

**CD61__16A, CS61__16A
CN61__16A, CC61__16A**
**Dual & Single Diode Isolated
POW-R-BLOK™ Module**
160 Amperes / Up to 1600 Volts

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™* 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

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™* Module

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

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.



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160 Amperes / Up to 1600 Volts

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, $T_C=100^{\circ}C$	$I_{F(RMS)}$	260	A
Average Forward Current	180° Conduction, $T_C=100^{\circ}C$	$I_{F(AV)}$	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	$A^2 \text{ sec}$
	8.3ms, 100% No V_{RRM} reapplied, $T_J=150C$	I^2t	73,000	$A^2 \text{ sec}$
	10ms, 100% V_{RRM} reapplied, $T_J=150C$	I^2t	56,000	$A^2 \text{ sec}$
	10ms, 100% No V_{RRM} reapplied, $T_J=150C$	I^2t	80,000	$A^2 \text{ sec}$
Operating Temperature		T_J	-40 to +150	$^{\circ}C$
Storage Temperature		T_{stg}	-40 to +150	$^{\circ}C$
Max. Mounting Torque, M6 Mounting Screw			35 - 50	in.-Lb.
			4 - 6	Nm
Max. Mounting Torque, M8 Terminal Screw			35 - 50	in.-Lb.
			4 - 6	Nm
Module Weight, Typical			200	g
			7.1	oz.
V Isolation @ 25C, V_{rms} for 1 sec		V_{rms}	3500	V

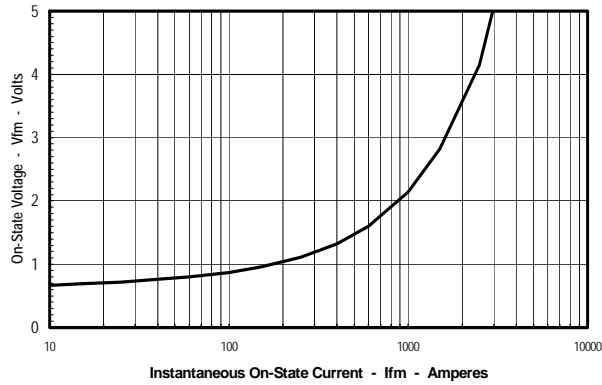
Electrical Characteristics, T_J=25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Reverse Leakage Current	I _{RRM}	Up to 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	V _{(TO)1}	T _J = 150°C, I = 16.7% I _{F(AV)} to I _{F(AV)}		0.73	V
Slope Resistance, Low-level	r _{T1}			1.5	mΩ
Threshold Voltage, High-level	V _{(TO)2}	T _J = 150°C, I = I _{F(AV)} to I _{FSM}		0.88	V
Slope Resistance, High-level	r _{T2}			1.26	mΩ
V _{TM} Coefficients, Full Range		T _J = 150°C, I = 15% I _{F(AV)} to I _{FSM}	A =	0.563	
			B =	0.0392	
		V _{FM} = A+ B Ln I + C I + D Sqrt I	C =	1.31 E-3	
			D =	-8.25 E-5	

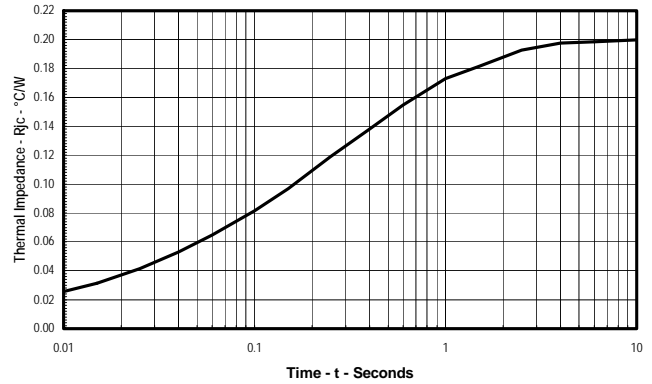
Thermal Characteristics

Characteristics	Symbol		Max.	Units
Thermal Resistance, Junction to Case	R _{ΘJ-C}	Per Module, both conducting	0.1	°C/W
		Per Junction both conducting	0.2	°C/W
Thermal Impedance Coefficients	Z _{ΘJ-C}	Z _{ΘJ-C} = K ₁ (1-exp(-t/τ ₁))	K ₁ = 1.84E-2	τ ₁ = 2.53E-6
		+ K ₂ (1-exp(-t/τ ₂))	K ₂ = 4.68E-2	τ ₂ = 6.44E-2
		+ K ₃ (1-exp(-t/τ ₃))	K ₃ = 8.25E-2	τ ₃ = 3.11E-1
		+ K ₄ (1-exp(-t/τ ₄))	K ₄ = 5.23E-2	τ ₄ = 1.32
Thermal Resistance, Case to Sink Lubricated	R _{ΘC-S}	Per Module	0.05	°C/W

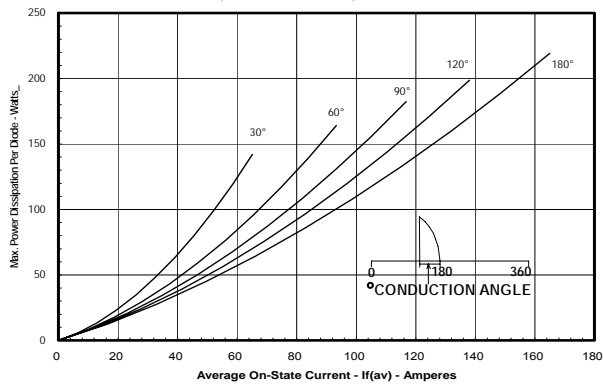
Maximum On-State Forward Voltage Drop
($T_J = 150^\circ\text{C}$)



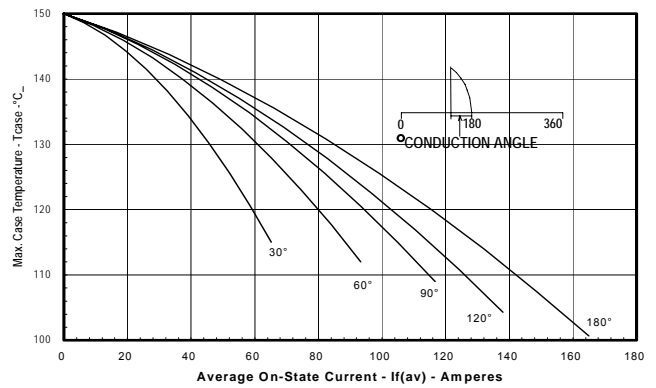
Maximum Transient Thermal Impedance
(Junction to Case, Per Diode)



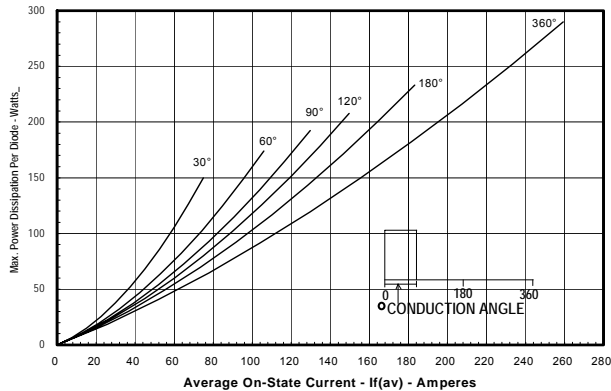
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



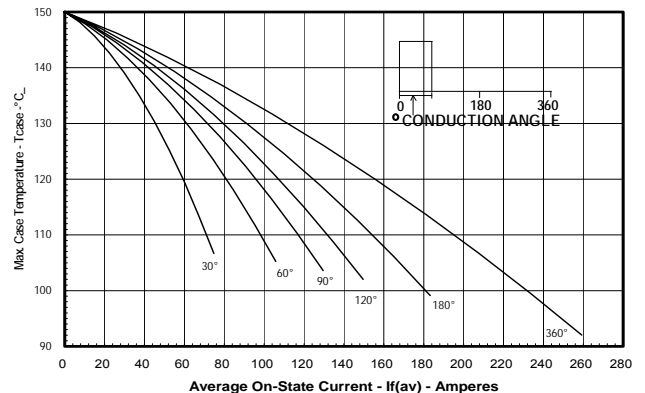
Maximum Allowable Case Temperature
(Sinusoidal Waveform)

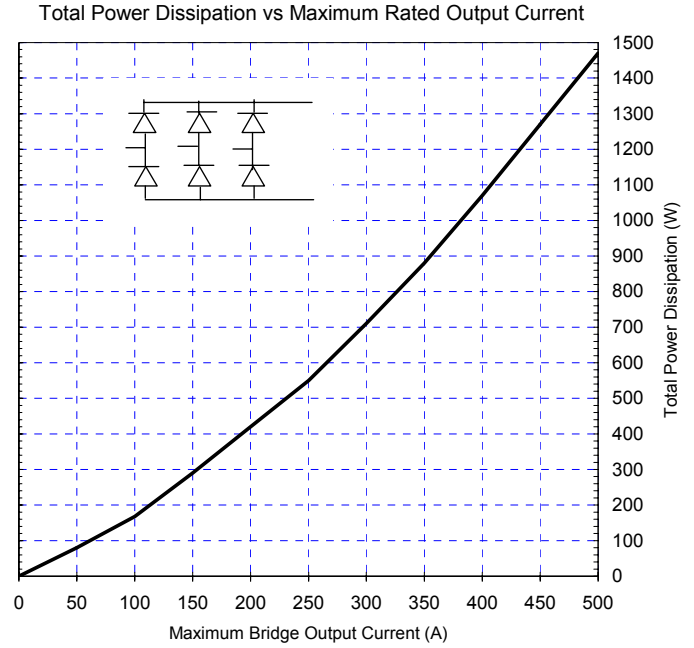
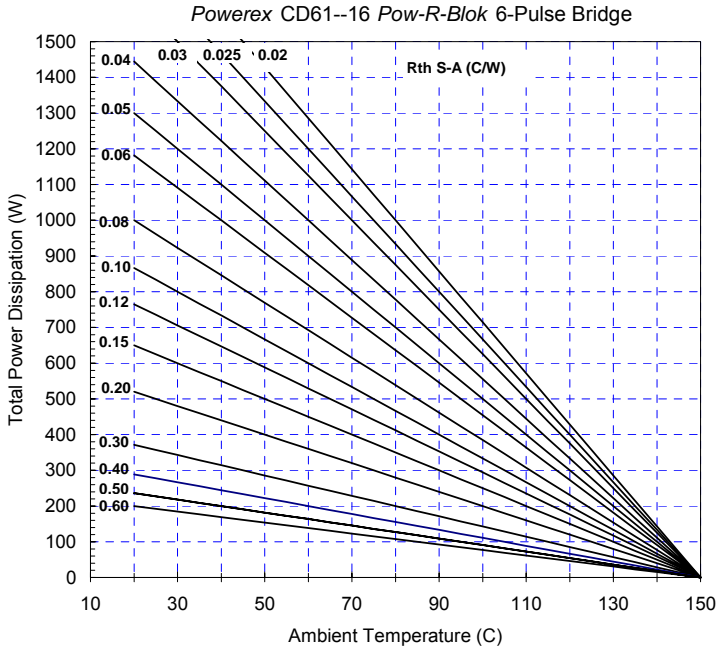


Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)





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