MUR120 Series

Preferred Devices

SWITCHMODE™ Power Rectifiers

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

The MUR120 series of SWITCHMODE power rectifiers are designed for use in switching power supplies, inverters and as free wheeling diodes.

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 V
- Pb−Free Packages are Available*

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

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

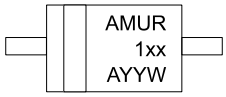
ON Semiconductor®

http://onsemi.com

ULTRAFAST RECTIFIERS
1.0 A, 50 V − 600 V

AXIAL LEAD
CASE 59−10
PLASTIC

MARKING DIAGRAM



MUR = Device Code
1xx = Specific Device Code
A = Assembly Location
YY = Year
W = Work Week

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.

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MAXIMUM RATINGS

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

Maximum Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	Note 1	°C/W

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1) (i_F = 1.0 Amp, T_J = 150°C) (i_F = 1.0 Amp, T_J = 25°C)	v_F	 0.710 0.875	 1.05 1.25	V
Maximum Instantaneous Reverse Current (Note 1) (Rated DC Voltage, T_J = 150°C) (Rated DC Voltage, T_J = 25°C)	i_R	 50 2.0	 150 5.0	μA
Maximum Reverse Recovery Time (I_F = 1.0 A, di/dt = 50 A/μs) (I_F = 0.5 A, i_R = 1.0 A, 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/μs, I_{REC} to 1.0 V)	t_{fr}	25	50	ns

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 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
MUR120RLG	MUR120	Axial Lead (Pb−Free)	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
MUR160RLG	MUR160	Axial Lead (Pb−Free)	5000 Units/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.

MUR105, MUR110, MUR115, MUR120

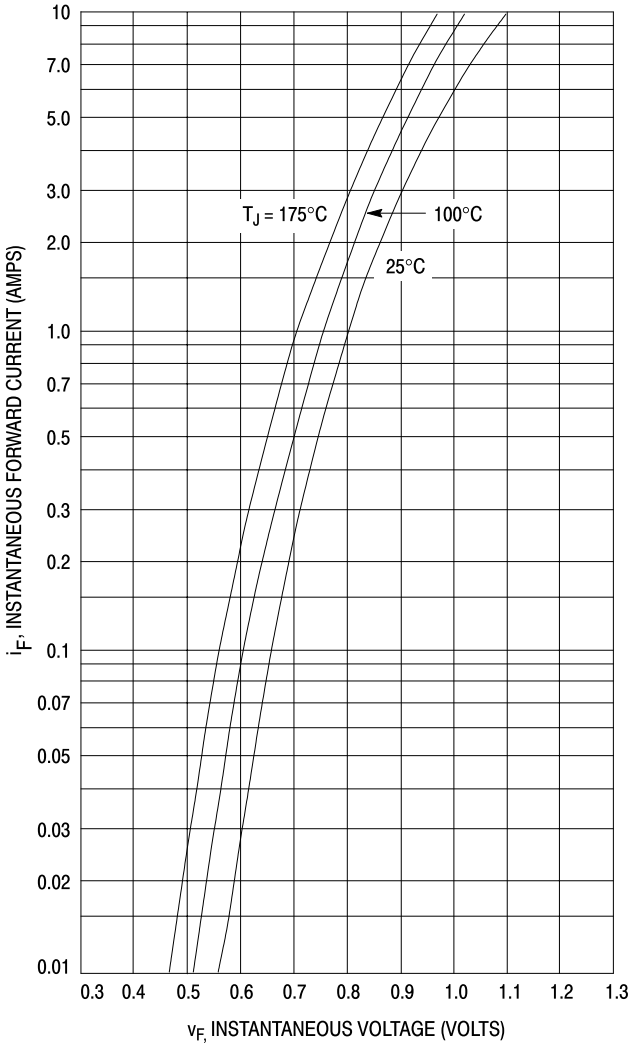


Figure 1. Typical Forward Voltage

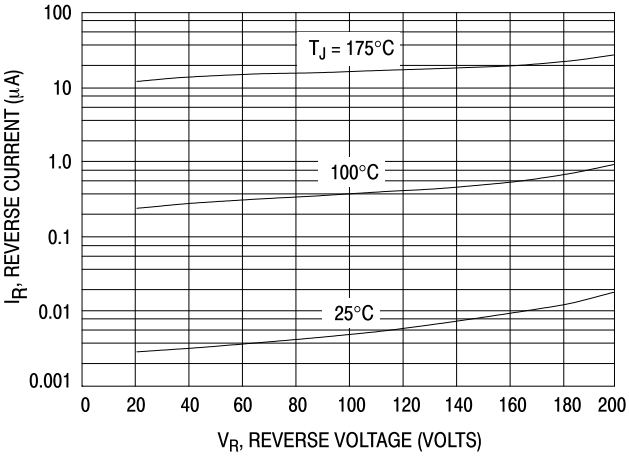


Figure 2. Typical Reverse Current*

* 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.

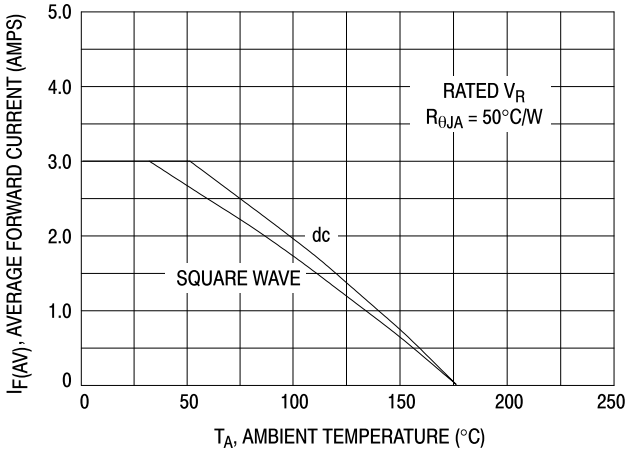


Figure 3. Current Derating (Mounting Method #3 Per Note 1)

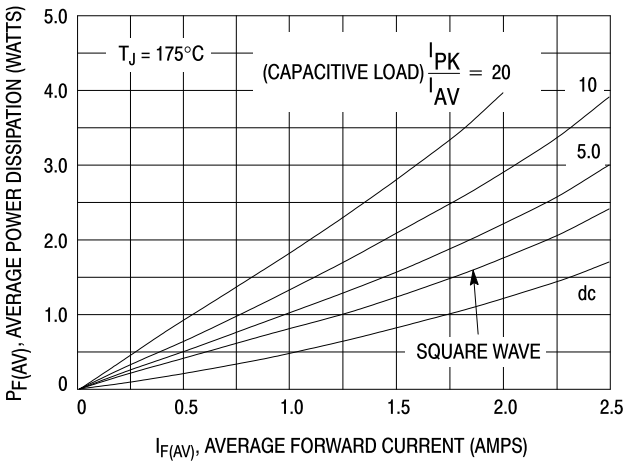


Figure 4. Power Dissipation

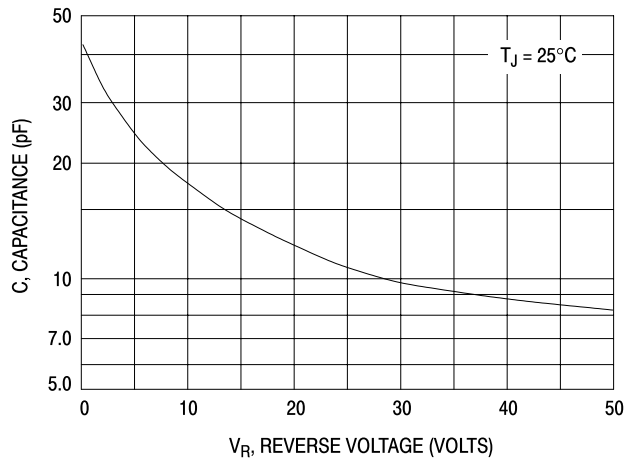


Figure 5. Typical Capacitance

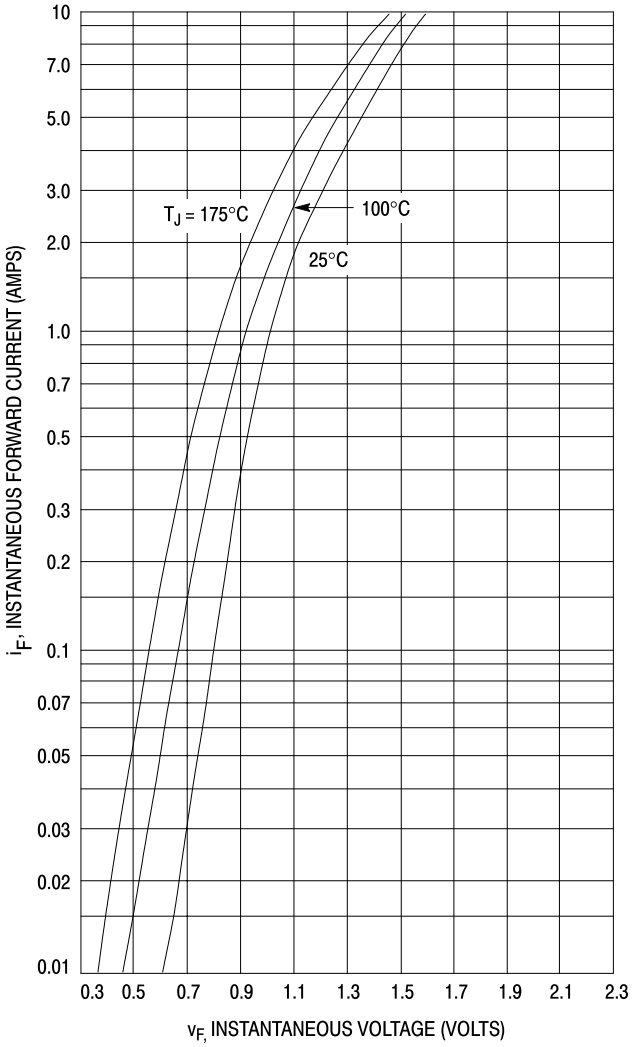


Figure 6. Typical Forward Voltage

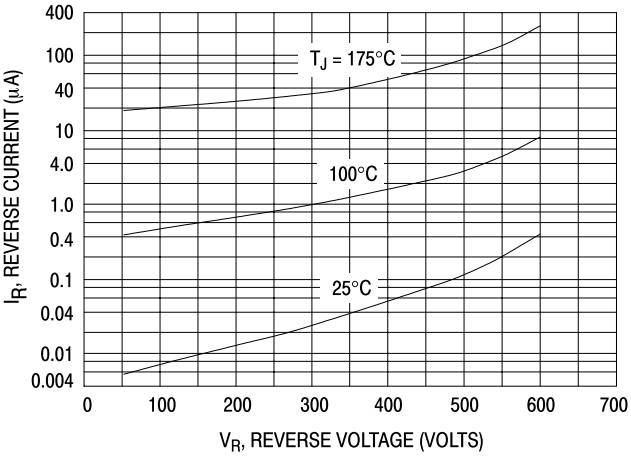


Figure 7. Typical Reverse Current*

* 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.

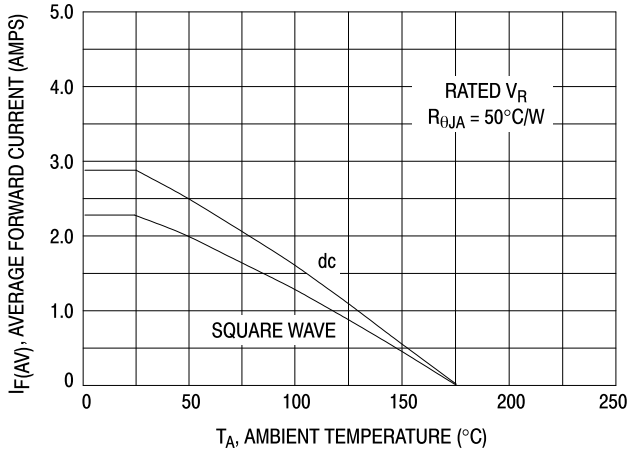


Figure 8. Current Derating (Mounting Method #3 Per Note 1)

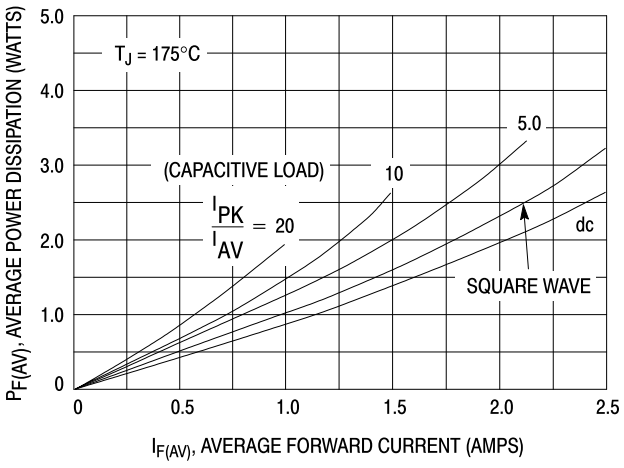


Figure 9. Power Dissipation

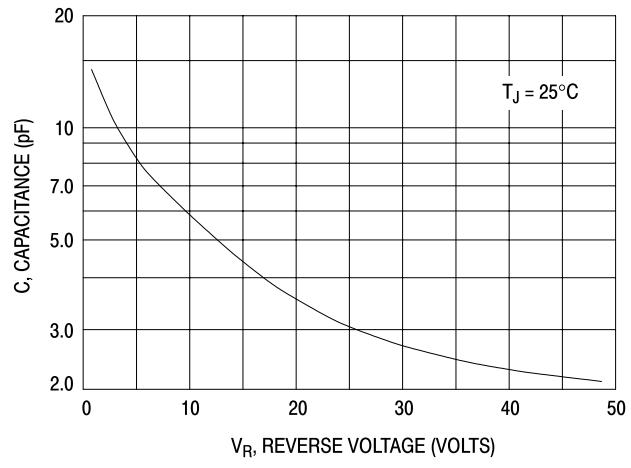


Figure 10. Typical Capacitance

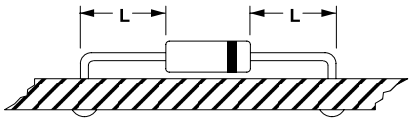
NOTE 1. — AMBIENT MOUNTING DATA

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.

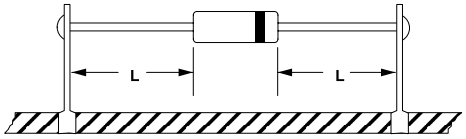
TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

Mounting Method		Lead Length, L			Units
		1/8	1/4	1/2	
1	$R_{\theta JA}$	52	65	72	°C/W
2		67	80	87	°C/W
3		50			°C/W

MOUNTING METHOD 1

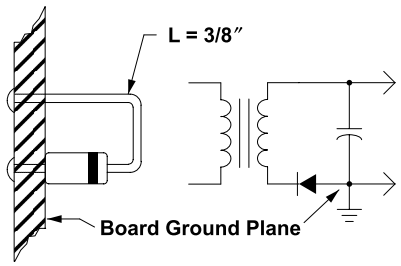


MOUNTING METHOD 2



Vector Pin Mounting

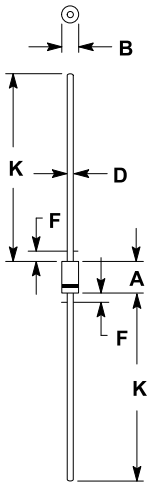
MOUNTING METHOD 3



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

PACKAGE DIMENSIONS

AXIAL LEAD
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.

	INCHES		MILLIMETERS	
DIM	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	---

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