

# MUR220

Preferred Device

## SWITCHMODE™ Power Rectifier

... designed for use in switching power supplies, inverters and as free wheeling diodes, these state-of-the-art devices have the following features:

- Ultrafast 25 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- Low Forward Voltage
- Low Leakage Current
- High Temperature Glass Passivated Junction

### 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
- Shipped in plastic bags, 1000 per bag
- Available Tape and Reeled, 5000 per reel, by adding a "RL" suffix to the part number
- Polarity: Cathode Indicated by Polarity Band
- Marking: MUR220

### 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>$V_R$ | 200<br>—                          | Volts |
| Average Rectified Forward Current<br>(Note 1) (Square Wave Mounting<br>Method #3 Per Note 1)                    | $I_{F(AV)}$                     | 2.0 @<br>$T_A = 90^\circ\text{C}$ | Amps  |
| Non-Repetitive Peak Surge Current<br>(Surge applied at rated load conditions,<br>halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 35                                | Amps  |
| Operating Junction Temperature and<br>Storage Temperature Range   | $T_J, T_{Stg}$                  | - 65 to<br>+175                   | °C    |

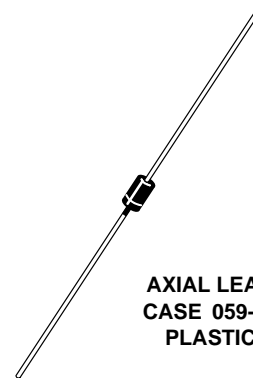
1. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .



ON Semiconductor®

<http://onsemi.com>

ULTRAFAST  
RECTIFIER  
2 AMPERES  
200 VOLTS



AXIAL LEAD  
CASE 059-10  
PLASTIC

### MARKING DIAGRAM



MUR220 = Device Code

### ORDERING INFORMATION

| Device   | Package    | Shipping         |
|----------|------------|------------------|
| MUR220   | Axial Lead | 1000 Units/Bag   |
| MUR220RL | Axial Lead | 5000/Tape & Reel |

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

# MUR220

## THERMAL CHARACTERISTICS

| Characteristic                                  | Symbol          | Value      | Unit          |
|---|-----------------|------------|---------------|
| Maximum Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | See Note 1 | $^{\circ}C/W$ |

## ELECTRICAL CHARACTERISTICS

|  |          |              |         |
|--|----------|--------------|---------|
| Maximum Instantaneous Forward Voltage (Note 2)<br>( $I_F = 2.0$ Amp, $T_J = 150^{\circ}C$ )<br>( $I_F = 2.0$ Amp, $T_J = 25^{\circ}C$ )    | $V_F$    | 0.75<br>0.95 | Volts   |
| Maximum Instantaneous Reverse Current (Note 2)<br>(Rated dc Voltage, $T_J = 150^{\circ}C$ )<br>(Rated dc Voltage, $T_J = 25^{\circ}C$ )    | $i_R$    | 50<br>2.0    | $\mu A$ |
| Maximum Reverse Recovery Time<br>( $I_F = 1.0$ Amp, $di/dt = 50$ Amp/ $\mu s$ )<br>( $I_F = 0.5$ Amp, $I_R = 1.0$ Amp, $I_{REC} = 0.25$ A) | $t_{rr}$ | 35<br>25     | ns      |
| Maximum Forward Recovery Time<br>( $I_F = 1.0$ A, $di/dt = 100$ A/ $\mu s$ , $I_{REC}$ to 1.0 V)   | $t_{fr}$ | 25           | ns      |

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

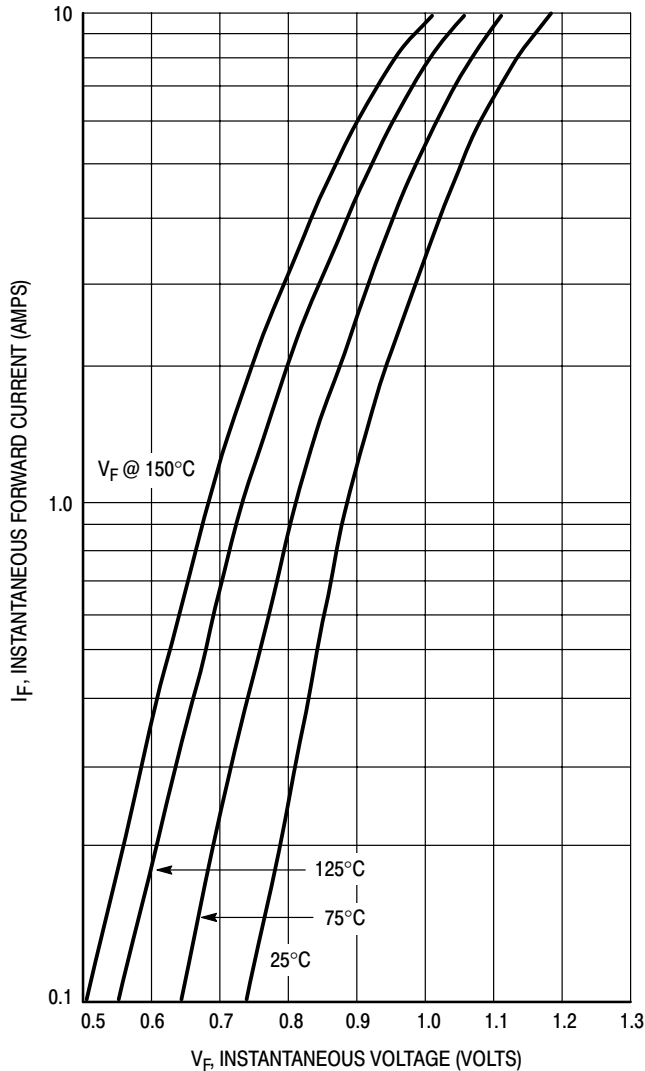


Figure 1. Maximum Forward Voltage

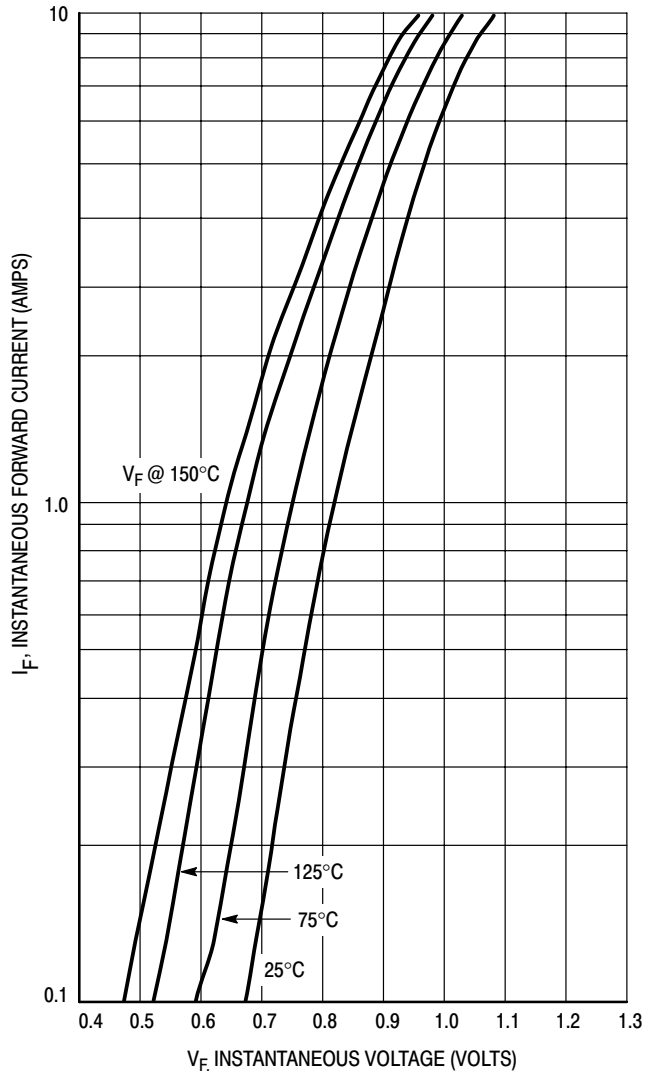
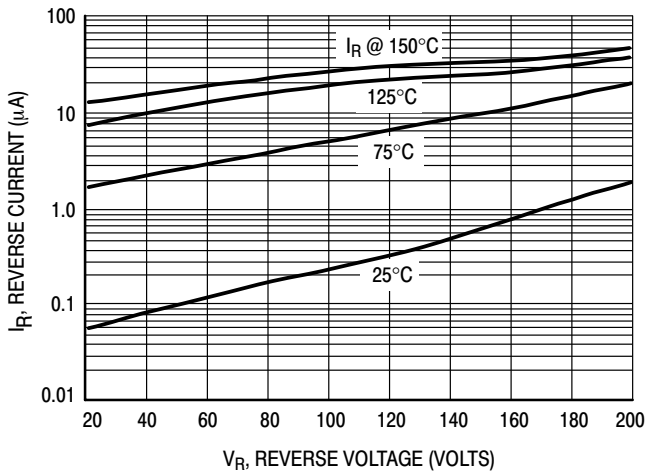
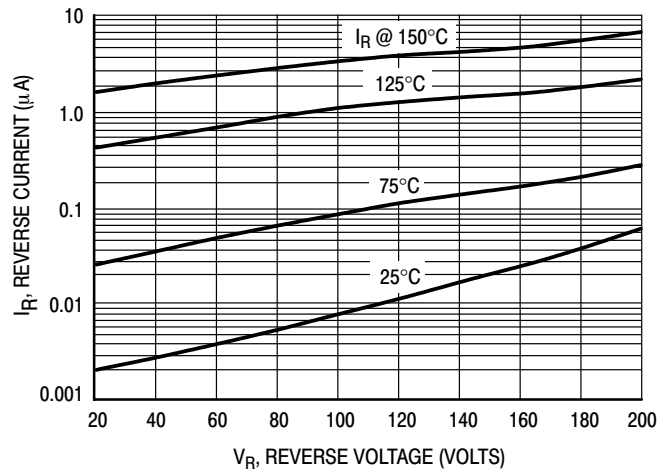


Figure 2. Typical Forward Voltage

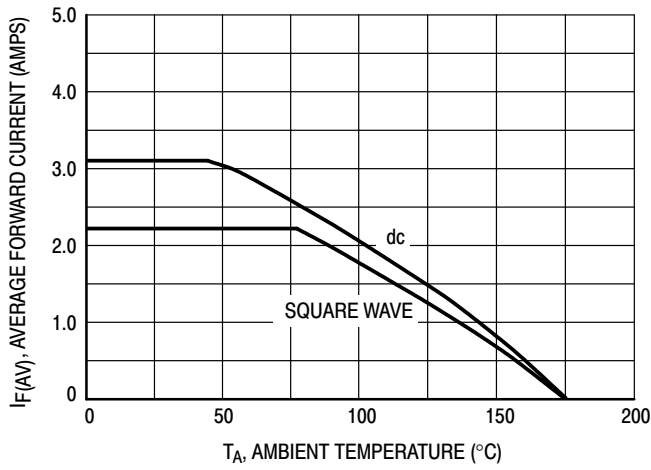
# MUR220



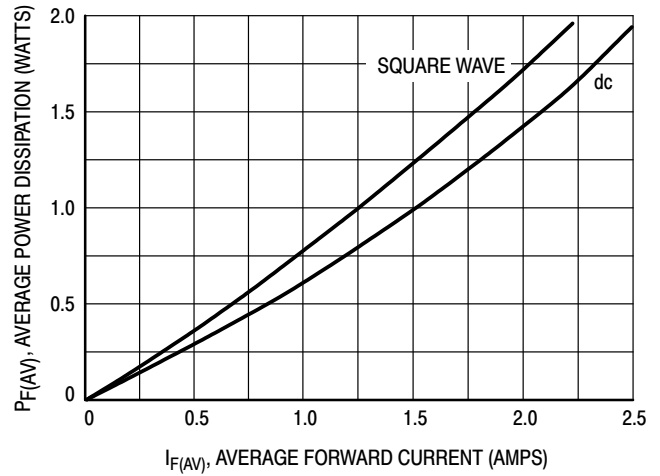
**Figure 3. Maximum Reverse Current**



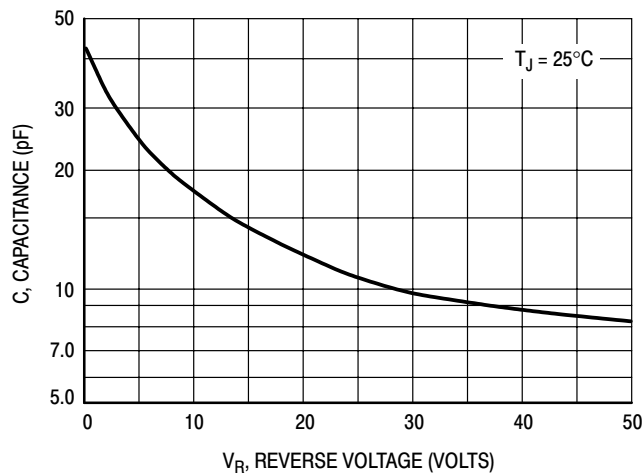
**Figure 4. Typical Reverse Current**



**Figure 5. Current Derating**



**Figure 6. Power Dissipation**



**Figure 7. Typical Capacitance**

# MUR220

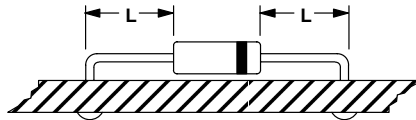
## NOTE 1. - AMBIENT MOUNTING DATA

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.

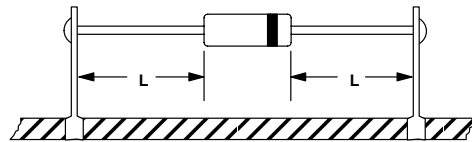
### TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

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

#### MOUNTING METHOD 1

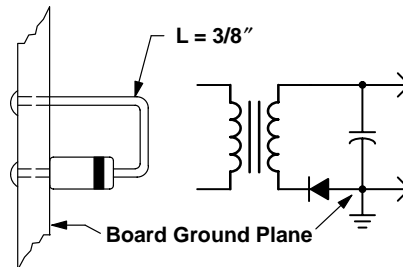


#### MOUNTING METHOD 2



#### Vector Pin Mounting

#### MOUNTING METHOD 3

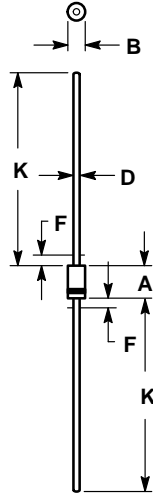


#### P.C. Board with 1-1/2" X 1-1/2" Copper Surface

# MUR220

## PACKAGE DIMENSIONS

### MINI MOSORB CASE 59-10 ISSUE S




#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 59-04 OBSOLETE, NEW STANDARD 59-09.
4. 59-03 OBSOLETE, NEW STANDARD 59-10.
5. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY
6. POLARITY DENOTED BY CATHODE BAND.
7. 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       | ---  |

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.

## 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

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

For additional information, please contact your local Sales Representative.