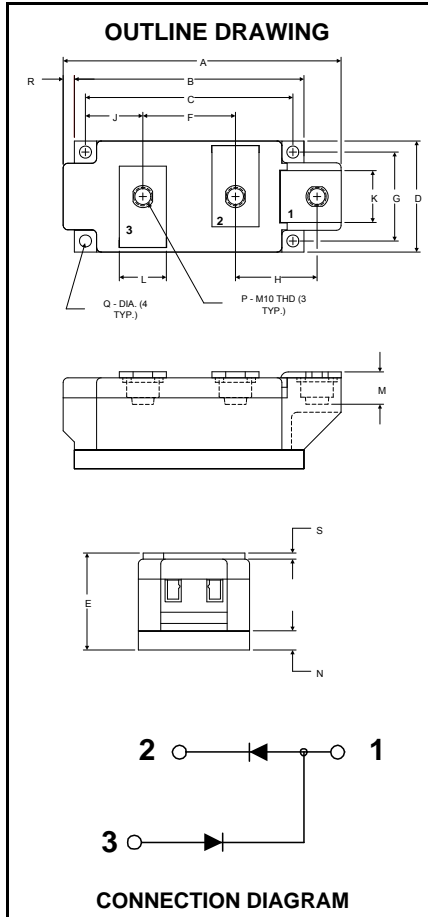


Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272
<http://www.pwr.com>

POW-R-BLOK™
Dual Diode Isolated Module
600 Amperes / Up to 2600 Volts



LD41__60
Dual Diode
POW-R-BLOK™ Module
 600 Amperes / 800-2600 Volts

LD41 Outline Dimensions

| Dimension | Inches | Millimeters |
|-----------|-------------|-------------|
| A | 5.91 | 150.0 |
| B | 4.88 | 124.0 |
| C | 4.41 | 112.0 |
| D | 2.36 | 60.0 |
| E | 2.05 | 52.0 |
| F | 1.97 | 50.0 |
| G | 1.89 | 48.0 |
| H | 1.73 | 44.0 |
| J | 1.22 | 31.0 |
| K | 1.10 | 28.0 |
| L | 1.00 | 25.4 |
| M | 0.69 | 17.5 |
| N | 0.39 | 10.0 |
| P | M10 Metric | M10 |
| Q | 0.26 Dia. | 6.5 Dia. |
| R | 0.24 | 6.0 |
| S | 0.12 | 3.0 |
| T | .110 x .032 | 2.5 x 0.8 |

Note: Dimensions are for reference only.

Ordering Information:

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

Example: LD412460 is a 2400V, 600 Ampere Dual Diode Isolated POW-R-BLOK™ Module.

| Type | Voltage Volts (x100) | Current Amperes (x10) |
|------|----------------------|-----------------------|
| LD41 | 08 10 12 to 26 | 60 |

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.

Features:

- Electrically Isolated Heatsinking
- Aluminum Nitride Isolator
- Compression Bonded Elements
- Metal Baseplate
- Low Thermal Impedance for Improved Current Capability
- UL Recognized

Benefits:

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

Applications:

- Bridge Circuits
- AC & DC Motor Drives
- Battery Supplies
- Power Supplies
- Large IGBT Circuit Front Ends

Absolute Maximum Ratings

| Characteristics | Conditions | Symbol | | Units |
|---|--|--------------|-----------------|-------------------------|
| Repetitive Peak Reverse Blocking Voltage | | V_{RRM} | up to 2600 | V |
| Non-Repetitive Peak Reverse Blocking Voltage ($t < 5$ msec) | | V_{RSM} | $V_{RRM} + 100$ | V |
| RMS Forward Current | | $I_{F(RMS)}$ | 950 | A |
| Average Forward Current | 180° Conduction, $T_C=106^\circ\text{C}$ | $I_{F(AV)}$ | 600 | A |
| Peak One Cycle Surge Current, Non-Repetitive | 60 Hz, 100% V_{RRM} reapplied | I_{FSM} | 21000 | A |
| | 50 Hz, 100% V_{RRM} reapplied | I_{FSM} | 19000 | A |
| Peak Three Cycle Surge Current, Non-Repetitive | 60 Hz, 100% V_{RRM} reapplied | I_{FSM} | 15,500 | A |
| Peak Ten Cycle Surge Current, Non-Repetitive | 60 Hz, 100% V_{RRM} reapplied | I_{FSM} | 13,000 | A |
| I^2t for Fusing for One Cycle | 8.3 milliseconds | I^2t | 1,840,000 | $\text{A}^2 \text{sec}$ |
| | 10 milliseconds | I^2t | 1,810,000 | $\text{A}^2 \text{sec}$ |
| 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 | | | 55 6 | in. – Lb. Nm |
| Max. Mounting Torque, M10 Terminal Screw | | | 110 12 | in. – Lb. Nm |
| Module Weight, Typical | | | 1500 | g |
| | | | 3.30 | lb |
| V Isolation @ 25C | | V_{rms} | 3000 | V |

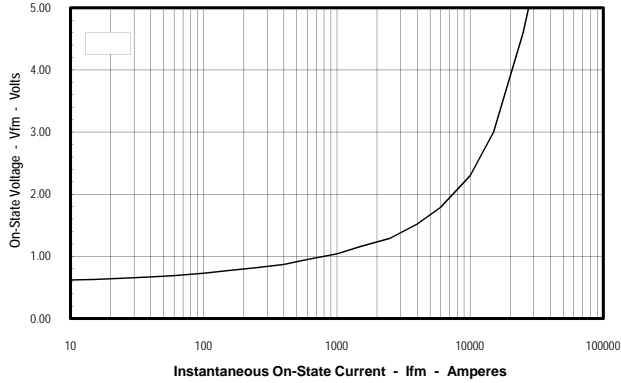
Electrical Characteristics, T_J=25°C unless otherwise specified

| Characteristics | Symbol | Test Conditions | Min. | Max. | Units |
|--|--------------------|--|------|----------|-------|
| Repetitive Peak Reverse Leakage Current | I _{RRM} | Up to 2600V, T _J =150°C | | 40 | mA |
| Peak On-State Voltage | V _{FM} | T _J =150°C, I _{FM} =1800A | | 1.19 | V |
| Threshold Voltage, Low-level | V _{(TO)1} | T _J = 150°C, I = 15%I _{F(AV)} to πI _{F(AV)} | | 0.747 | V |
| Slope Resistance, Low-level | r _{T1} | | | 0.243 | mΩ |
| Threshold Voltage, High-level | V _{(TO)2} | T _J = 150°C, I = πI _{F(AV)} to I _{FSM} | | 0.914 | V |
| Slope Resistance, High-level | r _{T2} | | | 0.145 | mΩ |
| V _{TM} Coefficients, Full Range | | T _J = 150°C, I = 15%I _{F(AV)} to I _{FSM} | A = | 5.05E-01 | |
| | | V _{TM} = A+ B Ln I +C I + D Sqrt I | B = | 3.44E-02 | |
| | | | C = | 8.13E-05 | |
| | | | D = | 6.57E-03 | |

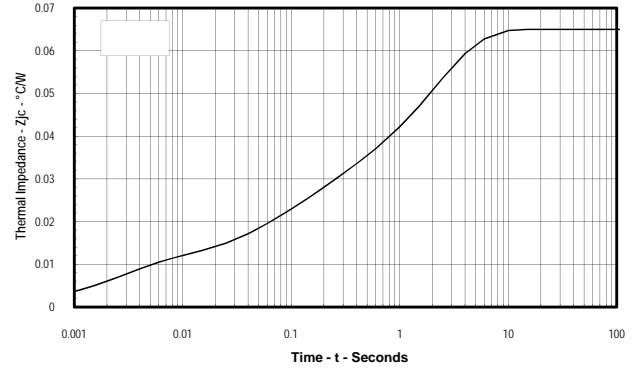
Thermal Characteristics

| Characteristics | Symbol | | Max. | Units |
|---|-------------------|--|--|---|
| Thermal Resistance, Junction to Case | R _{θJ-C} | Per Module, both conducting Per Junction, both conducting | 0.0325 0.0650 | °C/W °C/W |
| Thermal Impedance Coefficients | Z _{θJ-C} | Z _{θJ-C} = K ₁ (1-exp(-t/τ ₁)) + K ₂ (1-exp(-t/τ ₂)) + K ₃ (1-exp(-t/τ ₃)) + K ₄ (1-exp(-t/τ ₄)) | K ₁ = 8.03E-04 K ₂ = 1.03E-02 K ₃ = 1.64E-02 K ₄ = 3.75E-02 | τ ₁ = 3.39E-04 τ ₂ = 3.15E-03 τ ₃ = 1.06E-01 τ ₄ = 2.066 |
| Thermal Resistance, Case to Sink Lubricated | R _{θC-S} | Per Module | 0.01 | °C/W |

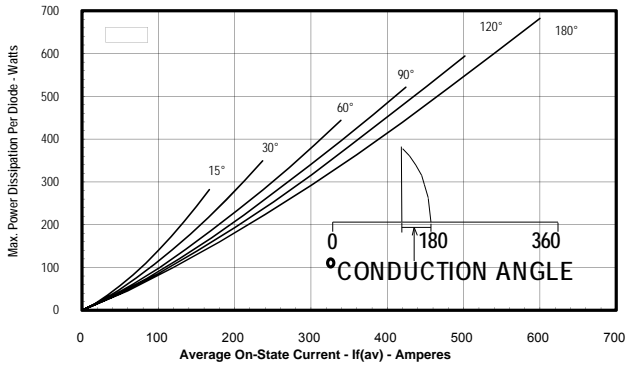
**Maximum On-State Forward Voltage Drop
 (T_j = 150 °C)**



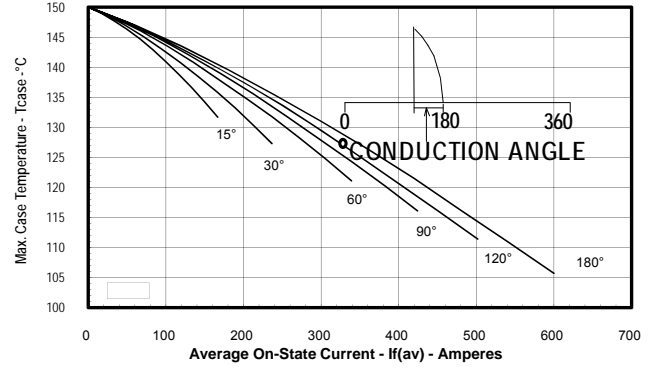
**Maximum Transient Thermal Impedance
 (Junction to Case)**



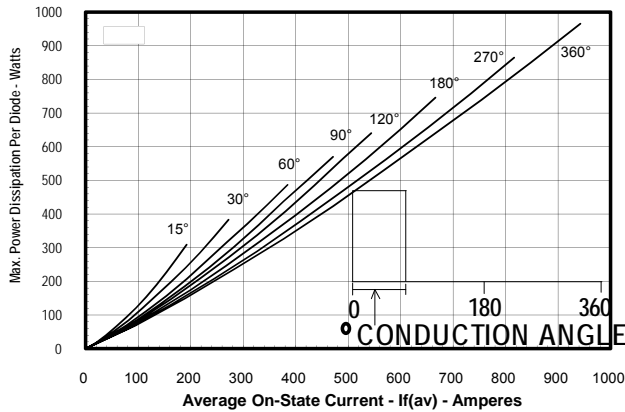
**Maximum On-State Power Dissipation
 (Sinusoidal Waveform)**



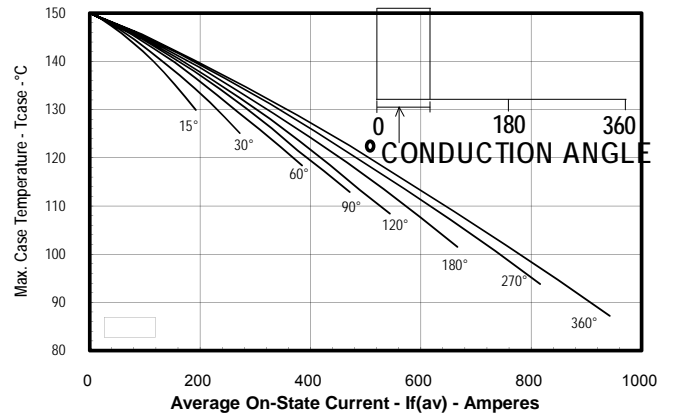
**Maximum Allowable Case Temperature
 (Sinusoidal Waveform)**



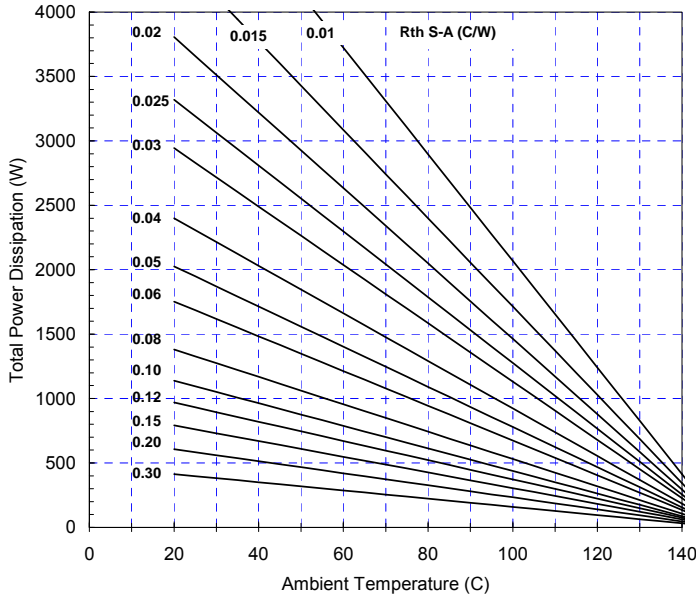
**Maximum On-State Power Dissipation
 (Rectangular Waveform)**



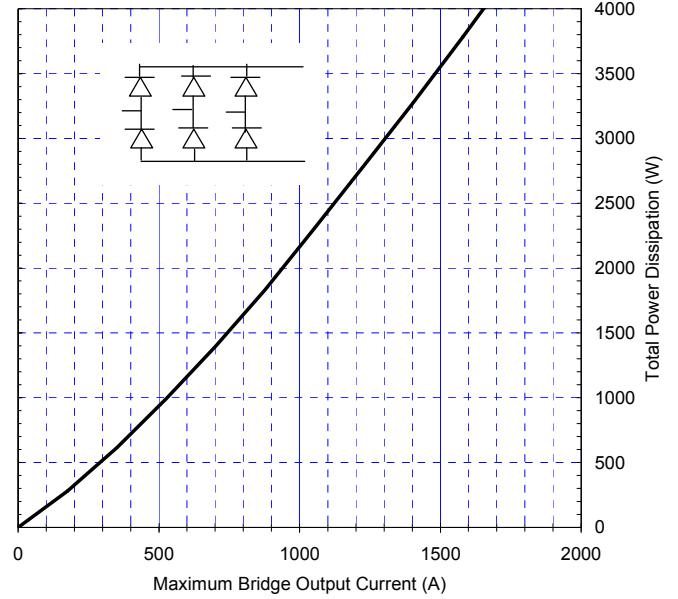
**Maximum Allowable Case Temperature
 (Rectangular Waveform)**



Powerex LD41--60 Pow-R-Blok 6-Pulse Bridge



Total Power Dissipation vs Maximum Rated Output Current



Six-Pulse Bridge Circuit Total Power Dissipation & Maximum Rated Output Current With Sink to Ambient Resistance of Heatsink as a Parameter.