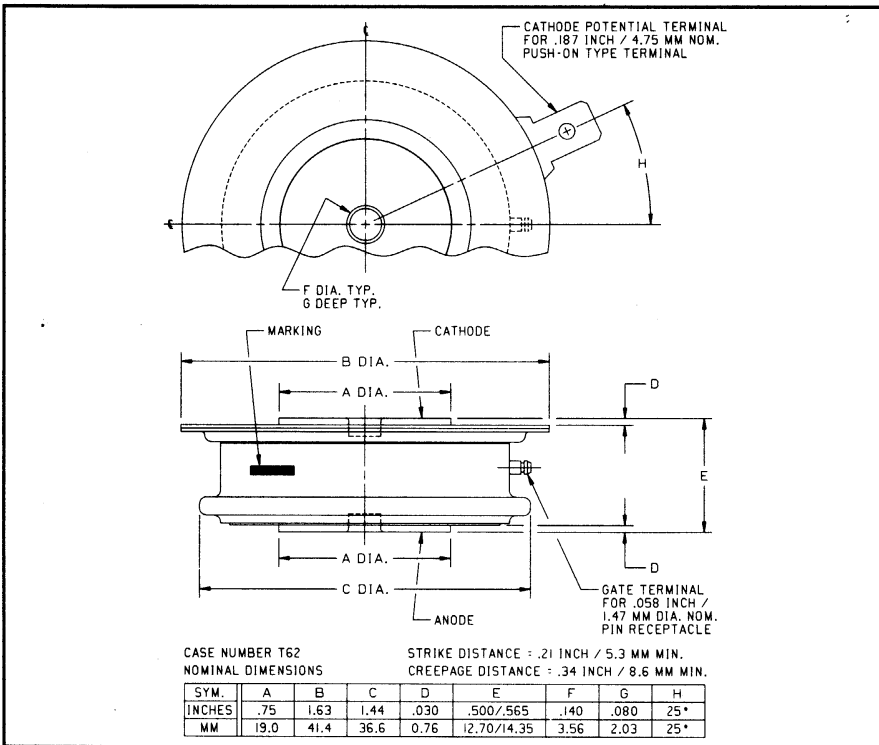
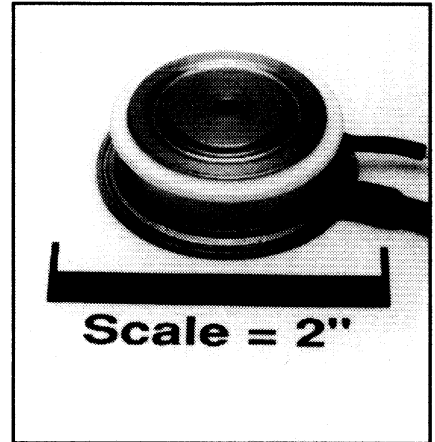


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
 Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Phase Control SCR
 115 Amperes Average
 1600 Volts



C350 (Outline Drawing)



C350 Phase Control SCR
 115 Amperes Average, 1600 Volts

Ordering Information:

Select the complete five or six digit part number you desire from the table, i.e. C350PM is a 1600 Volt, 115 Ampere Phase Control SCR.

| Type | Voltage | | Current |
|------|--------------------------------------|------|--------------------|
| | V _{DRM} V _{RRM} | Code | I _{T(av)} |
| C350 | 600 | M | 115 |
| | 800 | N | |
| | 1000 | P | |
| | 1200 | PB | |
| | 1400 | PD | |
| | 1600 | PM | |

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

Applications:

- Power Supplies
- Battery Chargers
- Motor Control



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C350

Phase Control SCR

115 Amperes Average, 1600 Volts

Absolute Maximum Ratings

| | Symbol | C350 | Units |
|---|---------------------|--------------|------------------------|
| RMS On-State Current @ $T_C = 89^\circ\text{C}$ | $I_{T(\text{RMS})}$ | 180 | Amperes |
| Average On-State Current @ $T_C = 89^\circ\text{C}$ | $I_{T(\text{av})}$ | 115 | Amperes |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz) | I_{TSM} | 1600 | Amperes |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) | I_{TSM} | 1480 | 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), 8.3 milliseconds | I^2t | 10,600 | A^2sec |
| Peak Gate Power Dissipation | P_{GM} | 10 | Watts |
| Average Gate Power Dissipation | $P_{G(\text{av})}$ | 2 | Watts |
| Storage Temperature | T_{STG} | -40 to 150 | $^\circ\text{C}$ |
| Operating Temperature | T_J | -40 to 125 | $^\circ\text{C}$ |
| Mounting Force | | 720 to 880 | lb. |
| Mounting Force | | 3.20 to 3.92 | kN |

C350
Phase Control SCR
 115 Amperes Average, 1600 Volts

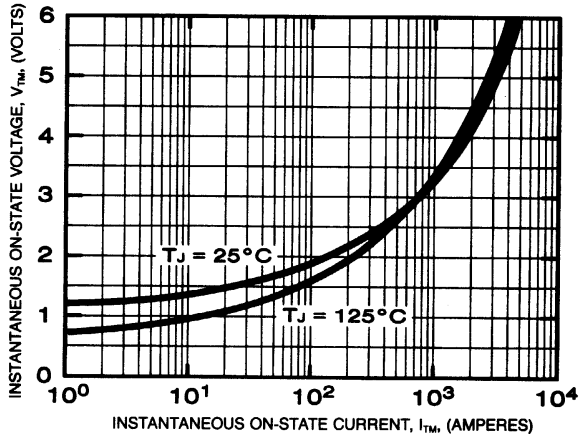
Electrical and Thermal Characteristics

| Characteristics | Symbol | Test Conditions | C350 | Units |
|---|-----------------|--|-------|------------------------------|
| Voltage—Blocking State Maximums | | | | |
| Forward Leakage, Peak | I_{DRM} | $T_J = 125^\circ\text{C}, V = V_{DRM}$ | 20 | mA |
| Reverse Leakage, Peak | I_{RRM} | $T_J = 125^\circ\text{C}, V = V_{RRM}$ | 20 | mA |
| Current—Conducting State Maximums | | | | |
| Peak On-State Voltage | V_{TM} | $I_{TM} = 500\text{A Peak}, T_C = 25^\circ\text{C}, \text{Duty Cycle} \leq 0.01\%$ | 2.6 | Volts |
| Switching | | | | |
| Typical Turn-Off Time | t_q | $T_J = 125^\circ\text{C}; I_{TM} = 50\text{ Amps Peak};$ $V_R = 50\text{ Volts Min.}; V_{DRM} = \text{Rated (Reapplied)};$ Rate-of-Rise of Reapplied Off-State Voltage = $20\text{V}/\mu\text{sec}$ (Linear); Gate Bias = 0 Volts, 100Ω during Turn-Off Interval; Duty Cycle $\leq 0.01\%$ | 200 | μsec |
| Typical Delay Time | t_d | $T_C = 25^\circ\text{C}, I_{TM} = 50\text{ Adc}, V_{DRM} = \text{Rated},$ Gate Supply: 10 Volt Open Circuit, 20 Ohm, 0.1 μsec max. rise time | 1.0 | μsec |
| Min. Critical dv/dt exponential to V_{DRM} | dv/dt | $T_J = 125^\circ\text{C}, \text{Gate Open}$ | 200 | V/ μsec |
| Thermal | | | | |
| Maximum Thermal Resistance, double sided cooling Junction to Case | $R_{\theta JC}$ | | 0.135 | $^\circ\text{C}/\text{Watt}$ |
| Case to Sink, Lubricated | $R_{\theta CS}$ | | 0.04 | $^\circ\text{C}/\text{Watt}$ |
| Gate—Maximum Parameters | | | | |
| Gate Current to Trigger | I_{GT} | $V_D = 6\text{V}, T_C = 25^\circ\text{C}, R_L = 3\Omega$ | 150 | mA |
| Gate Voltage to Trigger | V_{GT} | $V_D = 6\text{V}, R_L = 3\Omega, T_J = -40^\circ\text{C to } +120^\circ\text{C}$ | 3.0 | Volts |
| Non-Triggering Gate Voltage | V_{GDM} | $T_C = 120^\circ\text{C}, \text{Rated } V_{DRM}, R_L = 1000\Omega$ | 0.15 | Volts |
| Peak Forward Gate Current | I_{GTM} | | 10 | Amperes |
| Peak Reverse Gate Voltage | V_{GRM} | | 5 | Volts |

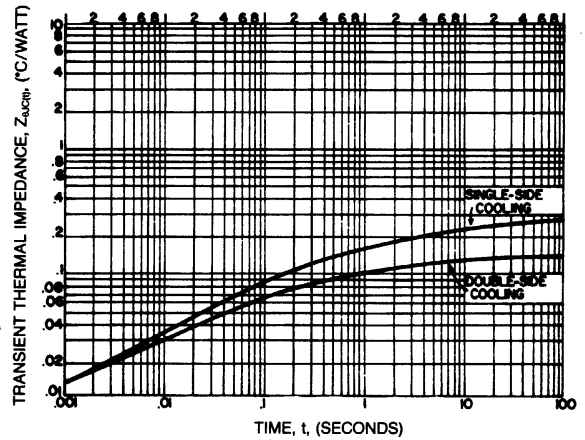
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C350
Phase Control SCR
 115 Amperes Average, 1600 Volts

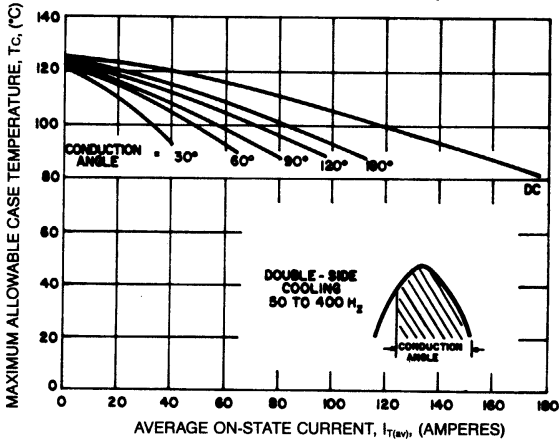
MAXIMUM ON-STATE CHARACTERISTICS



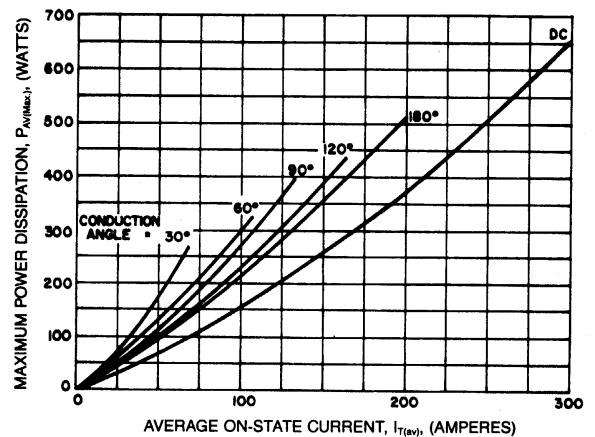
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



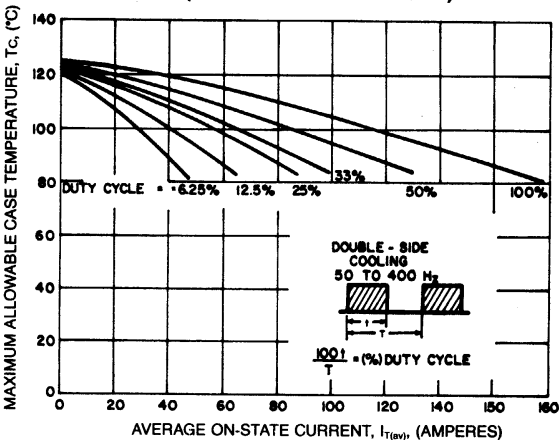
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



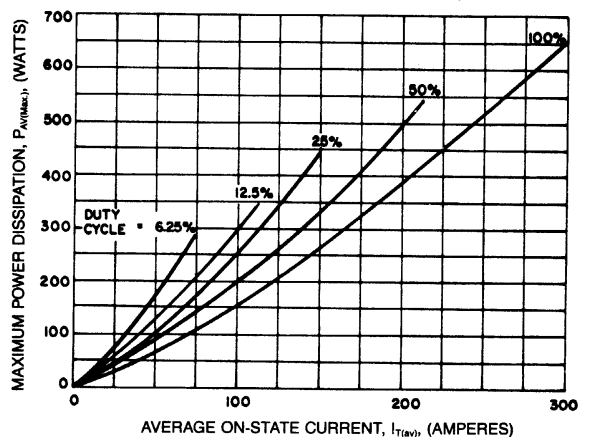
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



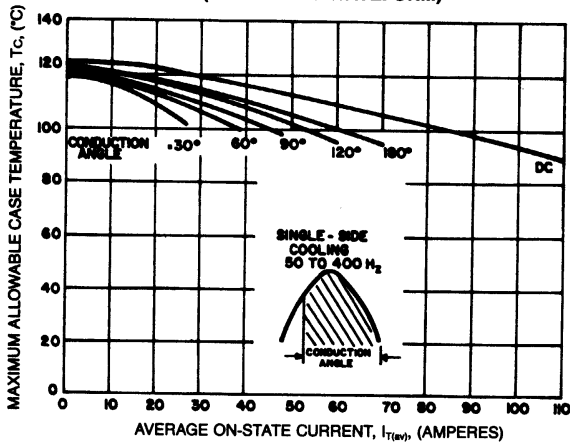
MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



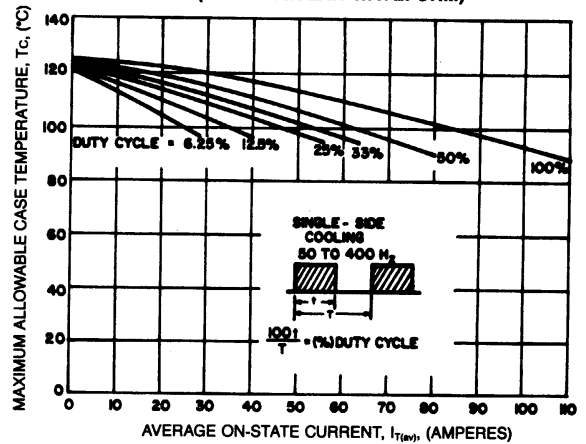
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C350
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 115 Amperes Average, 1600 Volts

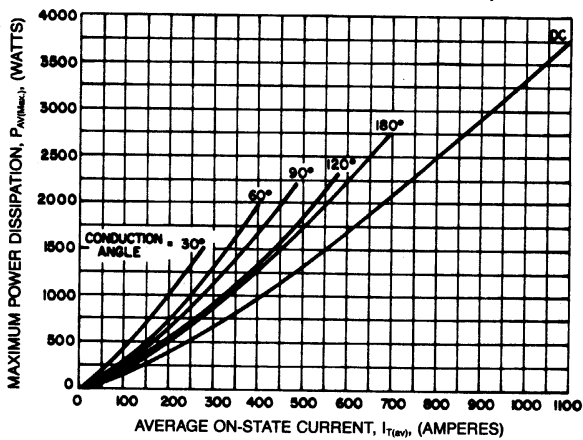
**MAXIMUM ALLOWABLE CASE TEMPERATURE
 (SINUSOIDAL WAVEFORM)**



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



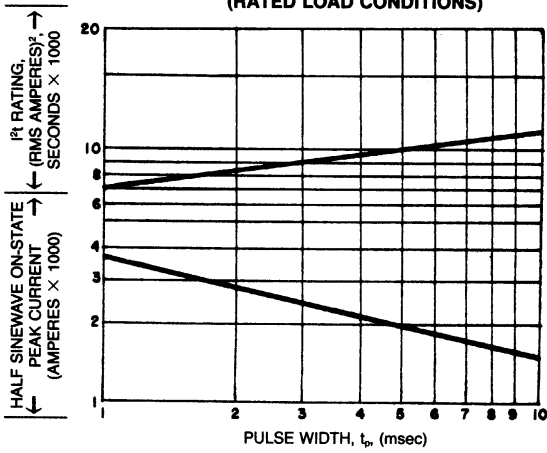
**MAXIMUM ON-STATE POWER DISSIPATION
 (SINUSOIDAL WAVEFORM EXTENDED)**



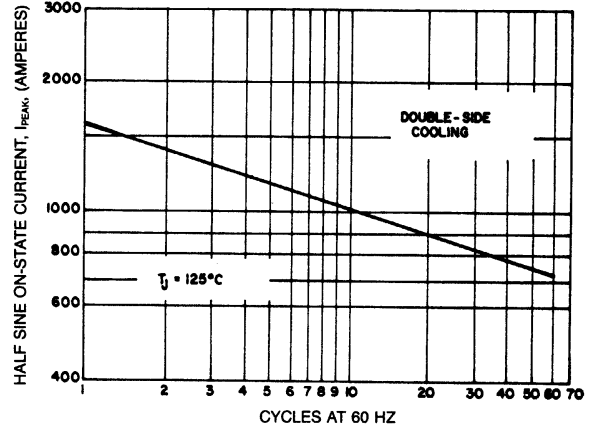
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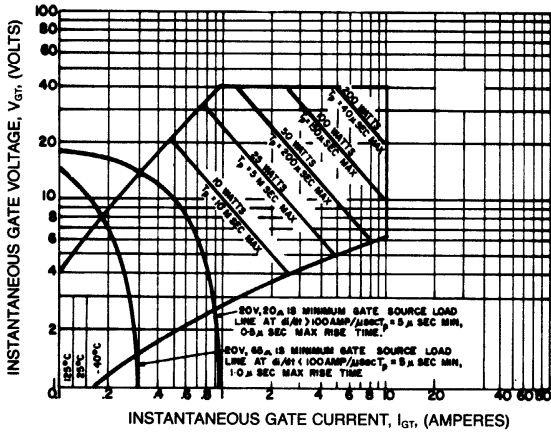
SUB-CYCLE SURGE AND I^2t RATINGS
 (RATED LOAD CONDITIONS)



MAXIMUM ALLOWABLE SURGE ON-STATE CURRENT (NON-REPETITIVE)



GATE CHARACTERISTICS



- NOTES:**
1. Maximum allowable gate power dissipation = 2 watts.
 2. The locus of possible DC trigger points lie outside the boundaries shown at various case temperatures.
 3. T_p = Rectangular Gate Current Pulse Width.