

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



ON Semiconductor®

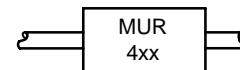
<http://onsemi.com>

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

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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

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

MUR405, MUR410, MUR415, MUR420, MUR440, MUR460

MAXIMUM RATINGS

Rating	Symbol	MUR						Unit
		405	410	415	420	440	460	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	50	100	150	200	400	600	V
Average Rectified Forward Current (Square Wave) (Mounting Method #3 Per Note 2)	$I_{F(AV)}$	4.0 @ $T_A = 80^\circ\text{C}$			4.0 @ $T_A = 40^\circ\text{C}$			A
Nonrepetitive Peak Surge Current (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						$^\circ\text{C}$

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						Unit
		405	410	415	420	440	460	
Maximum Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	See Note 2						$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS

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

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

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, MUR440, MUR460

MUR405, MUR410, MUR415, MUR420

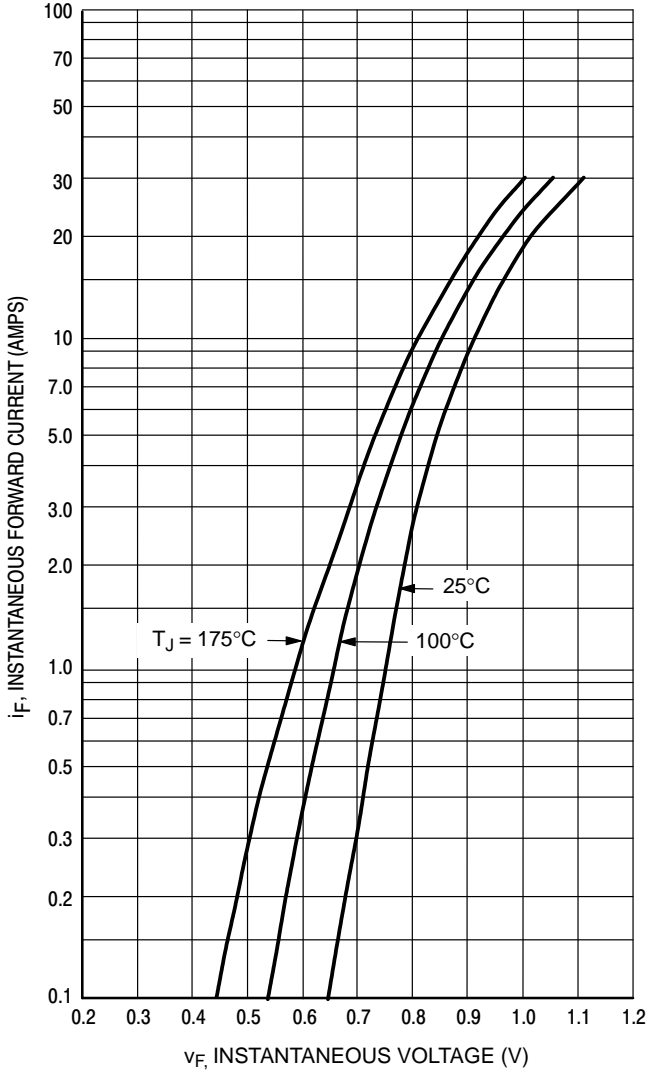


Figure 1. Typical Forward Voltage

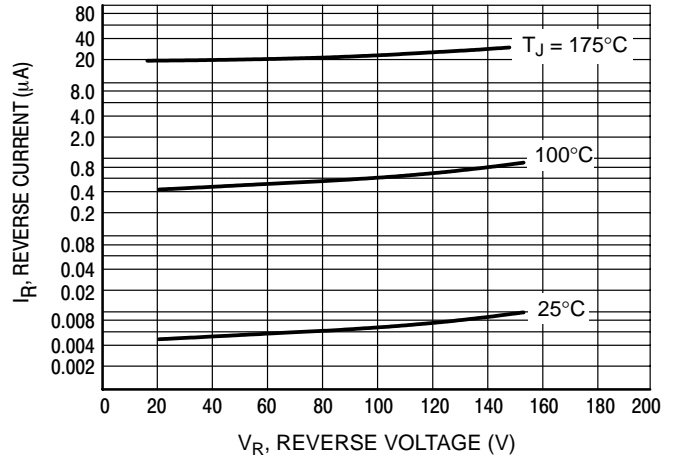


Figure 2. Typical Reverse Current

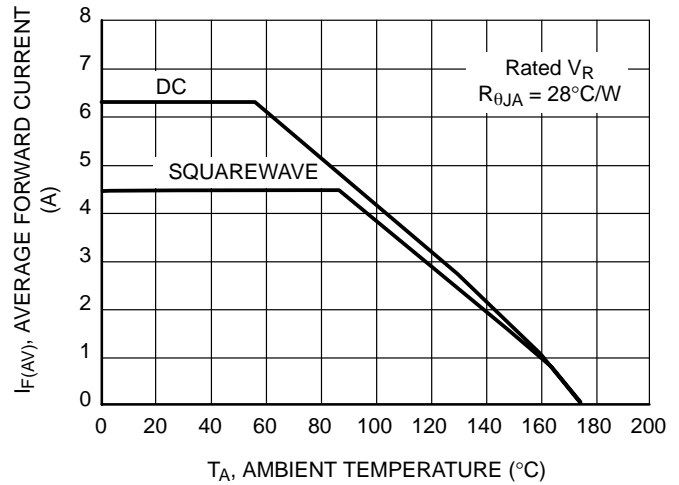


Figure 3. Current Derating (Mounting Method #3 Per Note 2)

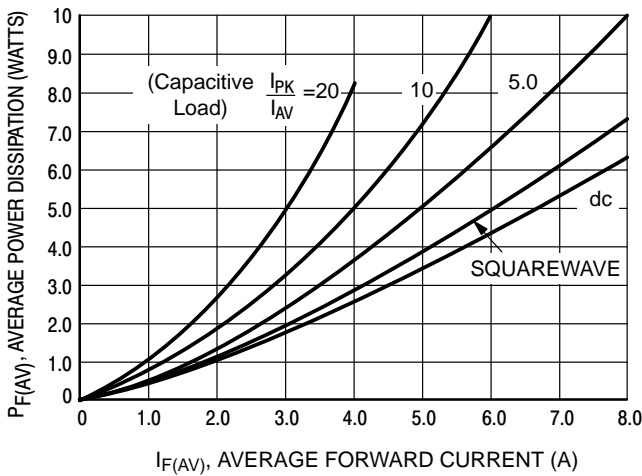


Figure 4. Power Dissipation

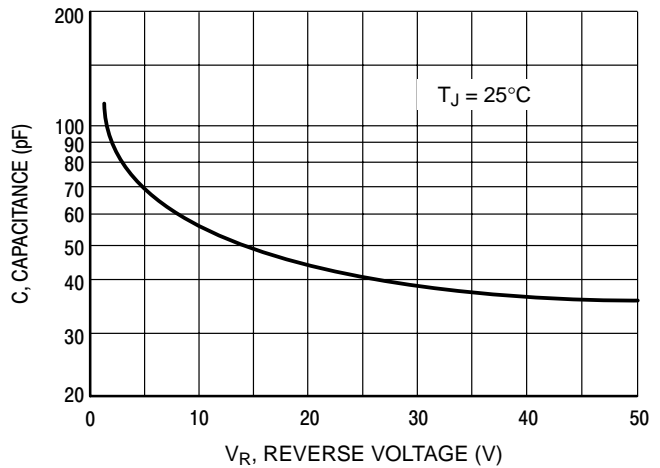


Figure 5. Typical Capacitance

MUR440, MUR460

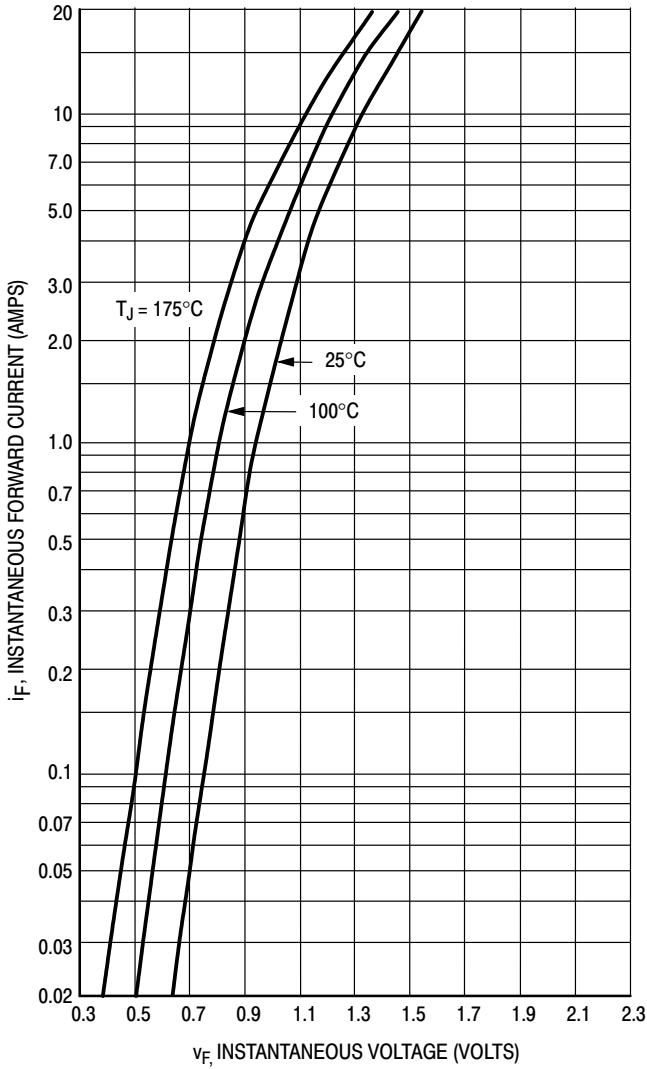


Figure 6. Typical Forward Voltage

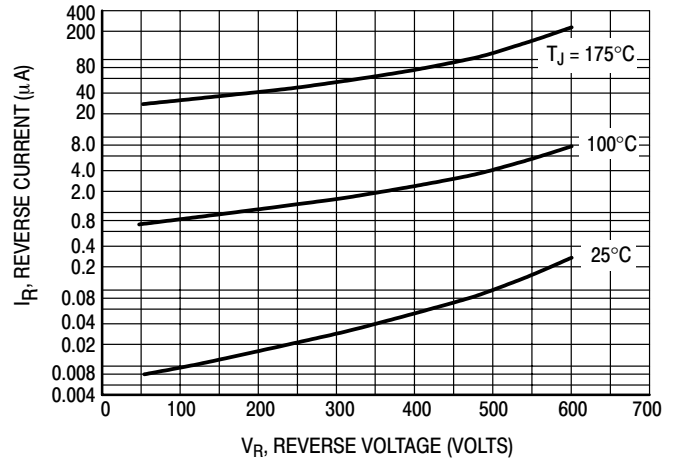


Figure 7. Typical Reverse Current

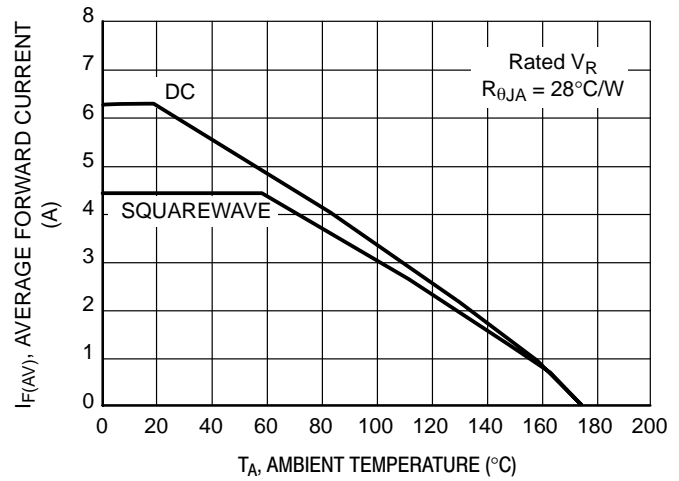


Figure 8. Current Derating
(Mounting Method #3 Per Note 2)

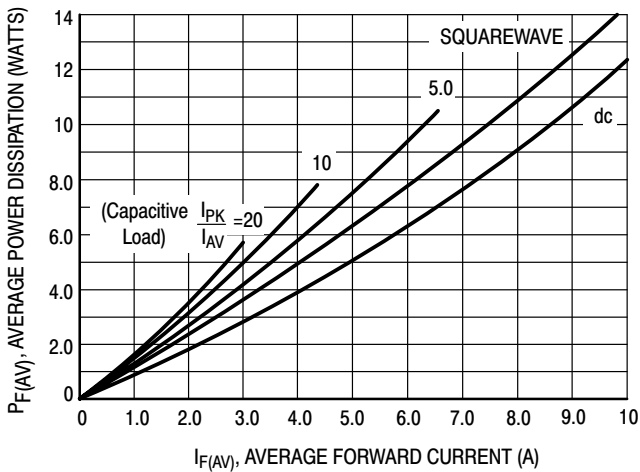


Figure 9. Power Dissipation

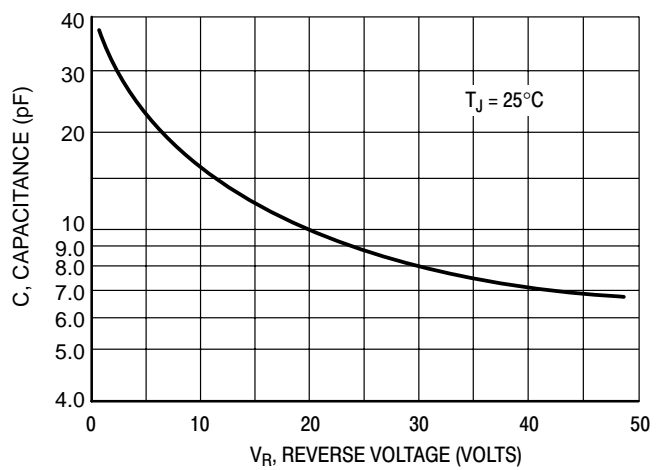


Figure 10. Typical Capacitance

NOTE 2 — AMBIENT MOUNTING DATA

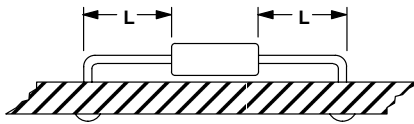
Data shown for thermal resistance junction-to-ambient ($R_{\theta JA}$) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

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

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

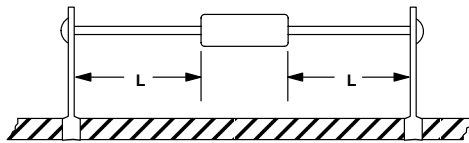
MOUNTING METHOD 1

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



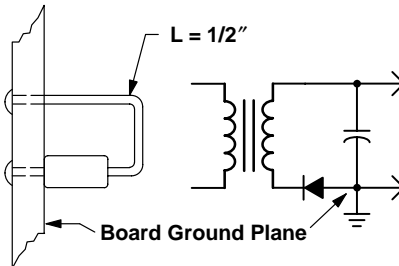
MOUNTING METHOD 2

Vector Push-In Terminals T-28



MOUNTING METHOD 3

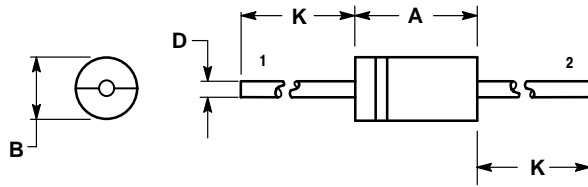
P.C. Board with 1-1/2" x 1-1/2" Copper Surface



MUR405, MUR410, MUR415, MUR420, MUR440, MUR460

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.

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)
- 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 61312, Phoenix, Arizona 85082-1312 USA
Phone: 480-829-7710 or 800-344-3860 Toll Free USA/Canada
Fax: 480-829-7709 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.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>

Order Literature: <http://www.onsemi.com/litorder>

For additional information, please contact your
local Sales Representative.

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.