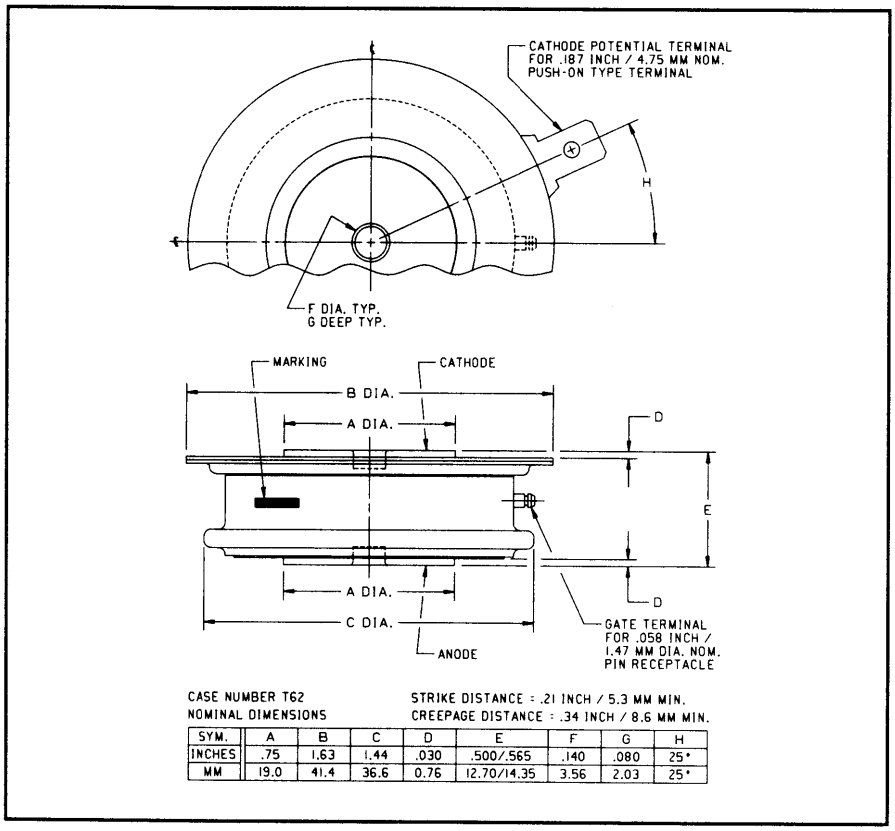
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

# Phase Control SCR
## 200-300 Amperes
## 1600 Volts

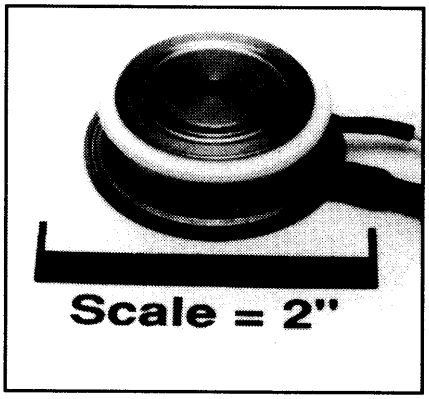



CASE NUMBER T62
NOMINAL DIMENSIONS

STRIKE DISTANCE = .21 INCH / 5.3 MM MIN.
CREEPAGE DISTANCE = .34 INCH / 8.6 MM MIN.

| SYM. | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| INCHES | .75 | 1.63 | 1.44 | .030 | .500/.565 | .140 | .080 | 25° |
| MM | 19.0 | 41.4 | 36.6 | 0.76 | 12.70/14.35 | 3.56 | 2.03 | 25° |

**T620** (Outline Drawing)




**T620 Phase Control SCR**
200-300 Amperes, 1600 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 $I^2t$ Ratings

### Applications:
- ☐ Power Supplies
- ☐ Battery Chargers
- ☐ Motor Control
- ☐ Welders

### Ordering Information:
Select the complete eight digit part number you desire from the table, i.e. T6201620 is a 1600 Volt, 200 Ampere Phase Control SCR.

| | Voltage | | Current | |
|---|---|---|---|---|
| Type | $V_{RRM}$ $V_{DRM}$ | Code | $I_{T(av)}$ | Code |
| T620 | 200 | 02 | 200 | 20 |
| | 400 | 04 | 300 | 30 |
| | 600 | 06 | | |
| | 800 | 08 | | |
| | 1000 | 10 | | |
| | 1200 | 12 | | |
| | 1400 | 14 | | |
| | 1600 | 16 | | |

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***T620***
***Phase Control SCR***
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## Absolute Maximum Ratings

| | Symbol | T620_ _20 | T620_ _30 | Units |
|---|---|---|---|---|
| RMS On-State Current | $I_{T(RMS)}$ | 315 | 470 | Amperes |
| Average On-State Current | $I_{T(av)}$ | 200 | 300 | Amperes |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz) | $I_{TSM}$ | 4000 | 5500 | Amperes |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) | $I_{TSM}$ | 3650 | 5000 | Amperes |
| Critical Rate-of-Rise of On-State Current (Non-Repetitive) | di/dt | 800 | 800 | Amperes/μs |
| Critical Rate-of-Rise of On-State Current (Repetitive) | di/dt | 150 | 150 | Amperes/μs |
| $I^2t$ (for Fusing), 8.3 milliseconds | $I^2t$ | 64,400 | 120,000 | $A^2$sec |
| Peak Gate Power Dissipation | $P_{GM}$ | 16 | 16 | Watts |
| Average Gate Power Dissipation | $P_{G(av)}$ | 3 | 3 | Watts |
| Storage Temperature | $T_{STG}$ | −40 to 150 | −40 to 150 | °C |
| Operating Temperature | $T_J$ | −40 to 125 | −40 to 125 | °C |
| Mounting Force | | 1000 to 1400 | 1000 to 1400 | lb. |
| Mounting Force | | 450 to 635 | 450 to 635 | kg |

## Electrical and Thermal Characteristics

| Characteristics | Symbol | Test Conditions | T620_ _20 | T620_ _30 | Units |
|---|---|---|---|---|---|
| **Current—Conducting State Maximums** | | | | | |
| Peak On-State Voltage | $V_{TM}$ | $I_{TM}$ = 625A, $T_J$ = 25°C | 2.05 | 1.55 | Volts |
| | | | T620 | | |
| **Voltage—Blocking State Maximums** | | | | | |
| Forward Leakage, Peak | $I_{DRM}$ | $T_J$ = 125°C, $V_{DRM}$ = rated | 25 | | mA |
| Reverse Leakage, Peak | $I_{RRM}$ | $T_J$ = 125°C, $V_{RRM}$ = rated | 25 | | mA |
| **Switching** | | | | | |
| Typical Turn-Off Time | $t_q$ | $I_T$ = 150A, $T_J$ = 125°C, $di_R/dt$ = 12.5A/μsec, reapplied dv/dt = 20V/μsec linear to 0.8$V_{DRM}$ | 100 | | μsec |
| Typical Turn-On Time | $t_{on}$ | $I_T$ = 100A, $V_D$ = 100V | 5 | | μsec |
| Min. Critical dv/dt exponential to $V_{DRM}$ | dv/dt | $T_J$ = 125°C | 300 | | V/μsec |
| **Thermal** | | | | | |
| Maximum Thermal Resistance, double sided cooling | | | | | |
| Junction to Case | $R_{\theta JC}$ | | 0.08 | | °C/Watt |
| Case to Sink, Lubricated | $R_{\theta CS}$ | | 0.02 | | °C/Watt |
| **Gate—Maximum Parameters** | | | | | |
| Gate Current to Trigger | $I_{GT}$ | $T_J$ = 25°C, $V_D$ = 12V | 150 | | mA |
| Gate Voltage to Trigger | $V_{GT}$ | $T_J$ = 25°C, $V_D$ = 12V | 3 | | Volts |
| Non-Triggering Gate Voltage | $V_{GDM}$ | $T_J$ = 125°C, rated $V_{DRM}$ | 0.15 | | Volts |
| Peak Forward Gate Current | $I_{GTM}$ | | 4 | | Amperes |
| Peak Reverse Gate Voltage | $V_{GRM}$ | | 5 | | Volts |

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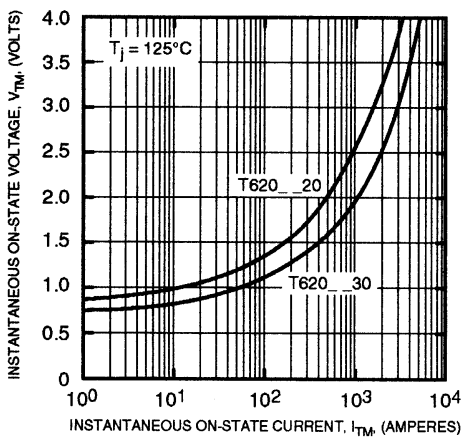
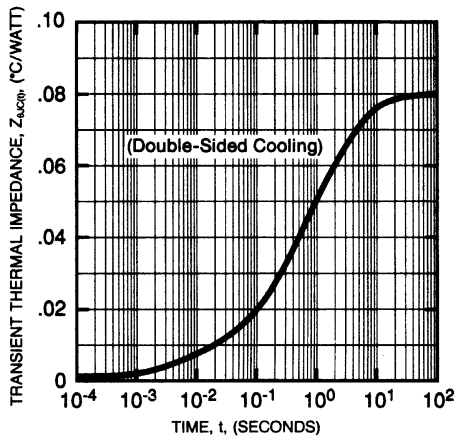
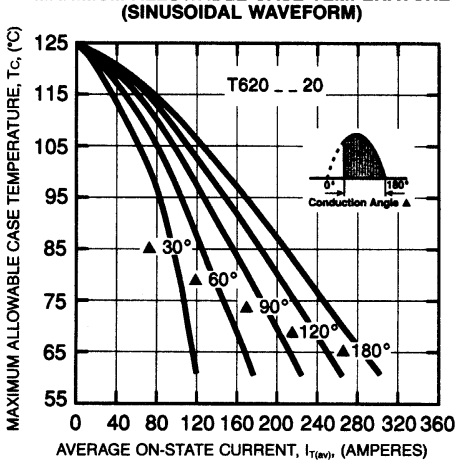
**MAXIMUM ON-STATE CHARACTERISTICS**



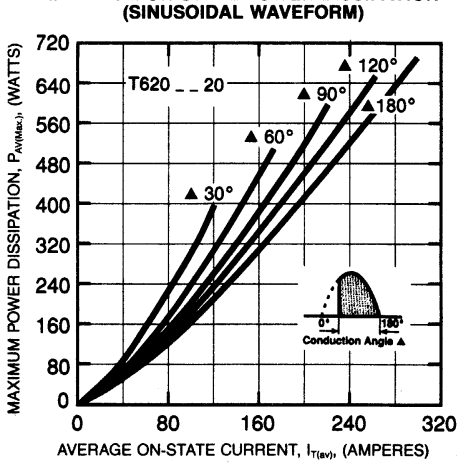

**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)**



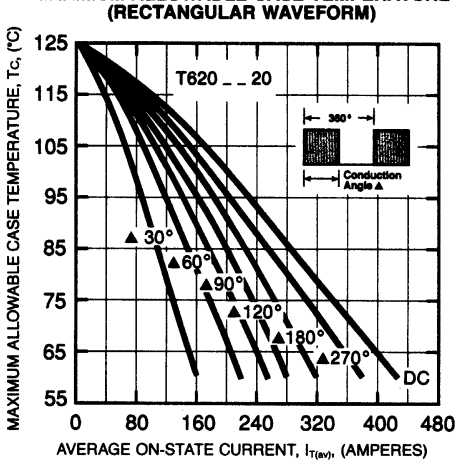

**MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)**



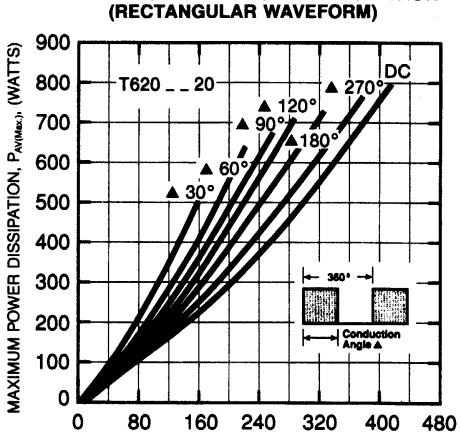

**MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)**




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




**MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)**



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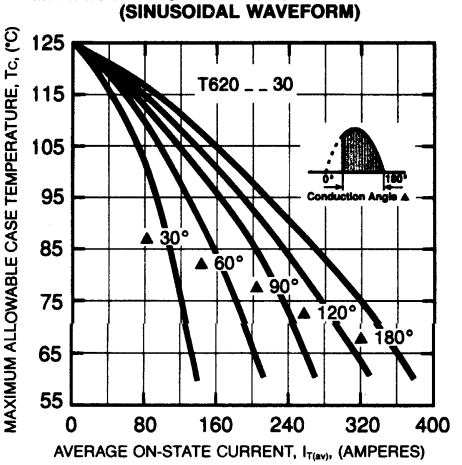


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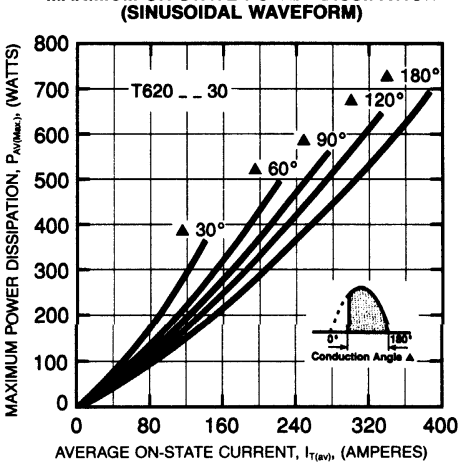


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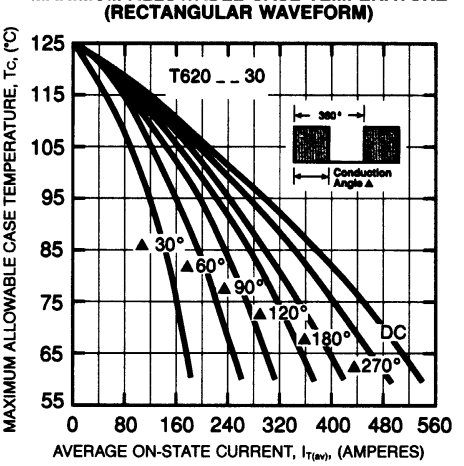


**MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)**