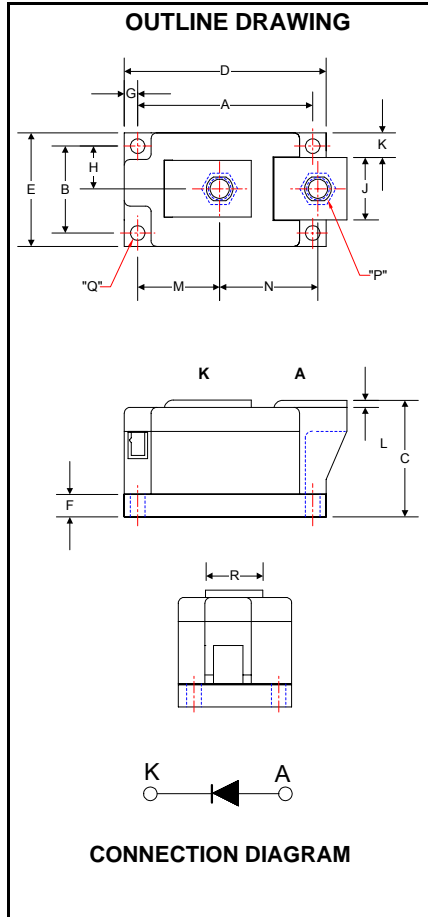


POW-R-BLOK™ Single Diode Isolated Module 600 Amperes / Up to 2400 Volts



**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 10 12 Thru 24	60

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, $T_C=106^{\circ}C$	$I_{F(AV)}$	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	$A^2 \text{ sec}$
	10 milliseconds	I^2t	1,810,000	$A^2 \text{ sec}$
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

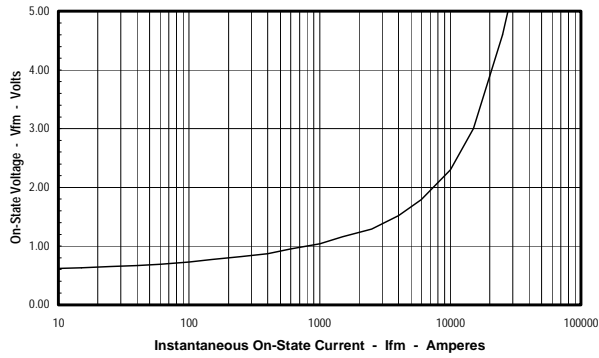
Electrical Characteristics, T_J=25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Reverse Leakage Current	I _{RPM}	Up to 2400V, 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 ∞I _{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 = ∞I _{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	

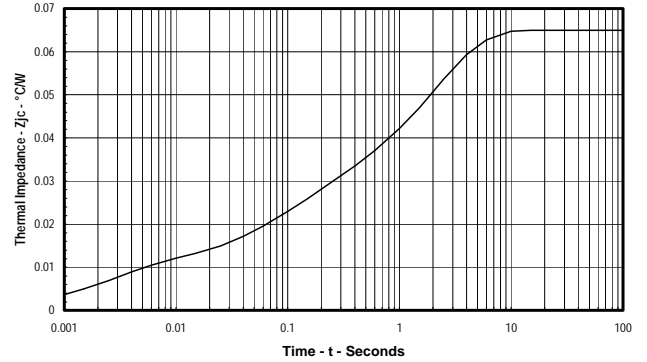
Thermal Characteristics

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}	$Z_{\theta J-C} = K_1 (1 - \exp(-t/\tau_1))$ $+ K_2 (1 - \exp(-t/\tau_2))$ $+ K_3 (1 - \exp(-t/\tau_3))$ $+ K_4 (1 - \exp(-t/\tau_4))$	K 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

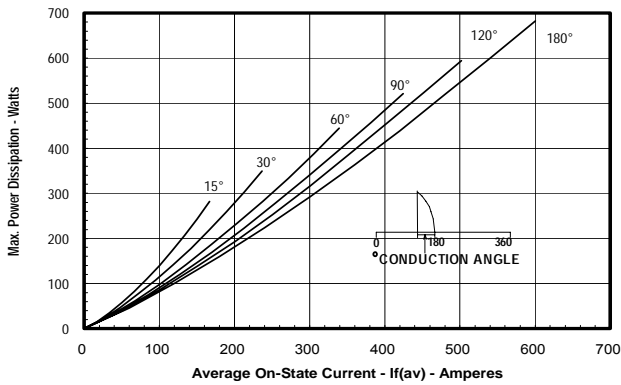
Maximum On-State Forward Voltage Drop
 (T_j = 150 °C)



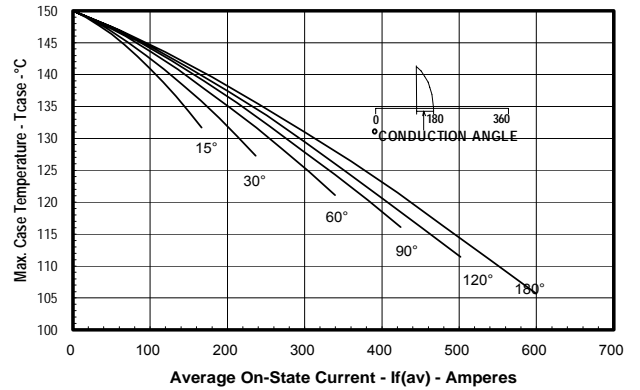
Maximum Transient Thermal Impedance
 (Junction to Case)



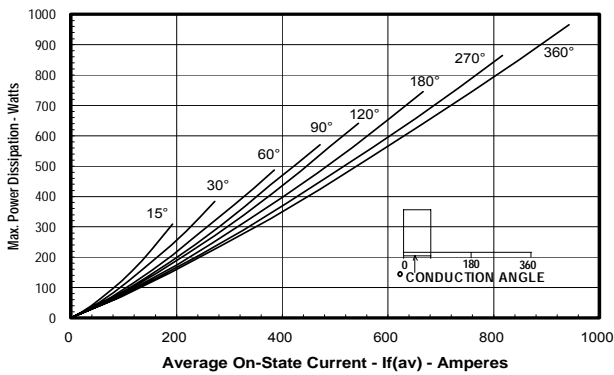
Maximum On-State Power Dissipation
 (Sinusoidal Waveform)



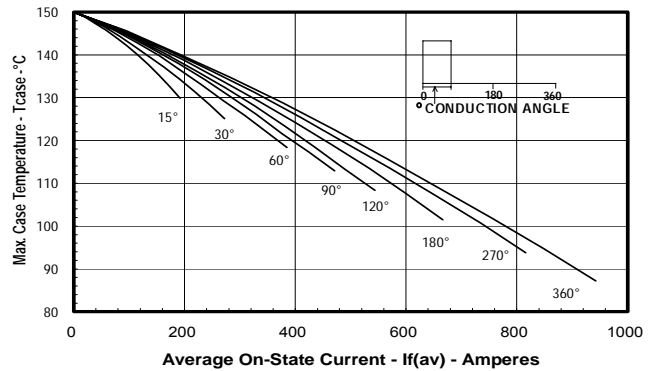
Maximum Allowable Case Temperature
 (Sinusoidal Waveform)



Maximum On-State Power Dissipation
 (Rectangular Waveform)



Maximum Allowable Case Temperature
 (Rectangular Waveform)



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