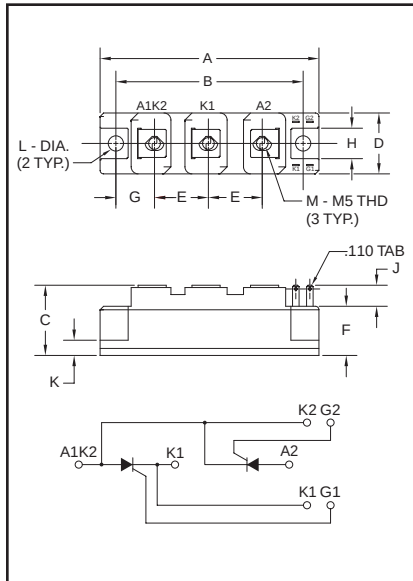


## Dual SCR POW-R-BLOK™ Modules 55 Amperes/1200-1600 Volts



Outline Drawing

| Dimension | Inches     | Millimeters |
|-----------|------------|-------------|
| A         | 3.681 Max. | 93.5 Max.   |
| B         | 3.150      | 80          |
| C         | 1.181 Max. | 30 Max.     |
| D         | 1.024 Max. | 26 Max.     |
| E         | 0.906      | 23          |
| F         | 0.827      | 21          |
| G         | 0.650      | 16.5        |
| H         | 0.512      | 13          |
| J         | 0.354      | 9           |
| K         | 0.256      | 6.5         |
| L         | 0.256 Dia. | Dia. 6.5    |
| M         | M5 Metric  | M5          |



CM431255, CM431655  
Dual SCR POW-R-BLOK™ Modules  
55 Amperes/1200-1600 Volts

### Description:

Powerex Dual SCR POW-R-BLOK™ Modules are designed for use in applications requiring phase control and isolated packaging. The modules are isolated for easy mounting with other components on common heatsinks.

### Features:

- ☐ Isolated Mounting
- ☐ Glass Passivated Chips
- ☐ Metal Baseplate
- ☐ Low Thermal Impedance

### Applications:

- ☐ Battery Supplies
- ☐ Bridge Circuits
- ☐ AC and DC Motor Control
- ☐ Tap Changers
- ☐ Lighting Control

### Ordering Information:

Select the complete eight digit module part number you desire from the table below.

Example: CM431655 is a 1600 Volt, 55 Ampere Dual SCR POW-R-BLOK™ Module.

| Type | Voltage<br>Volts (x100) | Current Rating<br>Amperes (55) |
|------|-------------------------|--------------------------------|
| CM43 | 12<br>16                | 55                             |

**CM431255, CM431655**  
**Dual SCR POW-R-BLOK™ Modules**  
 55 Amperes/1200-1600 Volts

**Absolute Maximum Ratings**

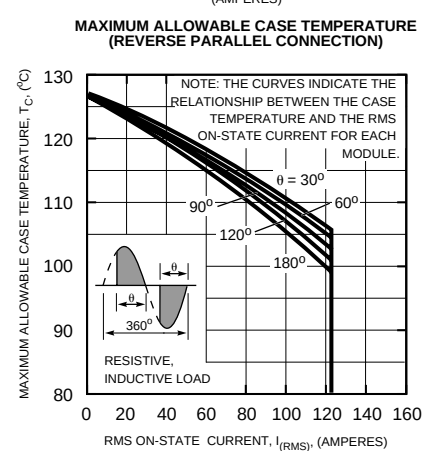
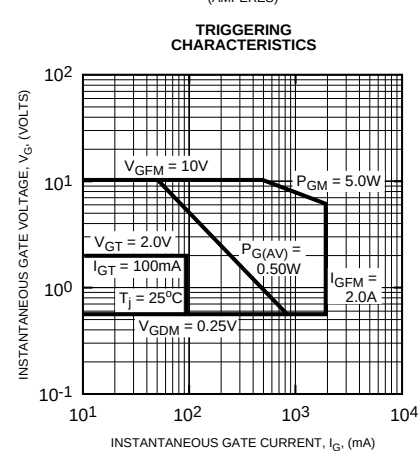
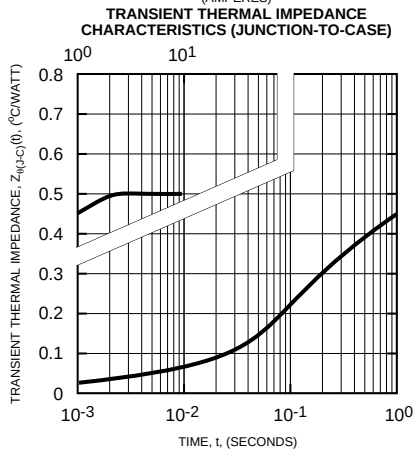
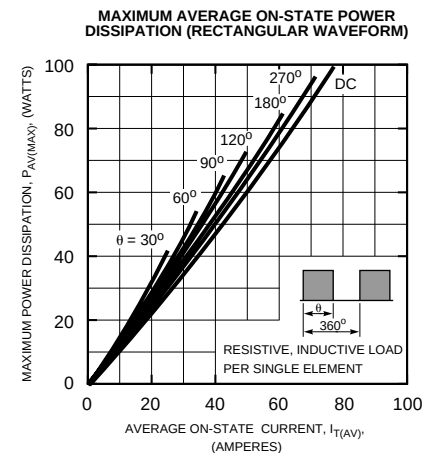
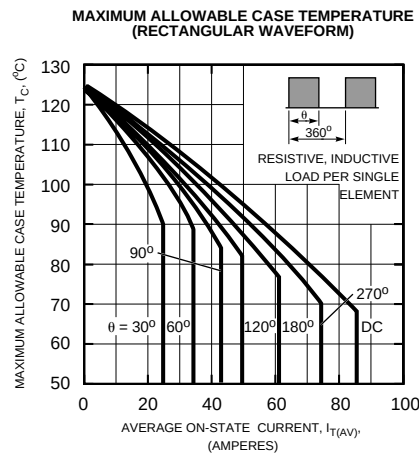
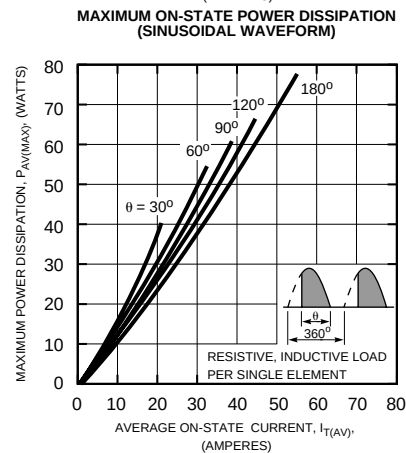
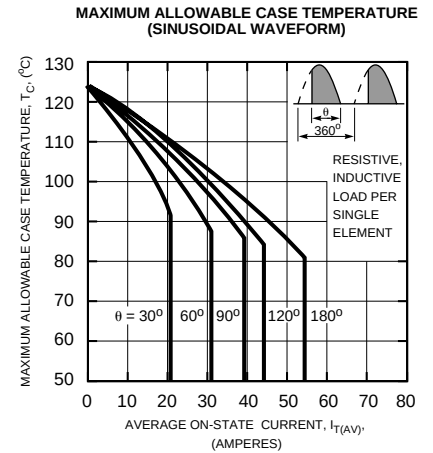
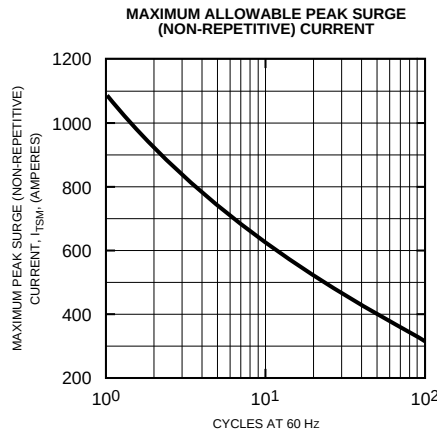
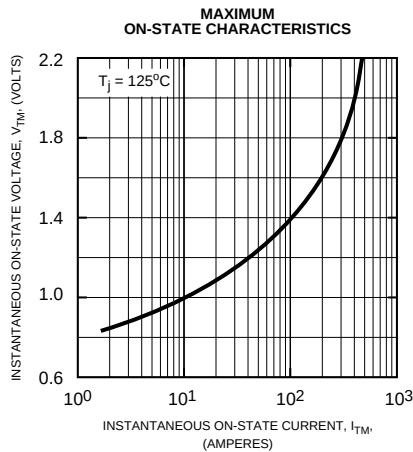
| Characteristics                                                     | Symbol      | CM431255   | CM431655   | Units            |
|---------------------------------------------------------------------|-------------|------------|------------|------------------|
| Peak Forward Blocking Voltage                                       | $V_{DRM}$   | 1200       | 1600       | Volts            |
| Transient Peak Forward Blocking Voltage (Non-Repetitive), $t < 5ms$ | $V_{DSM}$   | 1350       | 1700       | Volts            |
| DC Forward Blocking Voltage                                         | $V_{D(DC)}$ | 960        | 1280       | Volts            |
| Peak Reverse Blocking Voltage                                       | $V_{RRM}$   | 1200       | 1600       | Volts            |
| Transient Peak Reverse Blocking Voltage (Non-Repetitive), $t < 5ms$ | $V_{RSM}$   | 1350       | 1700       | Volts            |
| DC Reverse Blocking Voltage                                         | $V_{R(DC)}$ | 960        | 1280       | Volts            |
| RMS On-State Current                                                | $I_T(RMS)$  | 86         | 86         | Amperes          |
| Average On-State Current, $T_C = 81^\circ C$                        | $I_T(AV)$   | 55         | 55         | Amperes          |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)       | $I_{TSM}$   | 1100       | 1100       | Amperes          |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)       | $I_{TSM}$   | 1000       | 1000       | Amperes          |
| $I^2t$ (for Fusing), 8.3 milliseconds                               | $I^2t$      | 5500       | 5500       | $A^2sec$         |
| Critical Rate-of-Rise of On-State Current*                          | $di/dt$     | 100        | 100        | Amperes/ $\mu s$ |
| Peak Gate Power Dissipation                                         | $P_{GM}$    | 5.0        | 5.0        | Watts            |
| Average Gate Power Dissipation                                      | $P_{G(AV)}$ | 0.5        | 0.5        | Watts            |
| Peak Forward Gate Voltage                                           | $V_{GFM}$   | 10         | 10         | Volts            |
| Peak Reverse Gate Voltage                                           | $V_{GRM}$   | 5.0        | 5.0        | Volts            |
| Peak Forward Gate Current                                           | $I_{GFM}$   | 2.0        | 2.0        | Amperes          |
| Storage Temperature                                                 | $T_{STG}$   | -40 to 125 | -40 to 125 | $^\circ C$       |
| Operating Temperature                                               | $T_J$       | -40 to 125 | -40 to 125 | $^\circ C$       |
| Maximum Mounting Torque M6 Mounting Screw                           | —           | 26         | 26         | in.-lb.          |
| Maximum Mounting Torque M5 Terminal Screw                           | —           | 17         | 17         | in.-lb.          |
| Module Weight (Typical)                                             | —           | 160        | 160        | Grams            |
| V Isolation                                                         | $V_{RMS}$   | 2500       | 2500       | Volts            |

\* $T_J = 125^\circ C$ ,  $I_G = 1.0A$ ,  $V_D = 1/2 V_{DRM}$

**Electrical and Thermal Characteristics,  $T_J = 25^\circ C$  unless otherwise specified**

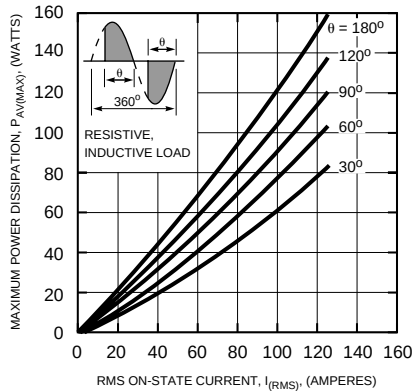
| Characteristics                               | Symbol            | Test Conditions                                | CM431255/CM431655 | Units           |
|-----------------------------------------------|-------------------|------------------------------------------------|-------------------|-----------------|
| <b>Blocking State Maximums</b>                |                   |                                                |                   |                 |
| Forward Leakage Current, Peak                 | $I_{DRM}$         | $T_J = 125^\circ C$ , $V_{DRM} = \text{Rated}$ | 10                | mA              |
| Reverse Leakage Current, Peak                 | $I_{RRM}$         | $T_J = 125^\circ C$ , $V_{RRM} = \text{Rated}$ | 10                | mA              |
| <b>Conducting State Maximums</b>              |                   |                                                |                   |                 |
| Peak On-State Voltage                         | $V_{TM}$          | $I_{TM} = 165A$                                | 1.5               | Volts           |
| <b>Switching Minimums</b>                     |                   |                                                |                   |                 |
| Critical Rate-of-Rise of Off-State Voltage    | $dv/dt$           | $T_J = 125^\circ C$ , $V_D = 2/3 V_{DRM}$      | 500               | Volts/ $\mu s$  |
| <b>Thermal Maximums</b>                       |                   |                                                |                   |                 |
| Thermal Resistance, Junction-to-Case          | $R_{\theta(J-C)}$ | Per Module                                     | 0.5               | $^\circ C/Watt$ |
| Thermal Resistance, Case-to-Sink (Lubricated) | $R_{\theta(C-S)}$ | Per Module                                     | 0.2               | $^\circ C/Watt$ |
| <b>Gate Parameters Maximums</b>               |                   |                                                |                   |                 |
| Gate Current-to-Trigger                       | $I_{GT}$          | $V_D = 6V$ , $R_L = 2\Omega$                   | 100               | mA              |
| Gate Voltage-to-Trigger                       | $V_{GT}$          | $V_D = 6V$ , $R_L = 2\Omega$                   | 2.0               | Volts           |
| Non-Triggering Gate Voltage                   | $V_{GDM}$         | $T_J = 125^\circ C$ , $V_D = 1/2 V_{DRM}$      | 0.25              | Volts           |

**CM431255, CM431655**  
**Dual SCR POW-R-BLOK™ Modules**  
 55 Amperes/1200-1600 Volts



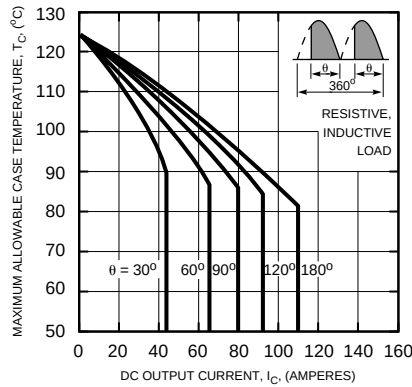
**CM431255, CM431655**  
**Dual SCR POW-R-BLOK™ Modules**  
 55 Amperes/1200-1600 Volts

**MAXIMUM ON-STATE POWER DISSIPATION  
(REVERSE PARALLEL CONNECTION)**



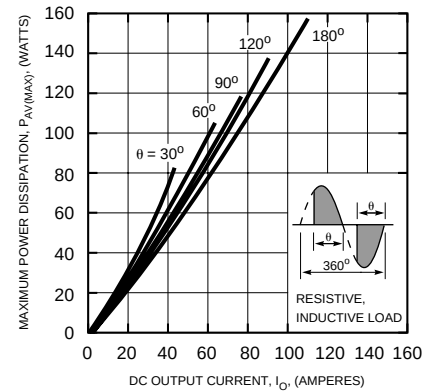
NOTE: THE CURVES INDICATE THE RELATIONSHIP BETWEEN THE AVERAGE ON-STATE POWER DISSIPATION PER MODULE AND THE RMS ON-STATE CURRENT.

**MAXIMUM ALLOWABLE CASE TEMPERATURE  
(SINGLE PHASE BRIDGE CONNECTION)**



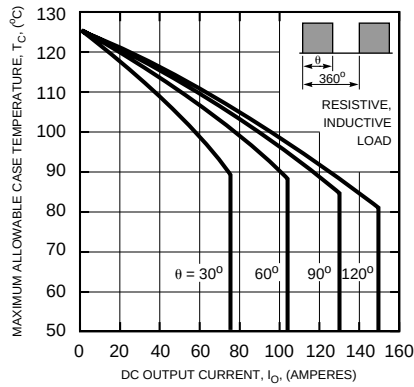
NOTE: THE CURVES INDICATE THE RELATIONSHIP BETWEEN THE CASE TEMPERATURE AND THE DC OUTPUT CURRENT (FOR TWO ELEMENTS) WHEN USED IN THE SINGLE PHASE BRIDGE CONFIGURATION.

**MAXIMUM ON-STATE POWER DISSIPATION  
(SINGLE PHASE BRIDGE CONNECTION)**



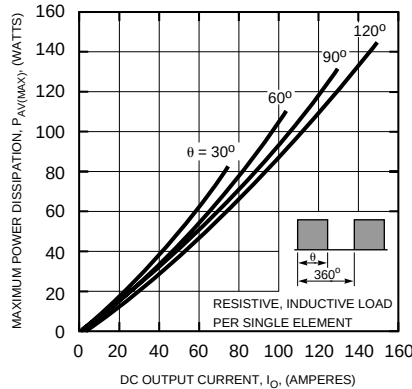
NOTE: THE CURVES INDICATE THE RELATIONSHIP BETWEEN THE AVERAGE ON-STATE POWER DISSIPATION AND THE DC OUTPUT CURRENT FOR THE SINGLE PHASE BRIDGE CONFIGURATION (POWER DISSIPATION EXPRESSED FOR EACH MODULE AND DC OUTPUT CURRENT EXPRESSED FOR THE PAIR)

**MAXIMUM ALLOWABLE CASE TEMPERATURE  
(THREE PHASE BRIDGE CONNECTION)**



NOTE: THE CURVES INDICATE THE RELATIONSHIP BETWEEN THE CASE TEMPERATURE AND THE DC OUTPUT CURRENT (FOR THREE MODULES) IN THE THREE PHASE CONFIGURATION.

**MAXIMUM ON-STATE POWER DISSIPATION  
(THREE PHASE BRIDGE CONNECTION)**



NOTE: THE CURVES INDICATE THE RELATIONSHIP BETWEEN THE ON-STATE POWER DISSIPATION (PER MODULE) AND THE DC OUTPUT CURRENT (FOR THREE MODULES) IN THE THREE PHASE BRIDGE CONFIGURATION.