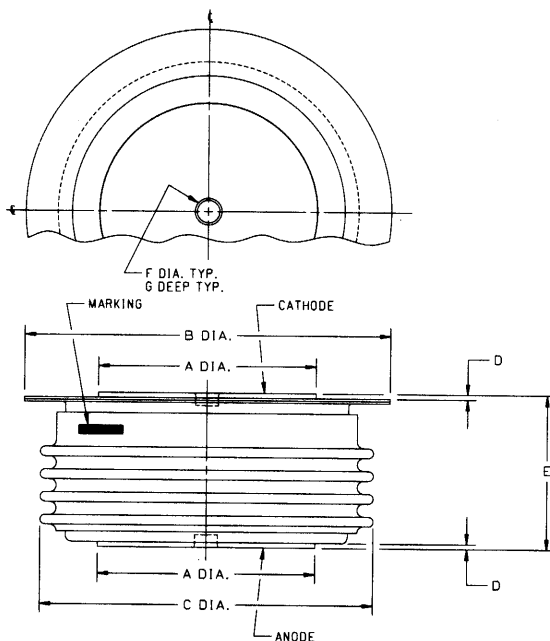


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

General Purpose Rectifier

1000 Amperes Average
1500 Volts



CASE NUMBER R72
NOMINAL DIMENSIONS

SYM.	A	B	C	D	E	F	G	H
INCHES	1.34	2.28	2.05	.030	1.020/1.060	.140	.078	---
MM	34.0	57.9	52.1	0.76	25.91/26.92	3.56	1.98	---

STRIKE DISTANCE : .73 INCH / 18.5 MM MIN.
CREEPAGE DISTANCE : 1.17 INCH / 29.7 MM MIN.

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 V_{RRM}	Code	Current $I_{T(av)}$
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		μsec

Thermal Characteristics

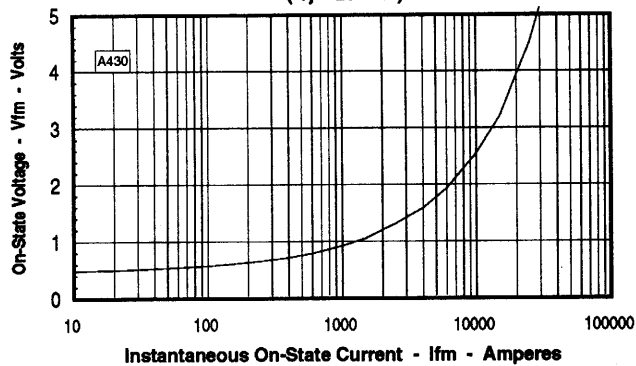
Maximum Thermal Resistance, Double Sided Cooling

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

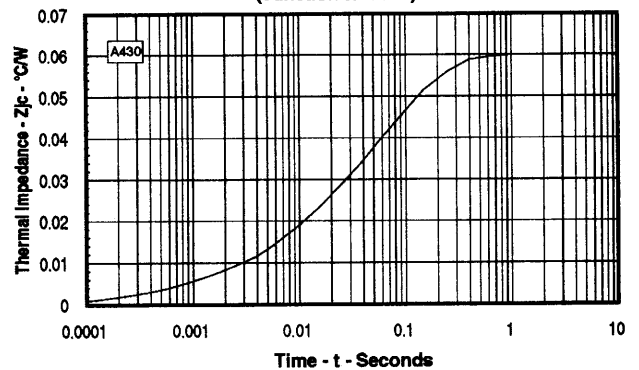
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A430
General Purpose Rectifier
 1000 Amperes Average, 1500 Volts

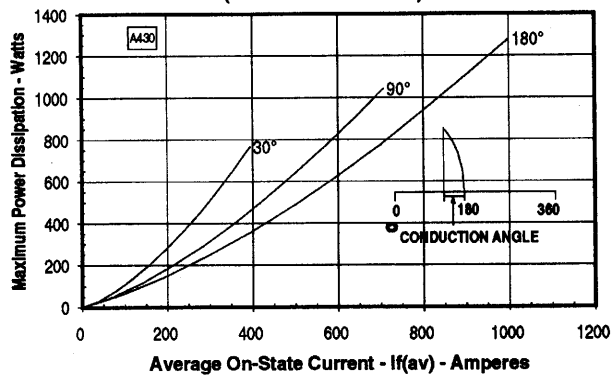
Maximum On-State Forward Voltage Drop
 ($T_J = 200^\circ\text{C}$)



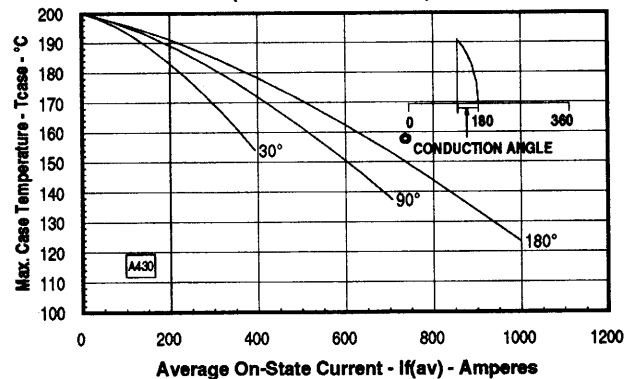
Maximum Transient Thermal Impedance
 (Junction to Case)



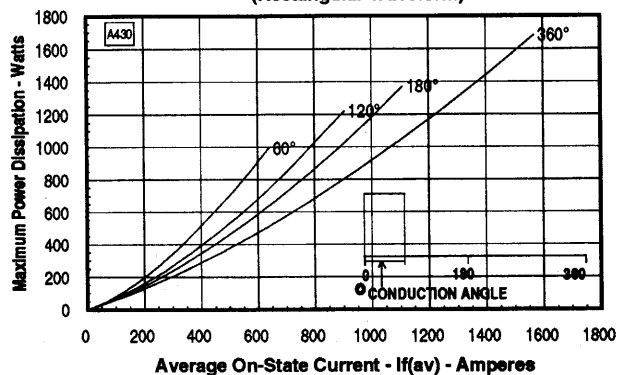
Maximum On-State Power Dissipation
 (Sinusoidal Waveform)



Maximum Allowable Case Temperature
 (Sinusoidal Waveform)



Maximum On-State Power Dissipation
 (Rectangular Waveform)



Maximum Allowable Case Temperature
 (Rectangular Waveform)

