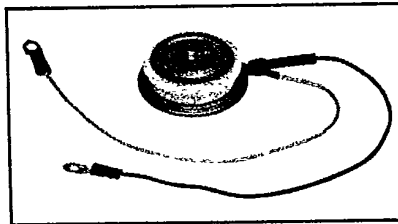
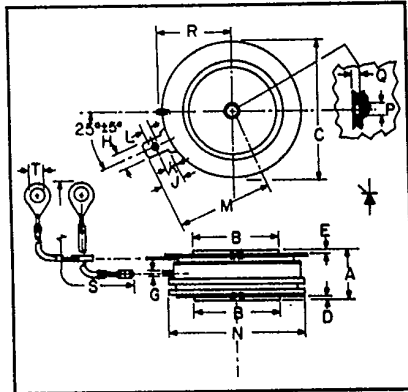




C430__X550

Powerex, Inc. Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272
 Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

Phase Control SCR
800 Amperes Avg
100-400 Volts



C430__X550
Phase Control SCR
 800 Amperes/100-400 Volts

C430__X550
Outline Drawing

| Dimensions | Inches | | Millimeters | |
|------------|--------|--------|-------------|--------|
| | Min. | Max. | Min. | Max. |
| A | .560 | .605 | 14.22 | 15.37 |
| B | .985 | .995 | 25.01 | 25.27 |
| C | 1.600 | 1.650 | 40.64 | 41.91 |
| D | .030 | — | .76 | — |
| E | .040 | — | 1.01 | — |
| G | .057 | .059 | 1.44 | 1.50 |
| H | .186 | .191 | 4.72 | 4.85 |
| J | .245 | .255 | 6.22 | 6.48 |
| K | .115 | .130 | 2.92 | 3.30 |
| L | .064 | .070 | 1.62 | 1.78 |
| M | — | 1.120 | — | 28.45 |
| N | — | 1.585 | — | 40.26 |
| P | .135 | .145 | 3.42 | 3.68 |
| Q | .070 | .084 | 1.77 | 2.13 |
| R | — | .875 | — | 22.23 |
| S | 12.219 | 12.343 | 310.36 | 313.51 |
| T | .137 | .153 | 3.47 | 3.89 |

Description

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, Press-Pak (Pow-R-Disc) devices employing the field-proven amplifying (di/namic) gate.

Features:

- Low On-State Voltage
- High di/dt
- High dv/dt
- Hermetic Packaging
- Excellent Surge and I²t Ratings
- High Temperature Operation

Applications:

- Power Supplies
- Battery Chargers
- Motor Control
- Light Dimmers
- VAR Generators

Ordering Information

Example: Select the complete nine digit part number you desire from the table - i.e. C430DX550 is a 400 Volt, 800 Ampere Phase Control SCR.

| Type | Voltage | | Current |
|------------|--------------------------------------|------|---------|
| | V _{ORM} V _{RRM} | Code | |
| C430__X550 | 100 | A | 800 |
| | 200 | B | |
| | 300 | C | |
| | 400 | D | |



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C430_X550

Phase Control SCR

800 Amperes Avg/100-400 Volts

Absolute Maximum Ratings

| | Symbol | C430_X550 | Units |
|---|--------------|-------------|--------------------|
| RMS On-State Current | $I_{T(RMS)}$ | 1250 | Amperes |
| Average On-State Current | $I_{T(av)}$ | 800 | Amperes |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz) | I_{TSM} | 9000 | Amperes |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) | I_{TSM} | 8200 | Amperes |
| Critical Rate-of-Rise of On-State Current (Non-Repetitive) | di/dt | 400 | Amperes/ μ s |
| Critical Rate-of-Rise of On-State Current (Repetitive) | di/dt | 150 | Amperes/ μ s |
| I^2t (for Fusing), One Cycle at 60Hz | I^2t | 335,000 | A ² sec |
| Peak Gate Power Dissipation | P_{GM} | 200 | Watts |
| Average Gate Power Dissipation | $P_{G(av)}$ | 5 | Watts |
| Storage Temperature | T_{STG} | -40 to 150 | °C |
| Operating Temperature | T_J | -40 to 150 | °C |
| Mounting Force [ⓐ] | | 800 to 2200 | lb. |
| Mounting Force [ⓐ] | | 3.6 to 11.1 | kN |

[ⓐ] Consult recommended mounting procedures.



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C430_X550

Phase Control SCR

800 Amperes Avg/100-400 Volts

Electrical and Thermal Characteristics

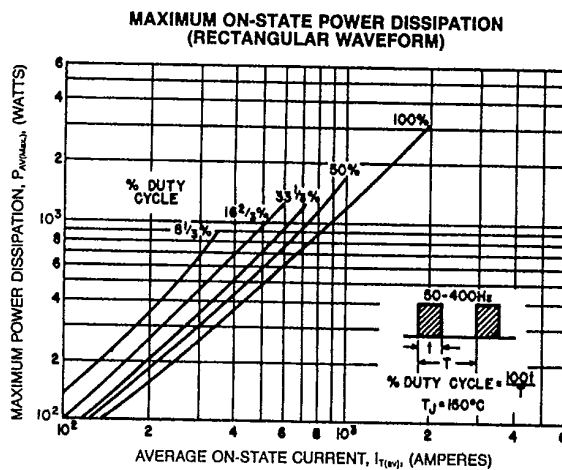
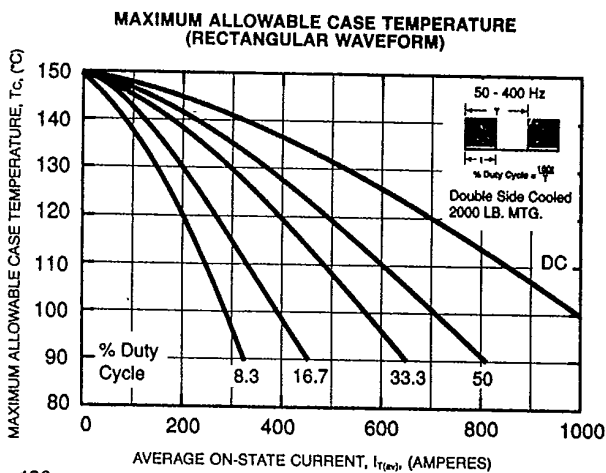
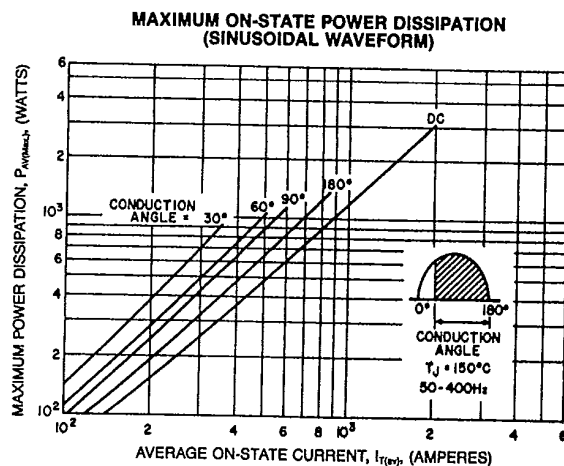
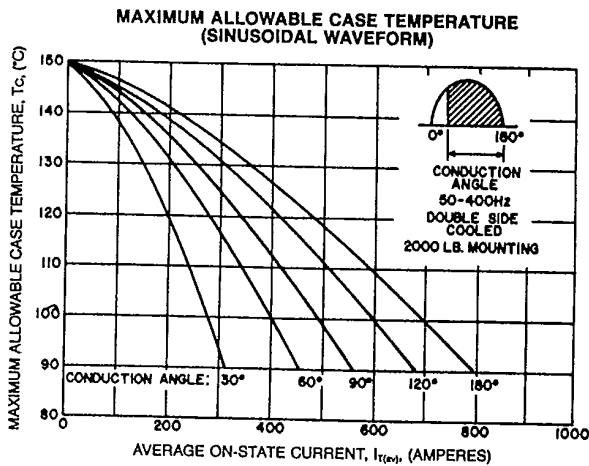
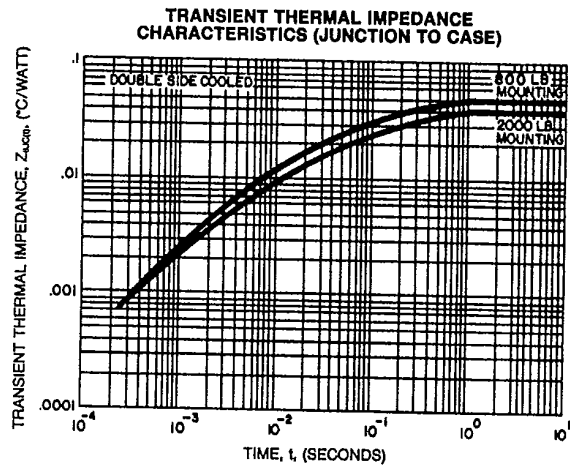
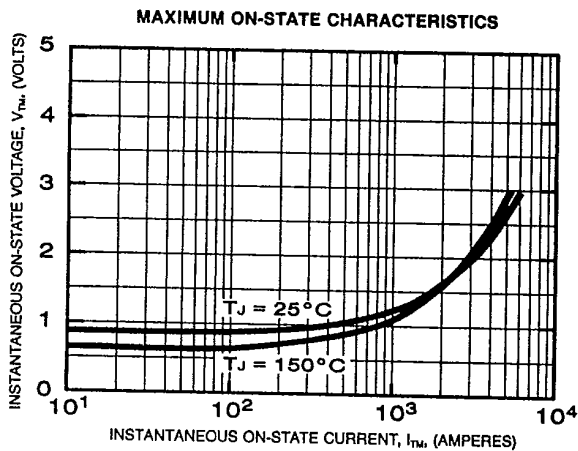
| Characteristics | Symbol | Test Conditions | C430_X550 | Units |
|--|-----------------|--|-----------|---------|
| Voltage—Blocking State Maximums | | | | |
| Forward Leakage, Peak | I_{DRM} | $T_J = 25^\circ\text{C}, V = V_{DRM}$ | 50 | mA |
| Reverse Leakage, Peak | I_{RRM} | $T_J = 25^\circ\text{C}, V = V_{RRM}$ | 50 | mA |
| Current—Conducting State Maximums | | | | |
| Peak On-State Voltage | V_{TM} | $I_{TM} = 3000\text{A}, T_C = 25^\circ\text{C}$ | 1.9 | Volts |
| Switching | | | | |
| Typical Turn-Off Time | t_q | $T_J = 150^\circ\text{C}; I_{TM} = 500\text{A}, V_R = 50\text{V Min};$ V_{DRM} (Reapplied); Reapplied $dv/dt = 20\text{V}/\mu\text{sec}$ (linear); Commutation $di/dt = 25\text{A}/\mu\text{sec};$ Repetition Rate = 1pps, Gate Bias during Turn-Off interval = 0V, 100Ω | 125 | μsec |
| Typical Delay Time | t_d | $T_C = 25^\circ\text{C}, I_T = 50\text{A dc},$ Gate Supply: 20V, 20Ω, 0.1μsec Rise Time | 0.7 | μsec |
| Min. Critical dv/dt exponential to V_{DRM} | dv/dt | $T_J = 150^\circ\text{C}, V_{DRM}$ rated, gate open | 100 | V/μsec |
| Thermal and Mechanical | | | | |
| Maximum Thermal Resistance, [ⓐ] double sided cooling | | | | |
| Junction to Case (2000 lb. force) | $R_{\theta JC}$ | | .04 | °C/Watt |
| Case to Sink, Lubricated (2000 lb. force) | $R_{\theta CS}$ | | .02 | °C/Watt |
| Gate—Maximum Parameters | | | | |
| Gate Current to Trigger | I_{GT} | $V_D = 6\text{V}, T_J = 150^\circ\text{C}, R_L = 3\text{ ohms}$ | 100 | mA |
| Gate Voltage to Trigger | V_{GT} | $V_D = 6\text{V}, T_J = 150^\circ\text{C}, R_L = 3\text{ ohms}$ | 5 | Volts |
| Non-Triggering Gate Voltage | V_{GDM} | $T_J = 150^\circ\text{C}, \text{rated } V_{DRM}$ | .15 | Volts |
| Peak Forward Gate Current | I_{GTM} | | 4 | Amperes |
| Peak Reverse Gate Voltage | V_{GRM} | | 5 | Volts |

[ⓐ] Consult recommended mounting procedures.



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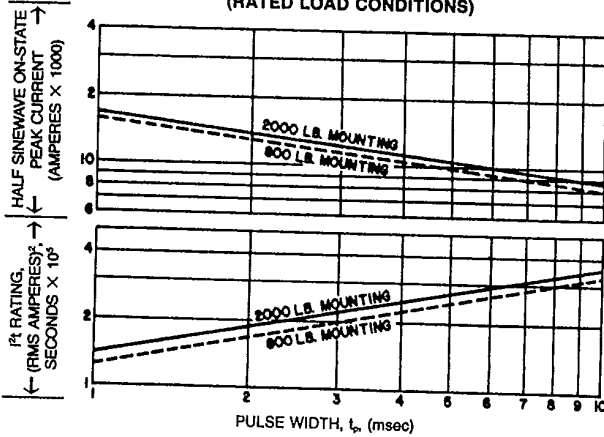




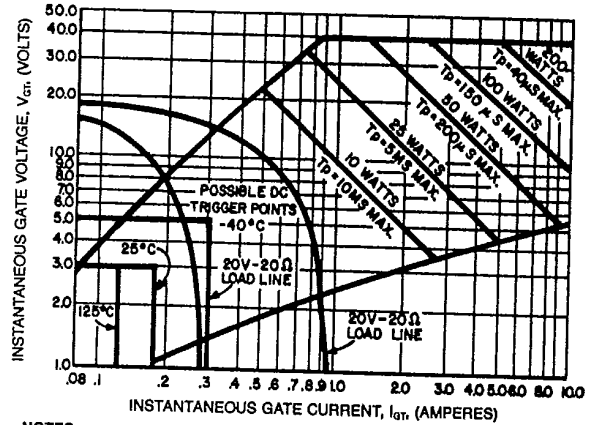
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C430_X550
 Phase Control SCR
 800 Amperes Avg/100-400 Volts

SUB-CYCLE SURGE AND I²t RATINGS
 (RATED LOAD CONDITIONS)



GATE CHARACTERISTICS



NOTES:

- Maximum allowable average gate dissipation = 5 watts.
- The locus of possible dc trigger points lie outside the boundaries shown at various case temperatures.
- Tp = Rectangular gate current pulse width (5μs min. duration; 1.0μs max. rise time for 20V, 65Ω source).
- 20V - 20Ω is the minimum gate source load line when rate of circuit current rise > 100 Amp/μs or anode rate of current rise > 200 Amps/μs (Tp = 5μs min., 0.5μs max. rise time).

Maximum long-term repetitive anode di/dt = 500 Amps/μs with 20V - 20Ω gate source.



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