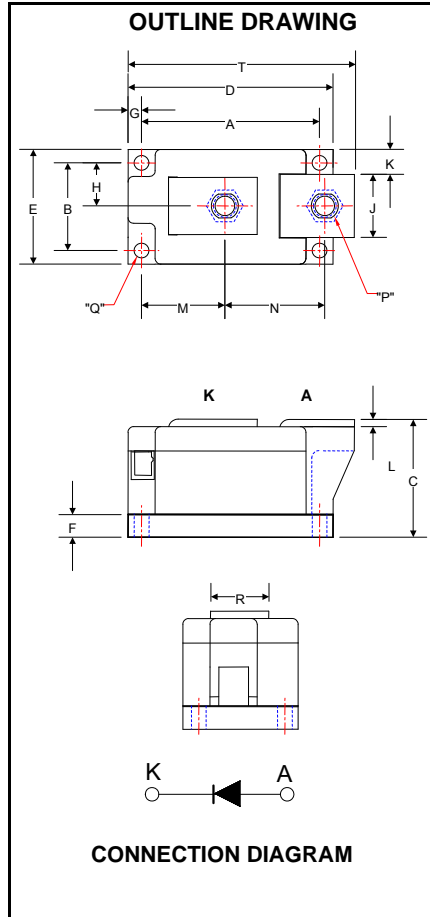


POW-R-BLOK™
Single Diode Isolated Module
600 Amperes / Up to 2600 Volts



LS41__60
Single Diode
POW-R-BLOK™ Module
600 Amperes / 800-2600 Volts

LS41 Outline Dimensions

| Dimension | Inches | Millimeters |
|-----------|------------|-------------|
| A | 3.15 | 80.0 |
| B | 1.50 | 38.0 |
| C | 2.05 | 52.1 |
| D | 3.62 | 92.0 |
| E | 1.97 | 50.0 |
| F | 0.39 | 9.9 |
| G | 0.24 | 6.1 |
| H | 0.75 | 19.0 |
| J | 0.99 | 25.1 |
| K | 0.48 | 12.2 |
| L | 0.12 | 3.1 |
| M | 1.45 | 36.8 |
| N | 1.76 | 44.7 |
| P | M10 Metric | M10 |
| Q | 0.250 Dia. | 6.35 Dia. |
| R | 0.99 | 25.1 |
| T | 3.99 | 101.3 |

Note: Dimensions are for reference only.

Ordering Information:

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

Example: LS412660 is a 2600V, 600 Ampere Single Diode Isolated POW-R-BLOK™ Module.

| Type | Voltage Volts (x100) | Current Amperes (x10) |
|------|----------------------|-----------------------|
| LS41 | 08 | 60 |
| | 10 | |
| | 12 Thru 26 | |

Description:

Powerex 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
- 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, $T_C=106^{\circ}C$ | $I_{F(AV)}$ | 600 | A |
| Peak One Cycle Surge Current, Non-Repetitive | 60 Hz, $V_f=V_{RRM}$, $T_j=150C$ | I_{FSM} | 21,000 | A |
| | 50 Hz, $V_f=V_{RRM}$, $T_j=150C$ | I_{FSM} | 19,000 | A |
| | 60 Hz, $V_f=V_{RRM}$, $T_j=25C$ | I_{FSM} | 24,360 | A |
| | 50 Hz, $V_f=V_{RRM}$, $T_j=25C$ | I_{FSM} | 22,040 | A |
| | 60 Hz, $V_f=0$, $T_j=150C$ | I_{FSM} | 31,500 | A |
| | 50 Hz, $V_f=0$, $T_j=150C$ | I_{FSM} | 28,500 | A |
| | 60 Hz, $V_f=0$, $T_j=25C$ | I_{FSM} | 36,540 | A |
| | 50 Hz, $V_f=0$, $T_j=25C$ | I_{FSM} | 33,060 | A |
| Peak Three Cycle Surge Current, Non-Repetitive | 60 Hz, $V_f=0$, $T_j=150C$ | I_{FSM} | 25,285 | A |
| | 50 Hz, $V_f=0$, $T_j=150C$ | I_{FSM} | 22,875 | A |
| | 60 Hz, $V_f=0$, $T_j=25C$ | I_{FSM} | 29,330 | A |
| | 50 Hz, $V_f=0$, $T_j=25C$ | I_{FSM} | 26,535 | A |
| Peak Ten Cycle Surge Current, Non-Repetitive | 60 Hz, $V_f=0$, $T_j=150C$ | I_{FSM} | 19,865 | A |
| | 50 Hz, $V_f=0$, $T_j=150C$ | I_{FSM} | 17,975 | A |
| | 60 Hz, $V_f=0$, $T_j=25C$ | I_{FSM} | 23,045 | A |
| | 50 Hz, $V_f=0$, $T_j=25C$ | I_{FSM} | 20,850 | A |
| I^2t for Fusing for One Cycle | 8.3 milliseconds, $T_j=150C$ | I^2t | 4,100,000 | A^2 sec |
| | 8.3 milliseconds, $T_j=25C$ | I^2t | 5,500,000 | A^2 sec |
| | 10 milliseconds, $T_j=150C$ | I^2t | 4,000,000 | A^2 sec |
| | 10 milliseconds, $T_j=25C$ | I^2t | 5,400,000 | A^2 sec |
| Operating Temperature | | T_J | -40 to +150 | $^{\circ}C$ |
| Storage Temperature | | T_{stg} | -40 to +150 | $^{\circ}C$ |
| Max. Mounting Torque, M6 Mounting Screw | | | 55 | in. – Lb. |
| | | | 6 | Nm |
| Max. Mounting Torque, M10 Terminal Screw | | | 110 | in. – Lb. |
| | | | 12 | Nm |
| Module Weight, Typical | | | 816 | g |
| | | | 1.80 | lb |
| V Isolation @ 25C | | V_{rms} | 3000 | V |

Electrical Characteristics, T_J=25°C unless otherwise specified

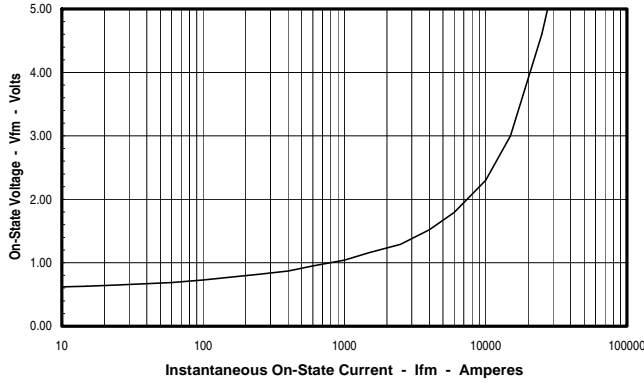
| Characteristics | Symbol | Test Conditions | Min. | Max. | Units |
|--|--------------------|--|------|----------|-------|
| Repetitive Peak Reverse Leakage Current | I _{RPM} | Up to 2600V, T _J =150°C | | 40 | mA |
| Peak On-State Voltage | V _{FM} | T _J =25°C, I _{FM} =1500A | | 1.18 | V |
| Threshold Voltage, Low-level | V _{(TO)1} | T _J = 150°C, I = 15%I _{F(AV)} to 1I _{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 = 1I _{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 | |
| | | | B = | 3.44E-02 | |
| | | V _{TM} = A + B Ln I + C I + D Sqrt I | C = | 8.13E-05 | |
| | | | D = | 6.57E-03 | |

Thermal Characteristics

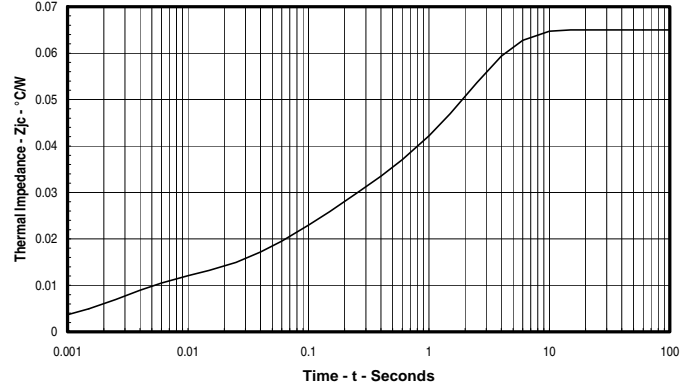
| Characteristics | Symbol | | Max. | Units |
|---|-------------------|--|--|---|
| Thermal Resistance, Junction to Case | R _{ΘJ-C} | Per Module / Junction | 0.0650 | °C/W |
| Thermal Impedance Coefficients | Z _{ΘJ-C} | Z _{ΘJ-C} = K ₁ (1-exp(-t/τ ₁)) + K ₂ (1-exp(-t/τ ₂)) + K ₃ (1-exp(-t/τ ₃)) + K 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 | 0.02 | °C/W |

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

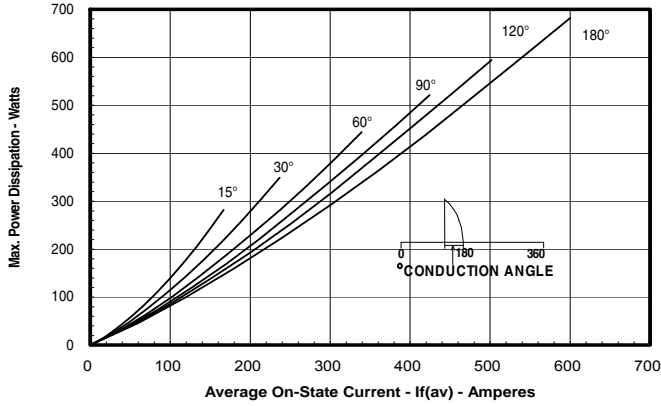
Maximum On-State Forward Voltage Drop
(T_J = 150 °C)



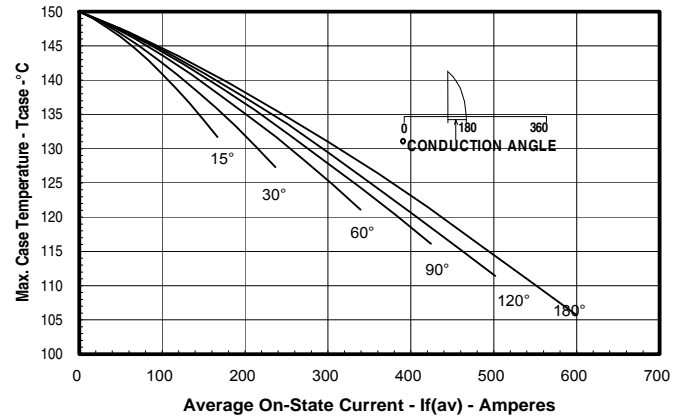
Maximum Transient Thermal Impedance
(Junction to Case)



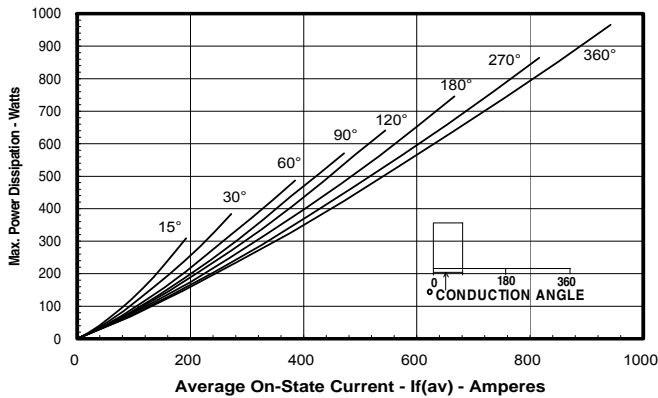
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

