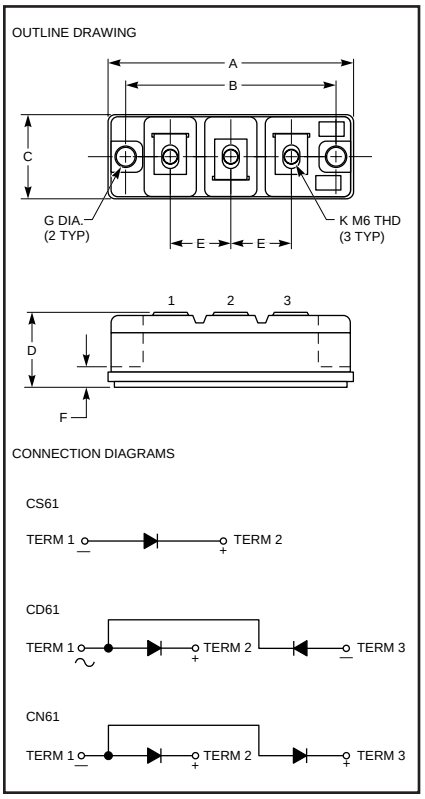
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

# Dual Diode
## POW-R-BLOK™ Module
### 160 Amperes/2000 Volts




**Outline Drawing**

| Dimension | Inches | | Metric | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 3.681 | 3.721 | 93.50 | 94.51 |
| B | 3.145 | 3.155 | 79.88 | 80.14 |
| C | 1.329 | 1.349 | 33.76 | 34.26 |
| D | 1.160 | 1.200 | 29.51 | 30.53 |
| E | 0.901 | 0.911 | 22.88 | 23.14 |
| F | 0.305 | 0.325 | 7.75 | 8.26 |
| K | — | — | M6 x 1.0 | |
| G∅ | 0.251 | 0.261 | 6.38 | 6.63 |

**CD61_ _16, CN61_ _16, CS61_ _16**
**Dual Diode POW-R-BLOK™ Module**
160 Amperes/2000 Volts

**Description:**
Powerex Dual 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 (QQQX2 Power Semiconductors).

**Features:**

- ☐ Electrically Isolated Heatsinking
- ☐ Compression Bonded Elements
- ☐ Metal Baseplate
- ☐ Low Thermal Impedance
- ☐ UL Recognized

**Applications:**

- ☐ Battery Supplies
- ☐ Bridge Circuits
- ☐ AC and DC Motor Control
- ☐ Rectifiers

**Ordering Information:**
Select the complete eight digit module part number you desire from the table below.
Example: CD611416 is a 1400Volt, 160 Ampere Dual Diode POW-R-BLOK™ Module.

| Type | Voltage Volts (x100) | Current Rating Amperes (x10) |
|---|---|---|
| CD61 | 12 | 16 |
| CN61 | 14 | |
| CS61 | 16 | |
| | 20 | |

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## Absolute Maximum Ratings

| Characteristics | Symbol | Conditions | CD61_ _16<br>CN61_ _16<br>CS61_ _16 | Units |
|---|---|---|---|---|
| Repetitive Peak Reverse Blocking Voltage | $V_{RRM}$ | — | 2000 | Volts |
| Non-Repetitive Peak Reverse Blocking Voltage | $V_{RSM}$ | — | $V_{RRM}$ + 100 | Volts |
| RMS Forward Current | $I_{F(RMS)}$ | — | 260 | Amperes |
| Average Forward Current | $I_{F(AV)}$ | 180° Conduction, $T_C$ = 89°C | 160 | Amperes |
| Peak Half-Cycle Surge (Non-Repetitive) On-State Current | $I_{FSM}$ | t = 8.3ms, 100%$V_{RRM}$ Reapplied | 3500 | Amperes |
| | | t = 10ms, 100%$V_{RRM}$ Reapplied | 3350 | Amperes |
| $I^2t$ (for Fusing) for One-Cycle | $I^2t$ | t = 8.3ms, 100%$V_{RRM}$ Reapplied | 52000 | $A^2sec$ |
| | | t = 10ms, 100%$V_{RRM}$ Reapplied | 56000 | $A^2sec$ |
| Storage Temperature | $T_{STG}$ | — | -40 to 150 | °C |
| Operating Temperature | $T_j$ | — | -40 to 150 | °C |
| Maximum Mounting Torque M6 Mounting Screw | — | — | 4 to 6 | Nm |
| Maximum Mounting Torque M6 Terminal Screw | — | — | 4 to 6 | Nm |
| Module Weight (Typical) | — | — | 500 | Grams |
| | | | 17.8 | oz. |
| V Isolation | $V_{RMS}$ | — | 3000 | Volts |

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## Electrical and Thermal Characteristics, $T_j$ = 25°C unless otherwise specified

| Characteristics | Symbol | Test Conditions | CD61_ _16/CN61_ _16/CS61_ _16 Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| **Blocking State Maximums** | | | | | | |
| Reverse Off-State Current, Peak | $I_{RRM}$ | $T_j$ = 150°C, $V_R = V_{RRM}$ | — | — | 50 | mA |
| **Conducting State Maximums** | | | | | | |
| Peak On-State Voltage | $V_{FM}$ | $T_j$ = 125°C, $I_{FM}$ = 500A, Duty Cycle < 0.1% | — | — | 1.57 | Volts |
| Peak On-State Voltage Coefficients, Full Range | $V_{FM}$ | $T_j$ = 150°C, I = 15% $I_{F(AV)}$ to $I_{FSM}$, $V_{FM}$ = A + B Ln $I_{FM}$ + C $I_{FM}$ + D Sqrt $I_{FM}$ | | A = 1.352<br>B = -0.2431<br>C = 0.00096<br>D = 0.05512 | | |
| Threshold Voltage, Low-Level | $V_{(TO)1}$ | $T_j$ = 150°C, I = 15% $I_{F(AV)}$ to π$I_{F(AV)}$ | — | — | 0.76 | Volts |
| Slope Resistance, Low-Level | $r_{T1}$ | | — | — | 1.53 | mΩ |
| Threshold Voltage, High-Level | $V_{(TO)2}$ | $T_j$ = 150°C, I = π$I_{F(AV)}$ to $I_{FSM}$ | — | — | 0.90 | Volts |
| Slope Resistance, High-Level | $r_{T2}$ | | — | — | 1.45 | mΩ |
| **Thermal Maximums** | | | | | | |
| Thermal Resistance, Junction-to-Case | $R_{θ(J-C)}$ | Per Module, Both Conducting | — | — | 0.10 | °C/Watt |
| | | Per Diode, Both Conducting | — | — | 0.20 | °C/Watt |
| Thermal Resistance, Case-to-Sink (Lubricated) | $R_{θ(C-S)}$ | Per Module | — | — | 0.035 | °C/Watt |

***WARNING:***
*Internal insulation used is Beryllium Oxide.*
*User should avoid grinding, crushing, or abrading these portions.*
*Care must be exercised in properly disposing of unwanted devices.*