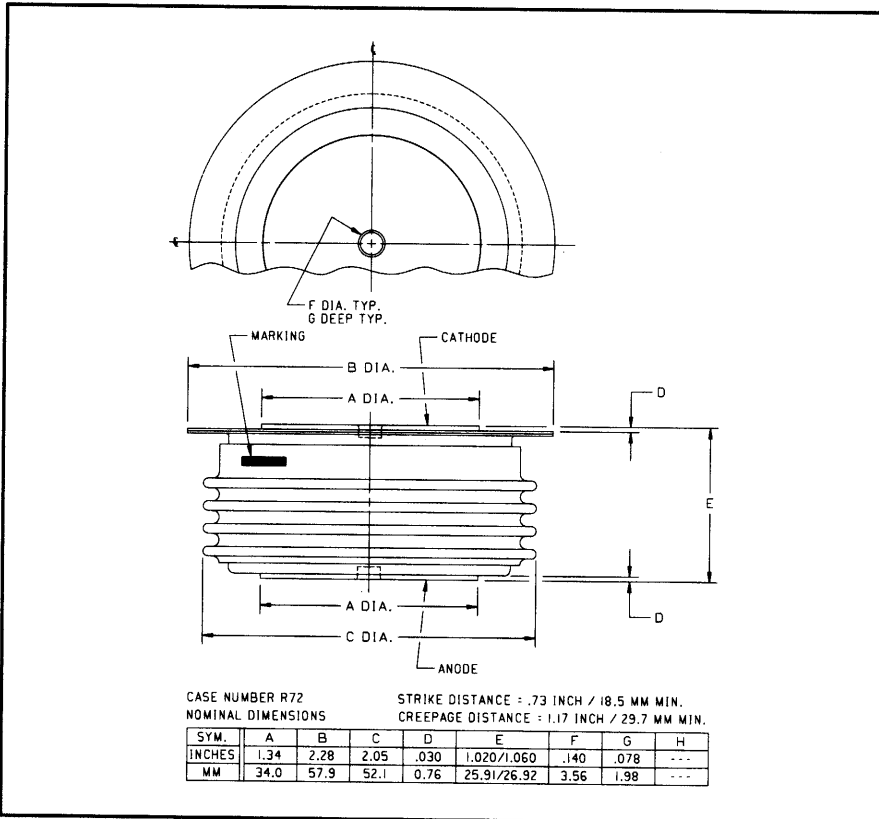
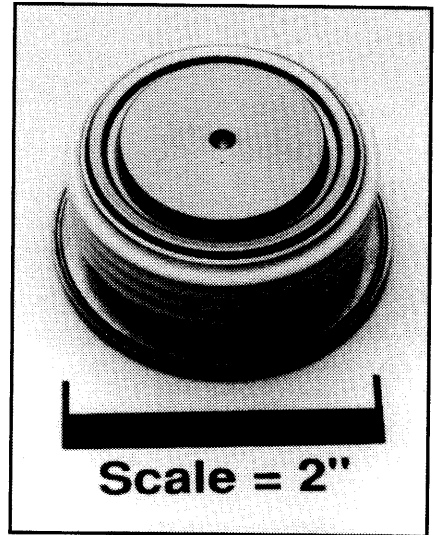


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272  
 Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

**General Purpose Rectifier**  
 1000 Amperes Average  
 1500 Volts



A430 (Outline Drawing)



A430 General Purpose Rectifier  
 1000 Amperes Average, 1500 Volts

### Description:

Powerex General Purpose Rectifiers are designed for high blocking voltage capability with low forward voltage to minimize conduction losses. These hermetic Pow-R-Disc devices can be mounted using commercially available clamps and heatsinks.

### Features:

- Low Forward Voltage
- Low Thermal Impedance
- Hermetic Packaging
- Excellent Surge and  $I^2t$  Ratings

### Applications:

- Power Supplies
- Motor Control
- Free Wheeling Diodes
- Battery Chargers
- Resistance Welding

### Ordering Information:

Select the complete five or six digit part number you desire from the table, i.e. A430PE is a 1500 Volt, 1000 Ampere General Purpose Rectifier.

Type	Voltage		Current $I_T(av)$
	$V_{RRM}$	Code	
A430	600	M	1000
	800	N	
	1000	P	
	1200	PB	
	1400	PD	
	1500	PE	



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**A430**  
**General Purpose Rectifier**  
 1000 Amperes Average, 1500 Volts

### Absolute Maximum Ratings

Characteristics	Symbol	A430	Units
Non-repetitive Transient Peak Reverse Voltage	$V_{RSM}$	$V_{RRM} + 100V$	Volts
RMS Forward Current, $T_C = 124^\circ C$	$I_{F(rms)}$	1570	Amperes
Average Current 180° Sine Wave, $T_C = 124^\circ C$	$I_{F(av)}$	1000	Amperes
RMS Forward Current, $T_C = 55^\circ C$	$I_{F(rms)}$	2160	Amperes
Average Current 180° Sine Wave, $T_C = 55^\circ C$	$I_{F(av)}$	1375	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 60Hz	$I_{fsm}$	10000	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 50Hz	$I_{fsm}$	9125	Amperes
$I^2t$ (for Fusing) for One Cycle, 60Hz	$I^2t$	415,000	$A^2sec$
$I^2t$ for $t_p \geq 1.5$ msec (Non-repetitive)	$I^2t$	200,000	$A^2sec$
Operating Temperature	$T_j$	-40 to +200°C	°C
Storage Temperature	$T_{stg}$	-40 to +200°C	°C
Approximate Weight		8	oz.
		227	g
Mounting Force		1800 to 2200	lb.
		8 to 9.8	kN



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A430  
 General Purpose Rectifier  
 1000 Amperes Average, 1500 Volts

### Electrical Characteristics, $T_j = 25^\circ\text{C}$ Unless Otherwise Specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Leakage Current	$I_{RRM}$	$T_j = 200^\circ\text{C}$ , $V_R = V_{RRM}$			50	mA
Forward Voltage Drop	$V_{FM}$	$T_C = 113^\circ\text{C}$ , $I_{FM} = 3140\text{A Peak}$ Duty Cycle < 0.1%			1.42	Volts
Threshold Voltage, Low-level	$V_{(TO)1}$	$T_j = 200^\circ\text{C}$ , $I = 15\%$ , $I_{T(av)}$ to $\pi I_{T(av)}$			0.62038	Volts
Slope Resistance, Low-level	$r_{T1}$				0.2540	$\text{m}\Omega$
Threshold Voltage, High-level	$V_{(TO)2}$	$T_j = 200^\circ\text{C}$ , $I = \pi I_{T(av)}$ to $I_{TSM}$			0.91468	Volts
Slope Resistance, High-level	$r_{T2}$				0.1641	$\text{m}\Omega$
$V_{TM}$ Coefficients, Low-level		$T_j = 200^\circ\text{C}$ , $I = 15\%$ $I_{T(av)}$ to $\pi I_{T(av)}$				
					$A_1 = 0.84432$	
					$B_1 = -0.11705$	
					$C_1 = -2.953\text{E-}05$	
					$D_1 = 0.02886$	
$V_{TM}$ Coefficients, High-level		$T_j = 200^\circ\text{C}$ , $I = \pi I_{T(av)}$ to $I_{TSM}$				
					$A_2 = 3.7691$	
					$B_2 = -0.57841$	
					$C_2 = -5.094\text{E-}06$	
					$D_2 = 0.04152$	
Typical Reverse Recovery Time	$t_{rr}$	$T_C = 25^\circ\text{C}$ , $I_{FM} = 1500\text{A}$ , $di_F/dt = 25\text{A}/\mu\text{sec}$ , $t_p = 190\mu\text{sec}$		10		$\mu\text{sec}$

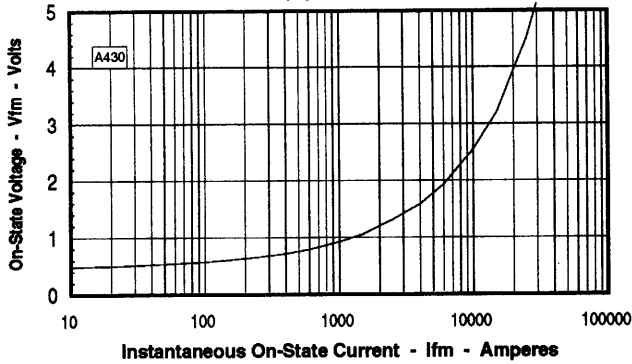
### Thermal Characteristics

Maximum Thermal Resistance, Double Sided Cooling

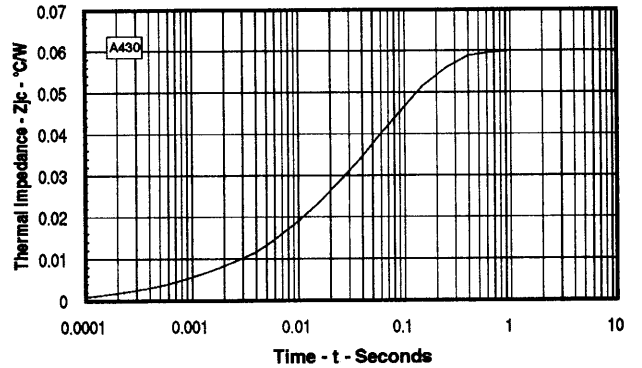
Junction-to-Case	$R_{\theta(j-c)}$	0.06	$^\circ\text{C/W}$
Case-to-Sink	$R_{\theta(c-s)}$	0.02	$^\circ\text{C/W}$

**A430**  
**General Purpose Rectifier**  
 1000 Amperes Average, 1500 Volts

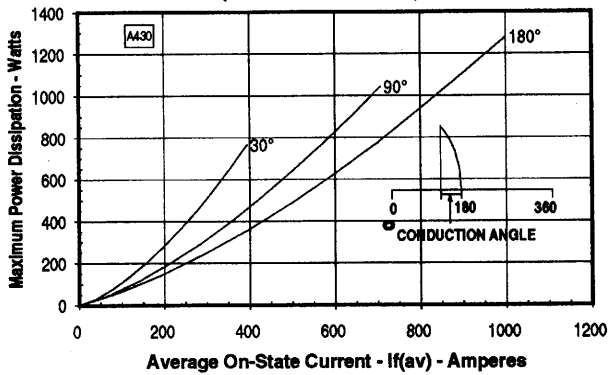
**Maximum On-State Forward Voltage Drop**  
 (  $T_J = 200^\circ\text{C}$  )



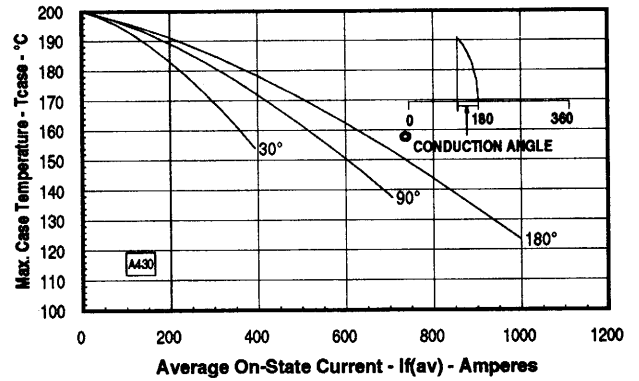
**Maximum Transient Thermal Impedance**  
 (Junction to Case)



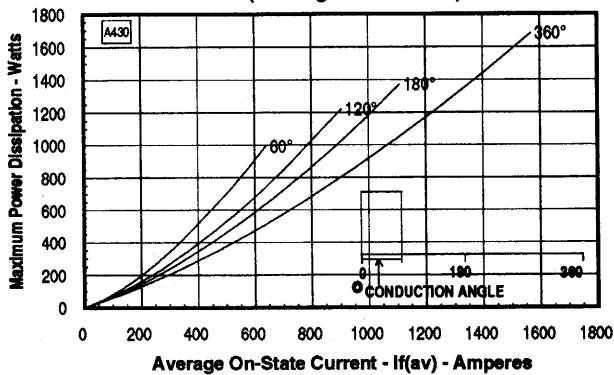
**Maximum On-State Power Dissipation**  
 (Sinusoidal Waveform)



**Maximum Allowable Case Temperature**  
 (Sinusoidal Waveform)



**Maximum On-State Power Dissipation**  
 (Rectangular Waveform)



**Maximum Allowable Case Temperature**  
 (Rectangular Waveform)

