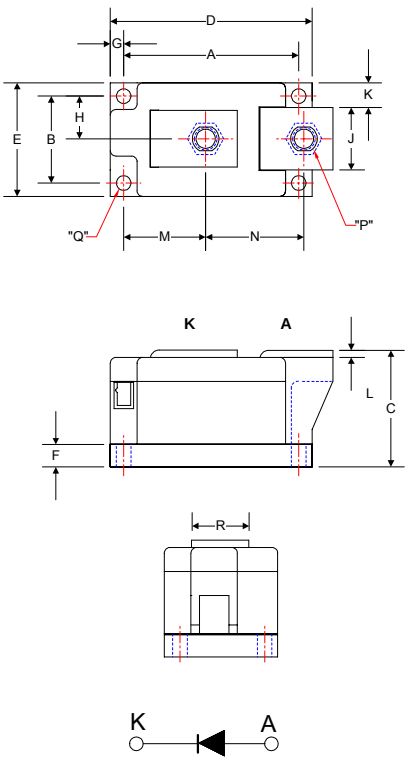
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (724) 925-7272

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

OUTLINE DRAWING



CONNECTION DIAGRAM

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

Revision Date: 4/19/2002

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (724) 925-7272

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

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°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 sec
	10 milliseconds	I^2t	1,810,000	A^2 sec
Operating Temperature		T_J	-40 to +150	°C
Storage Temperature		T_{stg}	-40 to +150	°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

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (724) 925-7272

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

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 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 Slope Resistance, Low-level	$V_{(TO)1}$ r_{T1}	T_J = 150°C, I = 15%$I_{F(AV)}$ to π$I_{F(AV)}$		0.747 0.243	V mΩ
Threshold Voltage, High-level Slope Resistance, High-level	$V_{(TO)2}$ r_{T2}	T_J = 150°C, I = π$I_{F(AV)}$ to I_{FSM}		0.914 0.145	V mΩ
V_{TM} Coefficients, Full Range		T_J = 150°C, I = 15%$I_{F(AV)}$ to I_{FSM} V_{TM} = A + B Ln I +C I + D Sqrt I	A = B = C = D =	5.05E-01 3.44E-02 8.13E-05 6.57E-03	

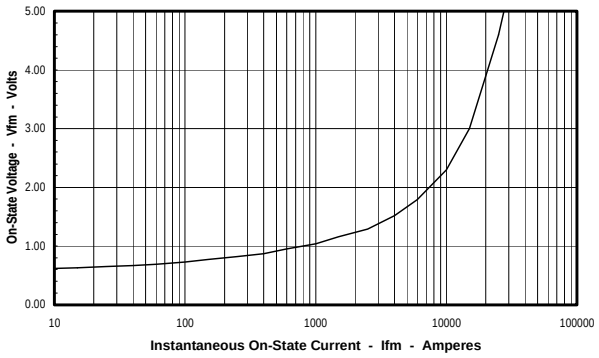
Thermal Characteristics

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_1 = 8.03E-04	τ_1 = 3.39E-04		
		+ K_2 (1-exp(-t/τ_2))	K_2 = 1.03E-02	τ_2 = 3.15E-03		
		+ K_3 (1-exp(-t/τ_3))	K_3 = 1.64E-02	τ_3 = 1.06E-01		
		+ K_4 (1-exp(-t/τ_4))	K_4 = 3.75E-02	τ_4 = 2.066		
Thermal Resistance, Case to Sink Lubricated	$R_{ΘC-S}$	Per Module			0.02	°C/W

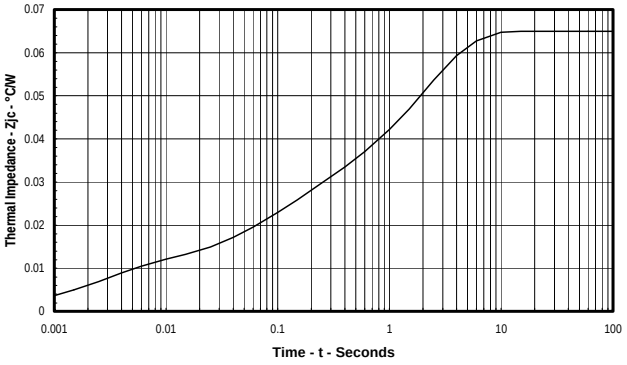
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (724) 925-7272

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

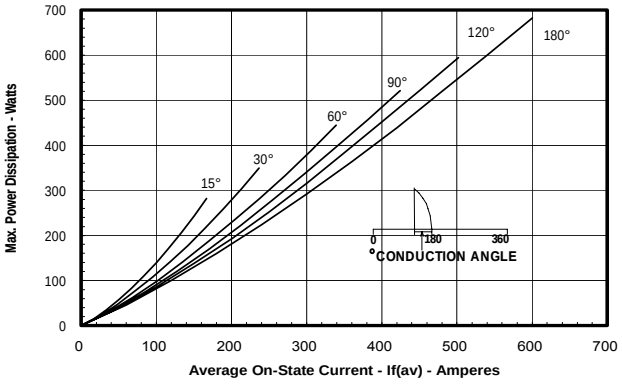
Maximum On-State Forward Voltage Drop
(Tj = 150 °C)



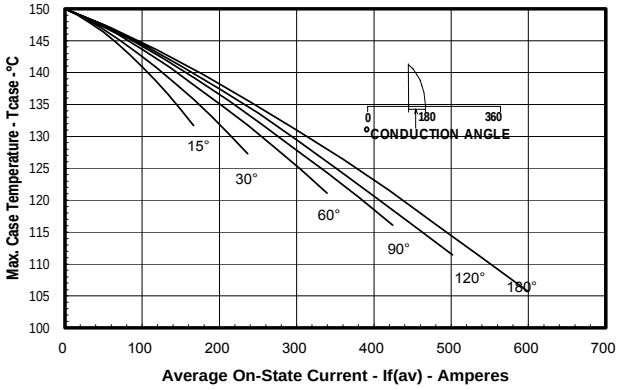
Maximum Transient Thermal Impedance
(Junction to Case)



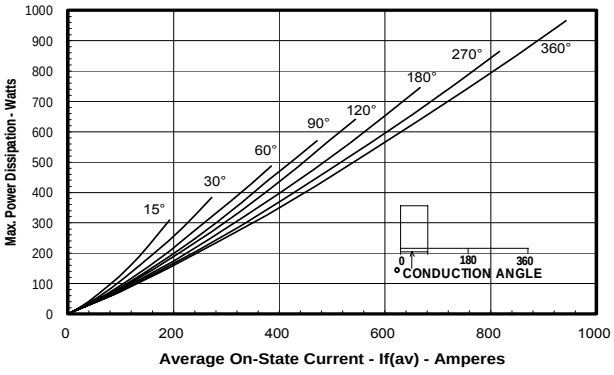
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



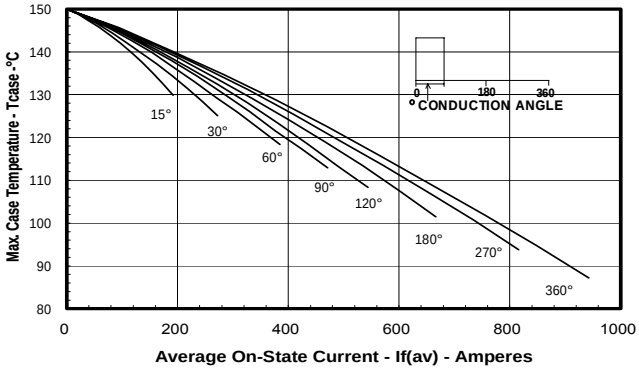
Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)



Revision Date: 4/19/2002