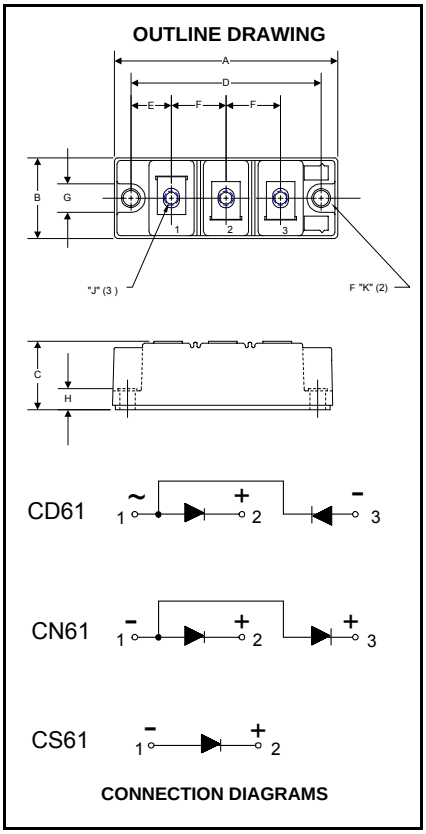
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (724) 925-7272

POW-R-BLOK^{TM}
Dual & Single Diode Isolated Module
160 Amperes / Up to 1600 Volts



CD61__16A, CS61__16A
CN61__16A, CC61__16A
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Description:
Powerex Dual Diode & 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^{TM}* has been tested and recognized by the Underwriters Laboratories.

Features:
- Electrically Isolated Heatsinking
- DBC Alumina Insulator
- Glass Passivated Chips
- Metal Baseplate
- Low Thermal Impedance for Improved Current Capability
- UL Recognized (E78240)

Benefits:
- No Additional Insulation Components Required
- Easy Installation
- No Clamping Components Required
- Reduce Engineering Time

Applications:
- Power Supplies
- Bridge Circuits
- AC & DC Motor Drives
- Battery Supplies
- Large IGBT Circuit Front Ends
- Welders

Outline Dimensions

Dimension	Inches	Millimeters
A	3.70	94
B	1.38	35
C	1.18	30
D	3.15	80
E	0.67	17
F	0.91	23
G	0.57	14.5
H	0.35	9
J	M6	M6
K	0.26	6.5

Note: Dimensions are for reference only.

Ordering Information:
Select the complete nine digit module part number from the table below. Example: CD611616A is a 1600 Volt, 160 Ampere Dual Diode Isolated *POW-R-BLOK^{TM}* Module

Type	Voltage Volts (x100)	Current Amperes (x10)
CD61	08	16
CN61	12	
CC61	14	
CS61	16	

Revision Date: 12/04/2002

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Absolute Maximum Ratings

Characteristics	Conditions	Symbol		Units
Repetitive Peak Reverse Blocking Voltage		V_{RRM}	up to 1600	V
Non-Repetitive Peak Reverse Blocking Voltage (t < 5 msec)		V_{RSM}	V_{RRM} + 100	V
RMS Forward Current	180° Conduction, T_C=100°C	$I_{F(RMS)}$	260	A
Average Forward Current	180° Conduction, T_C=100°C	$I_{F(AV)}$	165	A
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, T_J=150C	I_{FSM}	3,500	A
	60 Hz, 100% No V_{RRM} reapplied, T_J=150C	I_{FSM}	4,200	A
	50 Hz, 100% V_{RRM} reapplied, T_J=150C	I_{FSM}	3,350	A
	50 Hz, 100% No V_{RRM} reapplied, T_J=150C	I_{FSM}	4,000	A
Peak Three Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, T_J=150C	I_{FSM}	2,600	A
	50 Hz, 100% V_{RRM} reapplied, T_J=150C	I_{FSM}	2,480	A
Peak Ten Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, T_J=150C	I_{FSM}	1,750	A
	50 Hz, 100% V_{RRM} reapplied, T_J=150C	I_{FSM}	1,820	A
I^2t for Fusing for One Cycle	8.3ms, 100% V_{RRM} reapplied, T_J=150C	I^2t	52,000	A^2 sec
	8.3ms, 100% No V_{RRM} reapplied, T_J=150C	I^2t	73,000	A^2 sec
	10ms, 100% V_{RRM} reapplied, T_J=150C	I^2t	56,000	A^2 sec
	10ms, 100% No V_{RRM} reapplied, T_J=150C	I^2t	80,000	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			35 - 50 4 - 6	in.-Lb. Nm
Max. Mounting Torque, M8 Terminal Screw			35 - 50 4 - 6	in.-Lb. Nm
Module Weight, Typical			200 7.1	g lb.
V Isolation @ 25C, V_{rms} for 1 sec		V_{rms}	3500	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 1600V, T_J=150°C		20	mA
Peak On-State Voltage	V_{FM}	I_{FM}=520A, 180 Deg Conduction		1.43	V
Threshold Voltage, Low-level Slope Resistance, Low-level	$V_{(TO)1}$ r_{T1}	T_J = 150°C, I = 16.7%$\pi I_{F(AV)}$ to $\pi I_{F(AV)}$		0.73 1.5	V mΩ
Threshold Voltage, High-level Slope Resistance, High-level	$V_{(TO)2}$ r_{T2}	T_J = 150°C, I = $\pi I_{F(AV)}$ to I_{FSM}		0.88 1.26	V mΩ
V_{TM} Coefficients, Full Range		T_J = 150°C, I = 15%$I_{F(AV)}$ to I_{FSM} V_{FM} = A+ B Ln I +C I + D Sqrt I	A = B = C = D =	0.563 0.0392 1.31 E-3 -8.25 E-5	

Thermal Characteristics

Characteristics	Symbol			Max.	Units
Thermal Resistance, Junction to Case	$R_{\Theta J-C}$	Per Module, both conducting Per Junction both conducting		0.1 0.2	°C/W °C/W
Thermal Impedance Coefficients	$Z_{\Theta J-C}$	$Z_{\Theta J-C}$= 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 = 1.84E-2 K_2 = 4.68E-2 K_3 = 8.25E-2 K_4 = 5.23E-2	τ_1 = 2.53E-6 τ_2 = 6.44E-2 τ_3 = 3.11E-1 τ_4 = 1.32	
Thermal Resistance, Case to Sink Lubricated	$R_{\Theta C-S}$	Per Module		0.05	°C/W

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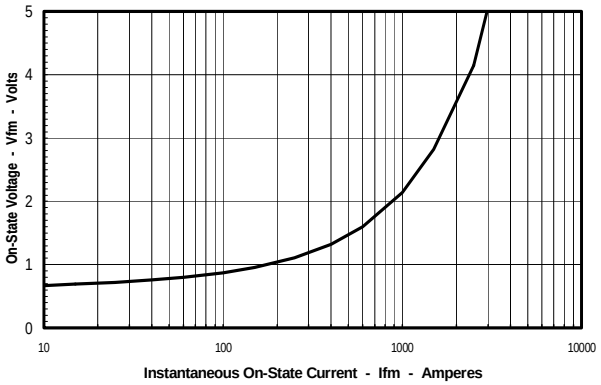
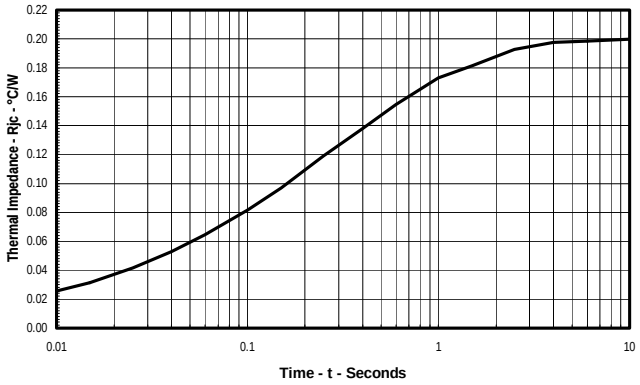
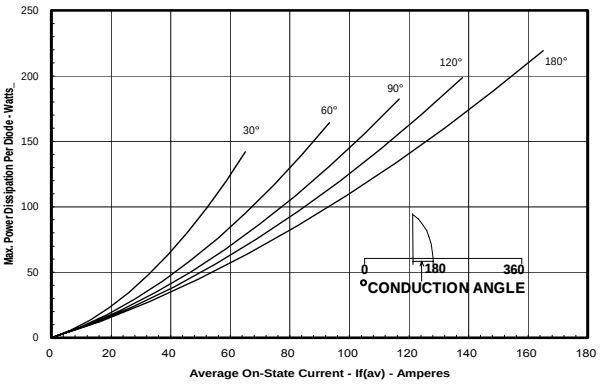
Maximum On-State Forward Voltage Drop
(Tj = 150 °C)



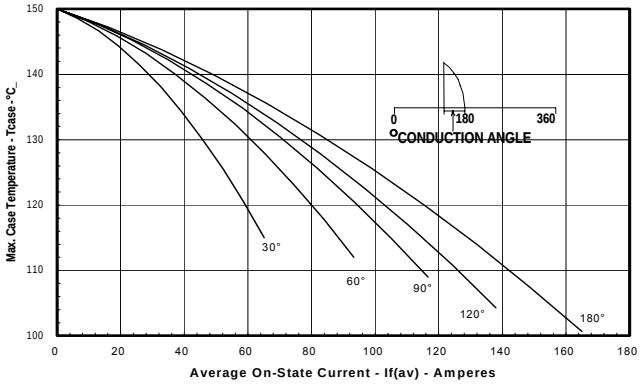
Maximum Transient Thermal Impedance
(Junction to Case, Per Diode)



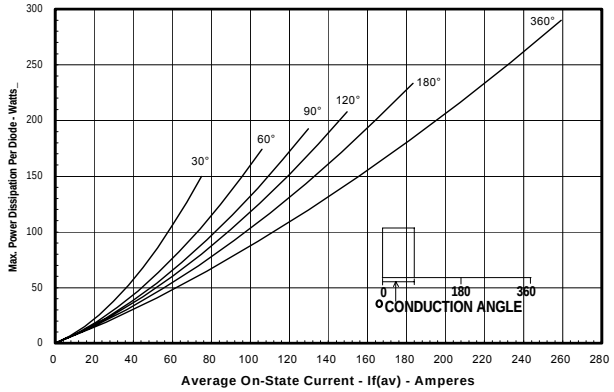
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



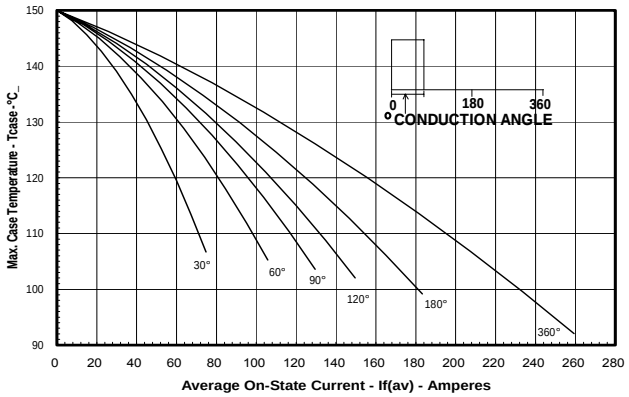
Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)



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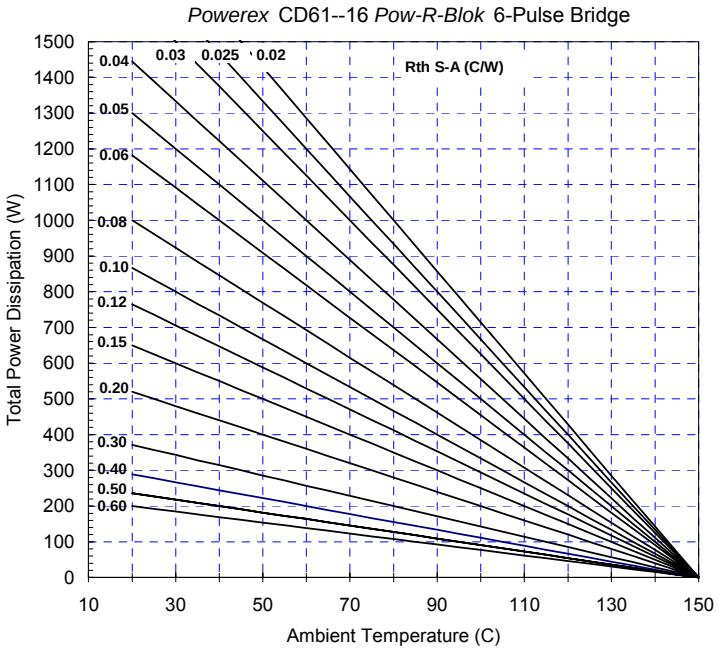

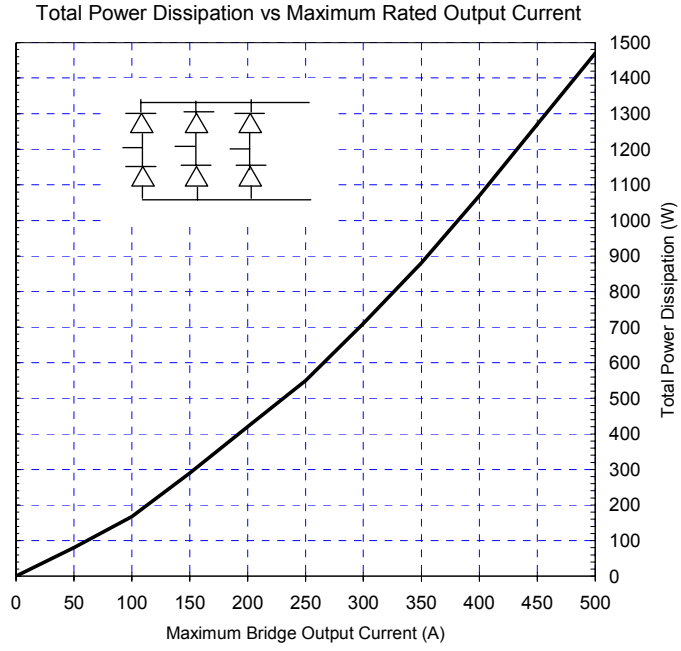

Six-Pulse Bridge Circuit Total Power Dissipation & Maximum Rated Output Current With Sink to Ambient Resistance of Heatsink as a Parameter.