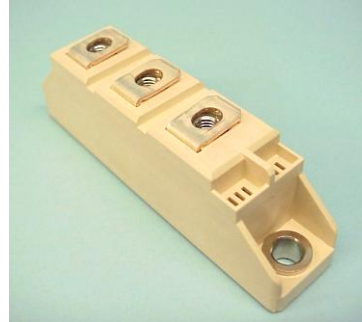
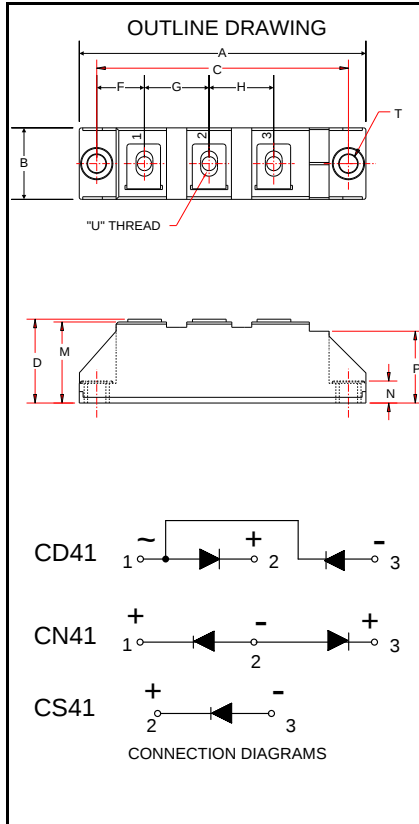


### POW-R-BLOK™ Dual & Single Diode Isolated Module 100 Amperes / Up to 1600 Volts



**CD41\_\_99B, CN41\_\_99B  
CS41\_\_99B**  
**Dual & Single Diode Isolated**  
**POW-R-BLOK™ Module**  
100 Amperes / Up to 1600 Volts

#### Ordering Information:

Select the complete nine digit module part number from the table below.  
Example: CD411699B is a 1600 Volt, 100 Ampere Dual Diode Isolated POW-R-BLOK™ Module

| Type | Voltage<br>Volts<br>(x100) | Current<br>Amperes | Version |
|------|----------------------------|--------------------|---------|
| CD41 | 08                         | 99                 | B       |
| CN41 | 12                         | (100 A)            |         |
| CS41 | 14                         |                    |         |
|      | 16                         |                    |         |

#### Description:

Powerex Dual Diode & Single Diode Modules are designed for use in applications requiring rectification and isolated packaging. The modules are isolated for easy mounting with other components on a common heatsink. POW-R-BLOK™ has been tested and recognized by the Underwriters Laboratories.

#### Features:

- Electrically Isolated Heatsinking
- DBC Alumina (Al<sub>2</sub>O<sub>3</sub>) Insulator
- Copper Baseplate
- Low Thermal Impedance for Improved Current Capability
- UL Recognized (E78240)

#### Benefits:

- No Additional Insulation Components Required
- Easy Installation
- No Clamping Components Required
- Reduce Engineering Time

#### Applications:

- Power Supplies
- Bridge Circuits
- AC & DC Motor Drives
- Battery Supplies
- Large IGBT Circuit Front Ends
- Lighting Control
- Heat & Temperature Control
- Welders

#### Outline Dimensions

| Dimension | Inches | Millimeters |
|-----------|--------|-------------|
| A         | 3.66   | 93          |
| B         | 0.79   | 20          |
| C         | 3.15   | 80          |
| D         | 1.18   | 30          |
| F         | 0.61   | 15.5        |
| G         | 0.79   | 20          |
| H         | 0.79   | 20          |
| M         | 1.16   | 29.4        |
| N         | 0.31   | 8           |
| P         | 0.94   | 24          |
| T         | 0.25   | 6.4         |
| U         | M5     | M5          |

Note: Dimensions are for reference only.



# CD41\_\_99B, CN41\_\_99B CS41\_\_99B

Powerex, Inc., 173 Pavilion Lane, Youngwood, PA 15697 (724) 925-7272  
www.pwr.com

**POW-R-BLOK™**  
**Dual & Single Diode Isolated Module**  
**100 Amperes / Up to 1600 Volts**

## Absolute Maximum Ratings

| Characteristics                                                 | Conditions                                                    | Symbol       |                 | Units                  |
|-----------------------------------------------------------------|---------------------------------------------------------------|--------------|-----------------|------------------------|
| Repetitive Peak Reverse Blocking Voltage                        |                                                               | $V_{RRM}$    | up to 1600      | V                      |
| Non-Repetitive Peak Reverse Blocking Voltage<br>( $t < 5$ msec) |                                                               | $V_{RSM}$    | $V_{RRM} + 100$ | V                      |
| RMS Forward Current                                             | DC Conduction, $T_C=90^{\circ}\text{C}$                       | $I_{F(RMS)}$ | 157             | A                      |
| Average Forward Current                                         | 180° Conduction, $T_C=100^{\circ}\text{C}$                    | $I_{F(AV)}$  | 100             | A                      |
| Peak One Cycle Surge Current, Non-Repetitive                    | 60 Hz, 100% $V_{RRM}$ reapplied, $T_J = 150^{\circ}\text{C}$  | $I_{FSM}$    | 1,780           | A                      |
|                                                                 | 60 Hz, No $V_{RRM}$ reapplied, $T_J = 150^{\circ}\text{C}$    | $I_{FSM}$    | 2,110           | A                      |
|                                                                 | 50 Hz, 100% $V_{RRM}$ reapplied, $T_J = 150^{\circ}\text{C}$  | $I_{FSM}$    | 1,700           | A                      |
|                                                                 | 50 Hz, No $V_{RRM}$ reapplied, $T_J = 150^{\circ}\text{C}$    | $I_{FSM}$    | 2,020           | A                      |
| $I^2t$ for Fusing for One Cycle                                 | 8.3 ms, 100% $V_{RRM}$ reapplied, $T_J = 150^{\circ}\text{C}$ | $I^2t$       | 13,190          | $\text{A}^2\text{sec}$ |
|                                                                 | 8.3 ms, No $V_{RRM}$ reapplied, $T_J = 150^{\circ}\text{C}$   | $I^2t$       | 18,650          | $\text{A}^2\text{sec}$ |
|                                                                 | 10 ms, 100% $V_{RRM}$ reapplied, $T_J = 150^{\circ}\text{C}$  | $I^2t$       | 14,450          | $\text{A}^2\text{sec}$ |
|                                                                 | 10 ms, No $V_{RRM}$ reapplied, $T_J = 150^{\circ}\text{C}$    | $I^2t$       | 20,430          | $\text{A}^2\text{sec}$ |
| Operating Temperature                                           |                                                               | $T_J$        | -40 to +150     | $^{\circ}\text{C}$     |
| Storage Temperature                                             |                                                               | $T_{stg}$    | -40 to +150     | $^{\circ}\text{C}$     |
| Max. Mounting Torque, M6 Mounting Screw on<br>Terminals         |                                                               |              | 25              | in. – Lb.              |
|                                                                 |                                                               |              | 3               | Nm                     |
| Max. Mounting Torque, Module to Heatsink                        |                                                               |              | 44              | in. – Lb.              |
|                                                                 |                                                               |              | 5               | Nm                     |
| Module Weight, Typical                                          |                                                               |              | 95              | g                      |
|                                                                 |                                                               |              | 3.35            | Oz                     |
| V Isolation @ 25C                                               | 50-60 Hz, 1 second                                            | $V_{rms}$    | 3500            | V                      |
| Circuit To Base, All Terminals Shorted Together                 |                                                               |              |                 |                        |

Information is based upon manufacturers testing and projected capabilities.  
This information is subject to change without notice.  
The manufacturer makes no claim as to suitability for use, reliability, capability,  
or future availability of this product.



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## Electrical Characteristics, $T_J=25^{\circ}\text{C}$ unless otherwise specified

| Characteristics                         | Symbol      | Test Conditions                                                                    | Min. | Max. | Units      |
|-----------------------------------------|-------------|------------------------------------------------------------------------------------|------|------|------------|
| Repetitive Peak Reverse Leakage Current | $I_{RRM}$   | Up to 1800V, $T_J=150^{\circ}\text{C}$                                             |      | 10   | mA         |
| Peak On-State Voltage                   | $V_{FM}$    | $T_J=25^{\circ}\text{C}$ , $I_{FM}=300\text{A}$ , $180^{\circ}$ Conduction         |      | 1.35 | V          |
| Threshold Voltage, Low-level            | $V_{(FO)1}$ | $T_J = 150^{\circ}\text{C}$ , $I = 16.7\% \times \pi I_{F(AV)}$ to $\pi I_{F(AV)}$ |      | 0.85 | V          |
| Slope Resistance, Low-level             | $r_{T1}$    |                                                                                    |      | 1.3  | m $\Omega$ |

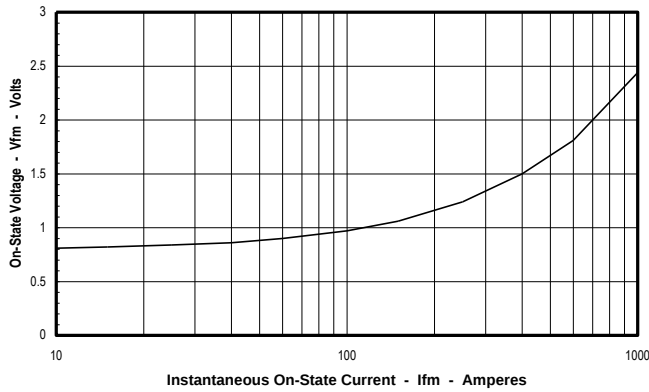
## Thermal Characteristics

| Characteristics                             | Symbol           |                                                              | Max.          | Units                                        |
|---------------------------------------------|------------------|--------------------------------------------------------------|---------------|----------------------------------------------|
| Thermal Resistance, Junction to Case        | $R_{\theta J-C}$ | Per Module, both conducting<br>Per Junction, both conducting | 0.175<br>0.35 | $^{\circ}\text{C/W}$<br>$^{\circ}\text{C/W}$ |
| Thermal Resistance, Case to Sink Lubricated | $R_{\theta C-S}$ | Per Module                                                   | 0.1           | $^{\circ}\text{C/W}$                         |

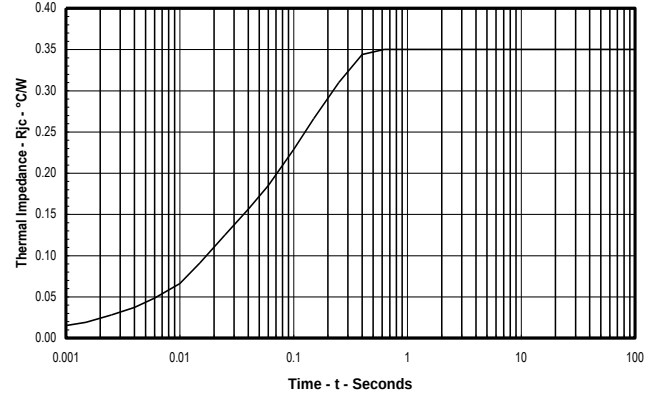
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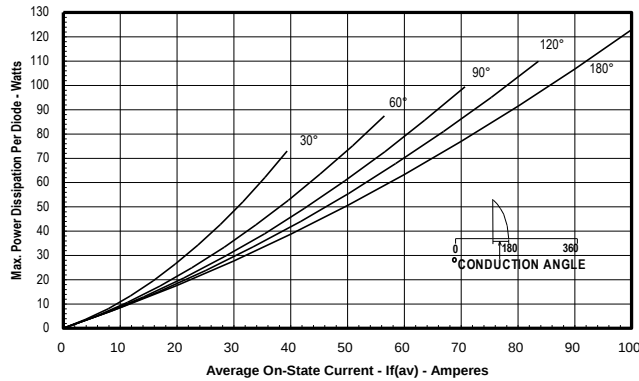
Maximum On-State Forward Voltage Drop  
( $T_J = 150^\circ\text{C}$ )



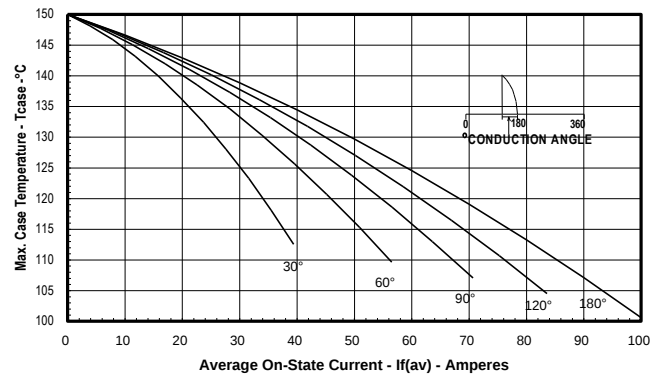
Maximum Transient Thermal Impedance  
(Junction to Case)



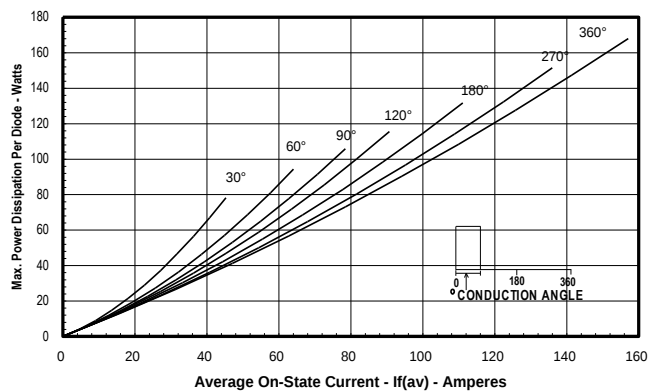
Maximum On-State Power Dissipation  
(Sinusoidal Waveform)



Maximum Allowable Case Temperature  
(Sinusoidal Waveform)



Maximum On-State Power Dissipation  
(Rectangular Waveform)



Maximum Allowable Case Temperature  
(Rectangular Waveform)

