

# MUR210

Preferred Device

## SWITCHMODE™ Power Rectifier

SWITCHMODE power rectifiers are state-of-the-art devices that are designed for use in switching power supplies, inverters and as free wheeling diodes.

### Features

- Ultrafast 20 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- Low Forward Voltage
- Low Leakage Current
- High Temperature Glass Passivated Junction
- These are Pb-Free Devices\*

### Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 220°C Max for 10 Seconds, 1/16" from Case
- Polarity: Cathode Indicated by Polarity Band

### MAXIMUM RATINGS

| Rating   | Symbol                          | Value                              | Unit |
|--|---------------------------------|------------------------------------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                         | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 100<br>—                           | V    |
| Average Rectified Forward Current<br>(Square Wave Mounting Method #3)<br>(Note 1)                              | $I_{F(AV)}$                     | 2.0 @<br>$T_A = 100^\circ\text{C}$ | A    |
| Non-Repetitive Peak Surge Current<br>(Surge applied at rated load conditions<br>halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 35                                 | A    |
| Operating Junction Temperature and<br>Storage Temperature Range  | $T_J$ , $T_{stg}$               | -65 to +175                        | °C   |

### THERMAL CHARACTERISTICS

| Characteristic                                     | Symbol          | Value      | Unit |
|--|-----------------|------------|------|
| Maximum Thermal Resistance,<br>Junction-to-Ambient | $R_{\theta JA}$ | See Note 3 | °C/W |

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.

1. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

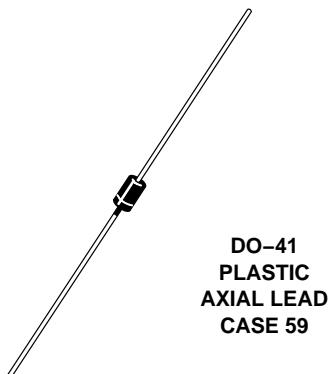
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



ON Semiconductor®

<http://onsemi.com>

### ULTRAFAST RECTIFIERS 2 AMPERES, 100 VOLTS



DO-41  
PLASTIC  
AXIAL LEAD  
CASE 59

### MARKING DIAGRAM



A = Assembly Location

Y = Year

WW = Work Week

▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device    | Package     | Shipping <sup>†</sup> |
|-----------|-------------|-----------------------|
| MUR210    | Axial Lead* | 1000 Units/Bag        |
| MUR210G   | Axial Lead* | 1000 Units/Bag        |
| MUR210RL  | Axial Lead* | 5000/Tape & Reel      |
| MUR210RLG | Axial Lead* | 5000/Tape & Reel      |

<sup>†</sup>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.

\*This package is inherently Pb-Free.

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

## ELECTRICAL CHARACTERISTICS

| Characteristic  | Symbol   | Value        | Unit          |
|---|----------|--------------|---------------|
| Maximum Instantaneous Forward Voltage (Note 2)<br>( $I_F = 2.0$ A, $T_J = 150^\circ\text{C}$ )<br>( $I_F = 2.0$ A, $T_J = 25^\circ\text{C}$ )     | $V_F$    | 0.74<br>0.94 | V             |
| Maximum Instantaneous Reverse Current (Note 2)<br>(Rated DC Voltage, $T_J = 150^\circ\text{C}$ )<br>(Rated DC Voltage, $T_J = 25^\circ\text{C}$ ) | $i_R$    | 50<br>2.0    | $\mu\text{A}$ |
| Maximum Reverse Recovery Time<br>( $I_F = 1.0$ A, $di/dt = 50$ A/ $\mu\text{s}$ )<br>( $I_F = 0.5$ A, $I_R = 1.0$ A, $I_{REC} = 0.25$ A)          | $t_{rr}$ | 30<br>20     | ns            |
| Maximum Forward Recovery Time<br>( $I_F = 1.0$ A, $di/dt = 100$ A/ $\mu\text{s}$ , $I_{REC}$ to 1.0 V)  | $t_{fr}$ | 20           | ns            |

2. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

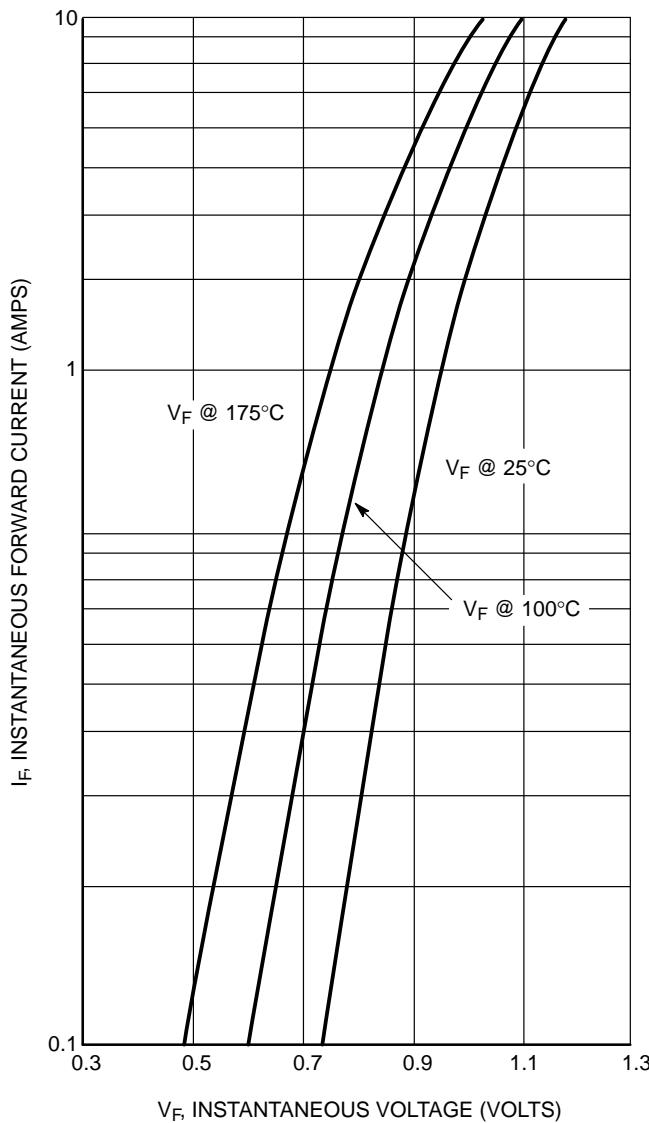


Figure 1. Maximum Forward Voltage

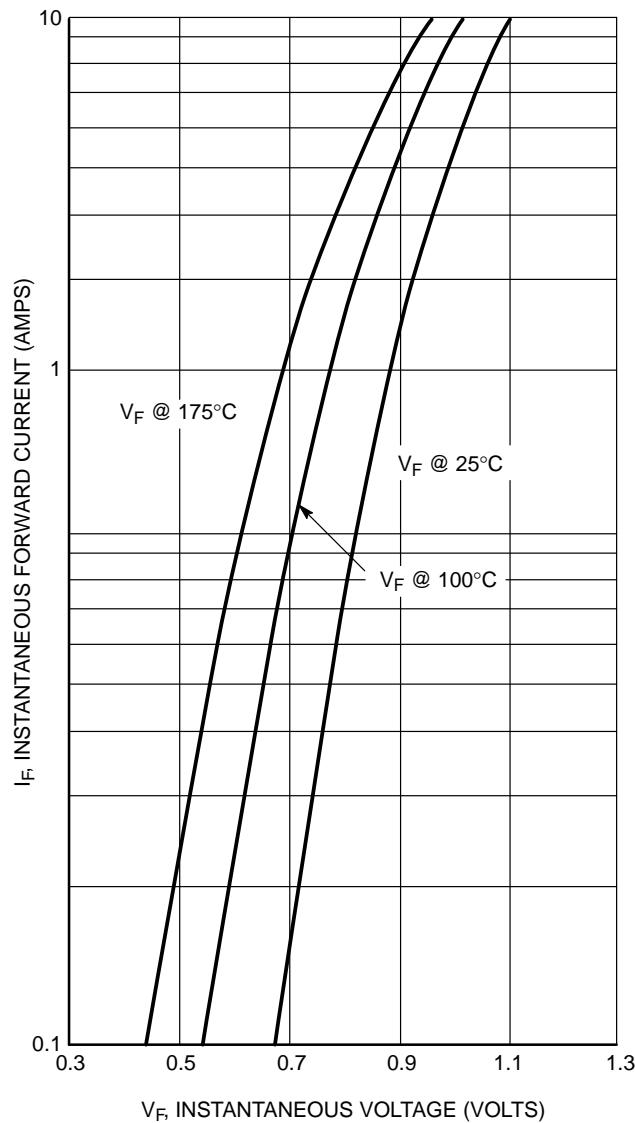
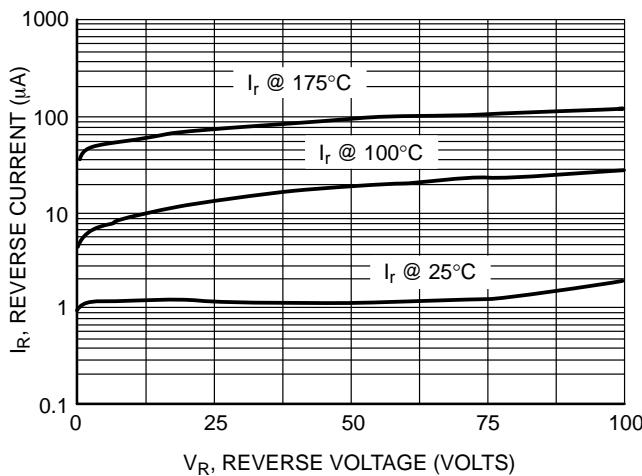
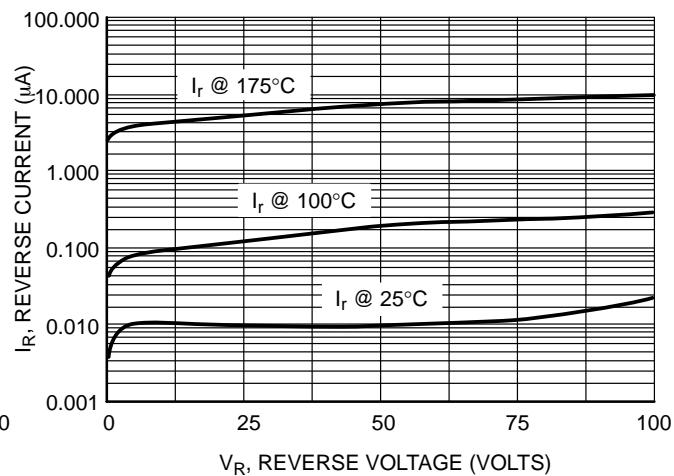


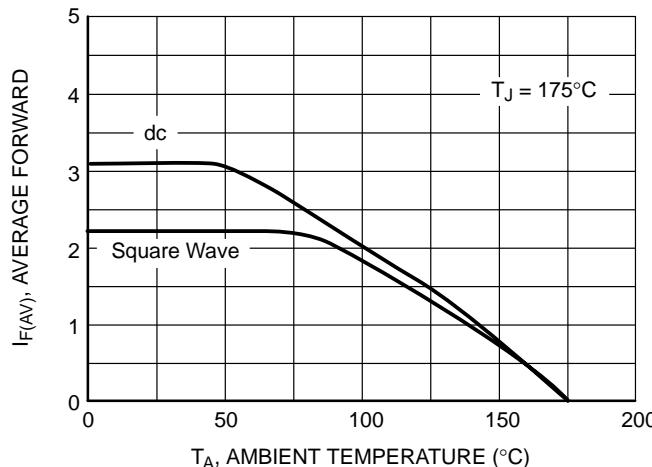
Figure 2. Typical Forward Voltage



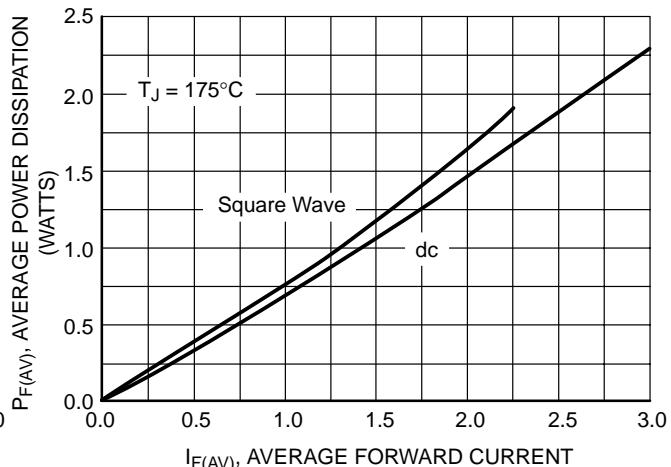
**Figure 3. Maximum Reverse Current**



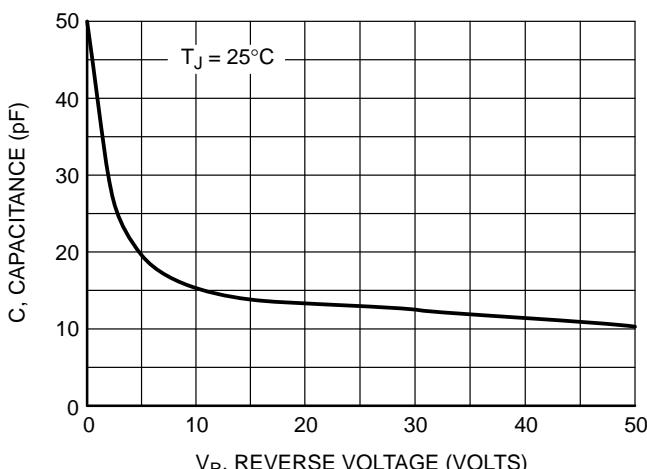
**Figure 4. Typical Reverse Current**



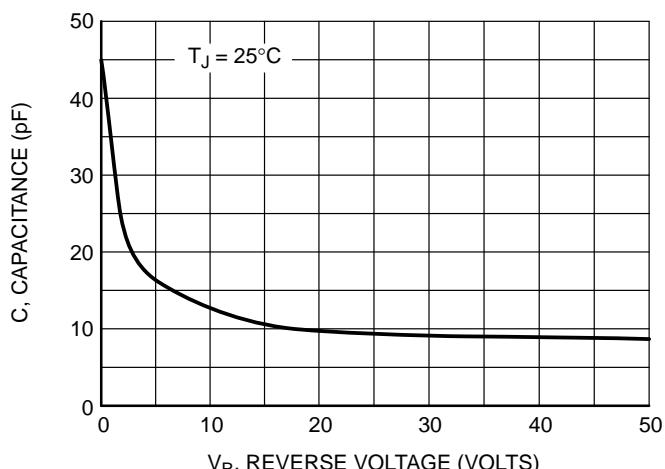
**Figure 5. Current Derating**



**Figure 6. Power Dissipation**



**Figure 7. Maximum Capacitance**



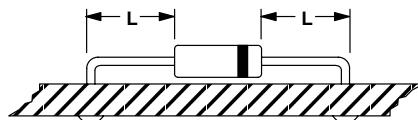
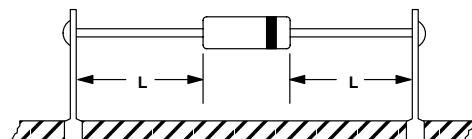
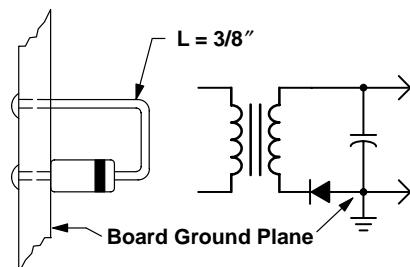
**Figure 8. Typical Capacitance**

**NOTE 3 – AMBIENT MOUNTING DATA**

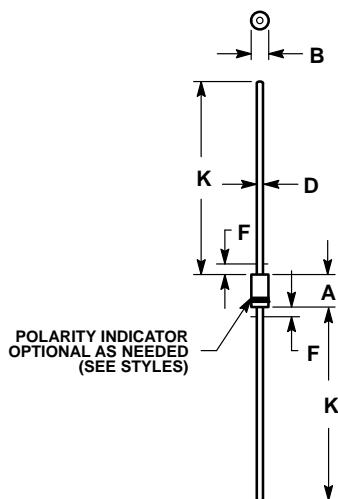
Data shown for thermal resistance junction to ambient ( $R_{\theta JA}$ ) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

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

| Mounting Method | $R_{\theta JA}$ | Lead Length, L |     |     | Units |
|-----------------|-----------------|----------------|-----|-----|-------|
|                 |                 | 1/8            | 1/4 | 1/2 |       |
| 1               |                 | 52             | 65  | 72  | °C/W  |
| 2               |                 | 67             | 80  | 87  | °C/W  |
| 3               |                 |                | 50  |     | °C/W  |

**MOUNTING METHOD 1****MOUNTING METHOD 2****Vector Pin Mounting****MOUNTING METHOD 3****P.C. Board with  
1-1/2" X 1-1/2" Copper Surface**

## PACKAGE DIMENSIONS

AXIAL LEAD  
CASE 59-10  
ISSUE U

## NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY.
4. POLARITY DENOTED BY CATHODE BAND.
5. LEAD DIAMETER NOT CONTROLLED WITHIN F DIMENSION.

| DIM | INCHES |       | MILLIMETERS |      |
|-----|--------|-------|-------------|------|
|     | MIN    | MAX   | MIN         | MAX  |
| A   | 0.161  | 0.205 | 4.10        | 5.20 |
| B   | 0.079  | 0.106 | 2.00        | 2.70 |
| D   | 0.028  | 0.034 | 0.71        | 0.86 |
| F   | —      | 0.050 | —           | 1.27 |
| K   | 1.000  | —     | 25.40       | —    |

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