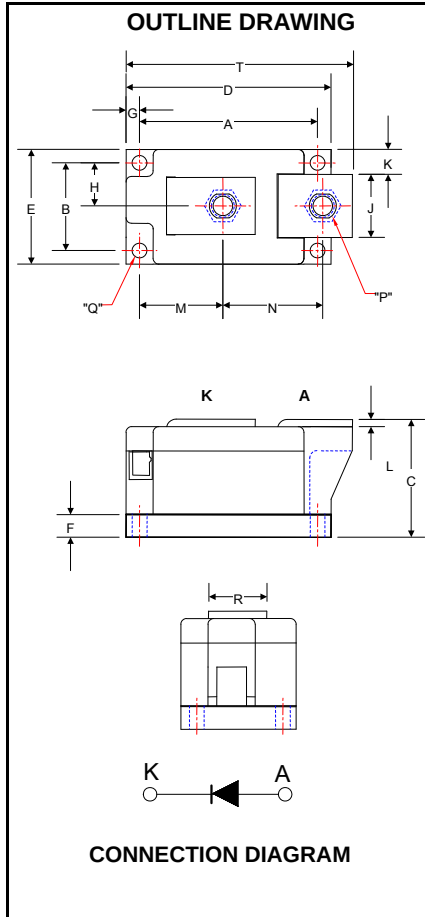


POW-R-BLOK™
Single Diode Isolated Module
600 Amperes / Up to 2600 Volts



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 10 12 Thru 26	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 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, $V_F=V_{RRM}$, $T_J=150^{\circ}\text{C}$	I_{FSM}	21,000 A
	50 Hz, $V_F=V_{RRM}$, $T_J=150^{\circ}\text{C}$	I_{FSM}	19,000 A
	60 Hz, $V_F=V_{RRM}$, $T_J=25^{\circ}\text{C}$	I_{FSM}	24,360 A
	50 Hz, $V_F=V_{RRM}$, $T_J=25^{\circ}\text{C}$	I_{FSM}	22,040 A
	60 Hz, $V_F=0$, $T_J=150^{\circ}\text{C}$	I_{FSM}	31,500 A
	50 Hz, $V_F=0$, $T_J=150^{\circ}\text{C}$	I_{FSM}	28,500 A
	60 Hz, $V_F=0$, $T_J=25^{\circ}\text{C}$	I_{FSM}	36,540 A
	50 Hz, $V_F=0$, $T_J=25^{\circ}\text{C}$	I_{FSM}	33,060 A
Peak Three Cycle Surge Current, Non-Repetitive	60 Hz, $V_F=0$, $T_J=150^{\circ}\text{C}$	I_{FSM}	25,285 A
	50 Hz, $V_F=0$, $T_J=150^{\circ}\text{C}$	I_{FSM}	22,875 A
	60 Hz, $V_F=0$, $T_J=25^{\circ}\text{C}$	I_{FSM}	29,330 A
	50 Hz, $V_F=0$, $T_J=25^{\circ}\text{C}$	I_{FSM}	26,535 A
Peak Ten Cycle Surge Current, Non-Repetitive	60 Hz, $V_F=0$, $T_J=150^{\circ}\text{C}$	I_{FSM}	19,865 A
	50 Hz, $V_F=0$, $T_J=150^{\circ}\text{C}$	I_{FSM}	17,975 A
	60 Hz, $V_F=0$, $T_J=25^{\circ}\text{C}$	I_{FSM}	23,045 A
	50 Hz, $V_F=0$, $T_J=25^{\circ}\text{C}$	I_{FSM}	20,850 A
I^2t for Fusing for One Cycle	8.3 milliseconds, $T_J=150^{\circ}\text{C}$	I^2t	4,100,000 A^2sec
	8.3 milliseconds, $T_J=25^{\circ}\text{C}$	I^2t	5,500,000 A^2sec
	10 milliseconds, $T_J=150^{\circ}\text{C}$	I^2t	4,000,000 A^2sec
	10 milliseconds, $T_J=25^{\circ}\text{C}$	I^2t	5,400,000 A^2sec
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_J=25°C unless otherwise specified

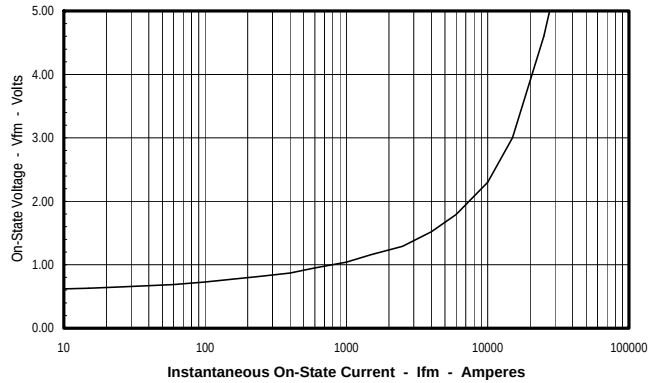
Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Reverse Leakage Current	I _{RRM}	Up to 2600V, T _J =150°C		40	mA
Peak On-State Voltage	V _{FM}	T _J =25°C, I _{FM} =1500A		1.18	V
Threshold Voltage, Low-level	V _{(TO)1}	T _J = 150°C, I = 15%I _{F(AV)} to π I _{F(AV)}		0.747	V
Slope Resistance, Low-level	r _{T1}			0.243	mΩ
Threshold Voltage, High-level	V _{(TO)2}	T _J = 150°C, I = π 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

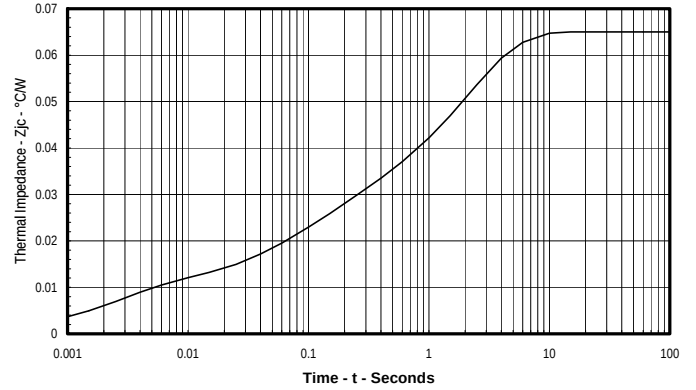
Characteristics	Symbol		Max.	Units
Thermal Resistance, Junction to Case	R _{ΘJ-C}	Per Module / Junction	0.0650	°C/W
Thermal Impedance Coefficients	Z _{ΘJ-C}	Z _{ΘJ-C} = K ₁ (1-exp(-t/τ ₁)) + K ₂ (1-exp(-t/τ ₂)) + K ₃ (1-exp(-t/τ ₃)) + K ₄ (1-exp(-t/τ ₄))	K ₁ = 8.03E-04 K ₂ = 1.03E-02 K ₃ = 1.64E-02 K 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.

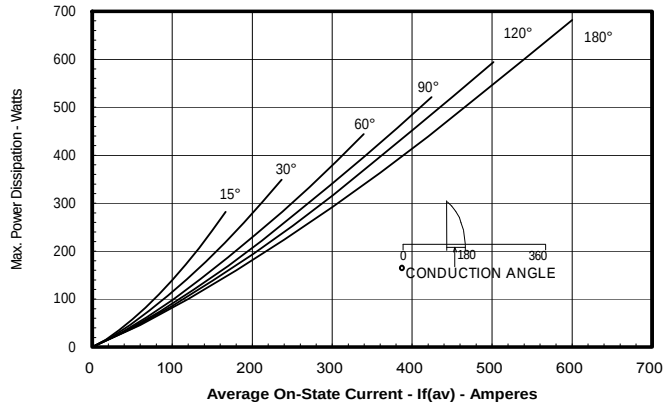
Maximum On-State Forward Voltage Drop
($T_J = 150^\circ\text{C}$)



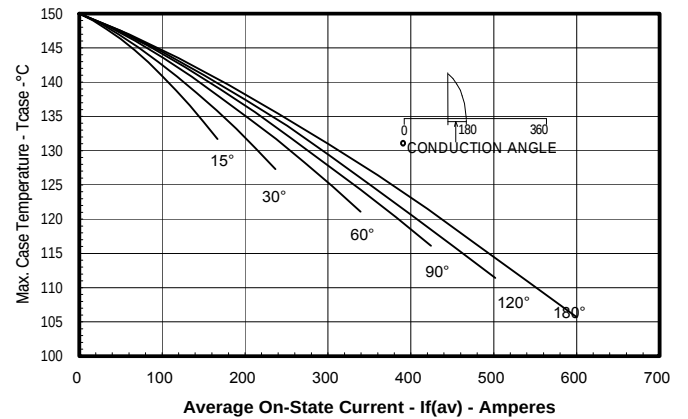
Maximum Transient Thermal Impedance
(Junction to Case)



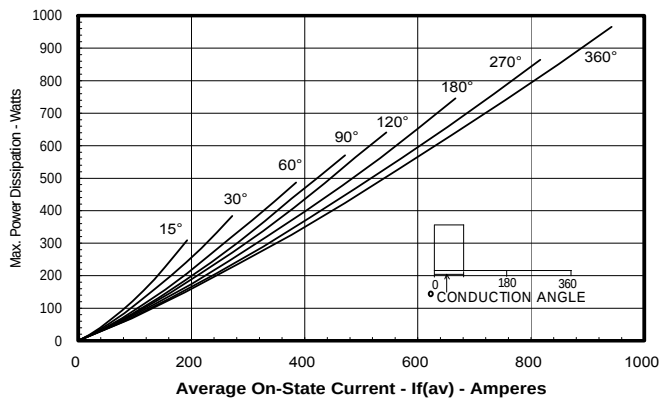
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

