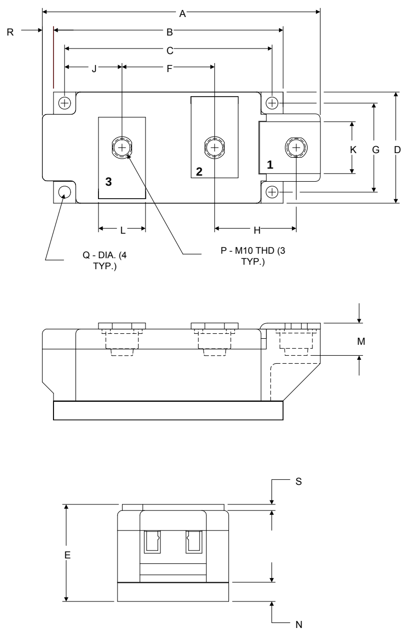
POWEREX

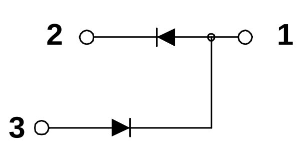
LD41__60

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

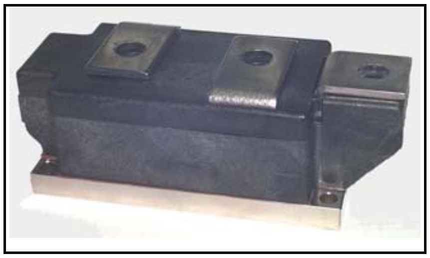
POW-R-BLOK™
Dual Diode Isolated Module
600 Amperes / Up to 2400 Volts

OUTLINE DRAWING





CONNECTION DIAGRAM



LD41__60
Dual Diode
POW-R-BLOK™ Module
600 Amperes / 800-2400 Volts

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

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.

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 24	60

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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 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 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 $\pi I_{F(AV)}$		0.747	V
Slope Resistance, Low-level	r_{T1}			0.243	mΩ
Threshold Voltage, High-level	$V_{(TO)2}$	T_J = 150°C, I = $\pi I_{F(AV)}$ 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	$R_{\Theta J-C}$	Per Module, both conducting			0.0325	°C/W
		Per Junction, both conducting			0.0650	°C/W
Thermal Impedance Coefficients	$Z_{\Theta J-C}$	$Z_{\Theta J-C}$= 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	$R_{\Theta C-S}$	Per Module			0.01	°C/W

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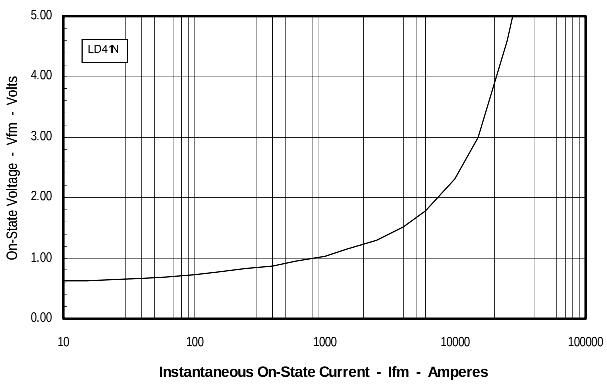
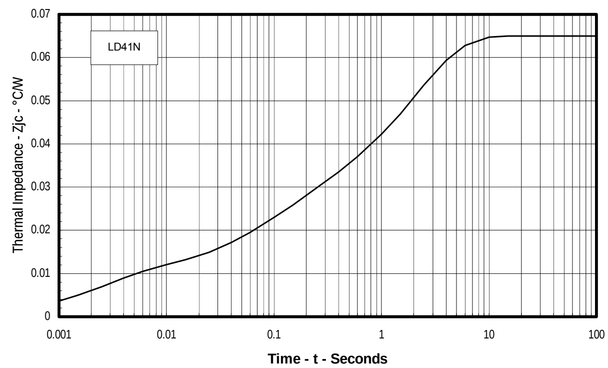
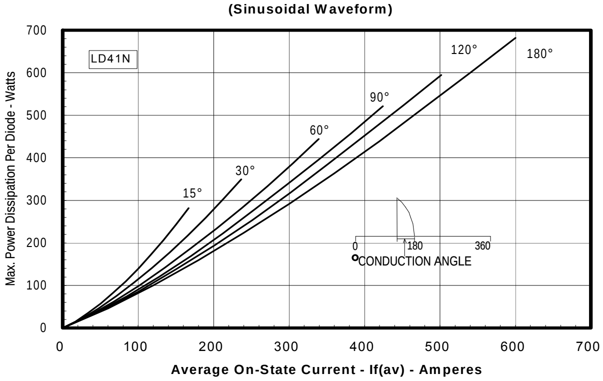
Maximum On-State Forward Voltage Drop
(Tj = 150 °C)



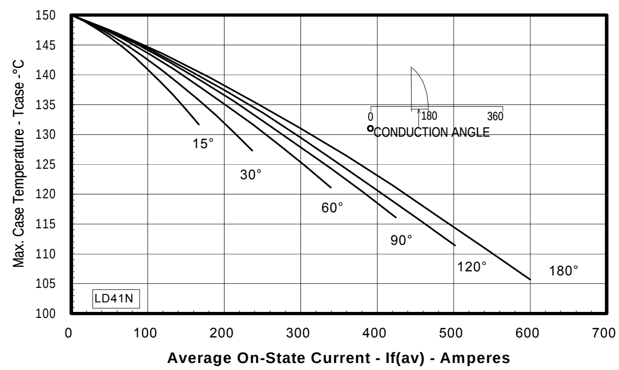
Maximum Transient Thermal Impedance
(Junction to Case)



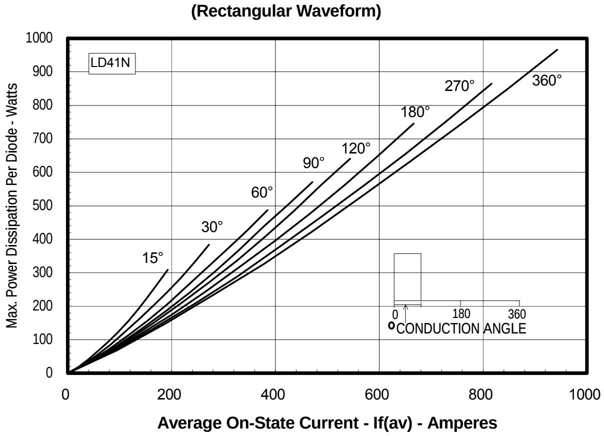
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



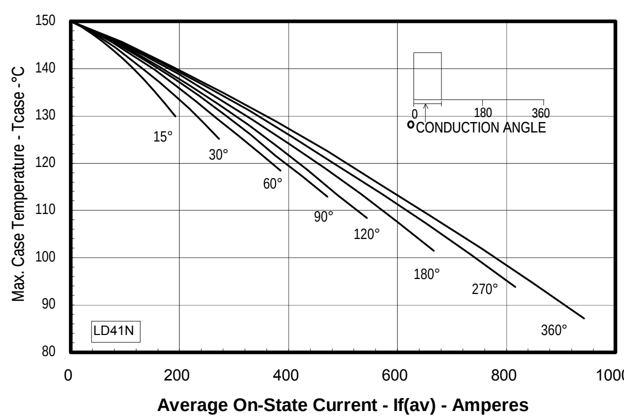
Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)



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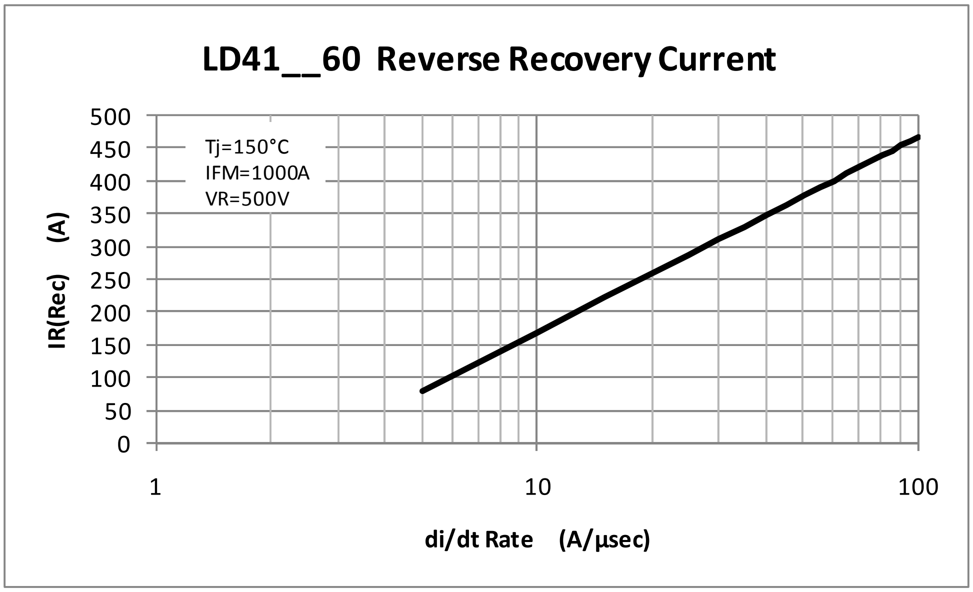

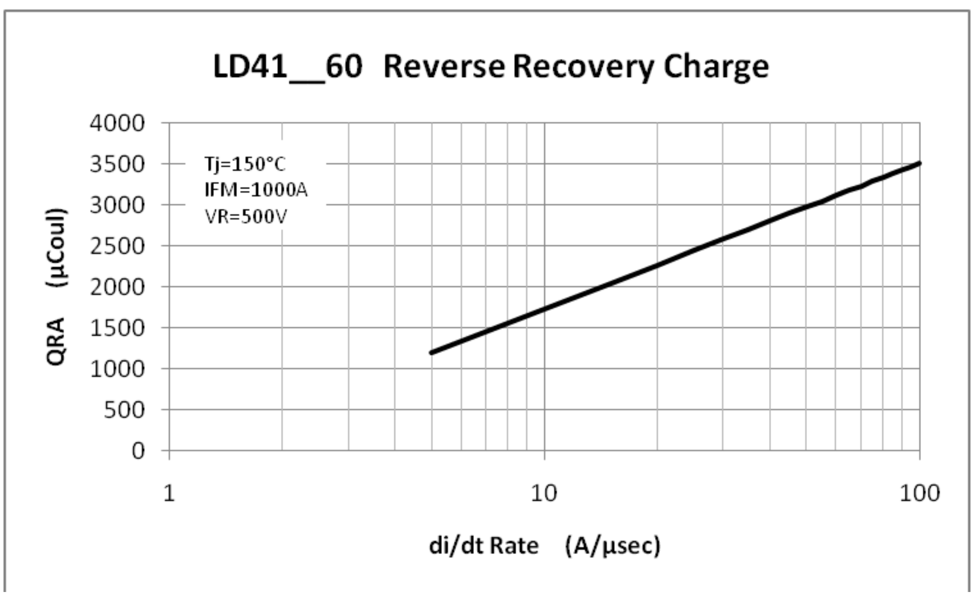

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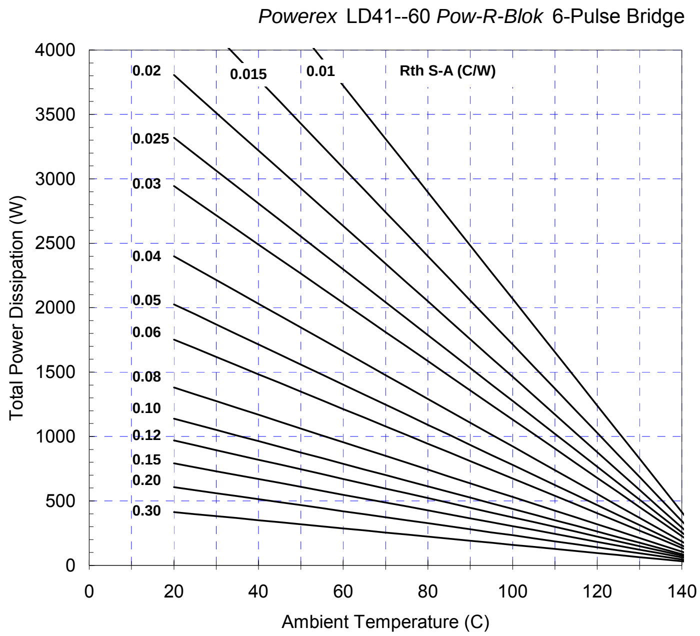

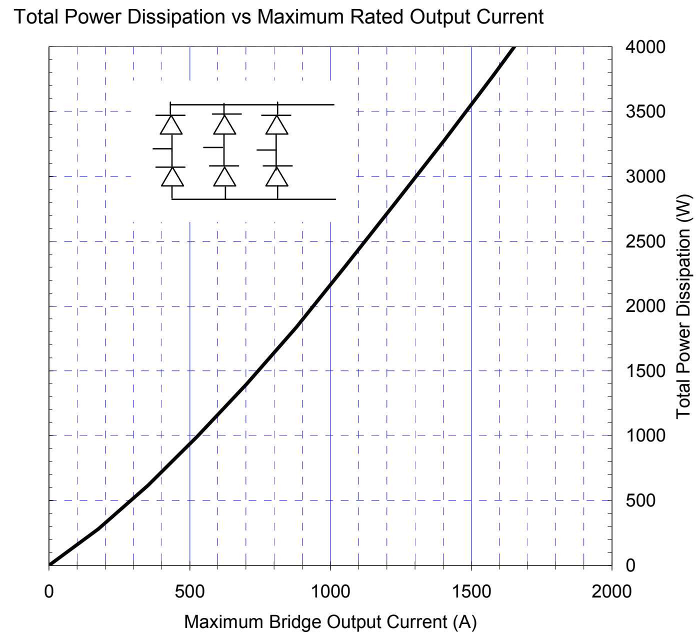

Six-Pulse Bridge Circuit Total Power Dissipation & Maximum Rated Output Current With Sink to Ambient Resistance of Heatsink as a Parameter.