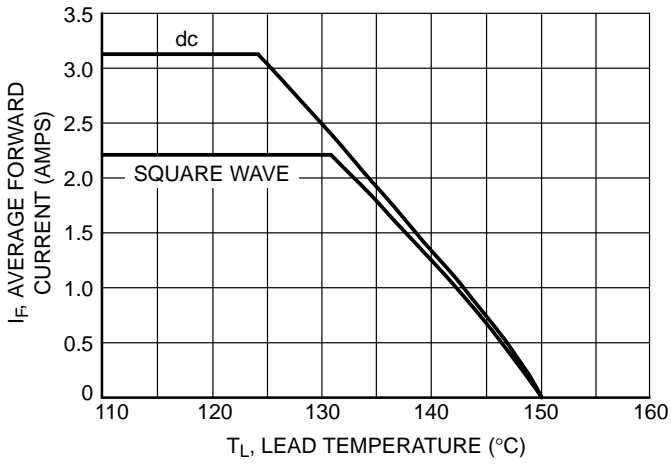


Figure 4. Current Derating - Junction to Lead

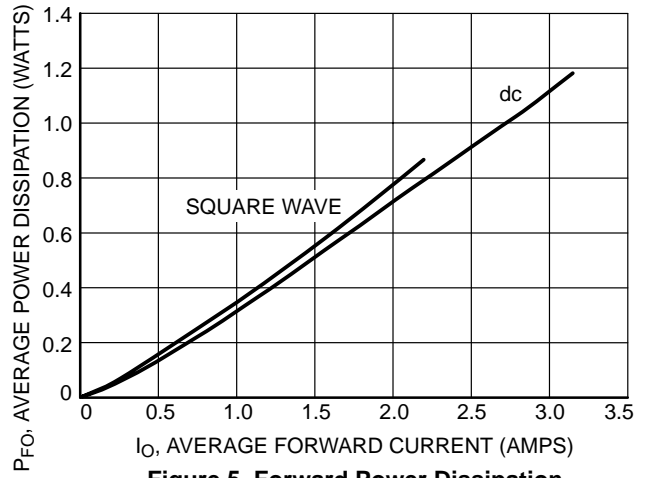


Figure 5. Forward Power Dissipation

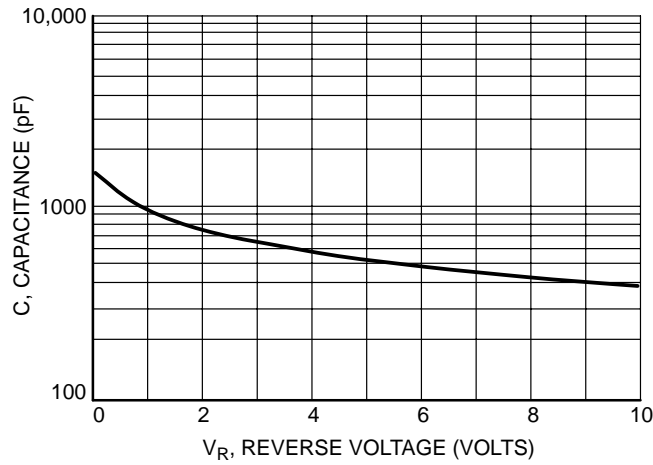


Figure 6. Typical Capacitance

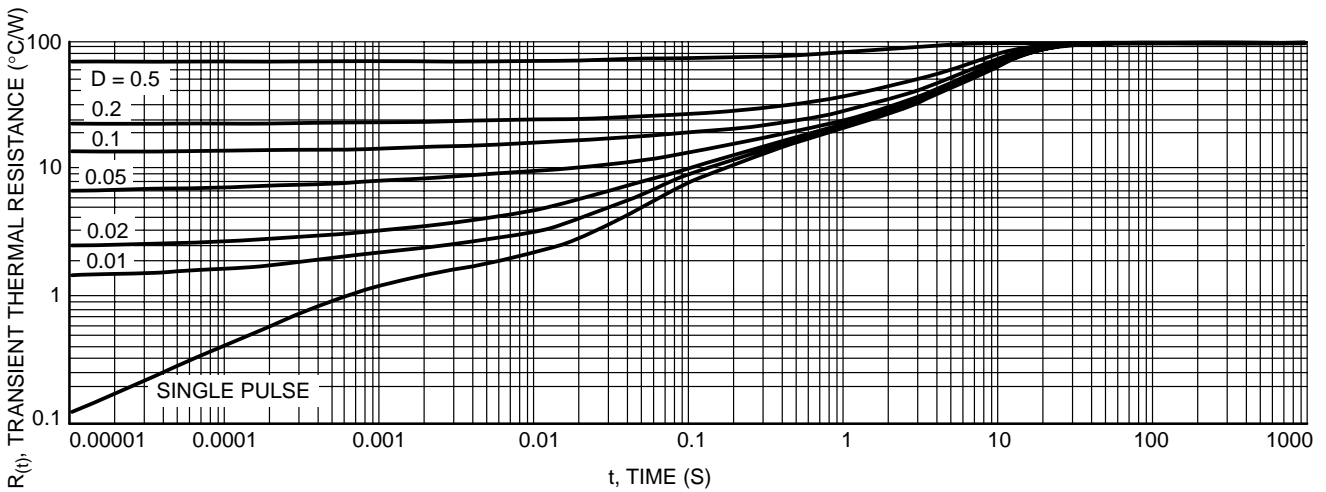


Figure 7. Thermal Response, Junction to Ambient (min pad)

MBRA210ET3

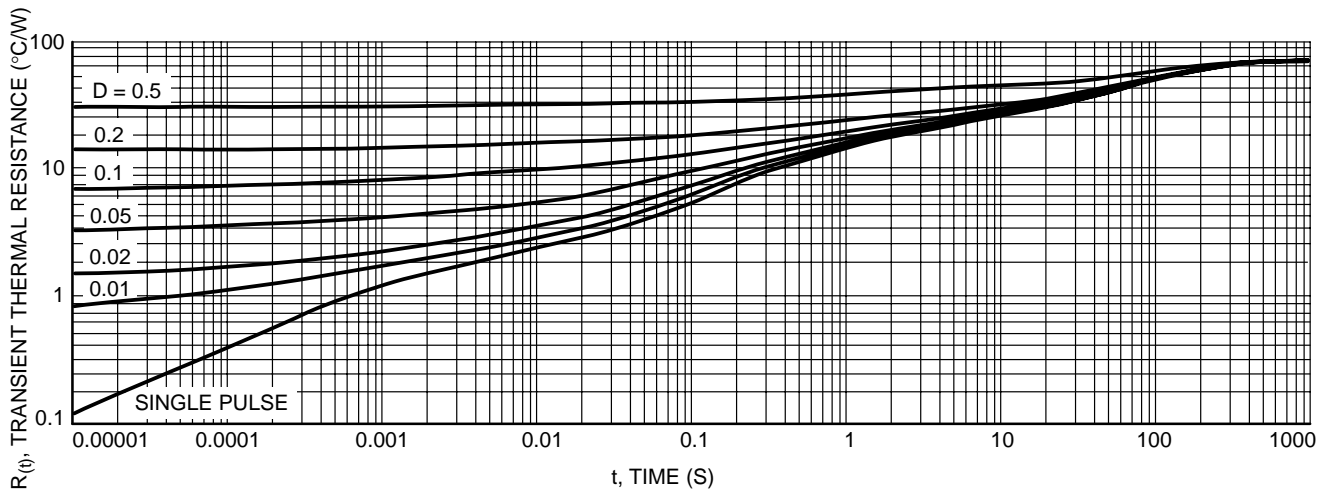
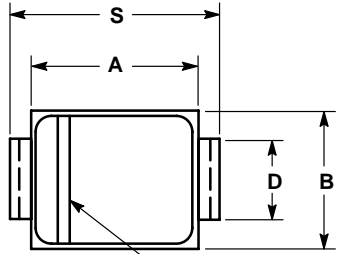


Figure 8. Thermal Response, Junction to Ambient (1 inch pad)

MBRA210ET3

PACKAGE DIMENSIONS

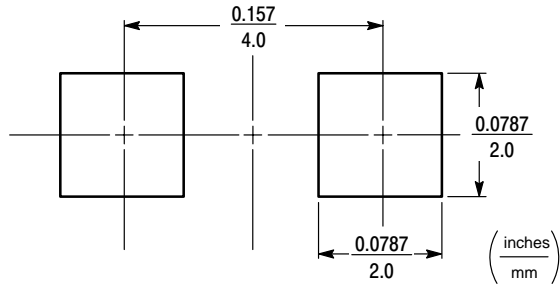
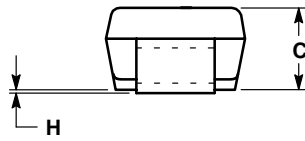
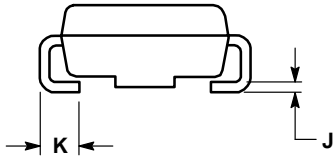
SMA
CASE 403D-02
ISSUE A



POLARITY INDICATOR OPTIONAL
AS NEEDED

- 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

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer.

PUBLICATION ORDERING INFORMATION

Literature Fulfillment:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: ONlit@hibbertco.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada

JAPAN: ON Semiconductor, Japan Customer Focus Center
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051
Phone: 81-3-5773-3850
Email: r14525@onsemi.com

ON Semiconductor Website: <http://onsemi.com>

For additional information, please contact your local Sales Representative.