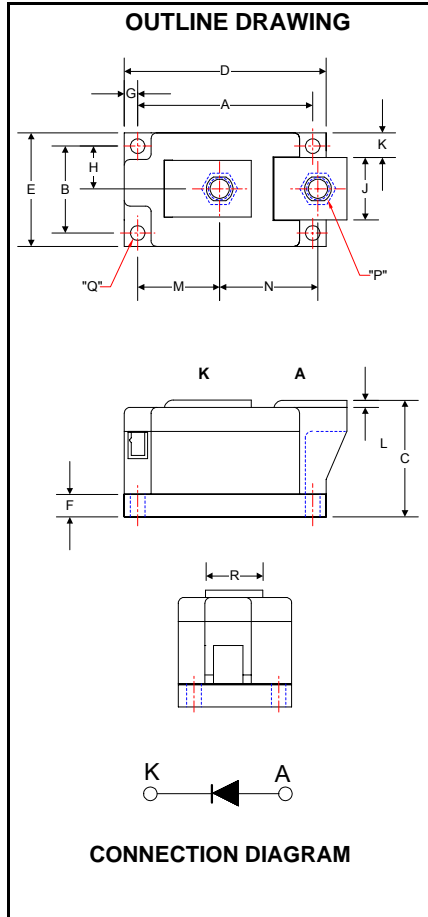


**POW-R-BLOK™**  
**Single Diode Isolated Module**  
**600 Amperes / Up to 2400 Volts**



**LS41\_\_60**  
**Single Diode**  
**POW-R-BLOK™ Module**  
 600 Amperes / 800-2400 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	0.79	20.1
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	0.22 Dia.	5.6 Dia.
R	0.99	25.1

Note: Dimensions are for reference only.

**Ordering Information:**

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

Example: LS412460 is a 2400V, 600 Ampere Single Diode Isolated POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Amperes (x10)
LS41	08	60
	10	
	12 Thru 24	

**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 2400	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	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

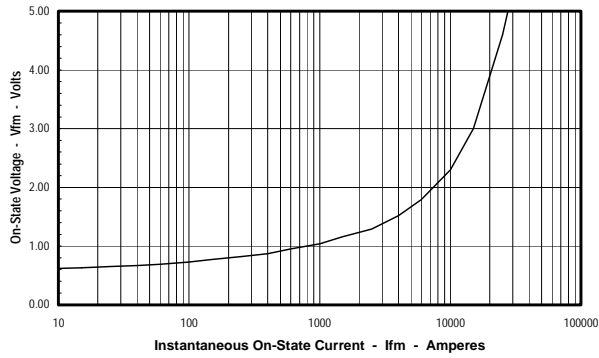
**Electrical Characteristics, T<sub>J</sub>=25°C unless otherwise specified**

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Reverse Leakage Current	I <sub>RPM</sub>	Up to 2400V, T <sub>J</sub> =150°C		40	mA
Peak On-State Voltage	V <sub>FM</sub>	T <sub>J</sub> =150°C, I <sub>FM</sub> =1800A		1.19	V
Threshold Voltage, Low-level	V <sub>(TO)1</sub>	T <sub>J</sub> = 150°C, I = 15%I <sub>F(AV)</sub> to ∞I <sub>F(AV)</sub>		0.747	V
Slope Resistance, Low-level	r <sub>T1</sub>			0.243	mΩ
Threshold Voltage, High-level	V <sub>(TO)2</sub>	T <sub>J</sub> = 150°C, I = ∞I <sub>F(AV)</sub> to I <sub>FSM</sub>		0.914	V
Slope Resistance, High-level	r <sub>T2</sub>			0.145	mΩ
V <sub>TM</sub> Coefficients, Full Range		T <sub>J</sub> = 150°C, I = 15%I <sub>F(AV)</sub> to I <sub>FSM</sub>	A =	5.05E-01	
			B =	3.44E-02	
		V <sub>TM</sub> = A + B Ln I + C I + D Sqrt I	C =	8.13E-05	
			D =	6.57E-03	

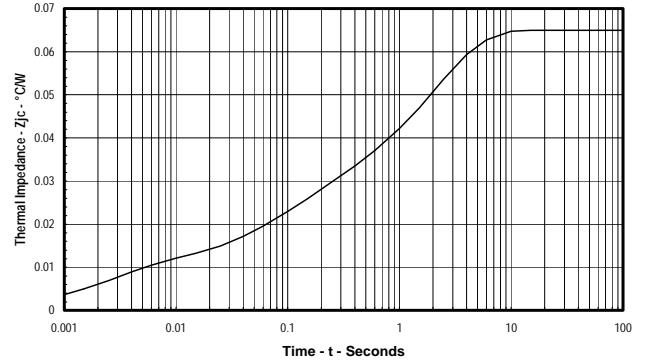
**Thermal Characteristics**

Characteristics	Symbol		Max.	Units
Thermal Resistance, Junction to Case	R <sub>θJ-C</sub>	Per Module / Junction	0.0650	°C/W
Thermal Impedance Coefficients	Z <sub>θJ-C</sub>	$Z_{\theta J-C} = K_1 (1 - \exp(-t/\tau_1))$ $+ K_2 (1 - \exp(-t/\tau_2))$ $+ K_3 (1 - \exp(-t/\tau_3))$ $+ K_4 (1 - \exp(-t/\tau_4))$	K <sub>1</sub> = 8.03E-04 K <sub>2</sub> = 1.03E-02 K <sub>3</sub> = 1.64E-02 K <sub>4</sub> = 3.75E-02	τ <sub>1</sub> = 3.39E-04 τ <sub>2</sub> = 3.15E-03 τ <sub>3</sub> = 1.06E-01 τ <sub>4</sub> = 2.066
Thermal Resistance, Case to Sink Lubricated	R <sub>θC-S</sub>	Per Module	0.02	°C/W

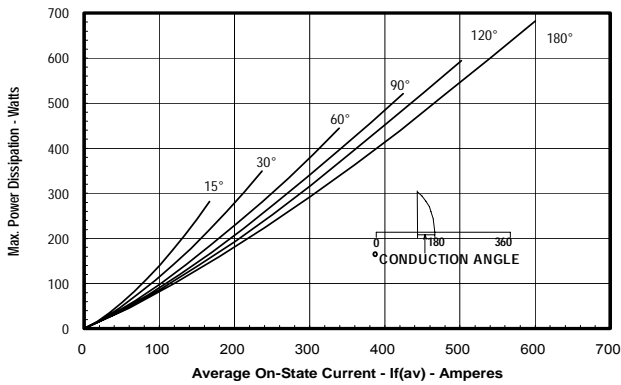
**Maximum On-State Forward Voltage Drop**  
 (T<sub>j</sub> = 150 °C)



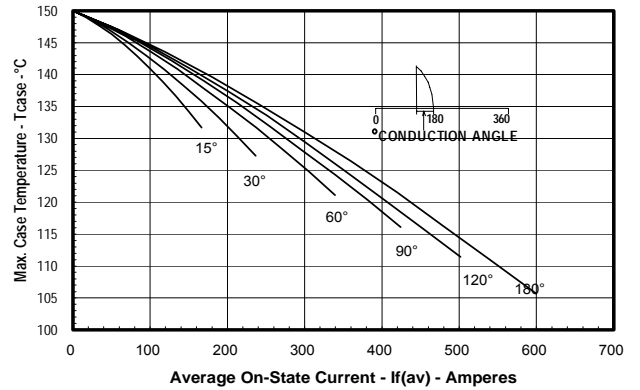
**Maximum Transient Thermal Impedance**  
 (Junction to Case)



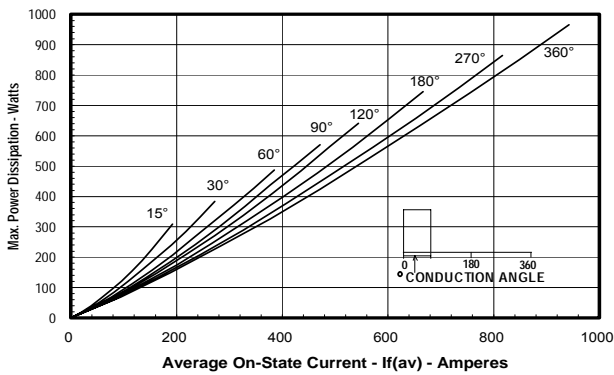
**Maximum On-State Power Dissipation**  
 (Sinusoidal Waveform)



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



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



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

