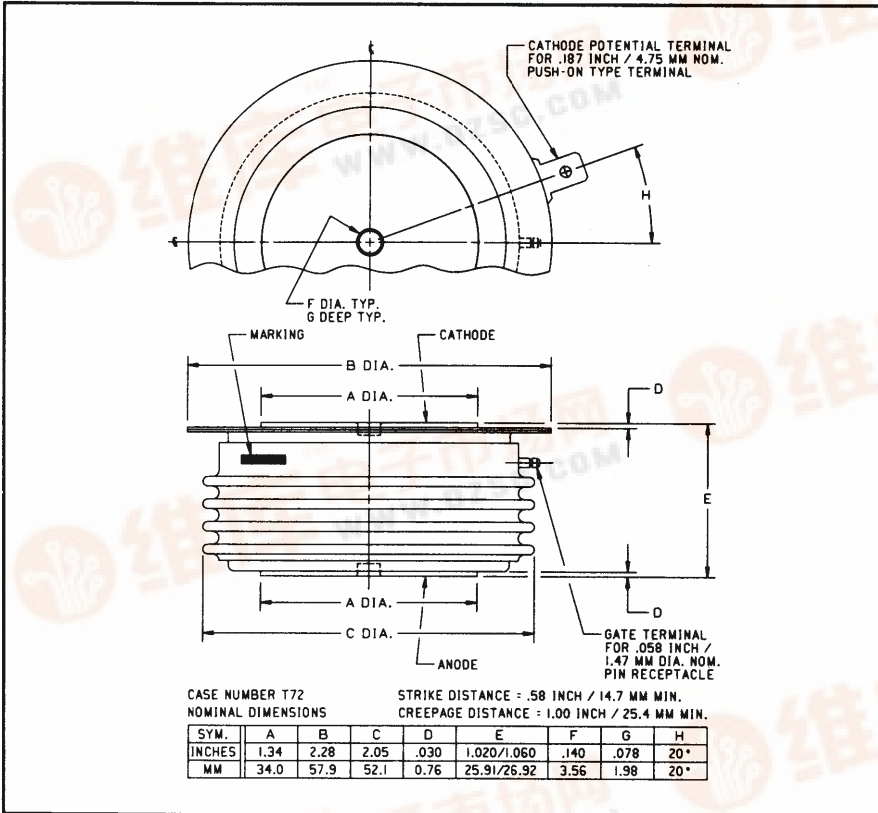
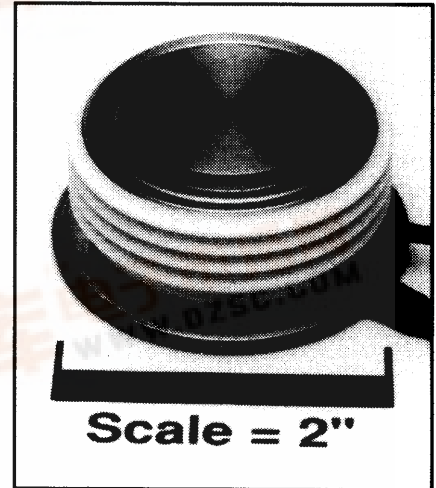


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
 Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Phase Control SCR
 590 Amperes Average
 1200 Volts



C390__X555 (Outline Drawing)



C390__X555 Phase Control SCR
 590 Amperes Average, 1200 Volts

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

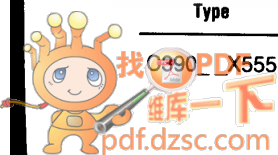
Applications:

- Power Supplies
- Battery Chargers
- Motor Control

Ordering Information:

Select the complete nine or ten digit part number you desire from the table, i.e. C390PBX555 is a 1200 Volt, 590 Ampere Phase Control SCR.

| Type | Voltage | | Current |
|------|------------------|------------------|--------------------|
| | V _{DRM} | V _{RRM} | I _{T(av)} |
| | 600 | M | 590 |
| | 800 | N | |
| | 1000 | P | |
| | 1200 | PB | |





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C390_X555
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 590 Amperes Average, 1200 Volts

Absolute Maximum Ratings

| | Symbol | C390_X555 | Units |
|---|--------------|--------------|------------------------|
| RMS On-State Current @ $T_C = 80^\circ\text{C}$ | $I_{T(RMS)}$ | 925 | Amperes |
| Average On-State Current @ $T_C = 80^\circ\text{C}$ | $I_{T(av)}$ | 590 | Amperes |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz) | I_{TSM} | 8000 | Amperes |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) | I_{TSM} | 7600 | Amperes |
| Critical Rate-of-Rise of On-State Current (Non-Repetitive) | di/dt | 800 | Amperes/ μs |
| Critical Rate-of-Rise of On-State Current (Repetitive) | di/dt | 500 | Amperes/ μs |
| I^2t (for Fusing), One Cycle at 60Hz | I^2t | 266,500 | A^2sec |
| Peak Gate Power Dissipation | P_{GM} | 200 | Watts |
| Average Gate Power Dissipation | $P_{G(av)}$ | 5 | Watts |
| Storage Temperature | T_{STG} | -40 to 150 | $^\circ\text{C}$ |
| Operating Temperature | T_J | -40 to 150 | $^\circ\text{C}$ |
| Mounting Force | | 1800 to 2200 | lb. |
| Mounting Force | | 8 to 9.8 | kN |

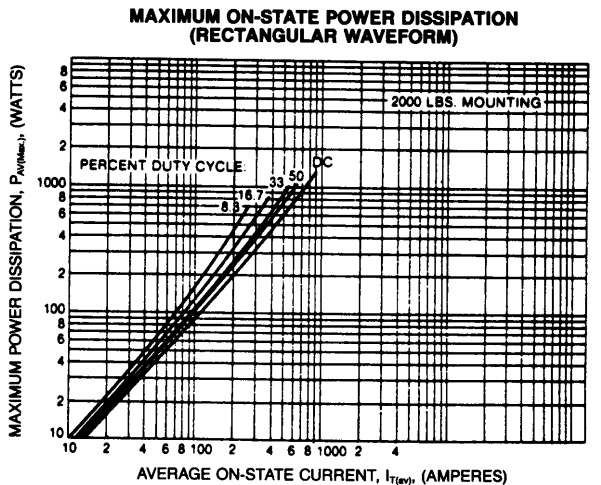
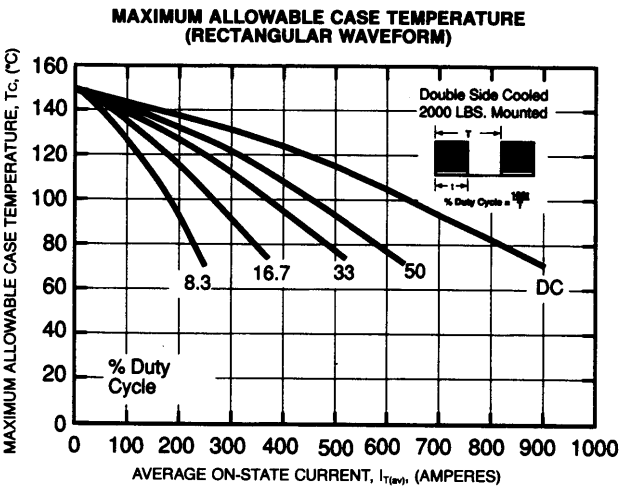
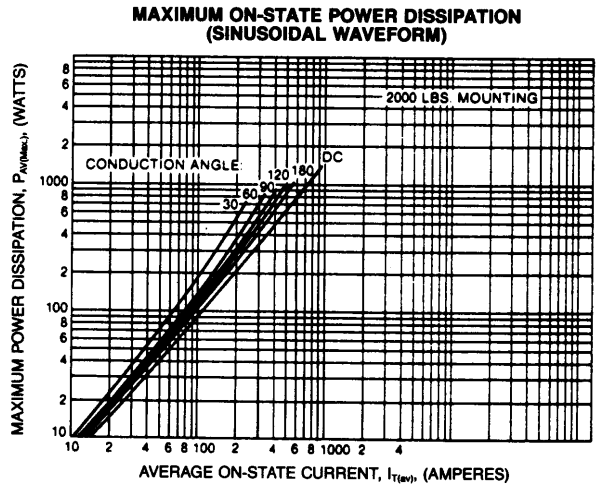
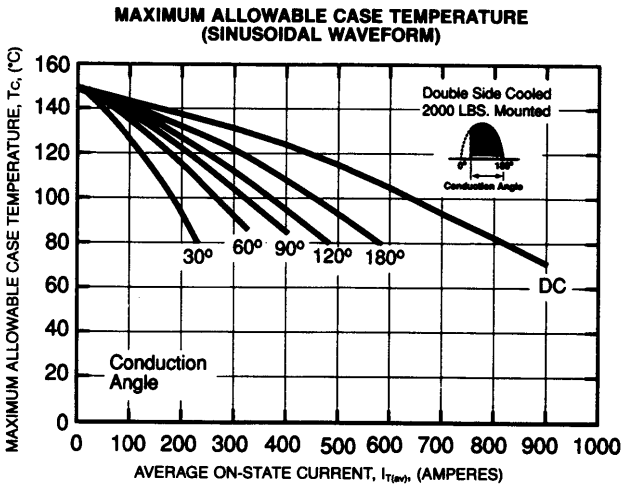
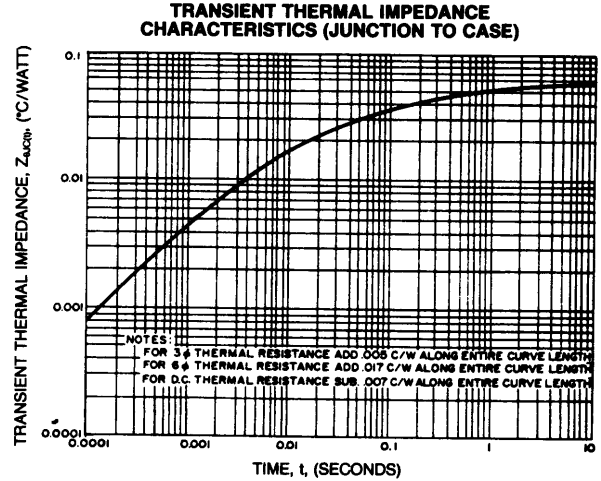
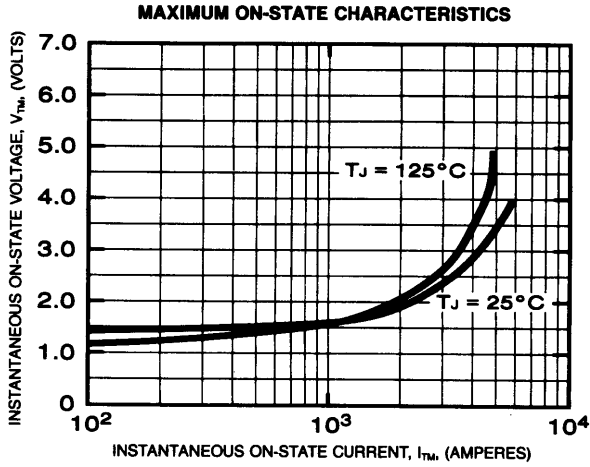
Electrical and Thermal Characteristics

| Characteristics | Symbol | Test Conditions | C390_X555 | Units |
|---|-----------------|--|-----------|------------------------------|
| Voltage—Blocking State Maximums | | | | |
| Forward Leakage, Peak | I_{DRM} | $T_J = 150^\circ\text{C}$, rated V_{DRM} | 65 | mA |
| Reverse Leakage, Peak | I_{RRM} | $T_J = 150^\circ\text{C}$, rated V_{RRM} | 65 | mA |
| Current—Conducting State Maximums | | | | |
| Peak On-State Voltage | V_{TM} | $I_{TM} = 3000\text{A}$, $T_J = 25^\circ\text{C}$ | 2.6 | Volts |
| Switching | | | | |
| Typical Turn-Off Time | t_q | $T_J = 150^\circ\text{C}$; $I_{TM} = 50\text{Amps}$; $V_R = 50\text{Volts Min.}$; V_{DRM} (Reapplied); Rate-of-Rise of Reapplied Off-State Voltage = $20\text{V}/\mu\text{sec}$ (linear); Commutation $di/dt = 25\text{Amps}/\mu\text{sec}$; Repetition Rate = 1 pps; Gate Bias During Turn-Off Interval = 0 Volts, 100Ω | 200 | μsec |
| Min. Critical dv/dt exponential to V_{DRM} | dv/dt | $T_J = 150^\circ\text{C}$, Gate Open | 200 | $\text{V}/\mu\text{sec}$ |
| Thermal | | | | |
| Maximum Thermal Resistance, double sided cooling Junction to Case | $R_{\theta JC}$ | | 0.06 | $^\circ\text{C}/\text{Watt}$ |
| Case to Sink, Lubricated | $R_{\theta CS}$ | | 0.02 | $^\circ\text{C}/\text{Watt}$ |
| Gate—Maximum Parameters | | | | |
| Gate Current to Trigger | I_{GT} | $T_J = 25^\circ\text{C}$, $V_D = 6\text{Vdc}$, $R_L = 3\Omega$ | 150 | mA |
| Gate Voltage to Trigger | V_{GT} | $T_J = -40^\circ\text{C}$ to 150°C , $V_D = 6\text{Vdc}$, $R_L = 3\Omega$ | 5 | Volts |
| Non-Triggering Gate Voltage | V_{GDM} | $T_J = 150^\circ\text{C}$, $V_D = \text{Rated } V_{DRM}$, $R_L = 1000\Omega$ | 0.15 | Volts |
| Peak Forward Gate Current | I_{GTM} | | 10 | Amperes |
| Peak Reverse Gate Voltage | V_{GRM} | | 5 | Volts |

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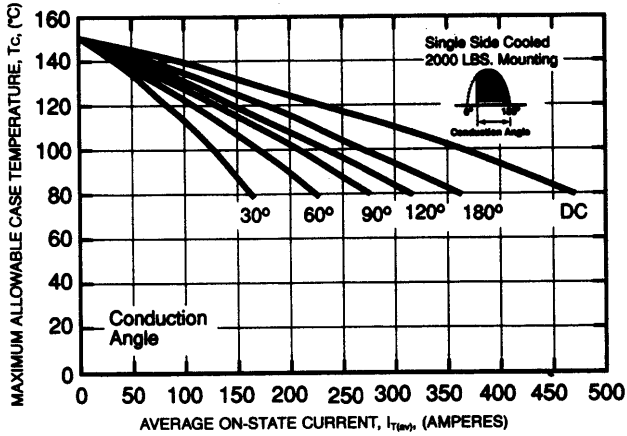


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**MAXIMUM ALLOWABLE CASE TEMPERATURE
 (SINUSOIDAL WAVEFORM)**



**MAXIMUM ALLOWABLE CASE TEMPERATURE
 (RECTANGULAR WAVEFORM)**

