

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

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



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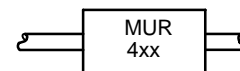
<http://onsemi.com>

## ULTRAFAST RECTIFIERS 4.0 AMPERES 50-600 VOLTS



AXIAL LEAD  
CASE 267-05  
(DO-201AD)  
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.

# 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	Volts
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 @ $T_A = 40^\circ\text{C}$		Amps
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions, half wave, single phase, 60 Hz)	$I_{FSM}$	125				110		Amps
Operating Junction Temperature & Storage Temperature	$T_J, T_{stg}$	- 65 to +175						$^\circ\text{C}$

## THERMAL CHARACTERISTICS

Maximum Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	See Note 2	$^\circ\text{C}/\text{W}$
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## ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1) ( $i_F = 3.0$ Amps, $T_J = 150^\circ\text{C}$ ) ( $i_F = 3.0$ Amps, $T_J = 25^\circ\text{C}$ ) ( $i_F = 4.0$ Amps, $T_J = 25^\circ\text{C}$ )	$v_F$	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, $T_J = 25^\circ\text{C}$ )	$i_R$	150 5.0	250 10	$\mu\text{A}$
Maximum Reverse Recovery Time ( $I_F = 1.0$ Amp, $di/dt = 50$ Amp/ $\mu\text{s}$ ) ( $I_F = 0.5$ Amp, $i_R = 1.0$ Amp, $I_{REC} = 0.25$ Amp)	$t_{rr}$	35 25	75 50	ns
Maximum Forward Recovery Time ( $I_F = 1.0$ A, $di/dt = 100$ A/ $\mu\text{s}$ , Recovery to 1.0 V)	$t_{fr}$	25	50	ns

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

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MUR405, MUR410, MUR415, MUR420

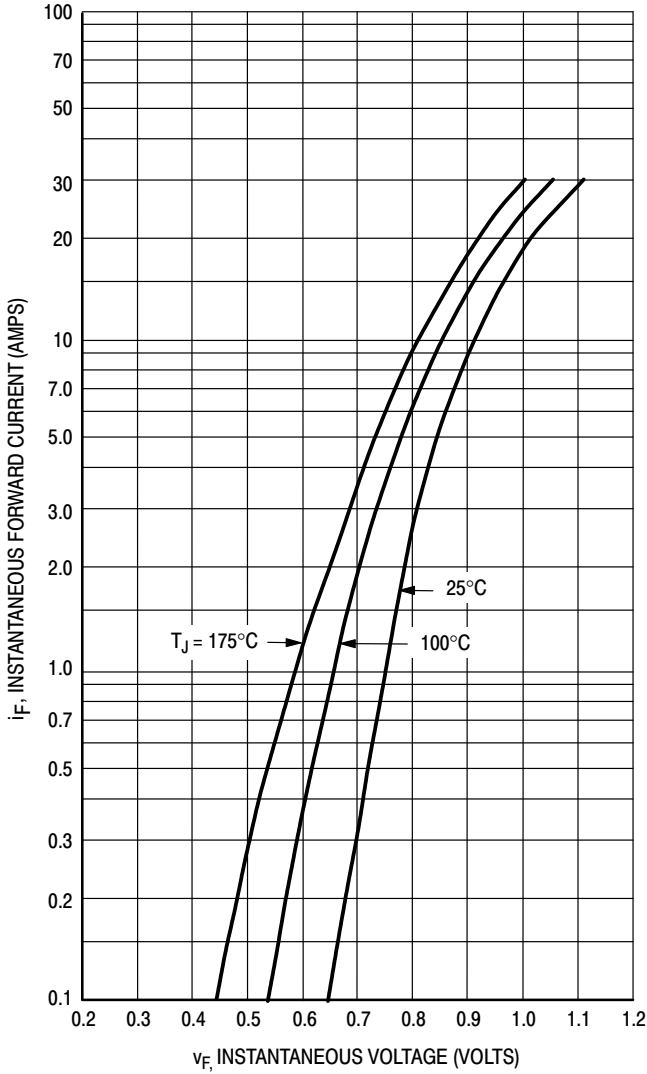


Figure 1. Typical Forward Voltage

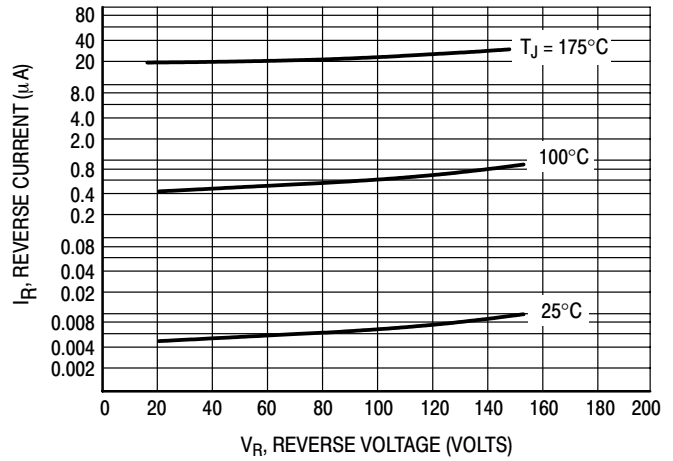


Figure 2. Typical Reverse Current

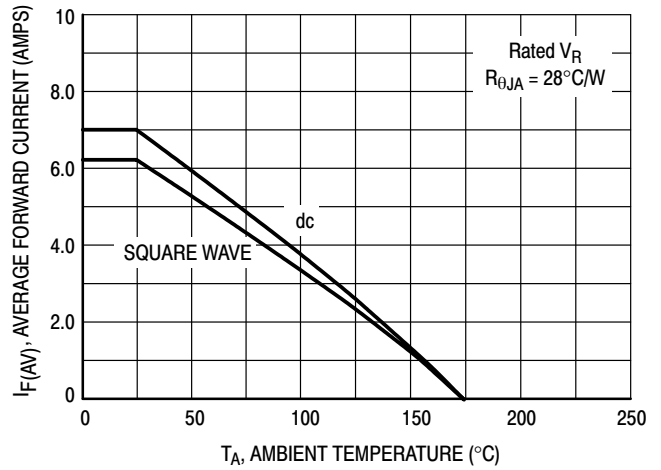


Figure 3. Current Derating  
(Mounting Method #3 Per Note 2)

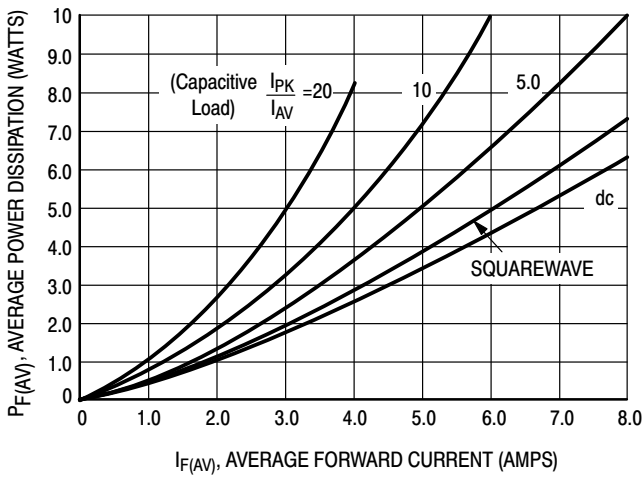


Figure 4. Power Dissipation

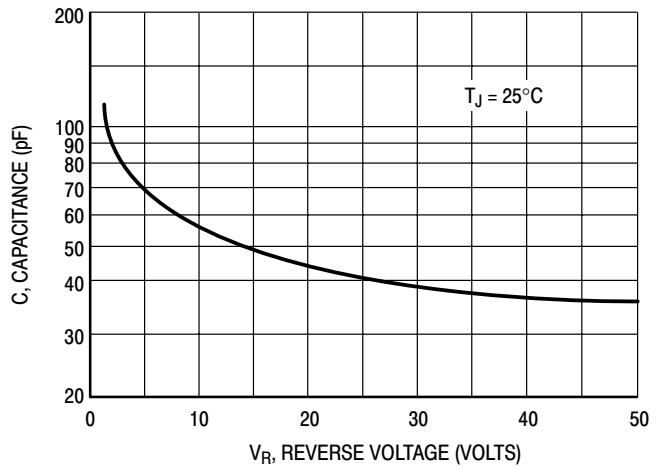


Figure 5. Typical Capacitance

MUR440, MUR460

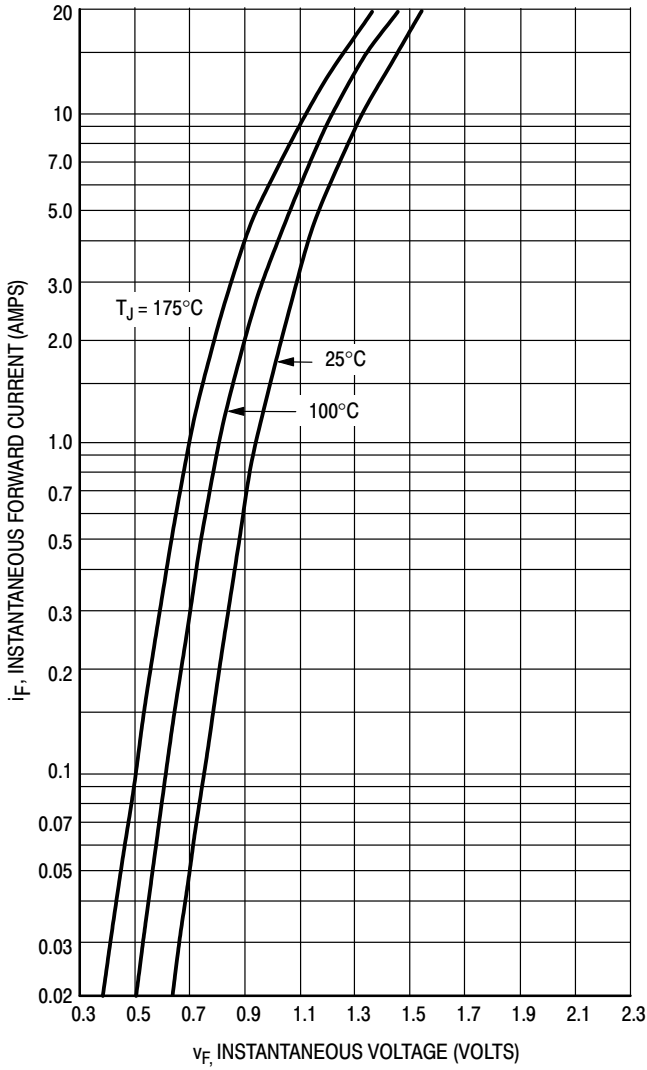


Figure 6. Typical Forward Voltage

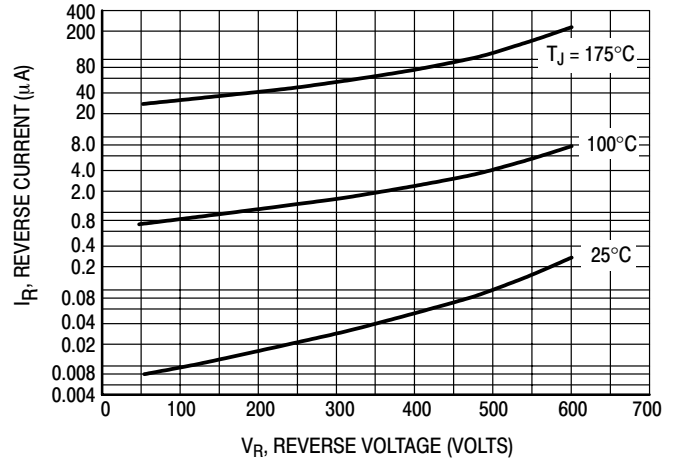


Figure 7. Typical Reverse Current

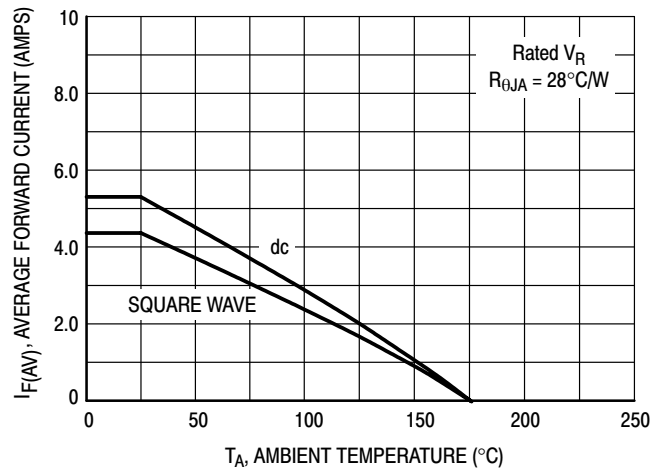


Figure 8. Current Derating  
(Mounting Method #3 Per Note 2)

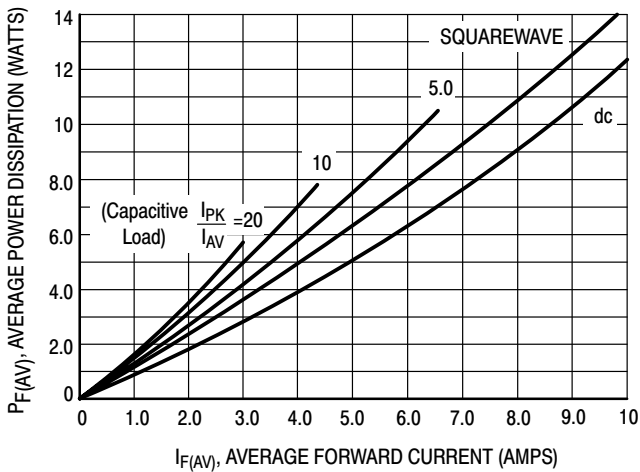


Figure 9. Power Dissipation

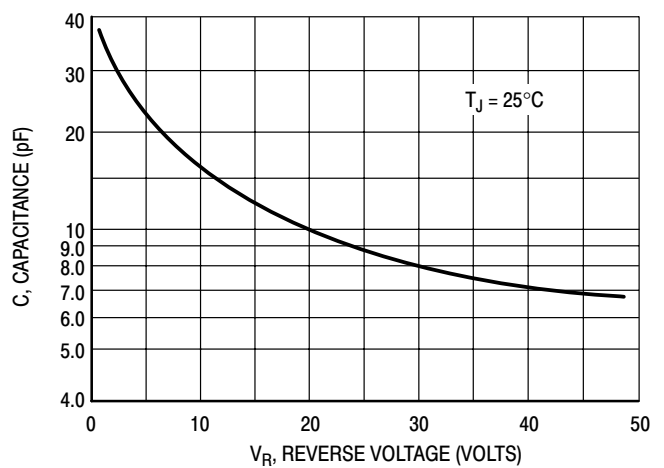


Figure 10. Typical Capacitance

NOTE 2 — AMBIENT MOUNTING DATA

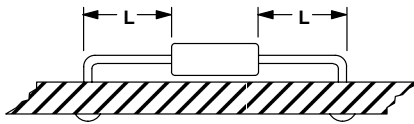
Data shown for thermal resistance junction-to-ambient ( $R_{\theta JA}$ ) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

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

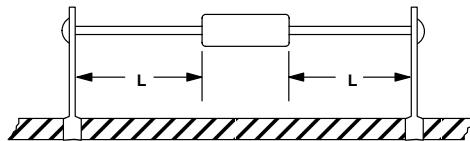
MOUNTING METHOD 1

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



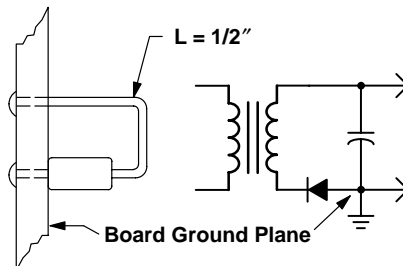
MOUNTING METHOD 2

Vector Push-In Terminals T-28



MOUNTING METHOD 3

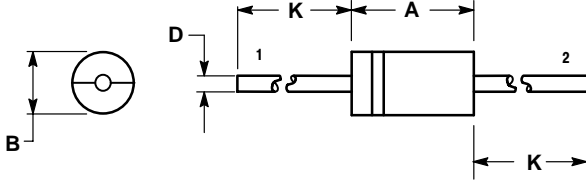
P.C. Board with 1-1/2" x 1-1/2" Copper Surface



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

## PACKAGE DIMENSIONS

### AXIAL LEAD CASE 267-05 (DO-201AD) 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)  
2. ANODE

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