

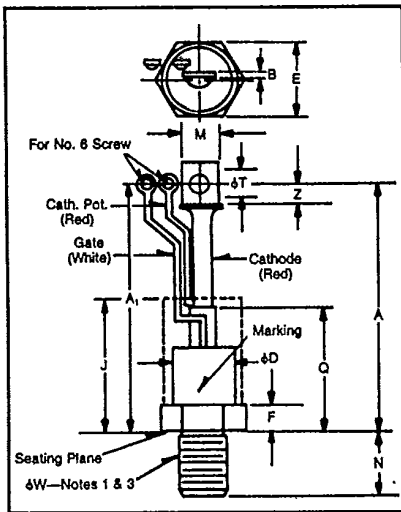
T-25-19



T700

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**  
 250-350 Amperes Avg  
 200-2200 Volts

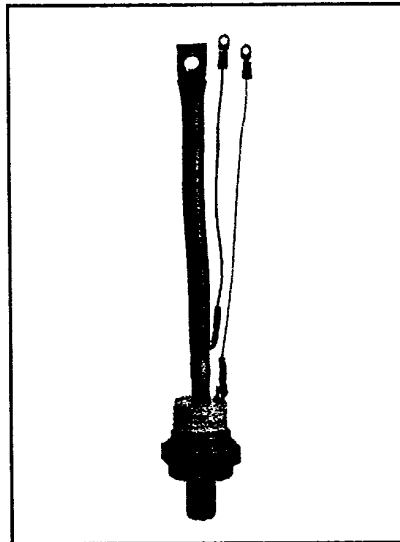


T70  
 Outline Drawing

| Dimensions     | Inches        |       | Millimeters |        |
|----------------|---------------|-------|-------------|--------|
|                | Min.          | Max.  | Min.        | Max.   |
| A              | 9.23          | 10.00 | 234.44      | 254.00 |
| A <sub>1</sub> | 9.65          | 10.42 | 245.11      | 264.67 |
| B              | .063          | .172  | 1.60        | 4.37   |
| φD             | —             | 1.490 | —           | 37.85  |
| E              | 1.620         | 1.750 | 41.15       | 44.45  |
| F              | .430          | .810  | 10.92       | 20.57  |
| J              | 4.000         | —     | 101.60      | —      |
| M              | .530          | .755  | 13.46       | 19.18  |
| N              | 1.04          | 1.08  | 26.42       | 27.43  |
| Q              | —             | 3.100 | —           | 78.74  |
| φT             | .330          | .350  | 8.38        | 8.89   |
| Z              | .440          | —     | 11.18       | —      |
| φW             | 3/4-16 UNF-2A |       |             |        |

T700

- Creep Distance—1.76 in. min. (44.70 mm)  
 Strike Distance—.81 in. min. (20.70 mm)  
 (In accordance with NEMA standards.)  
 Finish—Nickel Plate.  
 Approx. Weight—18 oz. (510 g).
- Complete threads to extend to within 2 1/2 threads of seating plane.
  - Angular orientation of terminals is undefined.
  - Pitch diameter of 3/4-16 UNF-2A (coated) threads (ASA B1.1—1960).
  - Dimension "J" denotes seated height with leads bent at right angles.



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 250-350 Amperes/200-2200 Volts

Description

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, compression bonded encapsulated (CBE) devices employing the field-proven amplifying (di/dynamic) gate.

Features:

- Low On-State Voltage
- High di/dt
- High dv/dt
- Hermetic Packaging
- Excellent Surge and I<sup>2</sup>t Ratings

Applications:

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

Ordering Information

Example: Select the complete eight digit part number you desire from the table – i.e. T7001435 is a 1400 Volt, 350 Ampere Phase Control SCR.

| Type | Voltage                              |      | Current              |      |
|------|--------------------------------------|------|----------------------|------|
|      | V <sub>onm</sub><br>V <sub>RRM</sub> | Code | I <sub>T</sub> (avg) | Code |
| T700 | 200                                  | 02   | 350                  | 35   |
|      | 400                                  | 04   |                      |      |
|      | 600                                  | 06   | 250                  | 25   |
|      | 800                                  | 08   |                      |      |
|      | 1000                                 | 10   |                      |      |
|      | 1200                                 | 12   |                      |      |
|      | 1300                                 | 13   |                      |      |
|      | 1400                                 | 14   |                      |      |
| 1600 | 16                                   |      |                      |      |
| 1800 | 18                                   |      |                      |      |
| 2000 | 20                                   |      |                      |      |
| 2200 | 22                                   |      |                      |      |



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### T700

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### Absolute Maximum Ratings

|   | Symbol       | T700 _ _ 25 | T700 _ _ 30 | T700 _ _ 35 | Units              |
|---|--------------|-------------|-------------|-------------|--------------------|
| RMS On-State Current  | $I_{T(RMS)}$ | 400         | 470         | 550         | Amperes            |
| Average On-State Current  | $I_{T(av)}$  | 250         | 300         | 350         | Amperes            |
| Peak One-Cycle Surge (Non Repetitive) On-State Current (60Hz) <sup>①</sup>  | $I_{TSM}$    | 7000        | 8400        | 10,000      | Amperes            |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) <sup>①</sup>  | $I_{TSM}$    | 6400        | 7700        | 9100        | Amperes            |
| Critical Rate-of-Rise of On-State Current (Non-Repetitive) <sup>① ② ③</sup> | $di/dt$      | 800         | 800         | 800         | Amperes/ $\mu$ s   |
| Critical Rate-of-Rise of On-State Current (Repetitive)                      | $di/dt$      | 150         | 150         | 150         | Amperes/ $\mu$ s   |
| $I^2t$ (for Fusing), 8.3 milliseconds                                       | $I^2t$       | 205,000     | 295,000     | 416,000     | A <sup>2</sup> sec |
| Peak Gate Power Dissipation   | $P_{GM}$     | 16          | 16          | 16          | Watts              |
| Average Gate Power Dissipation  | $P_{G(av)}$  | 3           | 3           | 3           | Watts              |
| Storage Temperature   | $T_{STG}$    | -40 to 150  | -40 to 150  | -40 to 150  | °C                 |
| Operating Temperature   | $T_J$        | -40 to 125  | -40 to 125  | -40 to 125  | °C                 |
| Mounting Torque <sup>④</sup>  |              | 360         | 360         | 360         | in.-lb.            |
| Mounting Torque <sup>⑤</sup>  |              | 400         | 400         | 400         | kg-cm              |

① Consult recommended mounting procedures.

② Applies for zero or negative gate bias.

③ Per JEDEC RS-397, 5.2.2.1.

④ With recommended gate drive.

⑤ Higher  $dv/dt$  ratings available, consult factory.

⑥ Per JEDEC standard RS-397, 5.2.2.6.



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### Electrical and Thermal Characteristics

|   | Symbol          | Test Conditions  | T700 _ _ 25 | T700 _ _ 30 | T700 _ _ 35 | Units                        |
|---|-----------------|--|-------------|-------------|-------------|------------------------------|
| <b>Current—Conducting State Maximums</b>                    |                 |  |             |             |             |                              |
| Peak On-State Voltage                                       | $V_{TM}$        | $T_J = 25^\circ\text{C}$ , $I_{TM} = 625\text{A}$  | 1.80        | 1.60        | 1.40        | Volts                        |
| <b>T700</b>   |                 |  |             |             |             |                              |
| <b>Voltage—Blocking State Maximums</b>                      |                 |  |             |             |             |                              |
| Forward Leakage, Peak                                       | $I_{DRM}$       | $T_J = 125^\circ\text{C}$ , $V_{DRM} = \text{rated}$   |             | 30          |             | mA                           |
| Reverse Leakage, Peak                                       | $I_{RRM}$       | $T_J = 125^\circ\text{C}$ , $V_{RRM} = \text{rated}$   |             | 30          |             | mA                           |
| <b>Switching</b>  |                 |  |             |             |             |                              |
| Typical Turn-Off Time                                       | $t_q$           | $I_T = 250\text{A}$ , $di_T/dt = 25\text{A}/\mu\text{sec}$ , reapplied<br>$dv/dt = 20\text{V}/\mu\text{sec}$ linear to $0.8 V_{DRM}$ , $T_J = 125^\circ\text{C}$ |             | 150         |             | $\mu\text{sec}$              |
| Typical Turn-On Time <sup>ⓐ</sup>                           | $t_{on}$        | $I_T = 100\text{A}$ , $V_D = 100\text{V}$  |             | 7           |             | $\mu\text{sec}$              |
| Min. Critical $dv/dt$ exponential to $V_{DRM}$ <sup>ⓑ</sup> | $dv/dt$         | $T_J = 125^\circ\text{C}$  |             | 300         |             | $\text{V}/\mu\text{sec}$     |
| <b>Thermal</b>  |                 |  |             |             |             |                              |
| Maximum Thermal Resistance <sup>Ⓒ</sup>                     |                 |  |             |             |             |                              |
| Junction to Case  | $R_{\theta JC}$ |  |             | .10         |             | $^\circ\text{C}/\text{Watt}$ |
| Case to Sink, Lubricated                                    | $R_{\theta CS}$ |  |             | .05         |             | $^\circ\text{C}/\text{Watt}$ |
| <b>Gate—Maximum Parameters</b>                              |                 |  |             |             |             |                              |
| Gate Current to Trigger                                     | $I_{GT}$        | $T_J = 25^\circ\text{C}$ , $V_D = 12\text{V}$  |             | 150         |             | mA                           |
| Gate Voltage to Trigger                                     | $V_{GT}$        | $T_J = 25^\circ\text{C}$ , $V_D = 12\text{V}$  |             | 3           |             | Volts                        |
| Non-Triggering Gate Voltage                                 | $V_{GDM}$       | $T_J = 125^\circ\text{C}$ , $V_{DRM} = \text{rated}$   |             | .15         |             | Volts                        |
| Peak Forward Gate Current                                   | $I_{GTM}$       |  |             | 4           |             | Amperes                      |
| Peak Reverse Gate Voltage                                   | $V_{GRM}$       |  |             | 5           |             | Volts                        |

ⓐ Consult recommended mounting procedures.

ⓑ Applies for zero or negative gate bias.

Ⓒ Per JEDEC RS-397, 5.2.2.1.

Ⓓ With recommended gate drive.

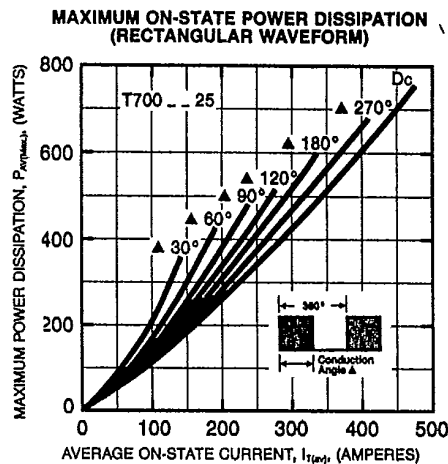
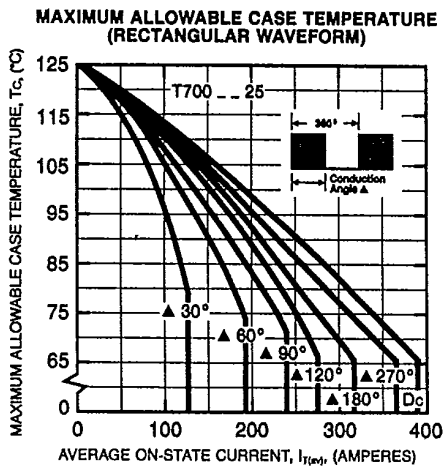
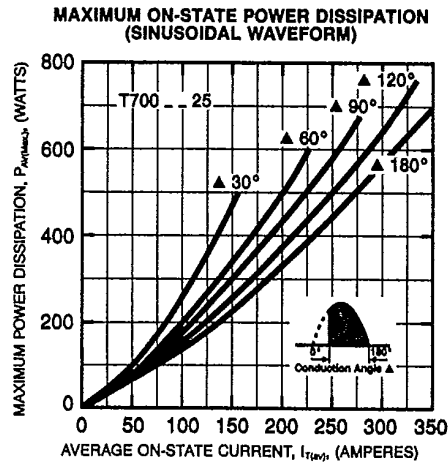
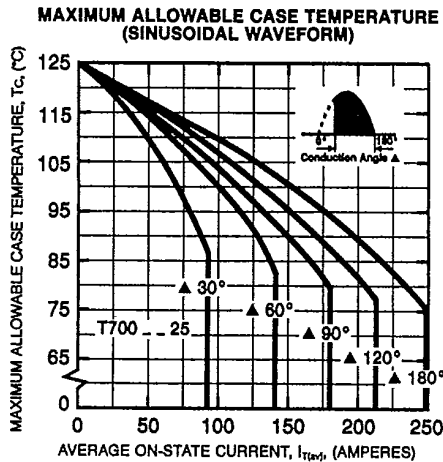
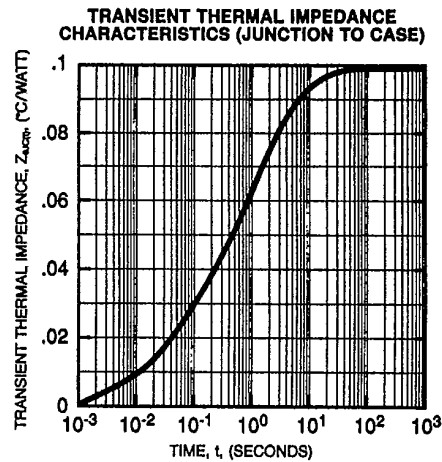
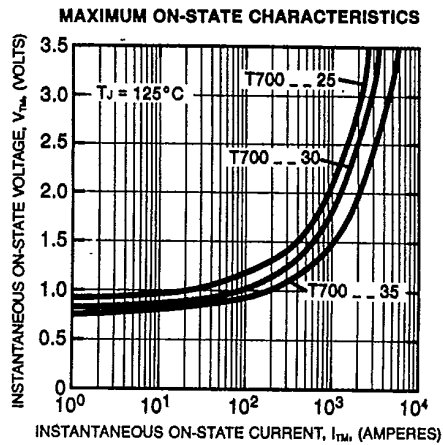
Ⓔ Higher  $dv/dt$  ratings available, consult factory.

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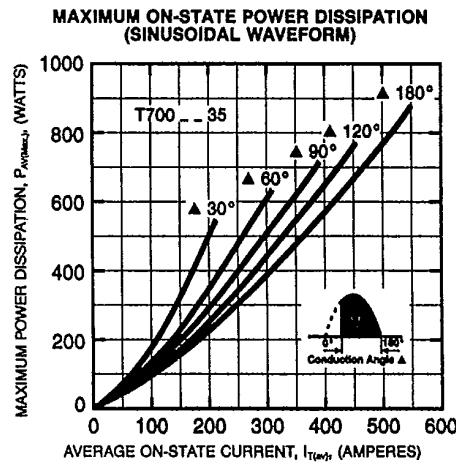
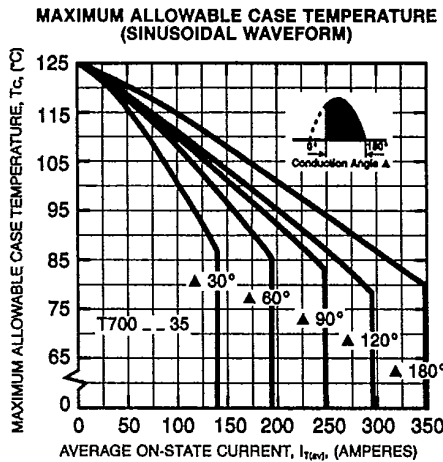
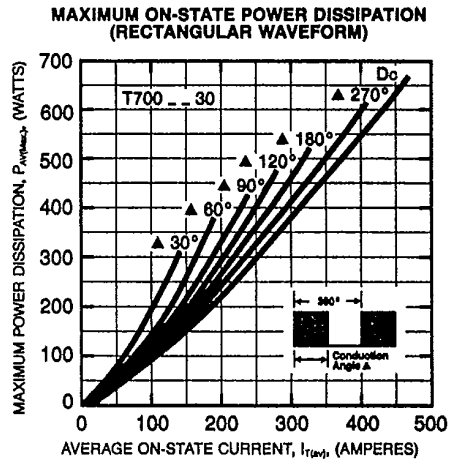
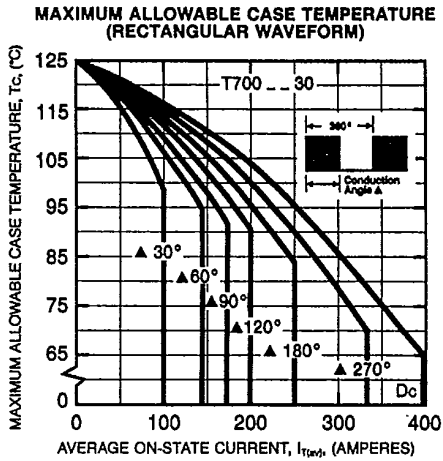
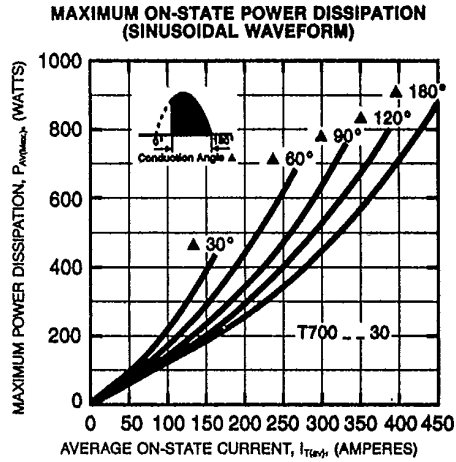
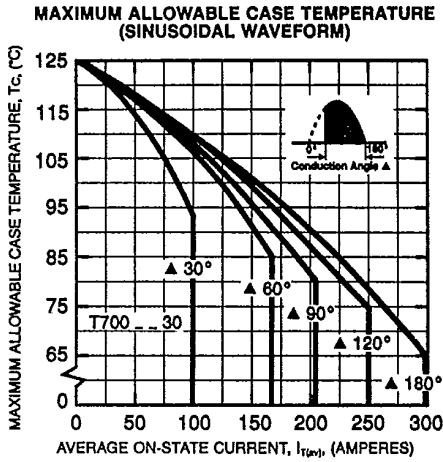
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