# MUR405, MUR410, MUR415, MUR420, MUR440, MUR460

**MUR420 and MUR460 are Preferred Devices**

# SWITCHMODE™ Power Rectifiers

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

### Features

- Ultrafast 25 ns, 50 ns and 75 ns Recovery Times
- 175°C Operating Junction Temperature
- Low Forward Voltage
- Low Leakage Current
- High Temperature Glass Passivated Junction
- Reverse Voltage to 600 V
- Shipped in plastic bags, 5,000 per bag
- Available in Tape and Reel, 1500 per reel, by adding a “RL’’ suffix to the part number
- These devices are manufactured with a Pb−Free external lead finish only*

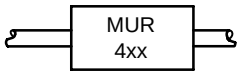
### Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 1.1 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

**ULTRAFAST RECTIFIERS**
**4.0 AMPERES**
**50−600 VOLTS**

**AXIAL LEAD**
**CASE 267**
**STYLE 1**

**MARKING DIAGRAM**




MUR4xx = Device Code
xx = 05, 10, 15, 20, 40, 60

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

## MAXIMUM RATINGS

| Rating | Symbol | MUR 405 | 410 | 415 | 420 | 440 | 460 | Unit |
|---|---|---|---|---|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 50 | 100 | 150 | 200 | 400 | 600 | V |
| Average Rectified Forward Current (Square Wave)<br>(Mounting Method #3 Per Note 2) | $I_{F(AV)}$ | 4.0 @ $T_A$ = 80°C | | | | 4.0 @ $T_A$ = 40°C | | A |
| Nonrepetitive Peak Surge Current<br>(Surge applied at rated load conditions, half wave, single phase, 60 Hz) | $I_{FSM}$ | 125 | | | | 110 | | A |
| Operating Junction Temperature & Storage Temperature | $T_J$, $T_{stg}$ | −65 to +175 | | | | | | °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.

## THERMAL CHARACTERISTICS

| Rating | Symbol | MUR 405 | 410 | 415 | 420 | 440 | 460 | Unit |
|---|---|---|---|---|---|---|---|---|
| Maximum Thermal Resistance, Junction−to−Ambient | $R_{\theta JA}$ | See Note 2 | | | | | | °C/W |

## ELECTRICAL CHARACTERISTICS

| Rating | Symbol | MUR 405 | 410 | 415 | 420 | 440 | 460 | Unit |
|---|---|---|---|---|---|---|---|---|
| Maximum Instantaneous Forward Voltage (Note 1)<br>($i_F$ = 3.0 A, $T_J$ = 150°C)<br>($i_F$ = 3.0 A, $T_J$ = 25°C)<br>($i_F$ = 4.0 A, $T_J$ = 25°C) | $v_F$ | <br>0.71<br>0.88<br>0.89 | | | | <br>1.05<br>1.25<br>1.28 | | V |
| Maximum Instantaneous Reverse Current (Note 1)<br>(Rated dc Voltage, $T_J$ = 150°C)<br>(Rated dc Voltage, $T_J$ = 25°C) | $i_R$ | <br>150<br>5 | | | | <br>250<br>10 | | μA |
| Maximum Reverse Recovery Time<br>($I_F$ = 1.0 Amp, di/dt = 50 Amp/μs)<br>($I_F$ = 0.5 Amp, $i_R$ = 1.0 Amp, $I_{REC}$ = 0.25 Amp) | $t_{rr}$ | <br>35<br>25 | | | | <br>75<br>50 | | ns |
| Maximum Forward Recovery Time<br>($I_F$ = 1.0 A, di/dt = 100 A/μs, Recovery to 1.0 V) | $t_{fr}$ | 25 | | | | 50 | | ns |

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

## ORDERING INFORMATION

| Device | Package | Shipping† |
|---|---|---|
| MUR405 | AXIAL LEAD | 5000 Units / Bag |
| MUR405RL | AXIAL LEAD | 1500 / Tape & Reel |
| MUR410 | AXIAL LEAD | 5000 Units / Bag |
| MUR410RL | AXIAL LEAD | 1500 / Tape & Reel |
| MUR415 | AXIAL LEAD | 5000 Units / Bag |
| MUR415RL | AXIAL LEAD | 1500 / Tape & Reel |
| MUR420 | AXIAL LEAD | 5000 Units / Bag |
| MUR420RL | AXIAL LEAD | 1500 / Tape & Reel |
| MUR440 | AXIAL LEAD | 5000 Units / Bag |
| MUR440RL | AXIAL LEAD | 1500 / Tape & Reel |
| MUR460 | AXIAL LEAD | 5000 Units / Bag |
| MUR460RL | 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 Specifications Brochure, BRD8011/D.

## MUR405, MUR410, MUR415, MUR420

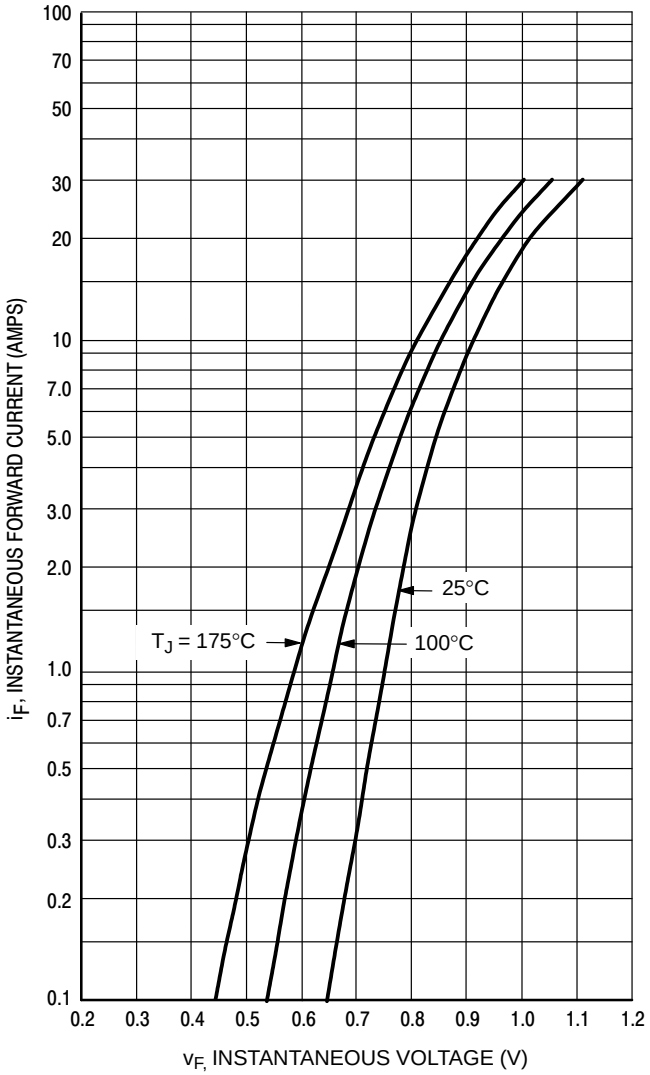



**Figure 1. Typical Forward Voltage**

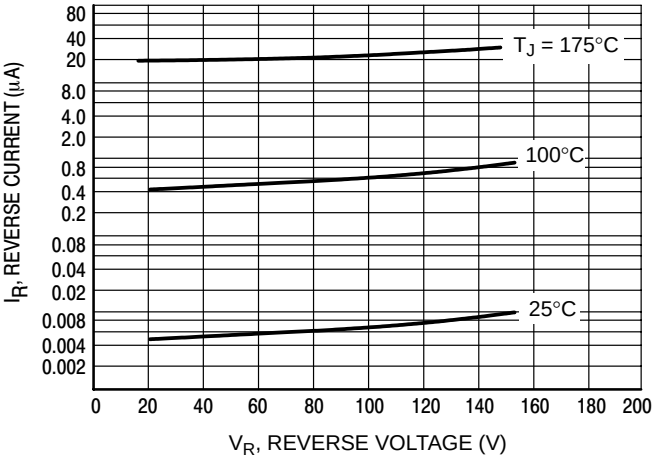



**Figure 2. Typical Reverse Current**

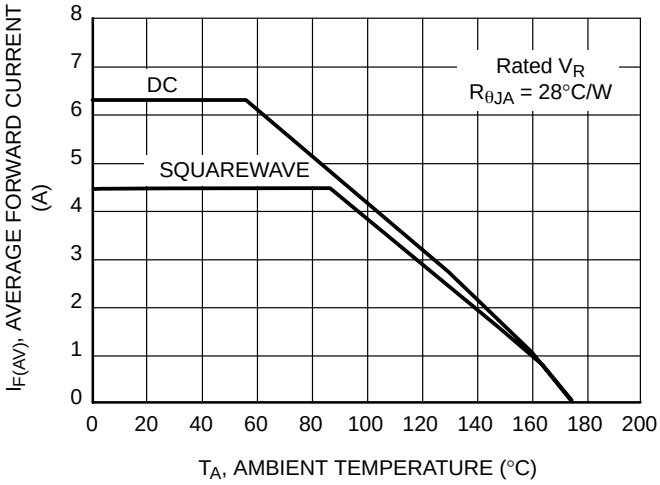



**Figure 3. Current Derating (Mounting Method #3 Per Note 2)**

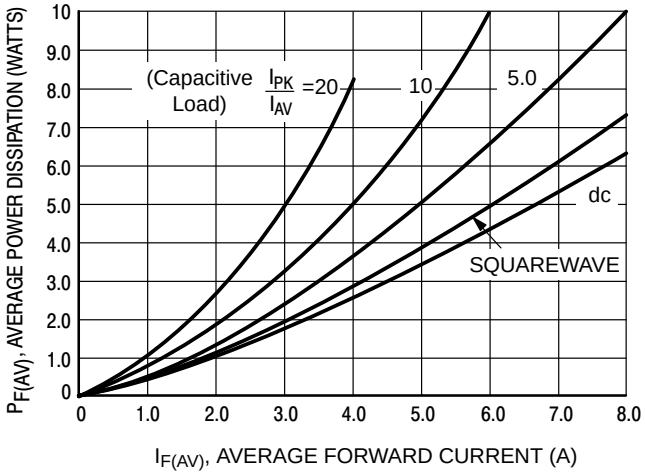



**Figure 4. Power Dissipation**

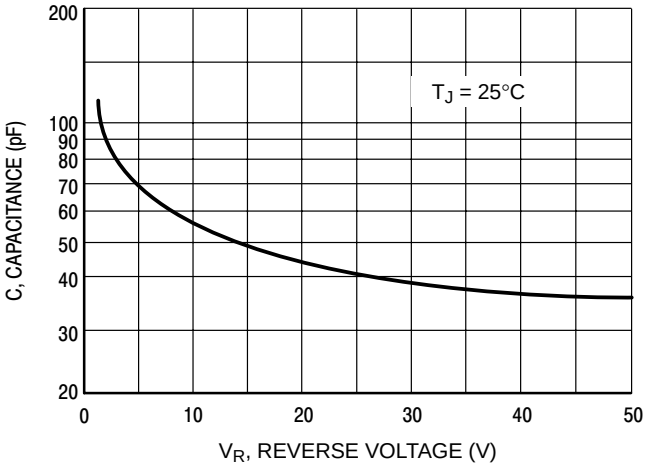



**Figure 5. Typical Capacitance**

**MUR440, MUR460**

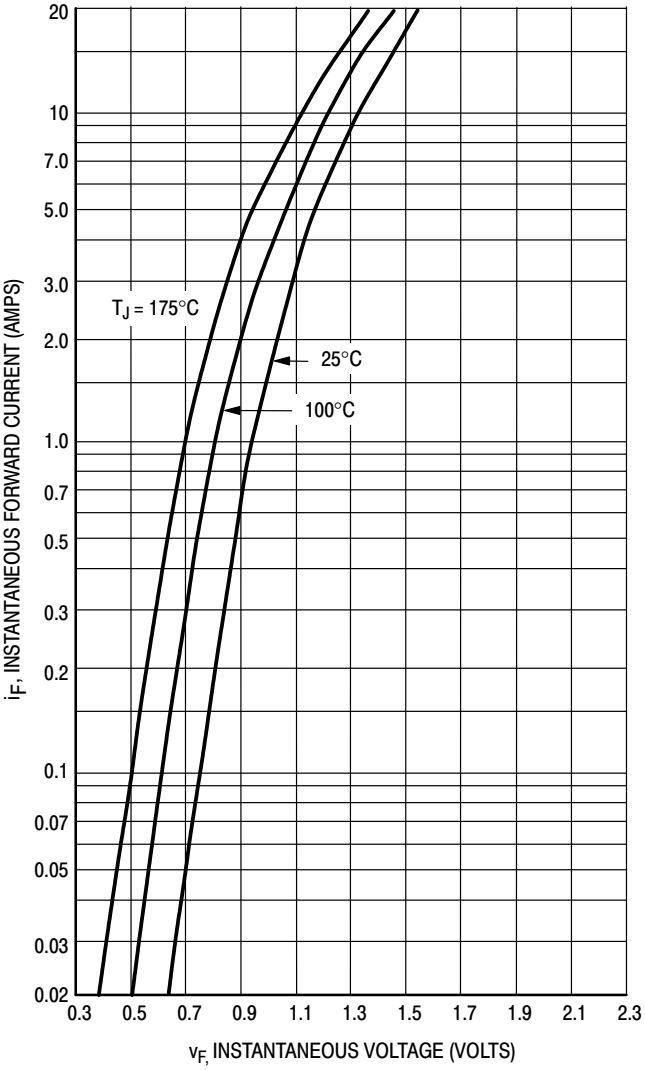



**Figure 6. Typical Forward Voltage**

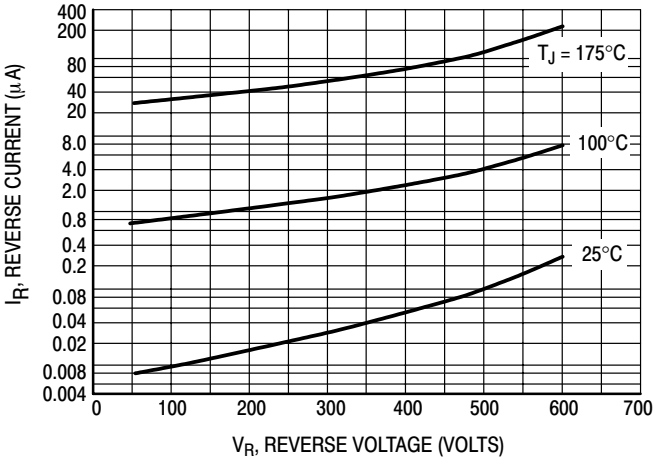



**Figure 7. Typical Reverse Current**

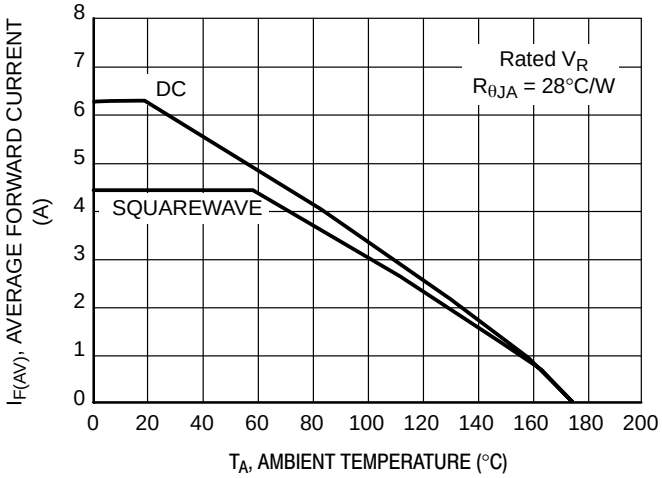



**Figure 8. Current Derating (Mounting Method #3 Per Note 2)**

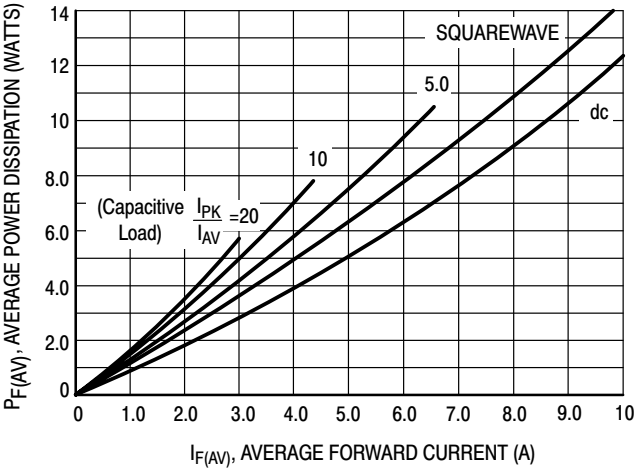



**Figure 9. Power Dissipation**

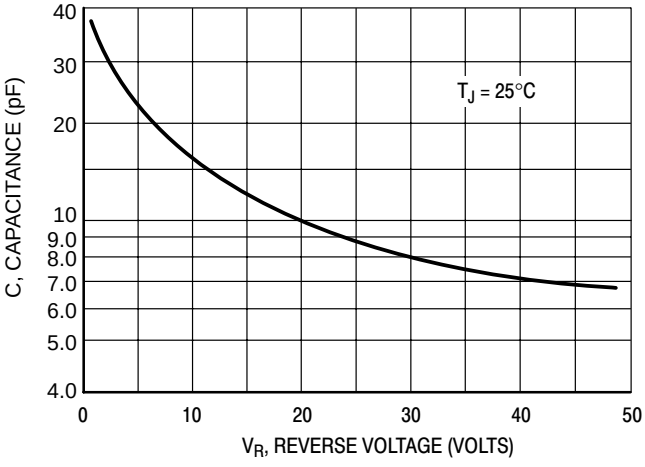



**Figure 10. Typical Capacitance**

## NOTE 2 — AMBIENT MOUNTING DATA

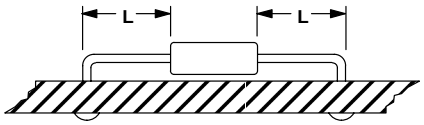
Data shown for thermal resistance junction−to−ambient ($R_{\theta JA}$) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

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

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

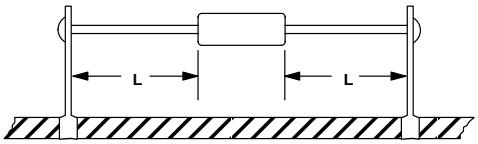
**MOUNTING METHOD 1**

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



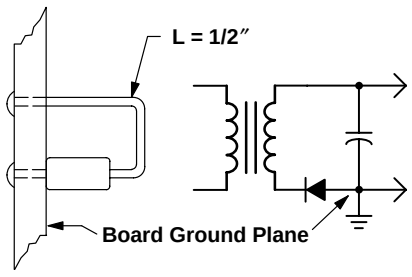

**MOUNTING METHOD 2**

**Vector Push−In Terminals T−28**



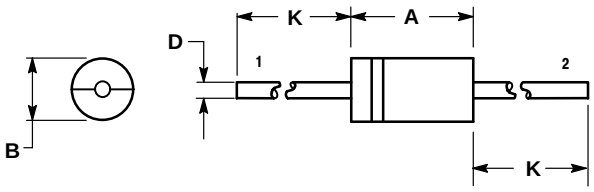

**MOUNTING METHOD 3**

**P.C. Board with 1−1/2″ x 1−1/2″ Copper Surface**



## PACKAGE DIMENSIONS

**AXIAL LEAD**
CASE 267−05
ISSUE G




NOTES:
1. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 267−04 OBSOLETE, NEW STANDARD 267−05.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | 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)
2. ANODE