

# MUR450PF

Preferred Device

## SWITCHMODE™ Power Rectifier

These state-of-the-art devices are designed for power factor correction in discontinuous and critical conduction mode.

### Features

- 520 V Rating Meets 80% Derating Requirements of Major OEMs
- Low Forward Voltage Drop
- Low Leakage
- Ultrafast 95 Nanosecond Recovery Time
- Reduces Forward Conduction Loss
- These are Pb-Free Devices\*

### Applications

- DCM PFC Designs
- Switching Power Supplies
- Power Inverters

### Mechanical Characteristics:

- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 1.1 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	520	V
Average Rectified Forward Current (Rated $V_R$ , $T_C = 65^\circ\text{C}$ )	$I_{F(AV)}$	4.0	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, 60 Hz)	$I_{FSM}$	85	A
Operating Junction Temperature Range	$T_J$	-65 to +175	°C
Storage Temperature Range	$T_{stg}$	-65 to +175	°C
ESD Ratings: Machine Model = C Human Body Model = 3B	ESD	> 400 > 8000	V

### THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	See Note 2	°C/W

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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



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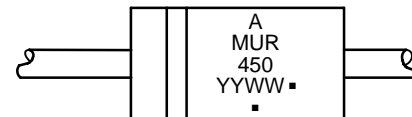
<http://onsemi.com>

ULTRAFAST RECTIFIER  
4.0 AMPERES, 520 VOLTS



AXIAL LEAD  
CASE 267  
STYLE 1

### MARKING DIAGRAM



A = Assembly Location  
MUR450 = Device Number  
YY = Year  
WW = Work Week  
▪ = Pb-Free Package  
(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping†
MUR450PF	Axial Lead**	500 Units/Bag
MUR450PFG	Axial Lead**	500 Units/Bag
MUR450PFRL	Axial Lead**	1500/Tape & Reel
MUR450PFRLG	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 Specification Brochure, BRD8011/D.

\*\*This package is inherently Pb-Free.

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

# MUR450PF

## ELECTRICAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage Drop (Note 1) ( $I_F = 4$ Amps, $T_J = 25^\circ\text{C}$ ) ( $I_F = 4$ Amps, $T_J = 150^\circ\text{C}$ )	$V_F$	1.15 0.98	V
Maximum Instantaneous Reverse Current (Note 1) ( $V_R = 520$ V, $T_J = 25^\circ\text{C}$ ) ( $V_R = 520$ V, $T_J = 150^\circ\text{C}$ )	$I_R$	5.0 400	$\mu\text{A}$
Maximum Reverse Recovery Time ( $I_F = 1$ Amp, $di/dt = 50$ Amps/ $\mu\text{s}$ , $V_R = 30$ V, $T_J = 25^\circ\text{C}$ )	$t_{rr}$	95	ns

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

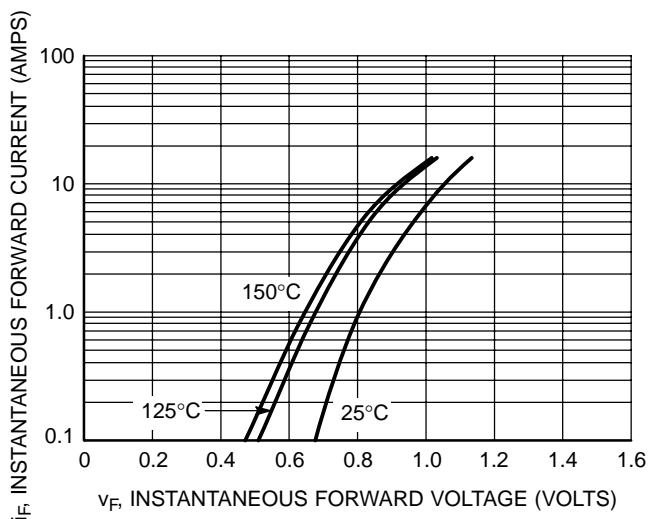


Figure 1. Typical Forward Voltage

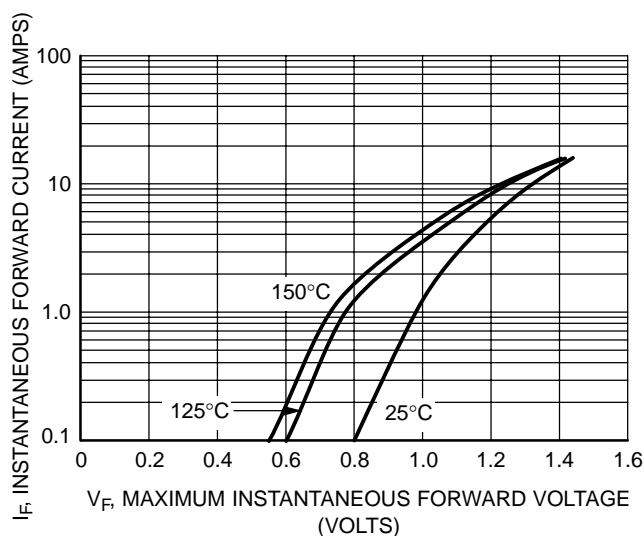


Figure 2. Maximum Forward Voltage

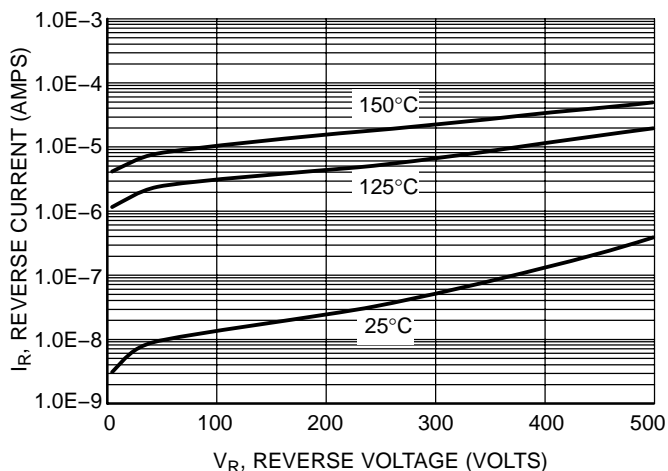


Figure 3. Typical Reverse Current

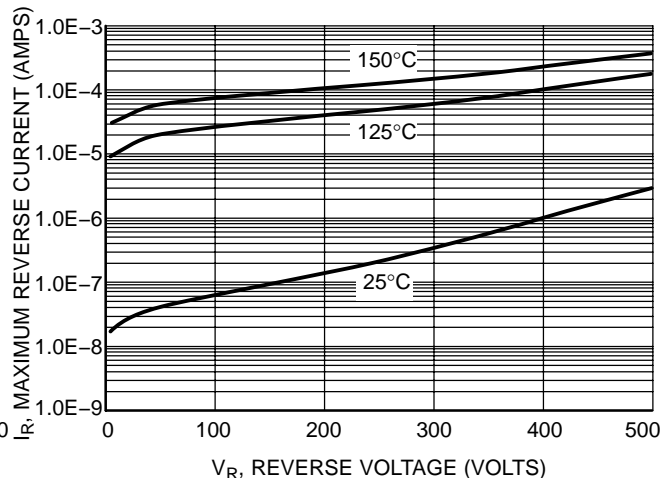


Figure 4. Maximum Reverse Current

# MUR450PF

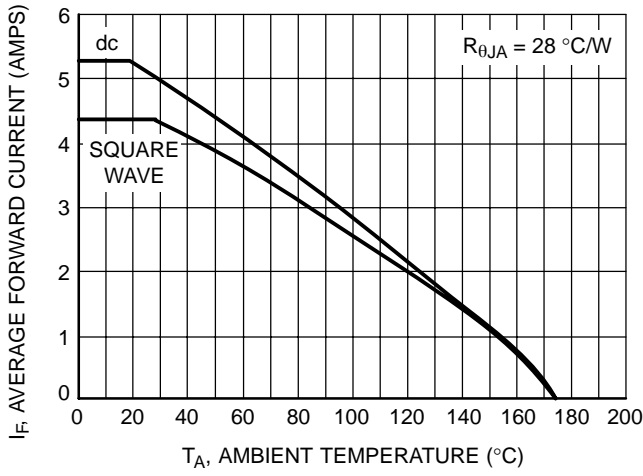


Figure 5. Current Derating

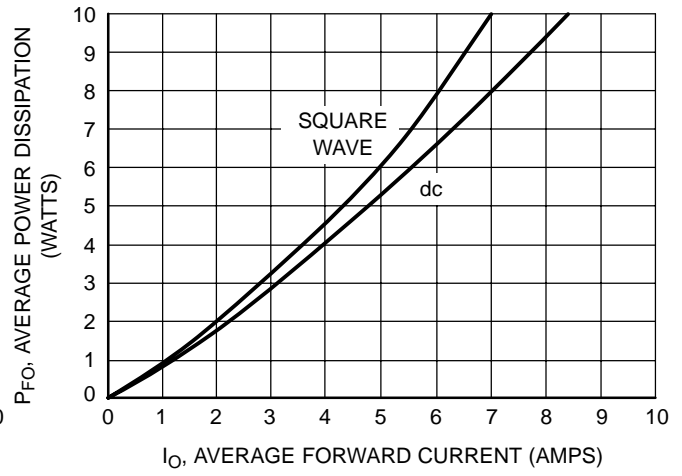


Figure 6. Forward Power Dissipation

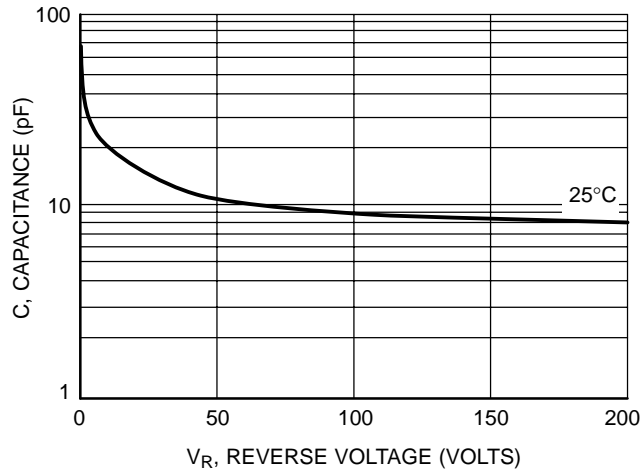


Figure 7. Capacitance

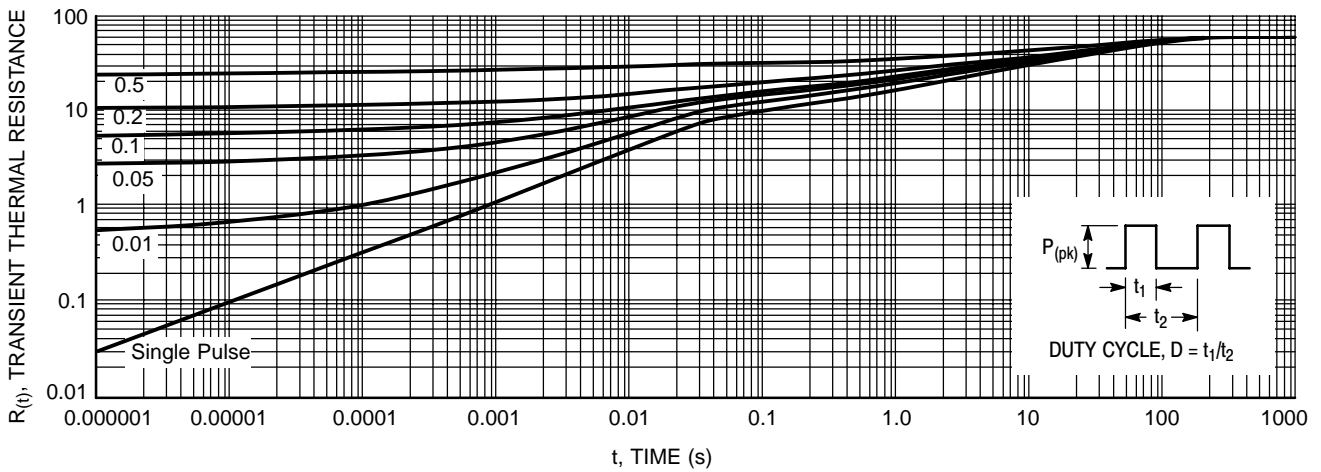


Figure 8. Thermal Response

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## NOTE 2 — AMBIENT MOUNTING DATA

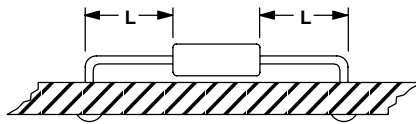
Data shown for thermal resistance, junction-to-ambient ( $R_{\theta JA}$ ) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

### 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	$^{\circ}\text{C/W}$
2		58	59	61	63	$^{\circ}\text{C/W}$
3		28				$^{\circ}\text{C/W}$

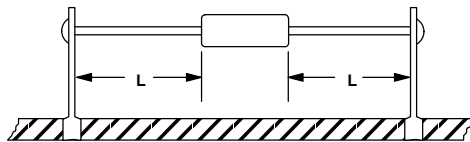
#### MOUNTING METHOD 1

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



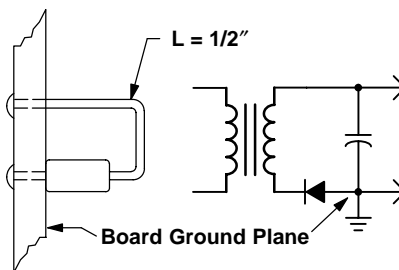
#### MOUNTING METHOD 2

Vector Push-In Terminals T-28



#### MOUNTING METHOD 3

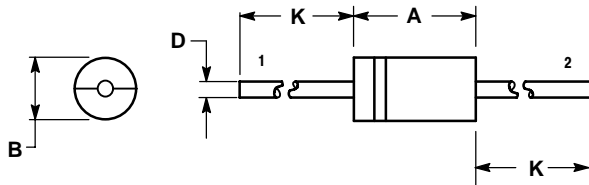
P.C. Board with 1-1/2" x 1-1/2" Copper Surface



# MUR450PF

## PACKAGE DIMENSIONS

AXIAL LEAD  
CASE 267-05  
(DO-201AD)  
ISSUE G



### NOTES:


1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

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

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**MUR450PF/D**