MUR420 and MUR460 are Preferred Devices

Switchmode[™] Power Rectifiers

... 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, 50 and 75 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- Low Forward Voltage
- Low Leakage Current
- High Temperature Glass Passivated Junction
- Reverse Voltage to 600 Volts

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
- Shipped in plastic bags, 5,000 per bag
- Available Tape and Reeled, 1500 per reel, by adding a "RL" suffix to the part number
- Polarity: Cathode indicated by Polarity Band
- Marking: MUR405, MUR410, MUR415, MUR420, MUR440, MUR460

MAXIMUM RATINGS

Please See the Table on the Following Page



ON Semiconductor™

http://onsemi.com

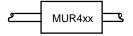
ULTRAFAST RECTIFIERS 4.0 AMPERES 50–600 VOLTS





AXIAL LEAD CASE 267-03 STYLE 1

MARKING DIAGRAM



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

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 |

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

MAXIMUM RATINGS

| | | MUR | | | | | | |
|---|--|-----------------------------|-----|--------------------------------|-----|------|-----|-------|
| Rating | Symbol | 405 | 410 | 415 | 420 | 440 | 460 | Unit |
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V _{RRM} V _{RWM} V _R | 50 | 100 | 150 | 200 | 400 | 600 | Volts |
| Average Rectified Forward Current (Square Wave) (Mounting Method #3 Per Note 2.) | I _{F(AV)} | 4.0 @ T _A = 80°C | | 4.0 @ T _A = 40°C | | Amps | | |
| Nonrepetitive Peak Surge Current (Surge applied at rated load conditions, half wave, single phase, 60 Hz) | I _{FSM} | 125 | | 7 | 0 | Amps | | |
| Operating Junction Temperature & Storage Temperature | T _J , T _{stg} | - 65 to +175 | | | | | °C | |

THERMAL CHARACTERISTICS

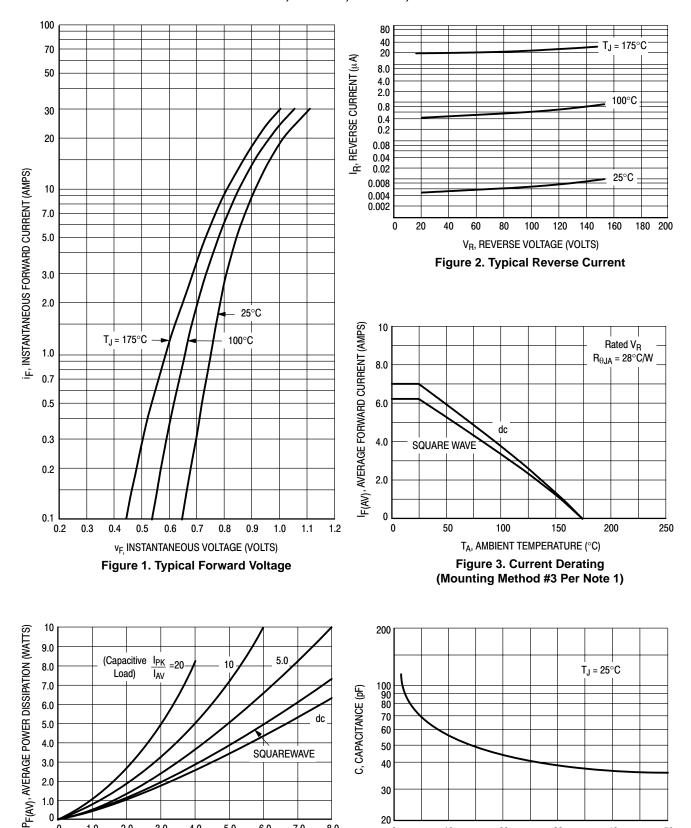
| Maximum Thermal Resistance, Junction to Ambient | $R_{	hetaJA}$ | See Note 2. | °C/W | |
|---|---------------|-------------|------|--|
|---|---------------|-------------|------|--|

ELECTRICAL CHARACTERISTICS

| $\label{eq:maximum instantaneous Forward Voltage (Note 1.)} \\ (i_F = 3.0 \text{ Amps, } T_J = 150^{\circ}\text{C}) \\ (i_F = 3.0 \text{ Amps, } T_J = 25^{\circ}\text{C}) \\ (i_F = 4.0 \text{ Amps, } T_J = 25^{\circ}\text{C}) \\ \end{aligned}$ | VF | 0.710 0.875 0.890 | 1.05 1.25 1.28 | Volts |
|---|-----------------|-------------------------|----------------------|-------|
| Maximum Instantaneous Reverse Current (Note 1.) (Rated dc Voltage, $T_J = 150^{\circ}\text{C}$) (Rated dc Voltage, $T_J = 25^{\circ}\text{C}$) | İR | 150 5.0 | 250 10 | μА |
| Maximum Reverse Recovery Time $ \begin{aligned} (I_F = 1.0 \text{ Amp, di/dt} = 50 \text{ Amp/}\mu\text{s}) \\ (I_F = 0.5 \text{ Amp, } I_R = 1.0 \text{ Amp, } I_{REC} = 0.25 \text{ Amp}) \end{aligned} $ | t _{rr} | 35 25 | 75 50 | ns |
| Maximum Forward Recovery Time (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 μ s, Duty Cycle \leq 2.0%.

MUR405, MUR410, MUR415, MUR420



http://onsemi.com

8.0

SQUAREWAVE

7.0

6.0

3.0

2.0

1.0

3.0

4.0

Figure 4. Power Dissipation

I_{F(AV)}, AVERAGE FORWARD CURRENT (AMPS)

5.0

40

30

20

0

10

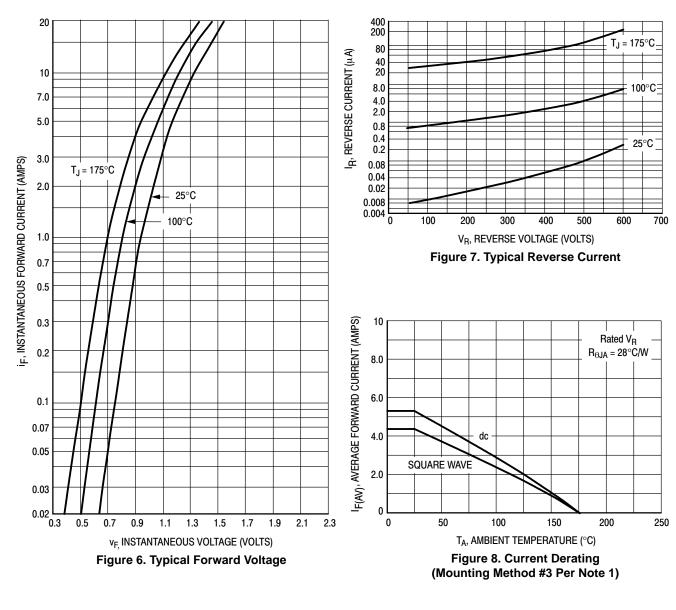
40

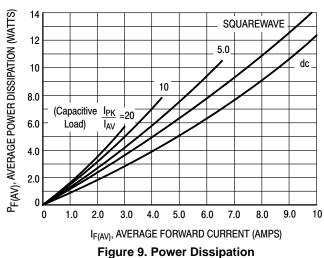
V_R, REVERSE VOLTAGE (VOLTS)

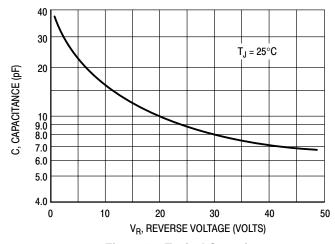
Figure 5. Typical Capacitance

50

MUR440, MUR460







NOTE 2. — AMBIENT MOUNTING DATA

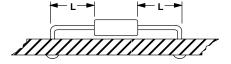
Data shown for thermal resistance junction—to—ambient $(R_{\theta JA})$ for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

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

| Mounting | | Lea | | | | |
|----------|-----------------|-----|-----|-----|-----|-------|
| Metho | od | 1/8 | 1/4 | 1/2 | 3/4 | Units |
| 1 | | 50 | 51 | 53 | 55 | °C/W |
| 2 | $R_{\theta JA}$ | 58 | 59 | 61 | 63 | °C/W |
| 3 | | | 28 | | | °C/W |

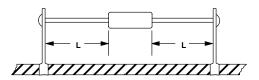
MOUNTING METHOD 1

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



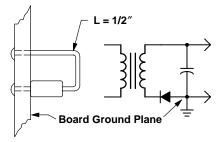
MOUNTING METHOD 2

Vector Push-In Terminals T-28



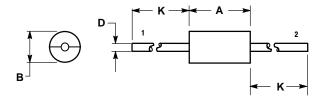
MOUNTING METHOD 3

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



PACKAGE DIMENSIONS

AXIAL LEAD CASE 267-03 **ISSUE E**



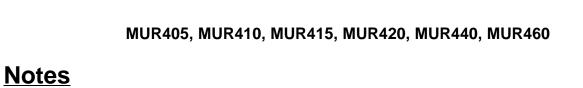
- NOTES:

 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

 2. CONTROLLING DIMENSION: INCH.

| | INCHES | | MILLIMETERS | | |
|-----|--------|-------|-------------|------|--|
| DIM | MIN | MAX | MIN | MAX | |
| Α | 0.370 | 0.380 | 9.40 | 9.65 | |
| В | 0.190 | 0.210 | 4.83 | 5.33 | |
| D | 0.048 | 0.052 | 1.22 | 1.32 | |
| K | 1.000 | | 25.40 | | |

STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE



SWITCHMODE is a trademark of Semiconductor Components Industries, LLC.

ON Semiconductor and are 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, affliliates, 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

NORTH AMERICA 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

Fax Response Line: 303-675-2167 or 800-344-3810 Toll Free USA/Canada

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

EUROPE: LDC for ON Semiconductor - European Support

German Phone: (+1) 303–308–7140 (Mon–Fri 2:30pm to 7:00pm CET)
Email: ONlit–german@hibbertco.com

French Phone: (+1) 303–308–7141 (Mon–Fri 2:00pm to 7:00pm CET)

Email: ONlit-french@hibbertco.com

English Phone: (+1) 303–308–7142 (Mon–Fri 12:00pm to 5:00pm GMT)

Email: ONlit@hibbertco.com

EUROPEAN TOLL-FREE ACCESS*: 00-800-4422-3781

*Available from Germany, France, Italy, UK, Ireland

CENTRAL/SOUTH AMERICA:

Spanish Phone: 303-308-7143 (Mon-Fri 8:00am to 5:00pm MST)

Email: ONlit-spanish@hibbertco.com

Toll-Free from Mexico: Dial 01-800-288-2872 for Access -

then Dial 866-297-9322

ASIA/PACIFIC: LDC for ON Semiconductor – Asia Support

Phone: 303-675-2121 (Tue-Fri 9:00am to 1:00pm, Hong Kong Time)

Toll Free from Hong Kong & Singapore:

001-800-4422-3781 Email: ONlit-asia@hibbertco.com

JAPAN: ON Semiconductor, Japan Customer Focus Center 4–32–1 Nishi–Gotanda, Shinagawa–ku, Tokyo, Japan 141–0031

Phone: 81–3–5740–2700 **Email**: r14525@onsemi.com

ON Semiconductor Website: http://onsemi.com

For additional information, please contact your local

Sales Representative.