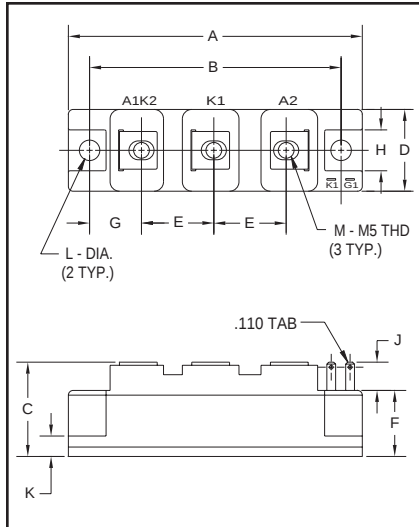


## SCR/Diode POW-R-BLOK™ Modules 25 Amperes/1200-1600 Volts



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          |



CM4212A2, CM4216A2  
SCR/Diode  
POW-R-BLOK™ Modules  
25 Amperes/1200-1600 Volts

### Description:

Powerex SCR/Diode POW-R-BLOK™ Modules are designed for use in applications requiring Half-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: CM4212A2 is a 1200 Volt, 25 Ampere SCR/Diode POW-R-BLOK™ Module.

| Type | Voltage<br>Volts (x100) | Current Rating<br>Amperes (25) |
|------|-------------------------|--------------------------------|
| CM42 | 12<br>16                | A2                             |



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

**CM4212A2, CM4216A2**  
**SCR/Diode POW-R-BLOK™ Modules**  
25 Amperes/1200-1600 Volts

#### Absolute Maximum Ratings

| Characteristics                                                            | Symbol                             | CM4212A2   | CM4216A2   | Units                  |
|----------------------------------------------------------------------------|------------------------------------|------------|------------|------------------------|
| Peak Forward Blocking Voltage                                              | $V_{DRM}$                          | 1200       | 1600       | Volts                  |
| Transient Peak Forward Blocking Voltage (Non-Repetitive), $t < 5\text{ms}$ | $V_{DSM}$                          | 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), $t < 5\text{ms}$ | $V_{RSM}$                          | 1350       | 1700       | Volts                  |
| DC Reverse Blocking Voltage                                                | $V_{R(DC)}$                        | 960        | 1280       | Volts                  |
| RMS On-State Current                                                       | $I_T(\text{RMS}), I_F(\text{RMS})$ | 39         | 39         | Amperes                |
| Average On-State Current, $T_C = 87^\circ\text{C}$                         | $I_T(\text{AV}), I_F(\text{AV})$   | 25         | 25         | Amperes                |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)              | $I_{TSM}, I_{FSM}$                 | 490        | 490        | Amperes                |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)              | $I_{TSM}, I_{FSM}$                 | 445        | 445        | Amperes                |
| $I^2t$ (for Fusing), 8.3 milliseconds                                      | $I^2t$                             | 1000       | 1000       | $\text{A}^2\text{sec}$ |
| Critical Rate-of-Rise of On-State Current*                                 | $di/dt$                            | 100        | 100        | Amperes/ $\mu\text{s}$ |
| Peak Gate Power Dissipation                                                | $P_{GM}$                           | 5.0        | 5.0        | Watts                  |
| Average Gate Power Dissipation                                             | $P_{G(\text{AV})}$                 | 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 | $^\circ\text{C}$       |
| Operating Temperature                                                      | $T_J$                              | -40 to 125 | -40 to 125 | $^\circ\text{C}$       |
| 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                  |

\* $T_J = 125^\circ\text{C}$ ,  $I_G = 0.5\text{A}$ ,  $V_D = 1/2 V_{DRM}$



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

CM4212A2, CM4216A2  
SCR/Diode POW-R-BLOK™ Modules  
25 Amperes/1200-1600 Volts

**Electrical and Thermal Characteristics,  $T_j = 25^\circ\text{C}$  unless otherwise specified**

| Characteristics                               | Symbol                            | Test Conditions                                             | CM4212A2/CM4216A2 | Units                 |
|-----------------------------------------------|-----------------------------------|-------------------------------------------------------------|-------------------|-----------------------|
| <b>Blocking State Maximums</b>                |                                   |                                                             |                   |                       |
| Forward Leakage Current, Peak                 | $I_{\text{DRM}}$                  | $T_j = 125^\circ\text{C}$ , $V_{\text{DRM}} = \text{Rated}$ | 10                | mA                    |
| Reverse Leakage Current, Peak                 | $I_{\text{RRM}}$                  | $T_j = 125^\circ\text{C}$ , $V_{\text{RRM}} = \text{Rated}$ | 10                | mA                    |
| <b>Conducting State Maximums</b>              |                                   |                                                             |                   |                       |
| Peak On-State Voltage                         | $V_{\text{FM}}$ , $V_{\text{TM}}$ | $I_{\text{FM}} = 75\text{A}$ , $I_{\text{TM}} = 75\text{A}$ | 1.8               | Volts                 |
| <b>Switching Minimums</b>                     |                                   |                                                             |                   |                       |
| Critical Rate-of-Rise of Off-State Voltage    | $dv/dt$                           | $T_j = 125^\circ\text{C}$ , $V_D = 2/3 V_{\text{DRM}}$      | 500               | Volts/ $\mu\text{s}$  |
| <b>Thermal Maximums</b>                       |                                   |                                                             |                   |                       |
| Thermal Resistance, Junction-to-Case          | $R_{\theta(\text{J-C})}$          | Per Module                                                  | 0.8               | $^\circ\text{C/Watt}$ |
| Thermal Resistance, Case-to-Sink (Lubricated) | $R_{\theta(\text{C-S})}$          | Per Module                                                  | 0.2               | $^\circ\text{C/Watt}$ |
| <b>Gate Parameters Maximums</b>               |                                   |                                                             |                   |                       |
| Gate Current-to-Trigger                       | $I_{\text{GT}}$                   | $V_D = 6\text{V}$ , $R_L = 2\Omega$                         | 50                | mA                    |
| Gate Voltage-to-Trigger                       | $V_{\text{GT}}$                   | $V_D = 6\text{V}$ , $R_L = 2\Omega$                         | 3.0               | Volts                 |
| Non-Triggering Gate Voltage                   | $V_{\text{GDM}}$                  | $T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{\text{DRM}}$      | 0.25              | Volts                 |

**CM4212A2, CM4216A2**  
**SCR/Diode POW-R-BLOK™ Modules**  
 25 Amperes/1200-1600 Volts

