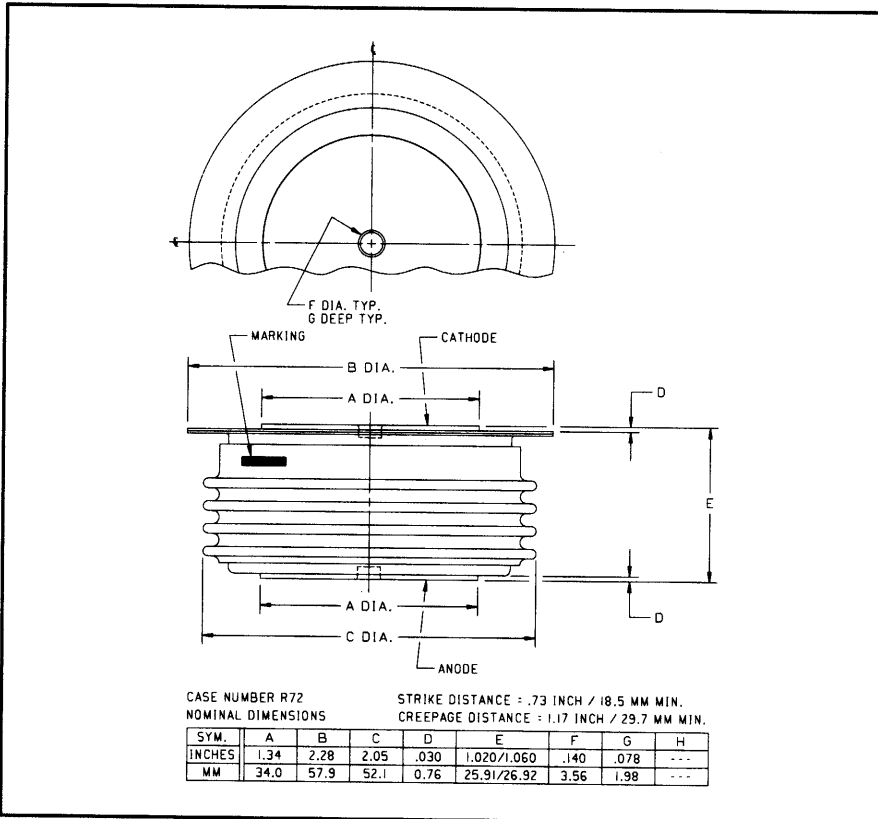
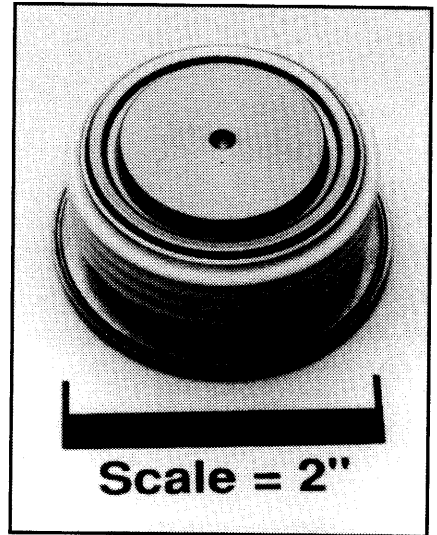


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
 Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

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 | | μsec |

Thermal Characteristics

Maximum Thermal Resistance, Double Sided Cooling

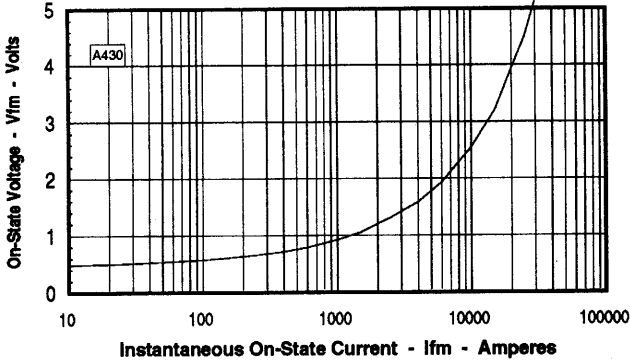
| | | | |
|------------------|-------------------|------|--------------------|
| Junction-to-Case | $R_{\theta(j-c)}$ | 0.06 | $^\circ\text{C/W}$ |
| Case-to-Sink | $R_{\theta(c-s)}$ | 0.02 | $^\circ\text{C/W}$ |



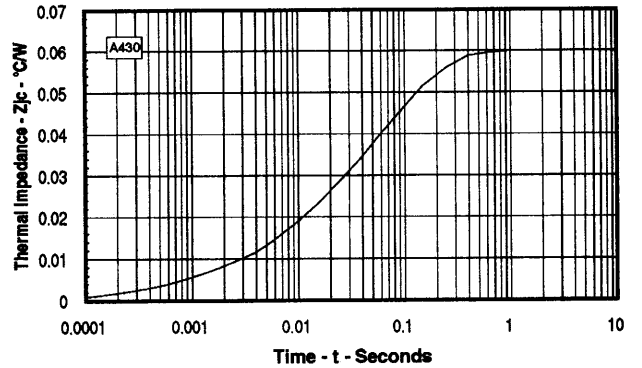
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A430
General Purpose Rectifier
 1000 Amperes Average, 1500 Volts

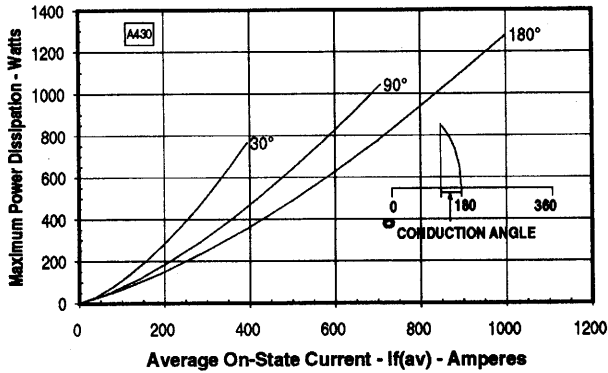
Maximum On-State Forward Voltage Drop
 ($T_J = 200^\circ\text{C}$)



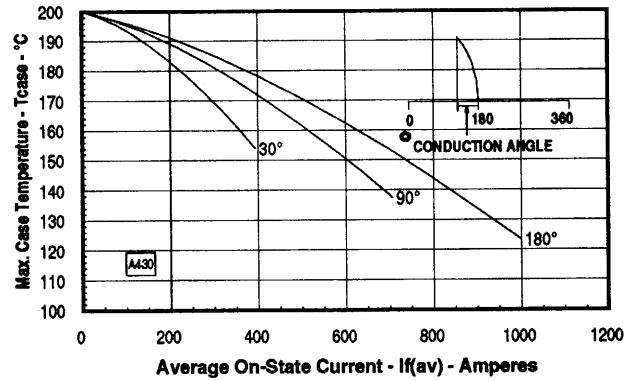
Maximum Transient Thermal Impedance
 (Junction to Case)



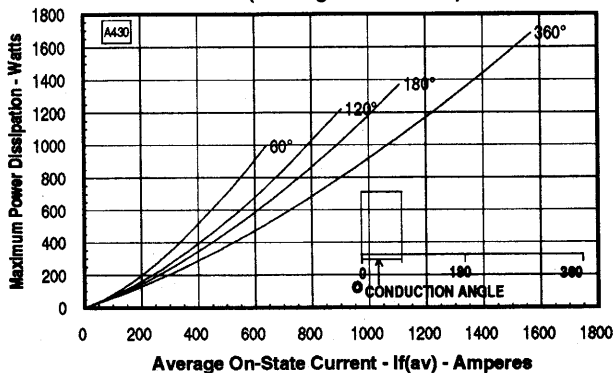
Maximum On-State Power Dissipation
 (Sinusoidal Waveform)



Maximum Allowable Case Temperature
 (Sinusoidal Waveform)



Maximum On-State Power Dissipation
 (Rectangular Waveform)



Maximum Allowable Case Temperature
 (Rectangular Waveform)

