

# MUR120 Series

Preferred Devices

## SWITCHMODE™ Power Rectifiers

MUR105, MUR110, MUR115, MUR120,  
MUR130, MUR140, MUR160

... 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: 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: MUR105, MUR110, MUR115, MUR120, MUR130, MUR140, MUR160

### MAXIMUM RATINGS

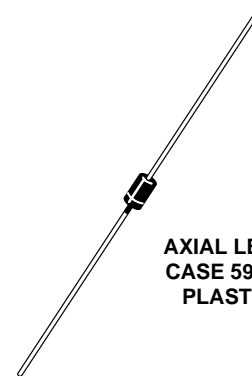
Please See the Table on the Following Page



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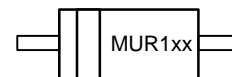
<http://onsemi.com>

ULTRAFAST RECTIFIERS  
1.0 AMPERE  
50-600 VOLTS



AXIAL LEAD  
CASE 59-10  
PLASTIC

### MARKING DIAGRAM



MUR1 = Device Code  
xx = Specific Device Code

### 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.

# MUR120 Series

## MAXIMUM RATINGS

Rating	Symbol	MUR							Unit
		105	110	115	120	130	140	160	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	50	100	150	200	300	400	600	Volts
Average Rectified Forward Current (Square Wave Mounting Method #3 Per Note 1.)	$I_{F(AV)}$	1.0 @ $T_A = 130^\circ\text{C}$				1.0 @ $T_A = 120^\circ\text{C}$			Amps
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	$I_{FSM}$	35							Amps
Operating Junction Temperature and 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 1.	$^\circ\text{C/W}$
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## ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1) ( $i_F = 1.0$ Amp, $T_J = 150^\circ\text{C}$ ) ( $i_F = 1.0$ Amp, $T_J = 25^\circ\text{C}$ )	$V_F$	0.710 0.875	1.05 1.25	Volts
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_J = 150^\circ\text{C}$ ) (Rated dc Voltage, $T_J = 25^\circ\text{C}$ )	$i_R$	50 2.0	150 5.0	$\mu\text{A}$
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, $I_{REC} = 0.25$ A)	$t_{rr}$	35 25	75 50	ns
Maximum Forward Recovery Time ( $I_F = 1.0$ A, $di/dt = 100$ A/ $\mu\text{s}$ , $I_{REC}$ to 1.0 V)	$t_{fr}$	25	50	ns

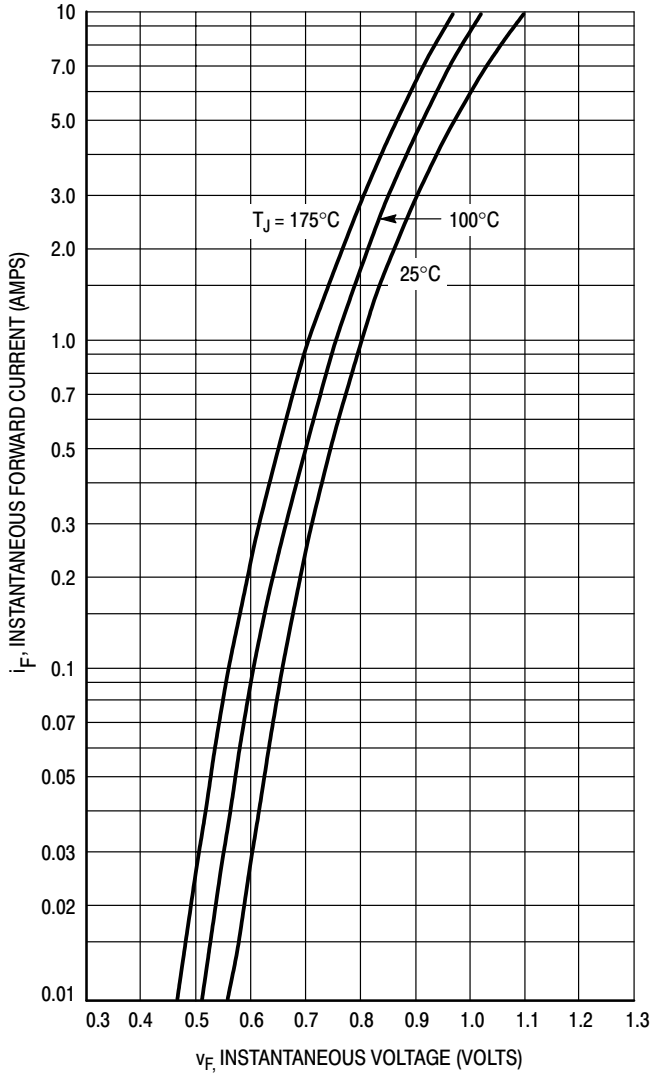
1. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

## ORDERING INFORMATION

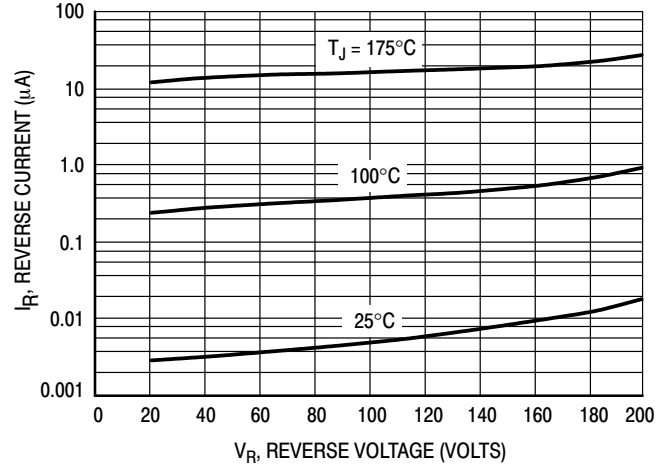
Device	Marking	Package	Shipping
MUR105	MUR105	Axial Lead	1000 Units/Bag
MUR105RL	MUR105	Axial Lead	5000 Units/Tape & Reel
MUR110	MUR110	Axial Lead	1000 Units/Bag
MUR110RL	MUR110	Axial Lead	5000 Units/Tape & Reel
MUR115	MUR115	Axial Lead	1000 Units/Bag
MUR115RL	MUR115	Axial Lead	5000 Units/Tape & Reel
MUR120	MUR120	Axial Lead	1000 Units/Bag
MUR120RL	MUR120	Axial Lead	5000 Units/Tape & Reel
MUR130	MUR130	Axial Lead	1000 Units/Bag
MUR130RL	MUR130	Axial Lead	5000 Units/Tape & Reel
MUR140	MUR140	Axial Lead	1000 Units/Bag
MUR140RL	MUR140	Axial Lead	5000 Units/Tape & Reel
MUR160	MUR160	Axial Lead	1000 Units/Bag
MUR160RL	MUR160	Axial Lead	5000 Units/Tape & Reel

# MUR120 Series

## MUR105, MUR110, MUR115, MUR120

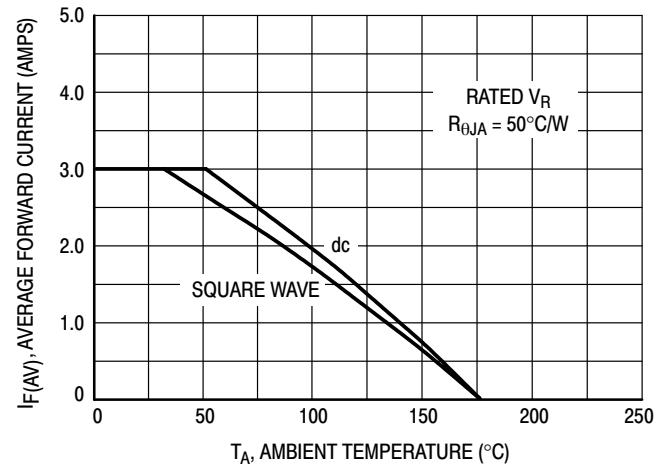


**Figure 1. Typical Forward Voltage**

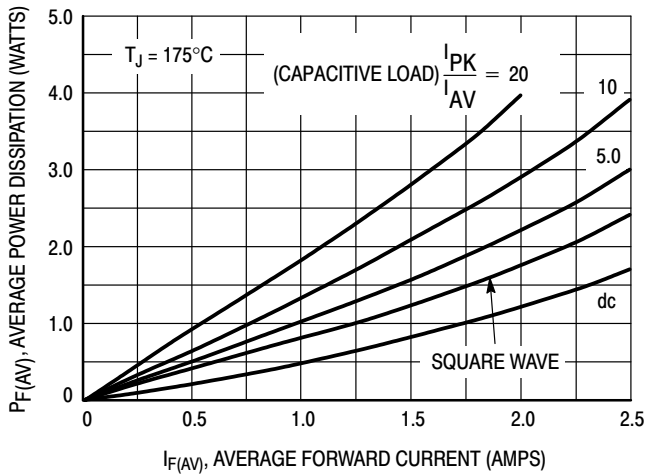


**Figure 2. Typical Reverse Current\***

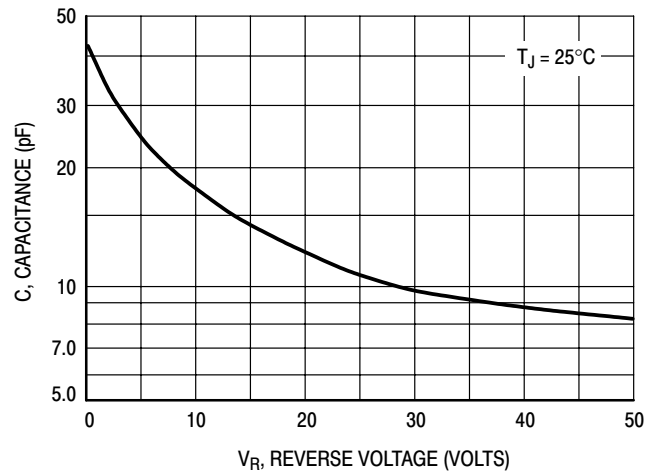
\* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .



**Figure 3. Current Derating  
(Mounting Method #3 Per Note 1)**



**Figure 4. Power Dissipation**



**Figure 5. Typical Capacitance**

# MUR120 Series

## MUR130, MUR140, MUR160

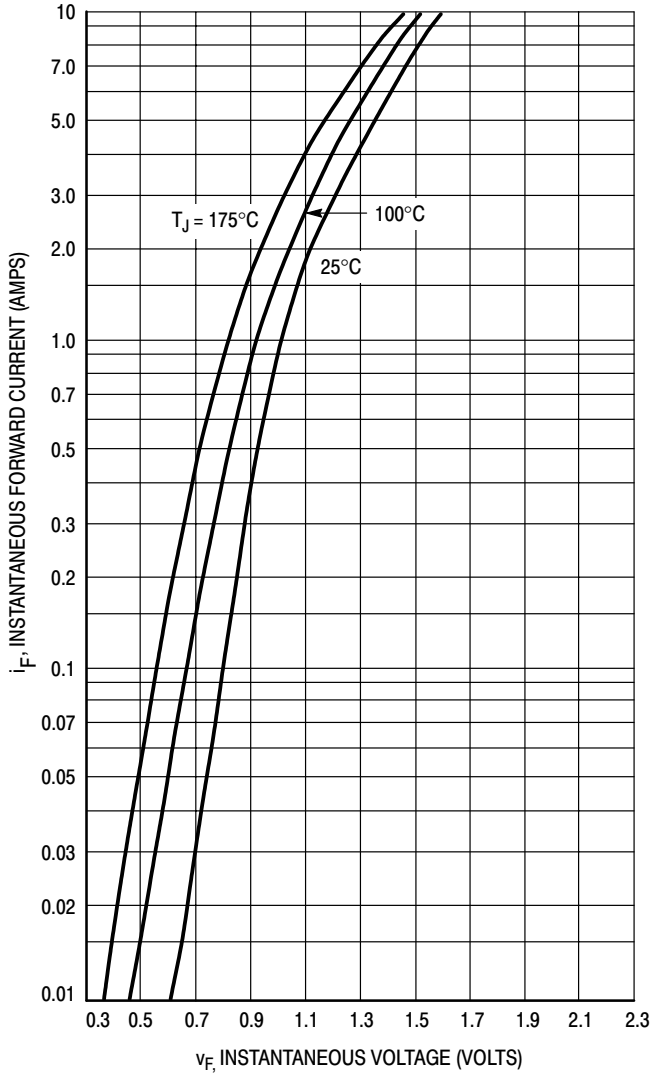


Figure 6. Typical Forward Voltage

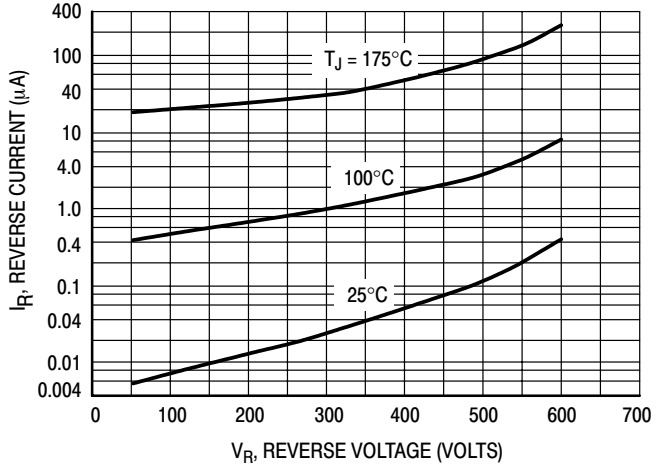


Figure 7. Typical Reverse Current\*

\* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .

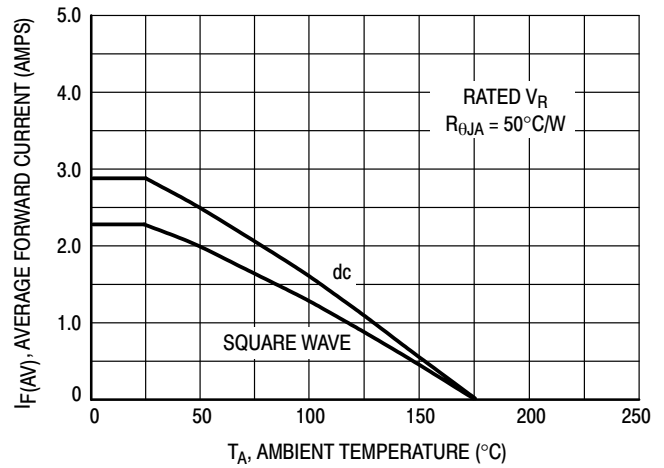


Figure 8. Current Derating  
(Mounting Method #3 Per Note 1)

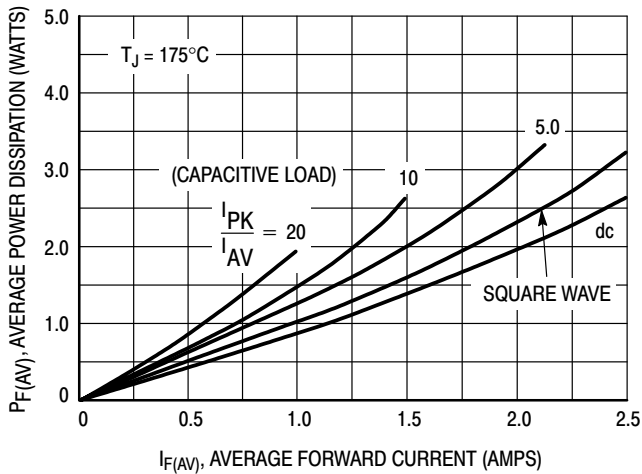


Figure 9. Power Dissipation

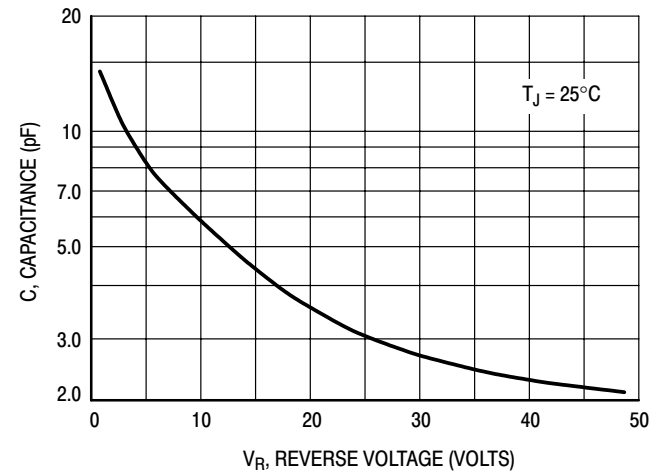


Figure 10. Typical Capacitance

# MUR120 Series

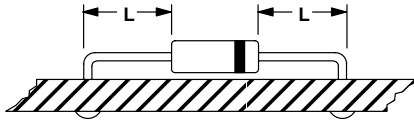
## NOTE 1. — AMBIENT MOUNTING DATA

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.

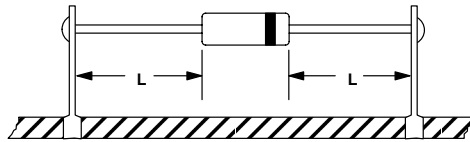
### TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

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

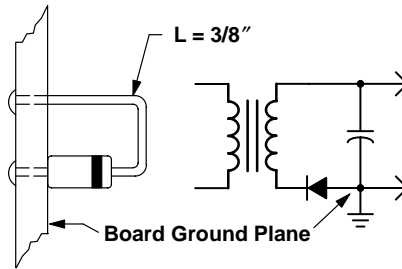


#### MOUNTING METHOD 2



Vector Pin Mounting

#### MOUNTING METHOD 3

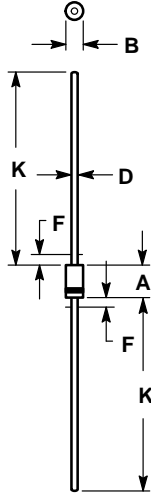


P.C. Board with  
1-1/2" X 1-1/2" Copper Surface

# MUR120 Series

## 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	---

**Notes**

# MUR120 Series

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