

SCRs

(1 – 70 Amps)

General Description

The Teccor Electronics line of thyristor SCR semi-conductors are half-wave, unidirectional, gate-controlled rectifiers which complement Teccor's line of sensitive SCRs. Teccor offers devices with ratings of 1-70 amps and 50-800 volts, with gate sensitivities from 10-50 milliamps. If gate currents in the 12-500 microamp ranges are required, please consult Teccor's sensitive SCR technical data sheets.

Electrically Isolated Packages

Teccor's SCRs are available in a choice of nine different device packages. Four (of the eight) packages are offered in electrically isolated construction where the case or tab is internally isolated to allow the use of low-cost assembly and convenient packaging techniques.


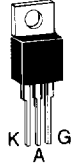
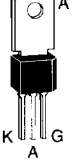
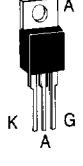
The Teccor line of SCRs features glass passivated device junctions to ensure long term device reliability and parameter stability. Teccor's glass offers a rugged, reliable barrier against junction contamination.

Variations of devices covered in this data sheet are available for custom design applications. Please consult the factory for more information.

Features

- **Electrically-isolated package**
- **High voltage capability — 50 up to 800 Volts**
- **High surge capability — up to 950 Amps**
- **Glass passivated chip**

Electrical Specifications

| TYPE | Part Number | | | | I_T | | V_{DRM} & V_{RRM} | I_{GT} | | I_{DRM} & I_{RRM} | | | V_{TM} | V_{GT} | |
|----------|---|---|---|---|----------------------------------|-------------|-----------------------|---|--|--|---------------------|---------------------|----------|--------------------|--|
| | Isolated | | Non-Isolated | | Maximum On-State Current (1) (2) | | | Repetitive Peak Off-State Forward & Reverse Voltage | DC Gate Trigger Current $V_D = 12VDC$ $R_L = 60\Omega$ (4) | Peak Off-State Forward & Reverse Current at V_{DRM} & V_{RRM} (13) | | | | | Peak On-State Voltage at Max Rated RMS Current $T_C = 25^\circ C$ (3) |
| |  |  |  |  | Amps | | mAmps | | | Volts | | | | | |
| | See "Package Dimensions" section for variations. | | | | $I_{T(RMS)}$ | $I_{T(AV)}$ | Volts | mAmps | | $T_C = 25^\circ C$ | $T_C = 100^\circ C$ | $T_C = 125^\circ C$ | Volts | $T_C = 25^\circ C$ | $T_C = 125^\circ C$ |
| | | | | MAX | MAX | MIN | MIN | MAX | MAX | | | MAX | MAX | MIN | |
| 1.0 Amp | S051E | | | 1.0 | 0.64 | 50 | 1 | 10 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 | |
| | S101E | | | 1.0 | 0.64 | 100 | 1 | 10 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 | |
| | S201E | | | 1.0 | 0.64 | 200 | 1 | 10 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 | |
| | S401E | | | 1.0 | 0.64 | 400 | 1 | 10 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 | |
| | S601E | | | 1.0 | 0.64 | 600 | 1 | 10 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 | |
| 6.0 Amps | | S0506L | S0506F1 | 6.0 | 3.8 | 50 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 | |
| | | S1006L | S1006F1 | 6.0 | 3.8 | 100 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 | |
| | | S2006L | S2006F1 | 6.0 | 3.8 | 200 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 | |
| | | S4006L | S4006F1 | 6.0 | 3.8 | 400 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 | |
| | | S6006L | S6006F1 | 6.0 | 3.8 | 600 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 | |
| | | S8006L | | | 6.0 | 3.8 | 800 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| 8.0 Amps | | S0508L | S0508F1 | S0508R | 8.0 | 5.1 | 50 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| | | S1008L | S1008F1 | S1008R | 8.0 | 5.1 | 100 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| | | S2008L | S2008F1 | S2008R | 8.0 | 5.1 | 200 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| | | S4008L | S4008F1 | S4008R | 8.0 | 5.1 | 400 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| | | S6008L | S6008F1 | S6008R | 8.0 | 5.1 | 600 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| | | S8008L | | S8008R | 8.0 | 5.1 | 800 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |

General Notes


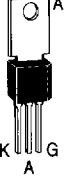
- All measurements are made at 60Hz with a resistive load at an ambient temperature of +25°C unless otherwise specified.
- Operating temperature range (T_J) is -65°C to +125°C for TO-92 devices and -40°C to +125°C for all other packages.
- Storage temperature range (T_S) is -65°C to +150°C for TO-92 devices, -40°C to +150°C for TO-202 and TO-220 devices, -40°C to +125°C for all others.
- Lead solder temperature is a maximum of 230°C for 10 seconds maximum; 1/16" (1.59mm) from case.
- The case temperature (T_C) is measured as shown on dimensional outline drawings. See "Package Dimensions" section of this catalog.

Electrical Specification Notes

- See Figures 6.5 through 6.16 for current rating at specified operating case temperature.
- See Figures 6.1 and 6.2 for free air current rating.
- See Figures 6.19 and 6.20 for instantaneous on-state current vs on-state voltage (typical).
- See Figure 6.18 for I_{GT} vs T_C .
- See Figure 6.17 for I_H vs T_C .
- For more than one full cycle rating, see Figure 6.23.
- See Figure 6.22 for t_{gt} vs I_{GT} .
- See Figure 6.21 for V_{GT} vs T_C .
- Test conditions are as follows: $I_T = 1A$ for 1.0A devices and 2A for all other devices. Pulse duration = 50 μs , $dv/dt = 20V/\mu s$, $di/dt = -10A/\mu s$ for 1.0A devices, and -30A/ μs for other devices. $I_{GT} = 200mA$ at turn-on.
- See Figures 6.5 through 6.10 for maximum allowable case temperatures at maximum rated current.
- Pulse width $\leq 10\mu s$.
- Initial on-state current = 200mA(DC) for 1A through 16A devices; 400mA(DC) for 20A through 70A devices.
- $T_C = T_J$ for test conditions in off-state.

| I_H | I_{GM} | P_{GM} | $P_{G(AV)}$ | I_{TSM} | | dv/dt | | I^2t | di/dt | t_{gt} | t_q |
|-------|----------|----------|-------------|---------------------------------------|------------------------|----------------------------------|--------------------------------|-----------------------|-----------------|-----------|-----------|
| | | | | | | | | | | | |
| | | | | DC Holding Current Gate Open (5) (12) | Peak Gate Current (11) | Peak Gate Power Dissipation (11) | Average Gate Power Dissipation | | | | |
| mAmps | Amps | Watts | Watts | 60Hz | 50Hz | $T_C = 100^\circ C$ | $T_C = 125^\circ C$ | Amps ² Sec | Amps/ μ Sec | μ Sec | μ Sec |
| MAX | | | | | | MIN | MIN | | | TYP | MAX |
| 30 | 1.5 | 15 | 0.3 | 30 | 25 | 40 | 30 | 3.7 | 50 | 2.0 | 35 |
| 30 | 1.5 | 15 | 0.3 | 30 | 25 | 40 | 30 | 3.7 | 50 | 2.0 | 35 |
| 30 | 1.5 | 15 | 0.3 | 30 | 25 | 40 | 20 | 3.7 | 50 | 2.0 | 35 |
| 30 | 1.5 | 15 | 0.3 | 30 | 25 | 40 | 20 | 3.7 | 50 | 2.0 | 35 |
| 30 | 1.5 | 15 | 0.3 | 30 | 25 | 40 | 20 | 3.7 | 50 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 300 | 225 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 250 | 200 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 300 | 225 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 250 | 200 | 41 | 100 | 2.0 | 35 |

Electrical Specifications

| TYPE | Part Number | | I_T | | V_{DRM} & V_{RRM} | I_{GT} | | I_{DRM} & I_{RRM} | | | V_{TM} | V_{GT} | |
|--|---|---|------------------------------|---|---|--|---|---|-----|-----|----------|----------|-----|
| | Isolated | Non-Isolated | | | | | | | | | | | |
| |  |  | Maximum On-State Current (1) | Repetitive Peak Off-State Forward and Reverse Voltage | DC Gate Trigger Current $V_D = 12VDC$ $R_L = 60\Omega$ (4) | Peak Off-State Forward and Reverse Current at V_{DRM} & V_{RRM} (13) | Peak On-State Voltage at Max Rated RMS Current $T_C = 25^\circ C$ (3) | DC Gate Trigger Voltage $V_D = 12VDC$ $R_L = 60\Omega$ (8) | | | | | |
| | TO-220AB | TO-202AB | Amps | Volts | mAmps | mAmps | Volts | Volts | | | | | |
| See "Package Dimensions" section for variations. | | | $I_{T(RMS)}$ | $I_{T(AV)}$ | MIN | MIN | MAX | MAX | MAX | MAX | MAX | MAX | MIN |
| 10.0 Amps | S0510L | S0510F1 | 10 | 6.4 | 50 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| | S1010L | S1010F1 | 10 | 6.4 | 100 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| | S2010L | S2010F1 | 10 | 6.4 | 200 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| | S4010L | S4010F1 | 10 | 6.4 | 400 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| | S6010L | S6010F1 | 10 | 6.4 | 600 | 1 | 15 | .01 | 0.2 | 0.5 | 1.6 | 1.5 | 0.2 |
| | S8010L | | 10 | 6.4 | 800 | 1 | 15 | .02 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S0510R | 10 | 6.4 | 50 | 1 | 15 | .01 | 0.2 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S1010R | 10 | 6.4 | 100 | 1 | 15 | .01 | 0.2 | 1.0 | 1.6 | 1.5 | 0.2 |
| 12.0 Amps | | S2010R | 10 | 6.4 | 200 | 1 | 15 | .01 | 0.2 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S4010R | 10 | 6.4 | 400 | 1 | 15 | .01 | 0.2 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S6010R | 10 | 6.4 | 600 | 1 | 15 | .01 | 0.2 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S8010R | 10 | 6.4 | 800 | 1 | 15 | .02 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S0512R | 12 | 7.6 | 50 | 1 | 20 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| 15.0 Amps | | S1012R | 12 | 7.6 | 100 | 1 | 20 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S2012R | 12 | 7.6 | 200 | 1 | 20 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S4012R | 12 | 7.6 | 400 | 1 | 20 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S6012R | 12 | 7.6 | 600 | 1 | 20 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S8012R | 12 | 7.6 | 800 | 1 | 20 | .02 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S0515L | 15 | 9.5 | 50 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| 16.0 Amps | | S1015L | 15 | 9.5 | 100 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S2015L | 15 | 9.5 | 200 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S4015L | 15 | 9.5 | 400 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S6015L | 15 | 9.5 | 600 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 |
| | | S8015L | 15 | 9.5 | 800 | 1 | 30 | .02 | 1.0 | 2.0 | 1.6 | 1.5 | 0.2 |
| | S0516R | 16 | 10 | 50 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 | |
| | S1016R | 16 | 10 | 100 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 | |
| | S2016R | 16 | 10 | 200 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 | |
| | S4016R | 16 | 10 | 400 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 | |
| | S6016R | 16 | 10 | 600 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 | 1.5 | 0.2 | |
| | S8016R | 16 | 10 | 800 | 1 | 30 | .02 | 1.0 | 2.0 | 1.6 | 1.5 | 0.2 | |

General Notes

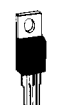


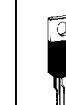


- All measurements are made at 60Hz with a resistive load at an ambient temperature of +25°C unless otherwise specified.
- Operating temperature range (T_J) is -65°C to +125°C for TO-92 devices and -40°C to +125°C for all other packages.
- Storage temperature range (T_S) is -65°C to +150°C for TO-92 devices, -40°C to +150°C for TO-202 and TO-220 devices, -40°C to +125°C for all others.
- Lead solder temperature is a maximum of 230°C for 10 seconds maximum; 1/16" (1.59mm) from case.
- The case temperature (T_C) is measured as shown on dimensional outline drawings. See "Package Dimensions" section of this catalog.

| I_H | I_{GM} | P_{GM} | $P_{G(AV)}$ | I_{TSM} | | dv/dt | | I^2t | di/dt | t_{gt} | t_q |
|-------|----------|----------|-------------|---------------------------------------|------------------------|--|--------------------------------|-----------------------|-----------------|-----------|-----------|
| | | | | | | Critical Rate-of-Applied Forward Voltage | | | | | |
| | | | | DC Holding Current Gate Open (5) (12) | Peak Gate Current (11) | Peak Gate Power Dissipation (11) | Average Gate Power Dissipation | | | | |
| mAmps | Amps | Watts | Watts | Amps | | Volts/ μ Sec | | Amps ² Sec | Amps/ μ Sec | μ Sec | μ Sec |
| MAX | | | | 60Hz | 50Hz | $T_C = 100^\circ C$ | $T_C = 125^\circ C$ | | | TYP | MAX |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 300 | 225 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 250 | 200 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 350 | 250 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 300 | 225 | 41 | 100 | 2.0 | 35 |
| 30 | 2.0 | 20 | 0.5 | 100 | 83 | 250 | 200 | 41 | 100 | 2.0 | 35 |
| 40 | 2.0 | 20 | 0.5 | 120 | 100 | 350 | 250 | 60 | 100 | 2.0 | 35 |
| 40 | 2.0 | 20 | 0.5 | 120 | 100 | 350 | 250 | 60 | 100 | 2.0 | 35 |
| 40 | 2.0 | 20 | 0.5 | 120 | 100 | 350 | 250 | 60 | 100 | 2.0 | 35 |
| 40 | 2.0 | 20 | 0.5 | 120 | 100 | 350 | 250 | 60 | 100 | 2.0 | 35 |
| 40 | 2.0 | 20 | 0.5 | 120 | 100 | 300 | 225 | 60 | 100 | 2.0 | 35 |
| 40 | 2.0 | 20 | 0.5 | 120 | 100 | 250 | 200 | 60 | 100 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 450 | 350 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 450 | 350 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 450 | 350 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 450 | 350 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 425 | 325 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 400 | 300 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 450 | 350 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 450 | 350 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 450 | 350 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 450 | 350 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 425 | 325 | 210 | 125 | 2.0 | 35 |
| 40 | 3.0 | 30 | 0.6 | 225 | 188 | 400 | 300 | 210 | 125 | 2.0 | 35 |

Electrical Specification Notes

- (1) See Figures 6.5 through 6.16 for current rating at specified operating case temperature.
- (2) See Figures 6.1 and 6.2 for free air current rating.
- (3) See Figures 6.19 and 6.20 for instantaneous on-state current vs on-state voltage (typical).
- (4) See Figure 6.18 for I_{GT} vs T_C .
- (5) See Figure 6.17 for I_H vs T_C .
- (6) For more than one full cycle rating, see Figure 6.23.
- (7) See Figure 6.22 for t_{gt} vs I_{GT} .
- (8) See Figure 6.21 for V_{GT} vs T_C .
- (9) Test conditions are as follows: $i_T = 1A$ for 1.0A devices and 2A for all other devices. Pulse duration = 50 μ s, $dv/dt = 20V/\mu$ s, $di/dt = -10A/\mu$ s for 1.0A devices, and -30A/ μ s for other devices. $I_{GT} = 200mA$ at turn-on.
- (10) See Figures 6.5 through 6.10 for maximum allowable case temperatures at maximum rated current.
- (11) Pulse width $\leq 10\mu$ s.
- (12) Initial on-state current = 200mA(DC) for 1 through 16A devices; 400mA(DC) for 20A through 70A devices.
- (13) $T_C = T_J$ for test conditions in off-state.
- (14) The "R", "K" or "M" package rating is intended for high surge condition use only and not recommended for $\geq 50A$ (RMS) continuous current use since narrow pin lead temperature can exceed PCB solder melting temperature. Recommend for $\geq 50A$ (RMS) continuous current requirements, Teccor's "J" or "W" package.
- (15) For various durations of an exponentially decaying current waveform, see Figures 6.3 and 6.4. (t_w is defined as 5 time constants.)

Electrical Specifications










| TYPE | Part Number | | | | | | I_T | | V_{DRM} & V_{RRM} | I_{GT} | | I_{DRM} & I_{RRM} | | | V_{TM} |
|--|---|---|---|---|---|---|-----------------------------------|---|---|--|-------|-----------------------|---|-------|----------|
| | Isolated | | | Non-Isolated | | | | | | | | | | | |
| |  |  |  |  |  |  | Maximum On-State Current (1) (14) | Repetitive Peak Off-State Forward and Reverse Voltage | DC Gate Trigger Current $V_D = 12VDC$ $R_L = 30\Omega$ (4) | Peak Off-State Forward and Reverse Current at V_{DRM} and V_{RRM} (13) | | | Peak On-State Voltage at Max Rated RMS Current $T_C = 25^\circ C$ (3) | | |
| | Amps | | | | | | $I_{T(RMS)}$ | $I_{T(AV)}$ | Volts | mAmps | mAmps | | | Volts | |
| See "Package Dimensions" section for variations. | | | | | | MAX | | MIN | MIN | MAX | MAX | | | MAX | |
| 20 Amps | S0520L | | | | | | 20 | 12.8 | 50 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 |
| | S1020L | | | | | | 20 | 12.8 | 100 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 |
| | S2020L | | | | | | 20 | 12.8 | 200 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 |
| | S4020L | | | | | | 20 | 12.8 | 400 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 |
| | S6020L | | | | | | 20 | 12.8 | 600 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 |
| | S8020L | | | | | | 20 | 12.8 | 800 | 1 | 30 | .01 | 0.5 | 1.0 | 1.6 |
| 25 Amps | | | | S0525R | | | 25 | 16 | 50 | 1 | 35 | .01 | 1.0 | 2.0 | 1.6 |
| | | | | S1025R | | | 25 | 16 | 100 | 1 | 35 | .01 | 1.0 | 2.0 | 1.6 |
| | | | | S2025R | | | 25 | 16 | 200 | 1 | 35 | .01 | 1.0 | 2.0 | 1.6 |
| | | | | S4025R | | | 25 | 16 | 400 | 1 | 35 | .01 | 1.0 | 2.0 | 1.6 |
| | | | | S6025R | | | 25 | 16 | 600 | 1 | 35 | .01 | 1.0 | 2.0 | 1.6 |
| | | | | S8025R | | | 25 | 16 | 800 | 1 | 35 | .02 | 1.5 | 3.0 | 1.6 |
| 35 Amps | | S0535J | S0535K | | | | 35 | 22 | 50 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | S1035J | S1035K | | | | 35 | 22 | 100 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | S2035J | S2035K | | | | 35 | 22 | 200 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | S4035J | S4035K | | | | 35 | 22 | 400 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | S6035J | S6035K | | | | 35 | 22 | 600 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | S8035J | S8035K | | | | 35 | 22 | 800 | 5 | 40 | .02 | 1.5 | 3.0 | 1.8 |
| 40 Amps | | | | S0540R | | | 40 | 25 | 50 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | | | S1040R | | | 40 | 25 | 100 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | | | S2040R | | | 40 | 25 | 200 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | | | S4040R | | | 40 | 25 | 400 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | | | S6040R | | | 40 | 25 | 600 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | | | S8040R | | | 40 | 25 | 800 | 5 | 40 | .02 | 1.5 | 3.0 | 1.8 |
| 55 Amps | | | | S0555R | S0555W | S0555M | 55 | 35 | 50 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | | | S1055R | S1055W | S1055M | 55 | 35 | 100 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | | | S2055R | S2055W | S2055M | 55 | 35 | 200 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | | | S4055R | S4055W | S4055M | 55 | 35 | 400 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | | | S6055R | S6055W | S6055M | 55 | 35 | 600 | 5 | 40 | .01 | 1.0 | 2.0 | 1.8 |
| | | | | S8055R | S8055W | S8055M | 55 | 35 | 800 | 5 | 40 | .02 | 1.5 | 3.0 | 1.8 |
| 65 Amps | | S0565J | S0565K | | | | 65 | 41 | 50 | 5 | 50 | .02 | 1.5 | 3.0 | 1.8 |
| | | S1065J | S1065K | | | | 65 | 41 | 100 | 5 | 50 | .02 | 1.5 | 3.0 | 1.8 |
| | | S2065J | S2065K | | | | 65 | 41 | 200 | 5 | 50 | .02 | 1.5 | 3.0 | 1.8 |
| | | S4065J | S4065K | | | | 65 | 41 | 400 | 5 | 50 | .02 | 1.5 | 3.0 | 1.8 |
| | | S6065J | S6065K | | | | 65 | 41 | 600 | 5 | 50 | .02 | 1.5 | 3.0 | 1.8 |
| | | S8065J | S8065K | | | | 65 | 41 | 800 | 5 | 50 | .02 | 2.0 | 5.0 | 1.8 |
| 70 Amps | | | | S0570W | | | 70 | 45 | 50 | 5 | 50 | .02 | 1.5 | 3.0 | 1.8 |
| | | | | S1070W | | | 70 | 45 | 100 | 5 | 50 | .02 | 1.5 | 3.0 | 1.8 |
| | | | | S2070W | | | 70 | 45 | 200 | 5 | 50 | .02 | 1.5 | 3.0 | 1.8 |
| | | | | S4070W | | | 70 | 45 | 400 | 5 | 50 | .02 | 1.5 | 3.0 | 1.8 |
| | | | | S6070W | | | 70 | 45 | 600 | 5 | 50 | .02 | 1.5 | 3.0 | 1.8 |
| | | | | S8070W | | | 70 | 45 | 800 | 5 | 50 | .02 | 2.0 | 5.0 | 1.8 |

See General Notes and Electrical Specification Notes on pages 6-4 and 6-5.

| V_{GT} | | I_H | I_{GM} | P_{GM} | $P_{G(AV)}$ | I_{TSM} | | dv/dt | | I^2t | di/dt | t_{gt} | t_q |
|---|---------------------|--|---------------------------|-------------------------------------|--------------------------------|---|-------|--|---------------------|---|--|---|--|
| DC Gate Trigger Voltage $V_D = 12VDC$ $R_L = 30\Omega$ (8) | | DC Holding Current Gate Open (5) (12) | Peak Gate Current (11) | Peak Gate Power Dissipation (11) | Average Gate Power Dissipation | Peak One Cycle Surge Forward Current (6) (10) (15) | | Critical Rate-of-Applied Forward Voltage | | RMS Surge (Non-Repetitive) On-State Current for a Period of 8.3 msec for Fusing | Maximum Rate-of-Change of On-State Current $I_{GT} = 150mA$ with $0.1\mu S$ Rise Time | Gate Controlled Turn-On Time Gate Pulse = $150mA$ Min. Width = $15\mu S$ with Rise Time $\leq 0.1\mu S$ (7) | Circuit Commutated Turn-Off Time (9) (10) |
| Volts | | | | | | Amps | | Volts/ μSec | | | | | |
| $T_C = 25^\circ C$ | $T_C = 125^\circ C$ | mAmps | Amps | Watts | Watts | 60 Hz | 50 Hz | $T_C = 100^\circ C$ | $T_C = 125^\circ C$ | Amps ² Sec | Amps/ μSec | μSec | μSec |
| MAX | MIN | MAX | | | | | | MIN | MIN | | | TYP | MAX |
| 1.5 | 0.2 | 40 | 3.0 | 30 | 0.6 | 300 | 255 | 450 | 350 | 374 | 125 | 2.0 | 35 |
| 1.5 | 0.2 | 40 | 3.0 | 30 | 0.6 | 300 | 255 | 450 | 350 | 374 | 125 | 2.0 | 35 |
| 1.5 | 0.2 | 40 | 3.0 | 30 | 0.6 | 300 | 255 | 450 | 350 | 374 | 125 | 2.0 | 35 |
| 1.5 | 0.2 | 40 | 3.0 | 30 | 0.6 | 300 | 255 | 450 | 350 | 374 | 125 | 2.0 | 35 |
| 1.5 | 0.2 | 40 | 3.0 | 30 | 0.6 | 300 | 255 | 425 | 325 | 374 | 125 | 2.0 | 35 |
| 1.5 | 0.2 | 40 | 3.0 | 30 | 0.6 | 300 | 255 | 400 | 300 | 374 | 125 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 350 | 300 | 450 | 350 | 510 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 350 | 300 | 450 | 350 | 510 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 350 | 300 | 450 | 350 | 510 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 350 | 300 | 425 | 325 | 510 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 350 | 300 | 400 | 300 | 510 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 500 | 425 | 450 | 350 | 1035 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 500 | 425 | 450 | 350 | 1035 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 500 | 425 | 450 | 350 | 1035 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 500 | 425 | 450 | 350 | 1035 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 500 | 425 | 425 | 325 | 1035 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 50 | 3.5 | 35 | 0.8 | 500 | 425 | 400 | 300 | 1035 | 150 | 2.0 | 35 |
| 1.5 | 0.2 | 60 | 3.5 | 35 | 0.8 | 520 | 430 | 650 | 550 | 1122 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 3.5 | 35 | 0.8 | 520 | 430 | 650 | 550 | 1122 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 3.5 | 35 | 0.8 | 520 | 430 | 650 | 550 | 1122 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 3.5 | 35 | 0.8 | 520 | 430 | 650 | 550 | 1122 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 3.5 | 35 | 0.8 | 520 | 430 | 600 | 500 | 1122 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 3.5 | 35 | 0.8 | 520 | 430 | 500 | 475 | 1122 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 4.0 | 40 | 0.8 | 650 | 550 | 650 | 550 | 1750 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 4.0 | 40 | 0.8 | 650 | 550 | 650 | 550 | 1750 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 4.0 | 40 | 0.8 | 650 | 550 | 650 | 550 | 1750 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 4.0 | 40 | 0.8 | 650 | 550 | 650 | 550 | 1750 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 4.0 | 40 | 0.8 | 650 | 550 | 600 | 500 | 1750 | 175 | 2.5 | 35 |
| 1.5 | 0.2 | 60 | 4.0 | 40 | 0.8 | 650 | 550 | 500 | 475 | 1750 | 175 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 650 | 550 | 3745 | 200 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 650 | 550 | 3745 | 200 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 650 | 550 | 3745 | 200 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 600 | 500 | 3745 | 200 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 500 | 475 | 3745 | 200 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 650 | 550 | 3745 | 200 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 650 | 550 | 3745 | 200 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 650 | 550 | 3745 | 200 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 650 | 550 | 3745 | 200 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 600 | 500 | 3745 | 200 | 2.5 | 35 |
| 2.0 | 0.2 | 80 | 5.0 | 50 | 1.0 | 950 | 800 | 500 | 475 | 3745 | 200 | 2.5 | 35 |

See General Notes and Electrical Specification Notes on pages 6-4 and 6-5.

Electrical Specifications

| Type |  TO-92 |  THERMOTAB TO-220AB |  Type 1 TO-202 |  Type 2 TO-202 |  Non-Isolated TO-220AB |  Isolated TO-218X |  Non-Isolated TO-218X |  Isolated TO-218AC |  Non-Isolated TO-218AC |
|------------------|--|--|---|---|---|---|--|---|---|
| 6.0 Amps | | 4.0 [50] | 4.3 | 9.5 [70] | | | | | |
| 10.0 Amps | | 3.0 | 3.4 | | 1.9 | | | | |
| 15.0 Amps | | 2.5 | | | | | | | |
| 20.0 Amps | | 2.4 | | | | | | | |
| 35.0 Amps | | | | | | .70 | | .70 | |
| 55.0 Amps | | | | | 0.58 | | .53 | | .53 |
| 70.0 Amps | | | | | | | .60 | | |

Electrical Isolation

Teccor's isolated SCR packages will withstand a minimum high potential test of 2500VAC(RMS) from leads to mounting tab over the device's operating temperature range. See table below for standard and optional isolation ratings.

| VAC(RMS) | Isolated ** TO-220AB | Isolated ** TO-218X | Isolated ** TO-218AC |
|-------------|-------------------------|------------------------|-------------------------|
| 4000 | Optional * | N/A | N/A |

*For 4000V isolation, add "V" suffix to part number.

**UL Recognized File #E71639.

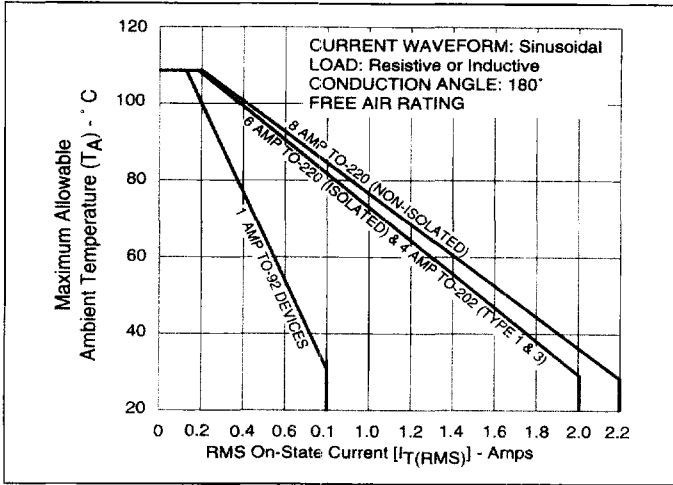


Figure 6.1 Maximum Allowable Ambient Temperature vs RMS On-State Current

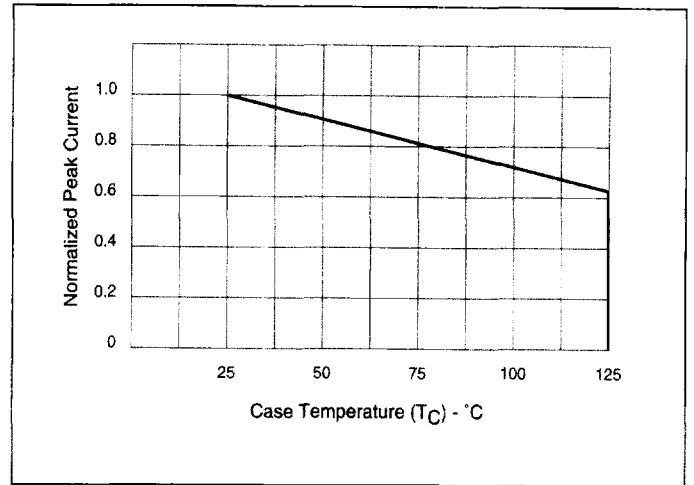


Figure 6.4 Peak Capacitor Discharge Current Derating for 12R, 16R, and 25R

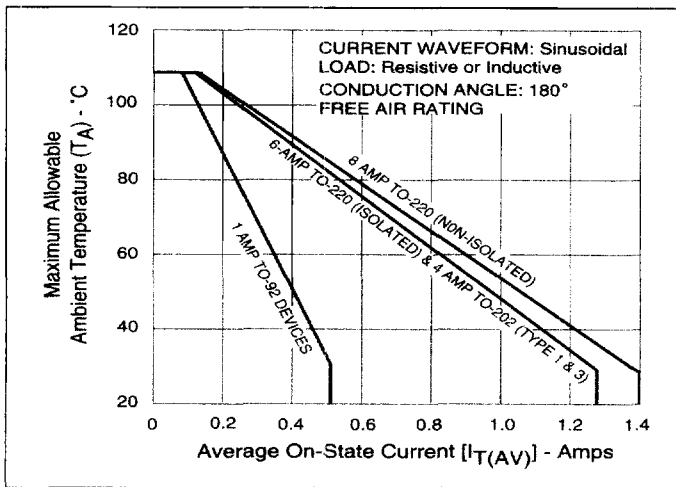


Figure 6.2 Maximum Allowable Ambient Temperature vs Average On-State Current

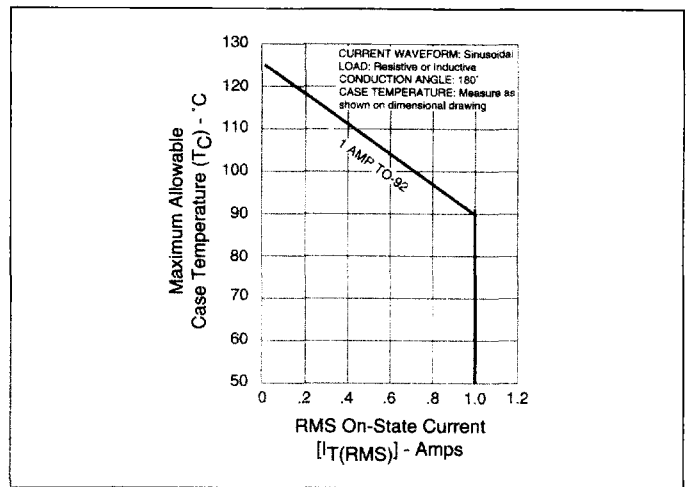


Figure 6.5 Maximum Allowable Case Temperature vs RMS On-State Current (TO-92, 1 Amp)

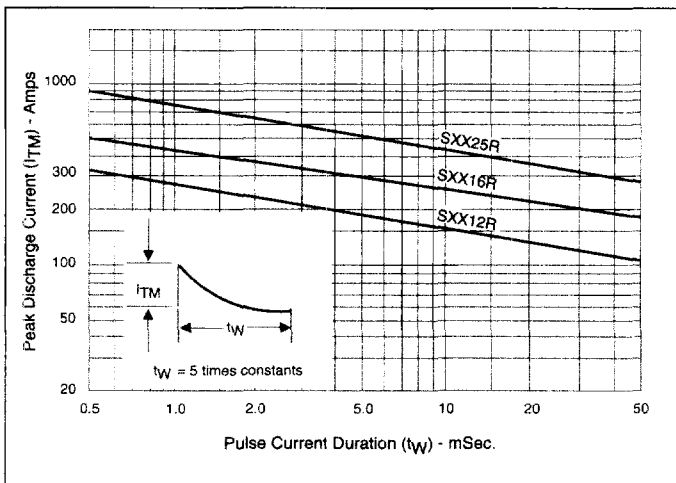


Figure 6.3 Peak Capacitor Discharge Current for 12R, 16R, and 25R

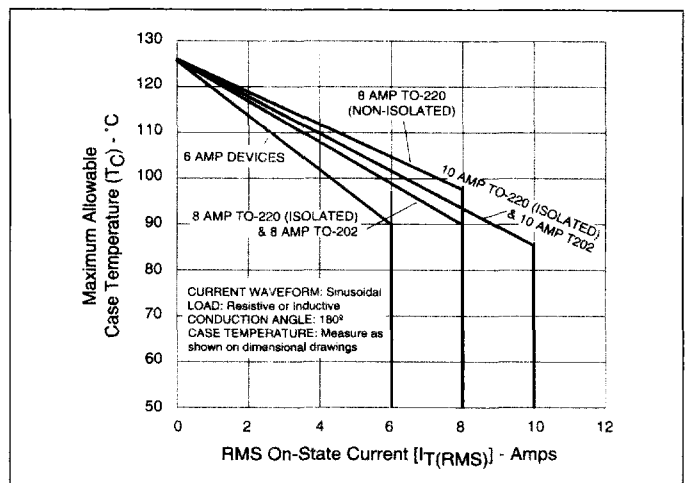


Figure 6.6 Maximum Allowable Case Temperature vs RMS On-State Current (6, 8, and 10 Amps)

Electrical Specifications

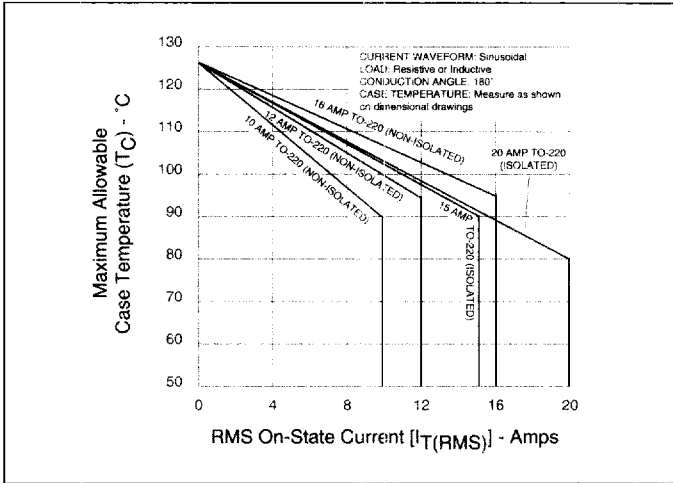


Figure 6.7 Maximum Allowable Case Temperature vs RMS On-State Current (10, 12, 16, and 20 Amps)

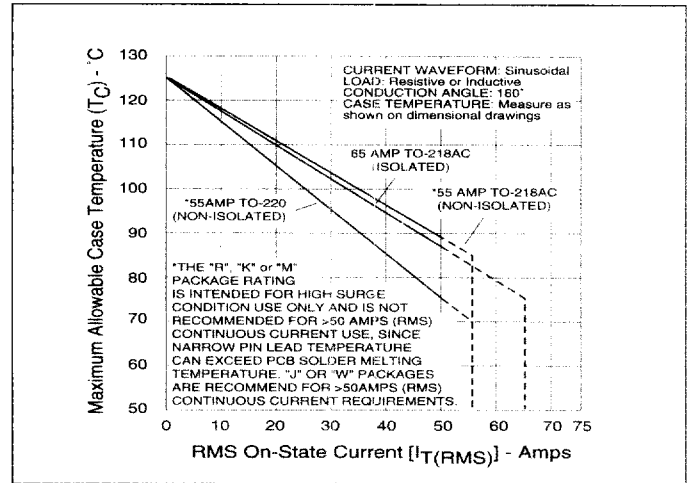


Figure 6.10 Maximum Allowable Case Temperature vs RMS On-State Current (55 and 65 Amps)

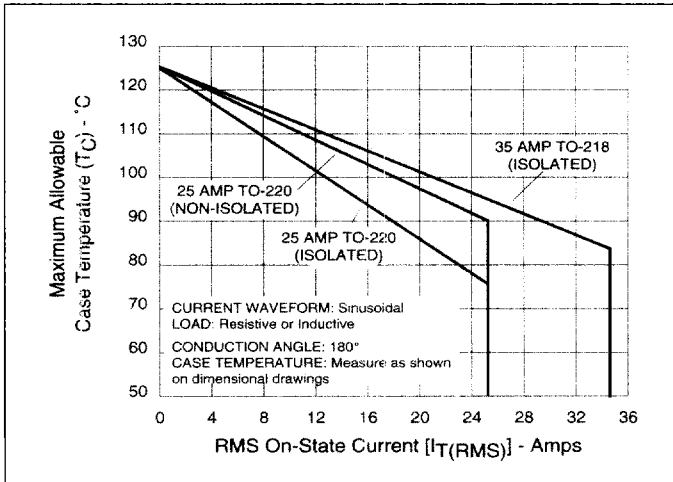


Figure 6.8 Maximum Allowable Case Temperature vs RMS On-State Current (25 and 35 Amps)

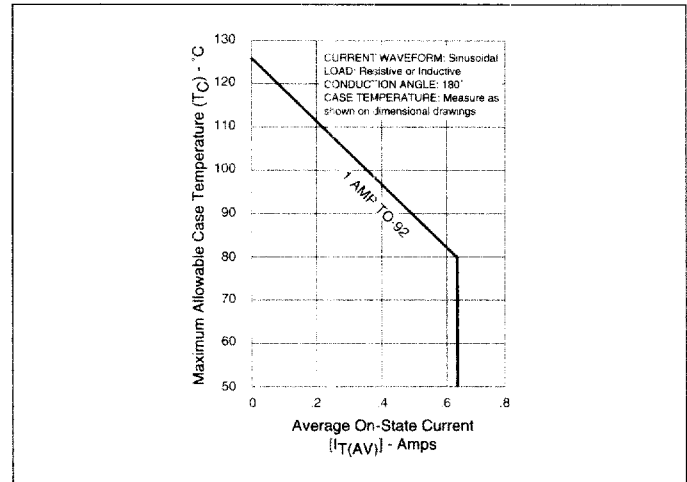


Figure 6.11 Maximum Allowable Case Temperature vs Average On-State Current (TO-92, 1 Amp)

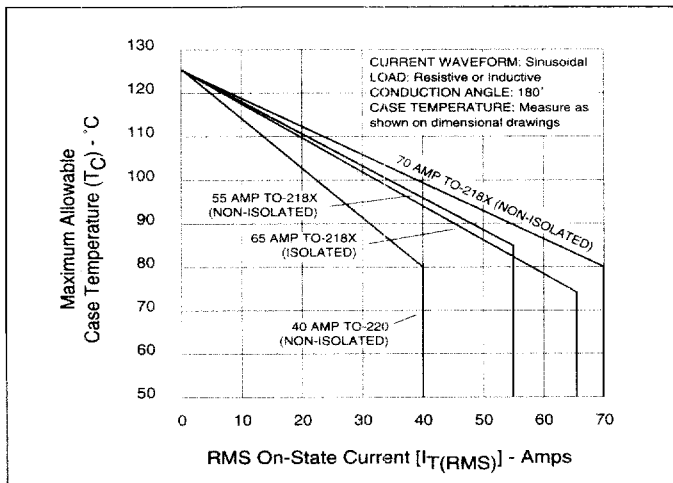


Figure 6.9 Maximum Allowable Case Temperature vs RMS On-State Current (40-70 Amps)

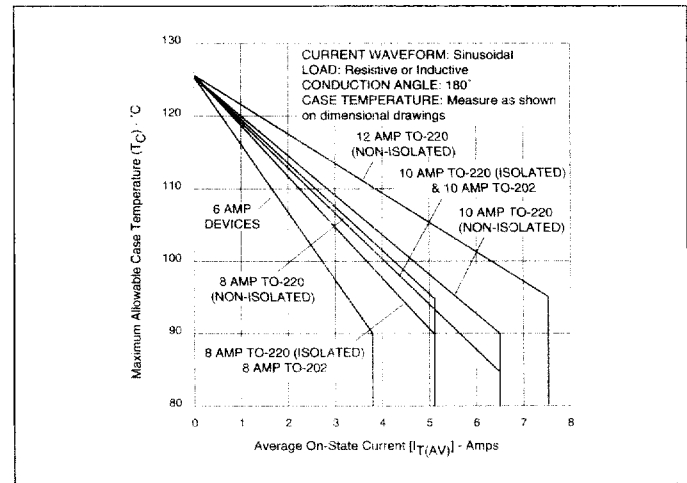


Figure 6.12 Maximum Allowable Case Temperature vs Average On-State Current (8, 10, and 12 Amps)

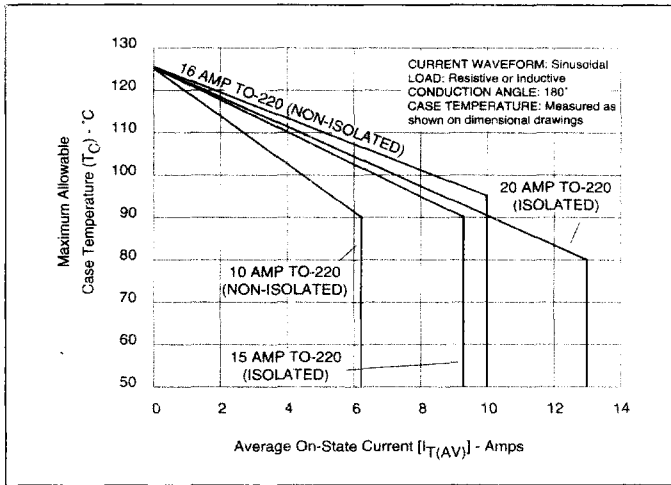


Figure 6.13 Maximum Allowable Case Temperature vs Average On-State Current (10-20 Amps)

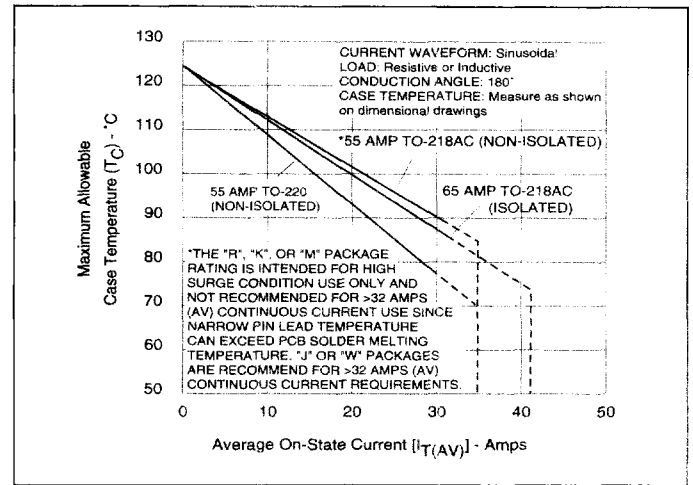


Figure 6.16 Maximum Allowable Case Temperature vs Average On-State Current (55 and 65 Amps)

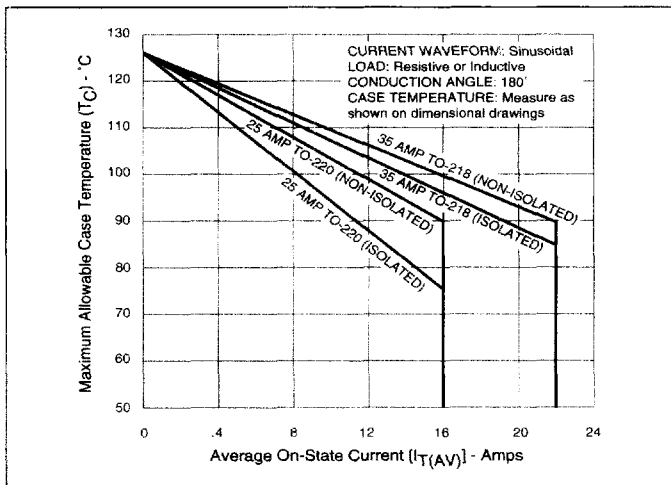


Figure 6.14 Maximum Allowable Case Temperature vs Average On-State Current (25 and 35 Amps)

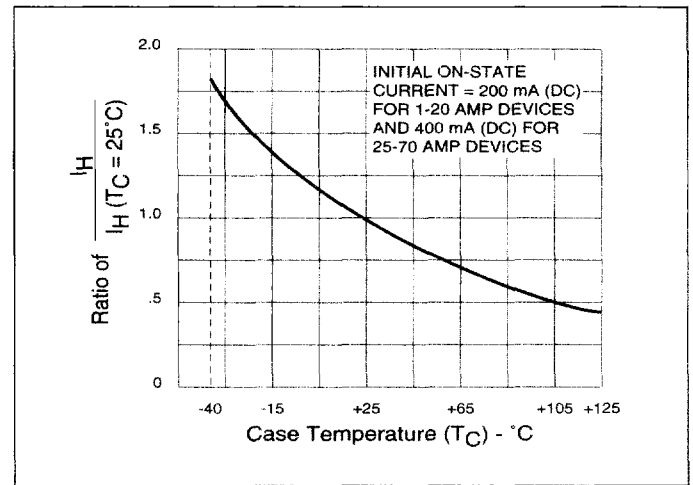


Figure 6.17 Normalized DC Holding Current vs Case Temperature

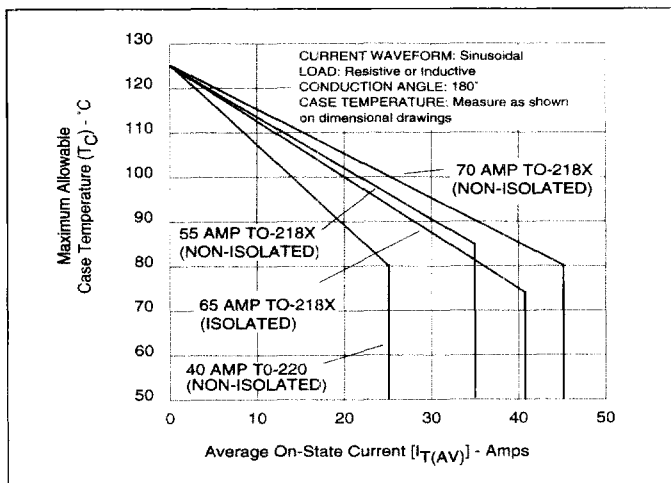


Figure 6.15 Maximum Allowable Case Temperature vs Average On-State Current (40-70 Amps)

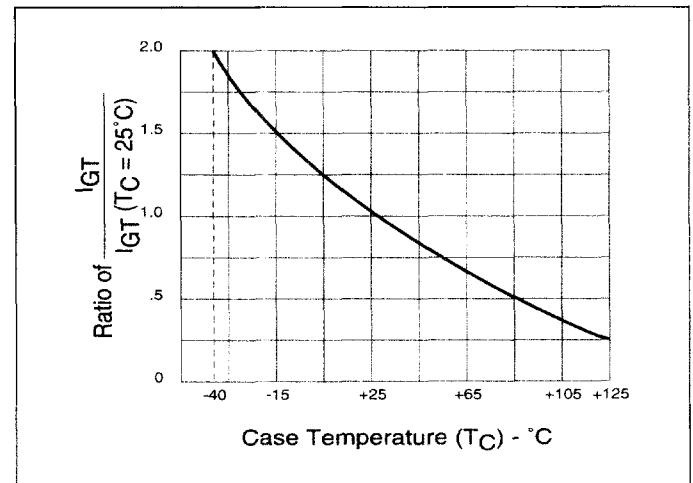


Figure 6.18 Normalized DC Gate-Trigger Current vs Case Temperature

Electrical Specifications

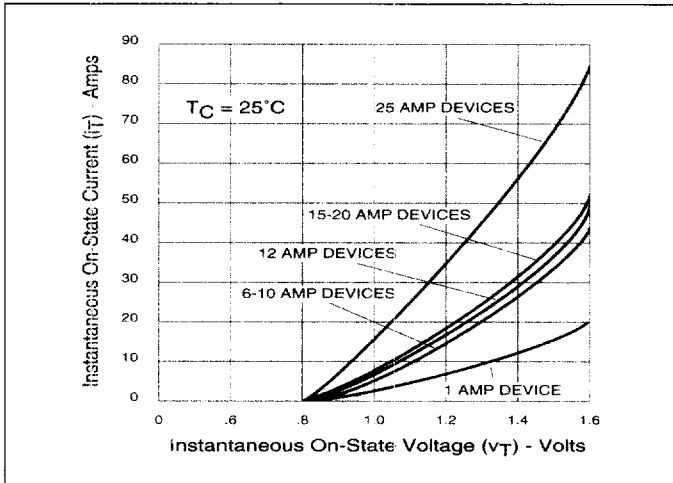


Figure 6.19 Instantaneous On-State Current vs On-State Voltage (Typical) (6-25 Amps)

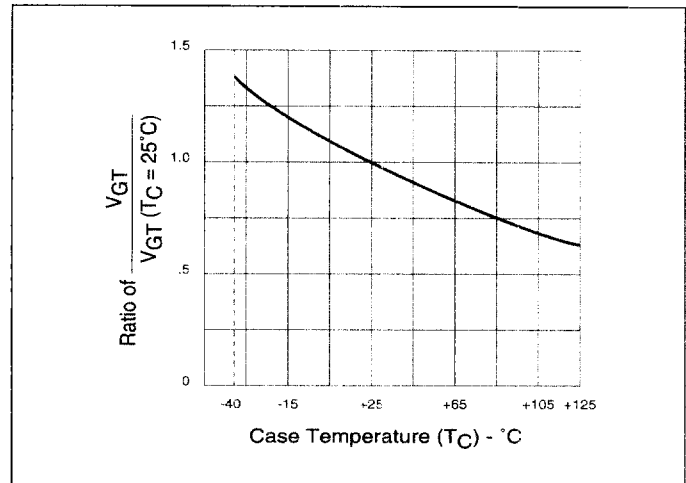


Figure 6.21 Normalized DC Gate-Trigger Voltage vs Case Temperature

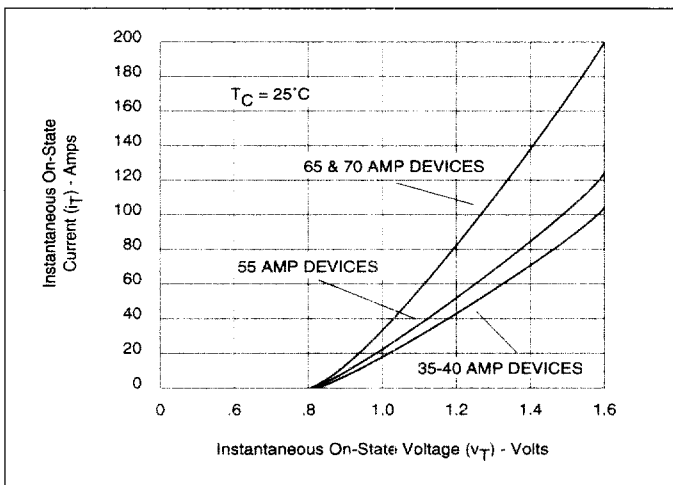


Figure 6.20 Instantaneous On-State Current vs On-State Voltage (Typical) (35-70 Amps)

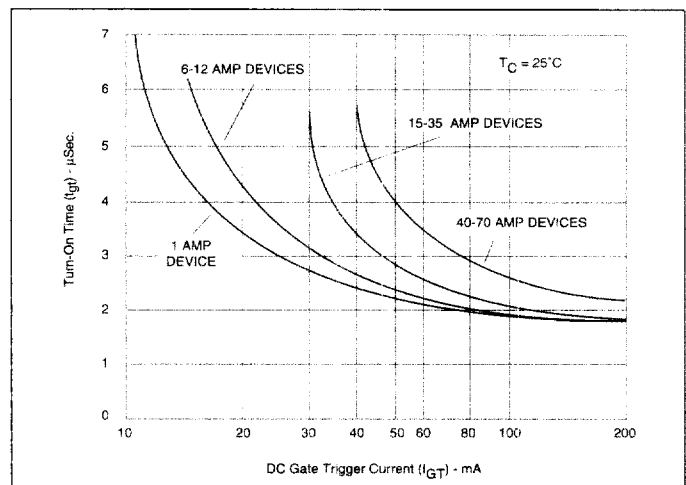


Figure 6.22 Typical Turn-On Time vs Gate-Trigger Current

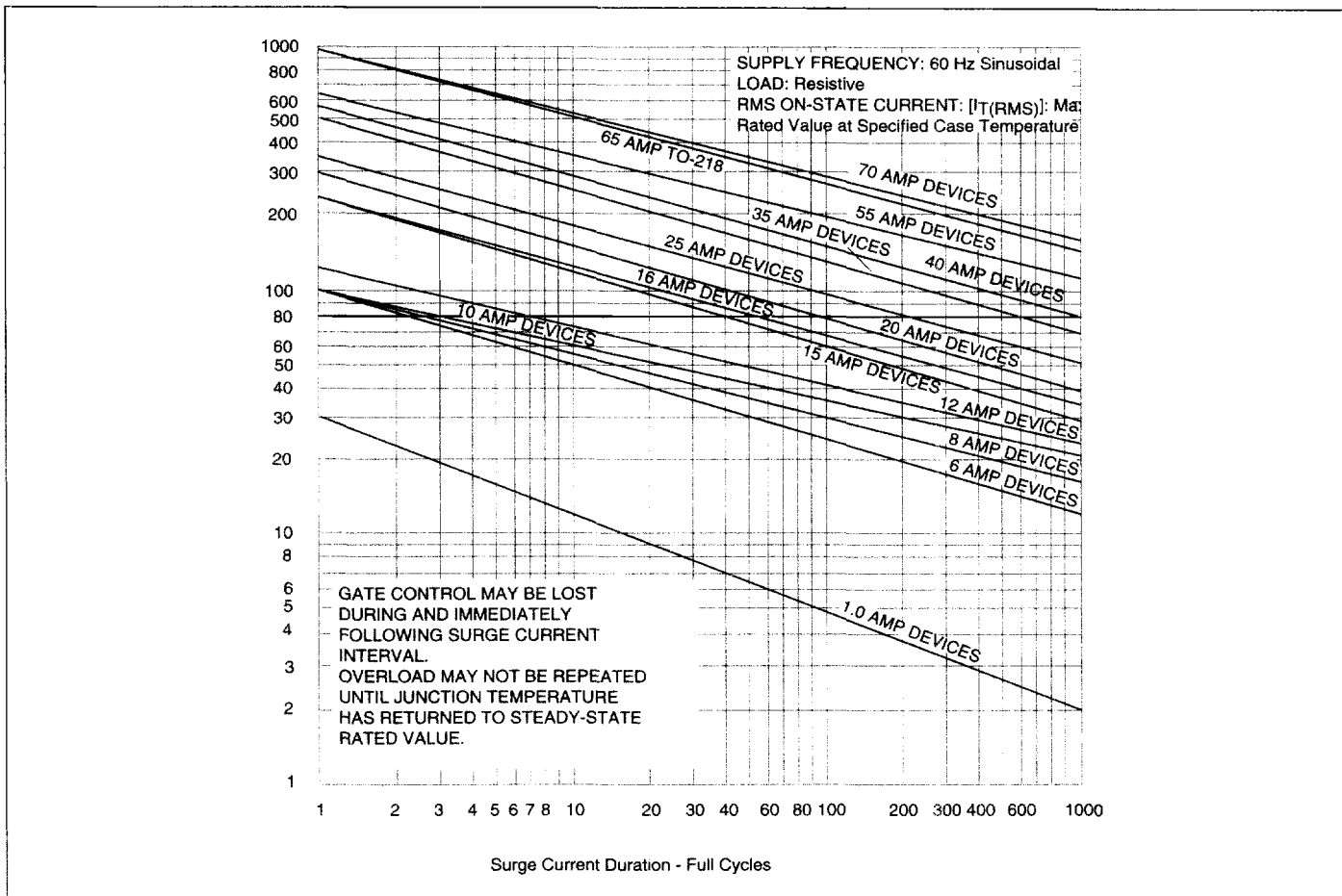


Figure 6.23 Peak Surge Current vs Surge Current Duration

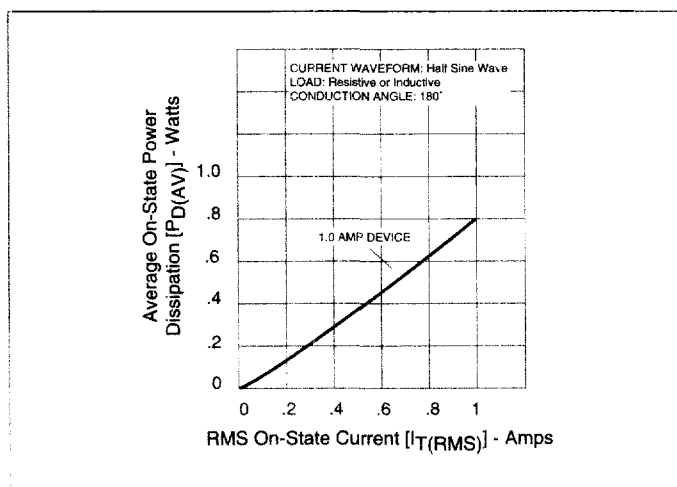


Figure 6.24 Power Dissipation (Typical) vs RMS On-State Current (TO-92, 1 Amp)

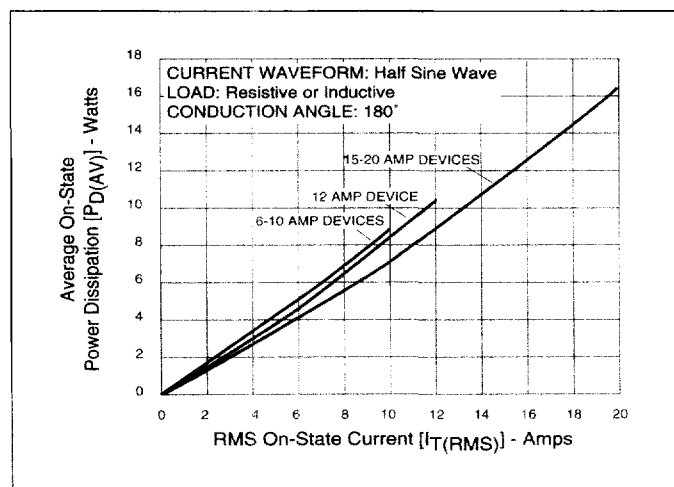


Figure 6.25 Power Dissipation (Typical) vs RMS On-State Current (6-20 Amps)

Electrical Specifications

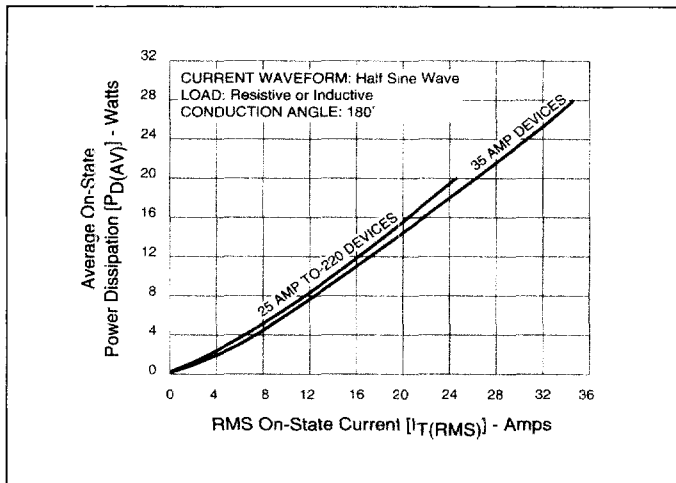


Figure 6.26 Power Dissipation (Typical) vs RMS On-State Current (25 and 35 Amps)

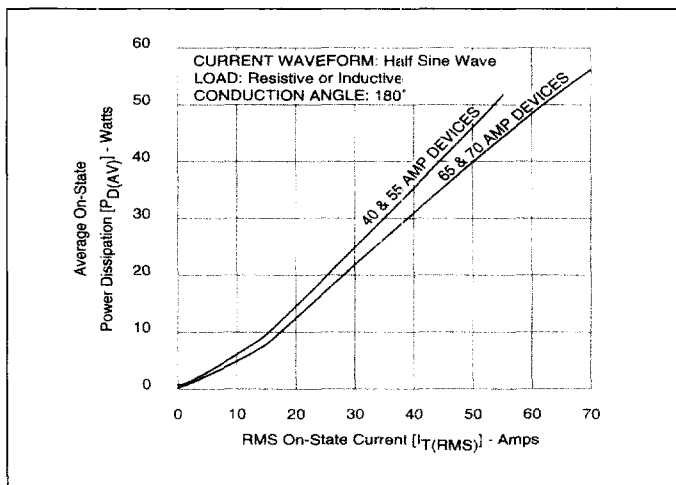


Figure 6.27 Power Dissipation (Typical) vs RMS On-State Current (40-70 Amps)