

MUR450PF

Preferred Device

SWITCHMODE™ Power Rectifier

These state-of-the-art devices are designed for power factor correction in discontinuous and critical conduction mode.

Features

- 520 V Rating Meets 80% Derating Requirements of Major OEMs
- Low Forward Voltage Drop
- Low Leakage
- Ultrafast 95 Nanosecond Recovery Time
- Reduces Forward Conduction Loss
- These are Pb-Free Devices*

Applications

- DCM PFC Designs
- Switching Power Supplies
- Power Inverters

Mechanical Characteristics:

- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 1.1 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|---------------------------------|-----------------|------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 520 | V |
| Average Rectified Forward Current (Rated V_R , $T_C = 65^\circ\text{C}$) | $I_{F(AV)}$ | 4.0 | A |
| Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, 60 Hz) | I_{FSM} | 85 | A |
| Operating Junction Temperature Range | T_J | -65 to +175 | °C |
| Storage Temperature Range | T_{stg} | -65 to +175 | °C |
| ESD Ratings: Machine Model = C Human Body Model = 3B | ESD | > 400 > 8000 | V |

THERMAL CHARACTERISTICS

| Rating | Symbol | Value | Unit |
|---|-----------------|------------|------|
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | See Note 2 | °C/W |

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.

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



ON Semiconductor®

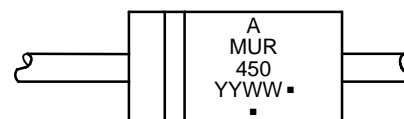
<http://onsemi.com>

ULTRAFAST RECTIFIER
4.0 AMPERES, 520 VOLTS



AXIAL LEAD
CASE 267
STYLE 1

MARKING DIAGRAM



A = Assembly Location
MUR450 = Device Number
YY = Year
WW = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

| Device | Package | Shipping† |
|-------------|--------------|------------------|
| MUR450PF | Axial Lead** | 500 Units/Bag |
| MUR450PFG | Axial Lead** | 500 Units/Bag |
| MUR450PFRL | Axial Lead** | 1500/Tape & Reel |
| MUR450PFRLG | Axial Lead** | 1500/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.

**This package is inherently Pb-Free.

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

MUR450PF

ELECTRICAL CHARACTERISTICS

| Rating | Symbol | Value | Unit |
|--|----------|--------------|---------------|
| Maximum Instantaneous Forward Voltage Drop (Note 1) ($I_F = 4$ Amps, $T_J = 25^\circ\text{C}$) ($I_F = 4$ Amps, $T_J = 150^\circ\text{C}$) | V_F | 1.15 0.98 | V |
| Maximum Instantaneous Reverse Current (Note 1) ($V_R = 520$ V, $T_J = 25^\circ\text{C}$) ($V_R = 520$ V, $T_J = 150^\circ\text{C}$) | I_R | 5.0 400 | μA |
| Maximum Reverse Recovery Time ($I_F = 1$ Amp, $di/dt = 50$ Amps/ μs , $V_R = 30$ V, $T_J = 25^\circ\text{C}$) | t_{rr} | 95 | ns |

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

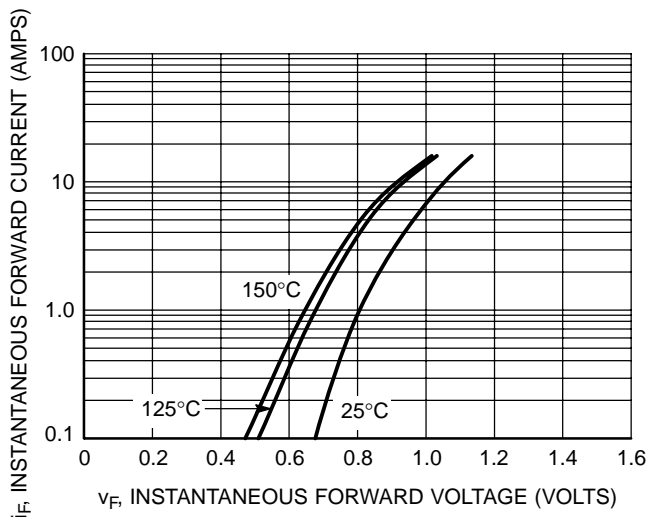


Figure 1. Typical Forward Voltage

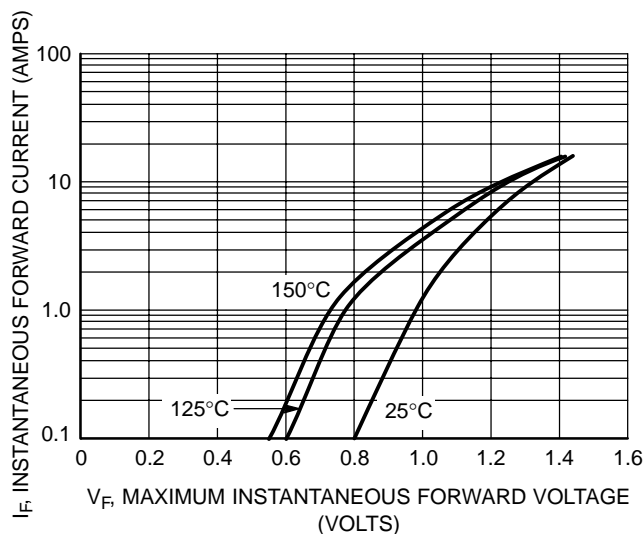


Figure 2. Maximum Forward Voltage

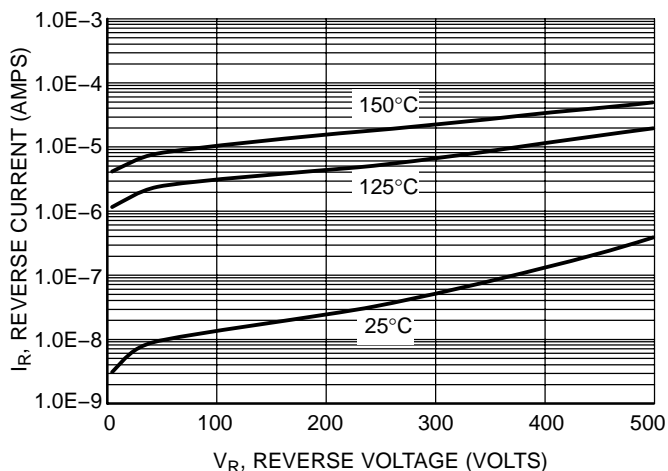


Figure 3. Typical Reverse Current

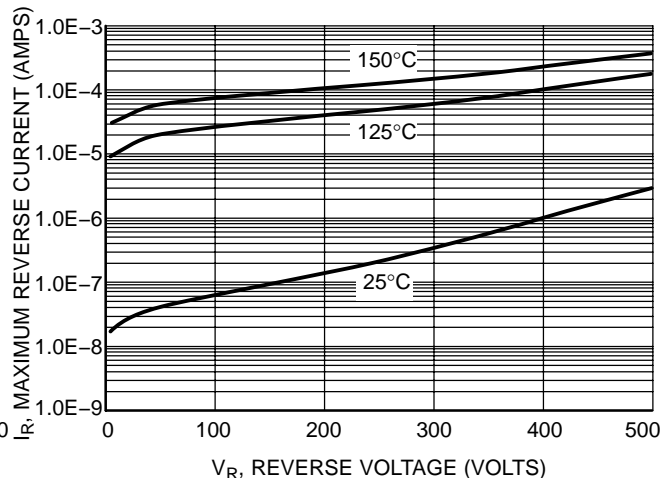


Figure 4. Maximum Reverse Current

MUR450PF

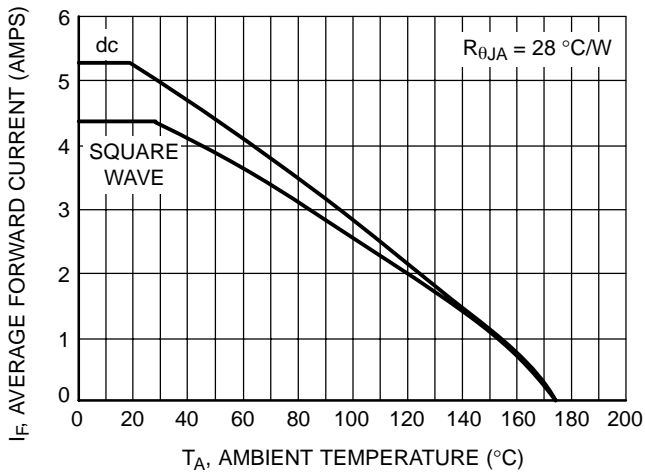


Figure 5. Current Derating

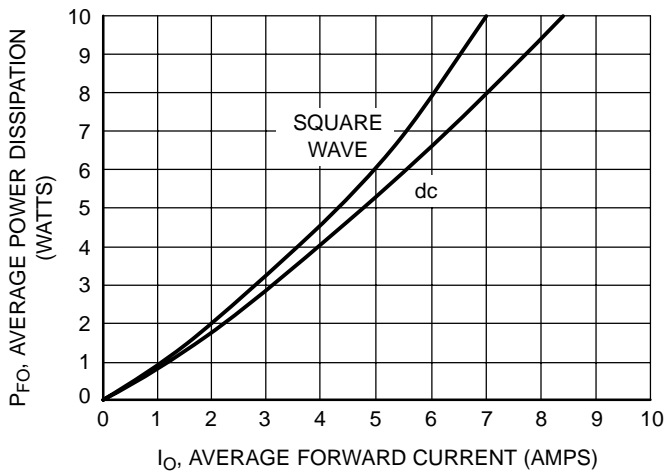


Figure 6. Forward Power Dissipation

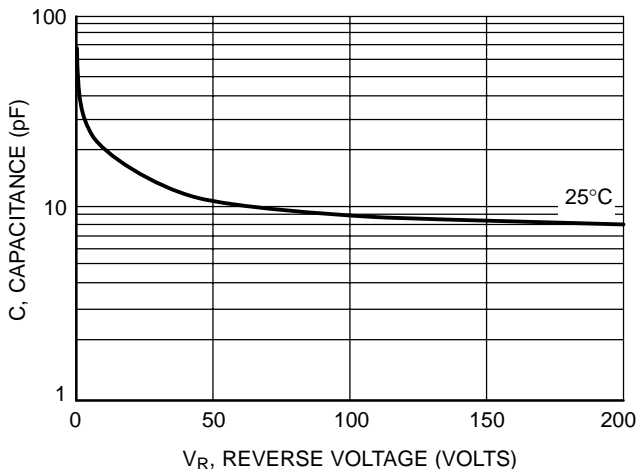


Figure 7. Capacitance

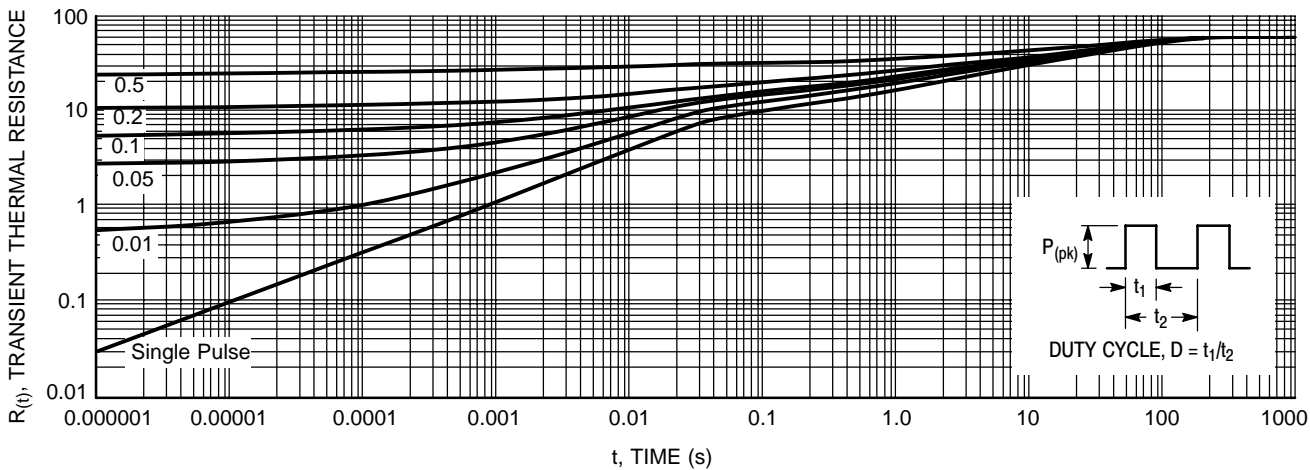


Figure 8. Thermal Response

MUR450PF

NOTE 2 — AMBIENT MOUNTING DATA

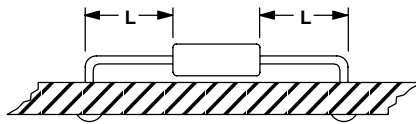
Data shown for thermal resistance, junction-to-ambient ($R_{\theta JA}$) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

| Mounting Method | $R_{\theta JA}$ | Lead Length, L (IN) | | | | Units |
|-----------------|-----------------|---------------------|-----|-----|-----|----------------------|
| | | 1/8 | 1/4 | 1/2 | 3/4 | |
| 1 | | 50 | 51 | 53 | 55 | $^{\circ}\text{C/W}$ |
| 2 | | 58 | 59 | 61 | 63 | $^{\circ}\text{C/W}$ |
| 3 | | 28 | | | | $^{\circ}\text{C/W}$ |

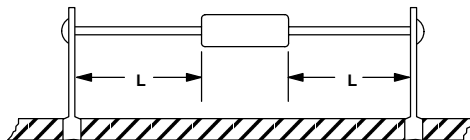
MOUNTING METHOD 1

P.C. Board Where Available Copper Surface area is small.



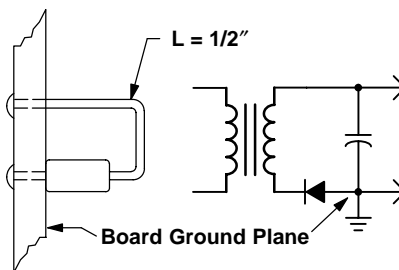
MOUNTING METHOD 2

Vector Push-In Terminals T-28



MOUNTING METHOD 3

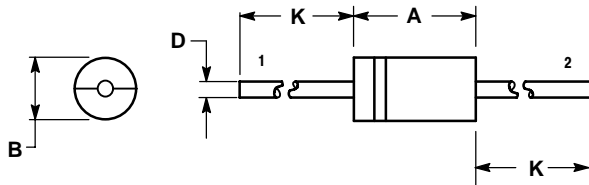
P.C. Board with 1-1/2" x 1-1/2" Copper Surface



MUR450PF

PACKAGE DIMENSIONS

AXIAL LEAD
CASE 267-05
(DO-201AD)
ISSUE G



NOTES:


1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.287 | 0.374 | 7.30 | 9.50 |
| B | 0.189 | 0.209 | 4.80 | 5.30 |
| D | 0.047 | 0.051 | 1.20 | 1.30 |
| K | 1.000 | --- | 25.40 | --- |

STYLE 1:

- PIN 1. CATHODE (POLARITY BAND)
- PIN 2. ANODE

SWITCHMODE is a trademark of Semiconductor Components Industries, LLC.

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. This literature is subject to all applicable copyright laws and is not for resale in any manner.

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: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com
Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative

MUR450PF/D