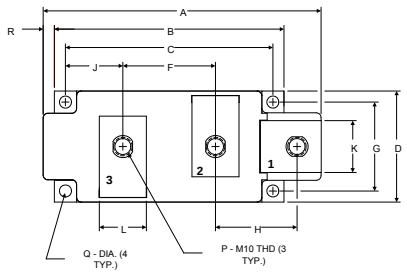
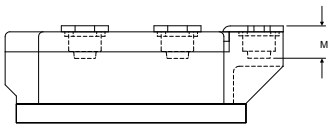
LD41__60

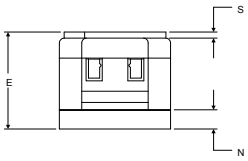
Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272
http://www.pwrx.com

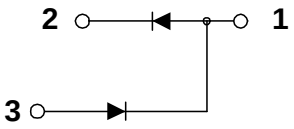
POW-R-BLOK™
Dual Diode Isolated Module
600 Amperes / Up to 2600 Volts

OUTLINE DRAWING

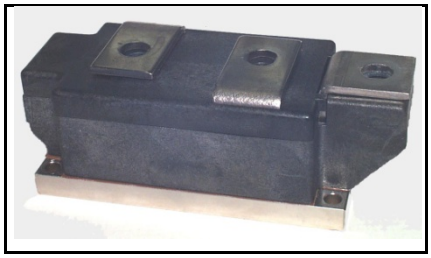








CONNECTION DIAGRAM



LD41__60
Dual Diode
POW-R-BLOK™ Module
600 Amperes / 800-2600 Volts

LD41 Outline Dimensions

Dimension	Inches	Millimeters
A	5.91	150.0
B	4.88	124.0
C	4.41	112.0
D	2.36	60.0
E	2.05	52.0
F	1.97	50.0
G	1.89	48.0
H	1.73	44.0
J	1.22	31.0
K	1.10	28.0
L	1.00	25.4
M	0.69	17.5
N	0.39	10.0
P	M10 Metric	M10
Q	0.26 Dia.	6.5 Dia.
R	0.24	6.0
S	0.12	3.0
T	.110 x .032	2.5 x 0.8

Note: Dimensions are for reference only.

Description:
Powerex Dual 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

Ordering Information:
Select the complete eight-digit module part number from the table below.
Example: LD412460 is a 2400V, 600 Ampere Dual Diode Isolated *POW-R-BLOK™* Module.

Type	Voltage Volts (x100)	Current Amperes (x10)
LD41	08 10 12 to 26	60

Revision Date: 01/14/2010

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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°C	$I_{F(AV)}$	600	A
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied 50 Hz, 100% V_{RRM} reapplied	I_{FSM} I_{FSM}	21000 19000	A 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 10 milliseconds	I^2t I^2t	1,840,000 1,810,000	A^2 sec 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 6	in. – Lb. Nm
Max. Mounting Torque, M10 Terminal Screw			110 12	in. – Lb. Nm
Module Weight, Typical			1500 3.30	g lb
V Isolation @ 25C		V_{rms}	3000	V

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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=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, both conducting Per Junction, both conducting			0.0325 0.0650	°C/W °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			0.01	°C/W

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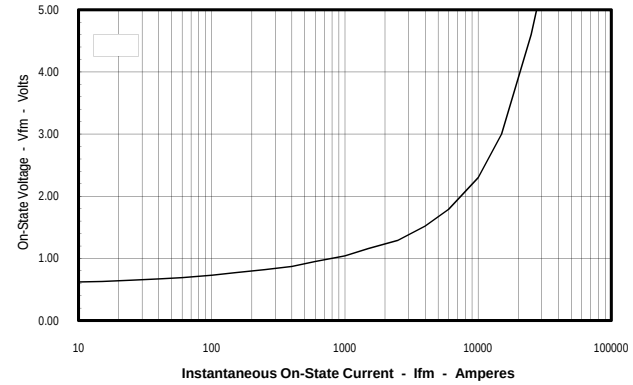
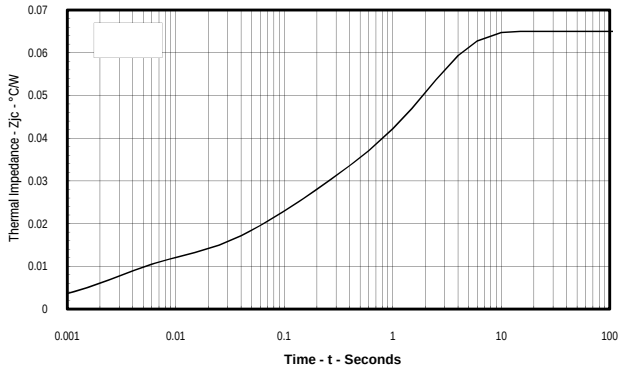
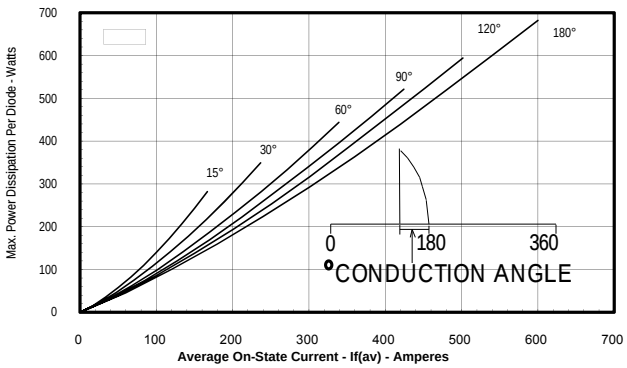
Maximum On-State Forward Voltage Drop
(Tj = 150 °C)



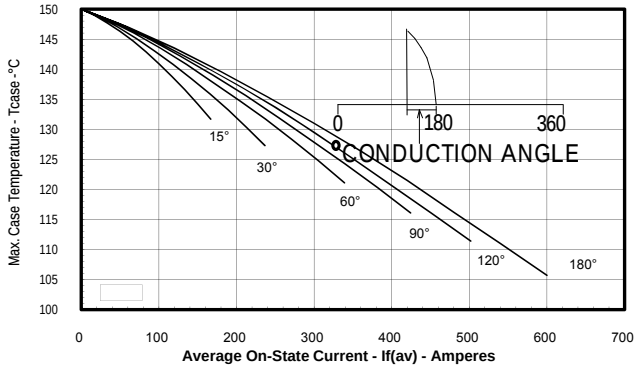
Maximum Transient Thermal Impedance
(Junction to Case)



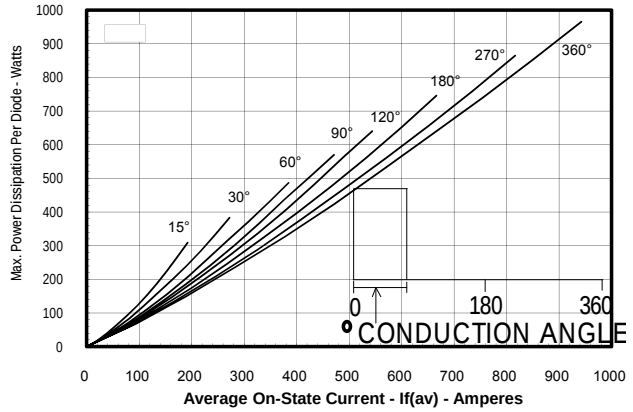
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



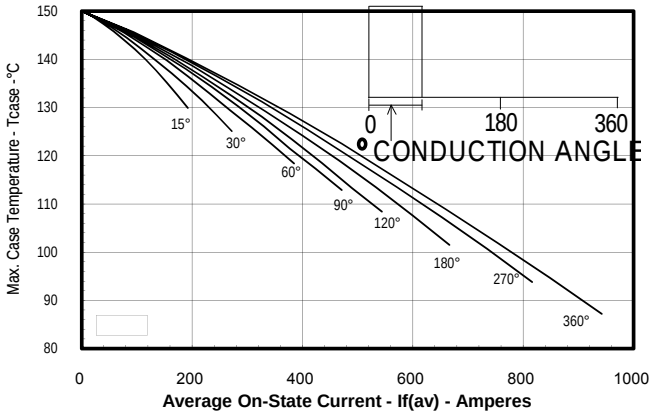
Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)



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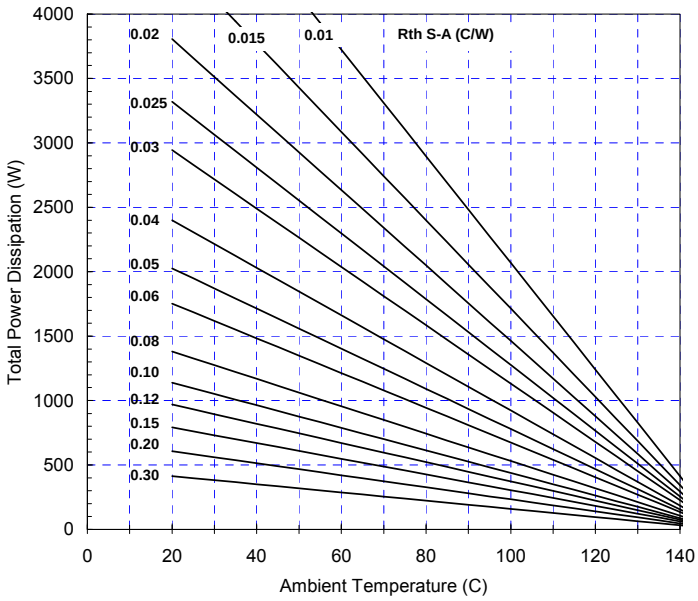
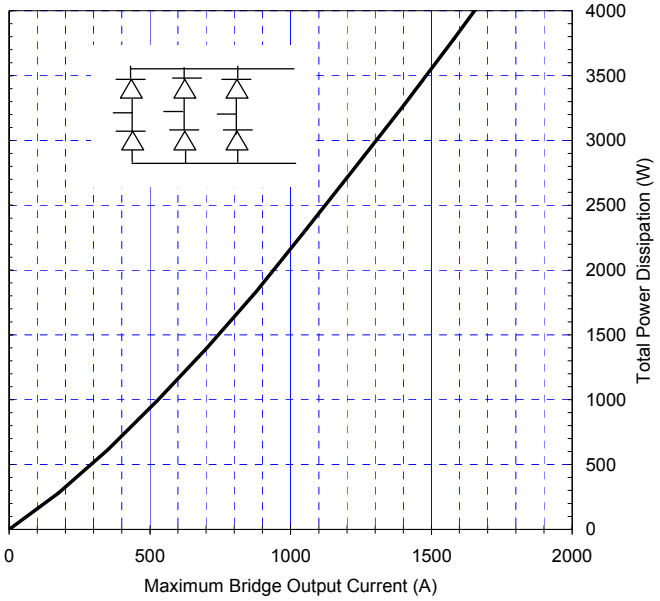
Powerex LD41--60 *Pow-R-Blok* 6-Pulse Bridge



Total Power Dissipation vs Maximum Rated Output Current



Six-Pulse Bridge Circuit Total Power Dissipation & Maximum Rated Output Current With Sink to Ambient Resistance of Heatsink as a Parameter.