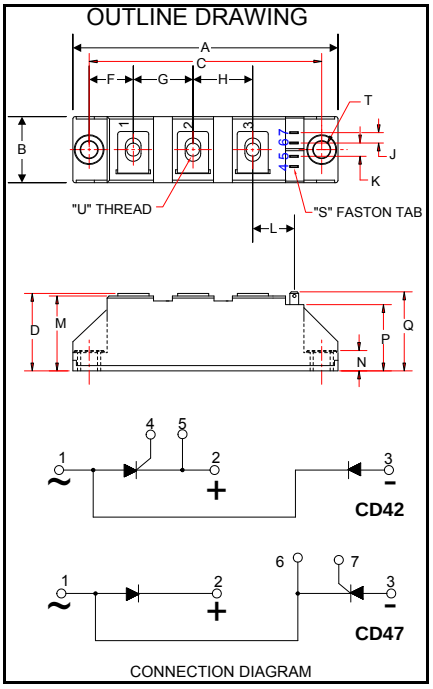
CD42__60B
CD47__60B

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

POW-R-BLOK™
Dual SCR/Diode Isolated Module
60 Amperes / Up to 1800 Volts

OUTLINE DRAWING



CONNECTION DIAGRAM

CD42__60B, CD47__60B
Dual SCR/Diode Isolated
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Description:

Powerex SCR/Diode Modules are designed for use in applications requiring phase control 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 (Al_2O_3) Insulator
- Copper 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:

- Bridge Circuits
- AC & DC Motor Drives
- Battery Supplies
- Power Supplies
- Large IGBT Circuit Front Ends
- Lighting Control
- Heat & Temperature Control
- Welders

CD42, CD47 Outline Dimensions

Dimension	Inches	Millimeters
A	3.66	93
B	0.79	20
C	3.15	80
D	1.18	30
F	0.61	15.5
G	0.79	20
H	0.79	20
J	0.16	4
K	0.22	5.7
L	0.59	15
M	1.10	28
N	0.31	8
P	0.94	24
Q	1.16	29.4
S	0.11 x .03	2.8 x 0.8
T	0.25	6.4
U	M5	M5

Note: Dimensions are for reference only.

Ordering Information:

Select the complete nine digit module part number from the table below. Example: CD421660B is a 1600Volt, 60 Ampere Dual SCR/Diode Isolated *POW-R-BLOK™* Module

Type	Voltage Volts (x100)	Current Amperes	Version
CD42	08	60	B
CD47	12		
	14		
	16		
	18		

Revision Date: 04/28/2009

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Absolute Maximum Ratings

Characteristics	Conditions	Symbol		Units
Repetitive Peak Forward and Reverse Blocking Voltage		V_{DRM} & V_{RRM}	up to 1800	V
Non-Repetitive Peak Reverse Blocking Voltage (t < 5 msec)		V_{RSM}	V_{RRM} + 100	V
RMS Forward Current	180° Conduction, T_C=70°C	$I_{T(RMS)}$	110	A
Average Forward Current	180° Conduction, T_C=70°C	$I_{T(AV)}$	70	A
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, T_j=125°C	I_{TSM}	1,470	A
	60 Hz, No V_{RRM} reapplied, T_j=125°C	I_{TSM}	1,740	A
	60 Hz, No V_{RRM} reapplied, T_j=25°C	I_{TSM}	1,940	A
	50 Hz, 100% V_{RRM} reapplied, T_j=125°C	I_{TSM}	1,400	A
	50 Hz, No V_{RRM} reapplied, T_j=125°C	I_{TSM}	1,665	A
	50 Hz, No V_{RRM} reapplied, T_j=25°C	I_{TSM}	1,850	A
I^2t for Fusing for One Cycle, 8.3 milliseconds	8.3 ms, 100% V_{RRM} reapplied, T_j=125°C	I^2t	8,960	A^2 sec
	8.3 ms, No V_{RRM} reapplied, T_j=125°C	I^2t	12,560	A^2 sec
	8.3 ms, No V_{RRM} reapplied, T_j=25°C	I^2t	15,600	A^2 sec
	10 ms, 100% V_{RRM} reapplied, T_j=125°C	I^2t	9,800	A^2 sec
	10 ms, No V_{RRM} reapplied, T_j=125°C	I^2t	13,860	A^2 sec
	10 ms, No V_{RRM} reapplied, T_j=25°C	I^2t	17,110	A^2 sec
Maximum Rate-of-Rise of On-State Current, (Non-Repetitive)	T_j=125°C	di/dt	150	A/µs
Operating Temperature		T_J	-40 to +125	°C
Storage Temperature		T_{stg}	-40 to +125	°C
Max. Mounting Torque, M5 Mounting Screw on Terminals			25 3	in.-Lb. Nm
Max. Mounting Torque, Module to Heatsink			44 5	in.-Lb. Nm
Module Weight, Typical			95 3.35	g oz.
V Isolation @ 25C	50 – 60 Hz, 1 minute	V_{rms}	3000	V
Circuit to base, all terminals shorted together	50 – 60 Hz, 1 second	V_{rms}	3500	V

Information presented is based upon manufacturers testing and projected capabilities.
This information is subject to change without notice.
The manufacturer makes no claim as to the suitability of use, reliability, capability, or future availability of this product.

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Electrical Characteristics, T_J=25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Forward Leakage Current	I_{DRM}	Up to 1800V, T_J=125°C		20	mA
Repetitive Peak Reverse Leakage Current	I_{RRM}	Up to 1800V, T_J=125°C		20	mA
Peak On-State Voltage	V_{TM} / V_{FM}	I_{TM} / I_{FM} =300A		1.9	V
Threshold Voltage, Low-level Slope Resistance, Low-level	$V_{(TO)1}$ r_{T1}	T_J = 125°C, I = 16.7% x $\pi I_{T(AV)}$ to $\pi I_{T(AV)}$		0.9 3.5	V mΩ
Minimum dV/dt	dV/dt	T_j=125°C, Up to 800V T_j=125°C, 1200V - 800V	500 1000		V/µs
Turn-Off Time (Typical)	t_{off}	T_J = 25°C	40 - 100	(Typical)	µs
Gate Trigger Current	I_{GT}	T_j= 25°C, V_D=6V, Resistive Load		150	mA
Gate Trigger Voltage	V_{GT}	T_j= 25°C, V_D=6V, Resistive Load		3.0	Volts
Non-Triggering Gate Voltage	V_{GDM}	T_j=125°C, V_D=V_{DRM}		0.25	Volts
Non-Triggering Gate Current	I_{GDM}	T_j=125°C, V_D=V_{DRM}		6	mA
Holding Current	I_H	T_j= 25°C		150	mA
Latching Current	I_L	T_j= 25°C		300	mA

Thermal Characteristics

Characteristics	Symbol		Max.	Units
Thermal Resistance, Junction to Case DC Operation	$R_{ΘJ-C}$	Per Module, both conducting Per Junction, both conducting	0.18 0.35	°C/W °C/W
Thermal Resistance, Case to Sink Lubricated	$R_{ΘC-S}$	Per Module	0.1	°C/W

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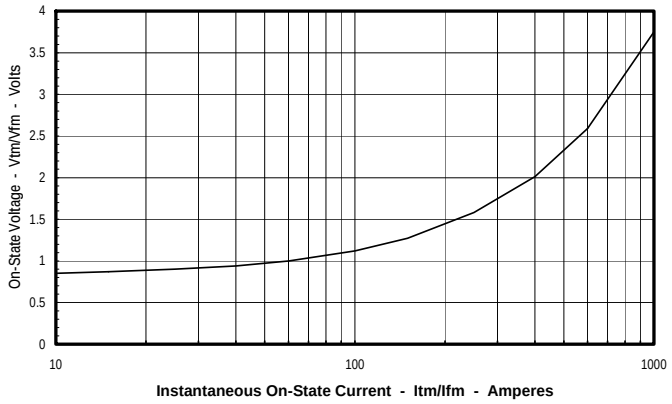
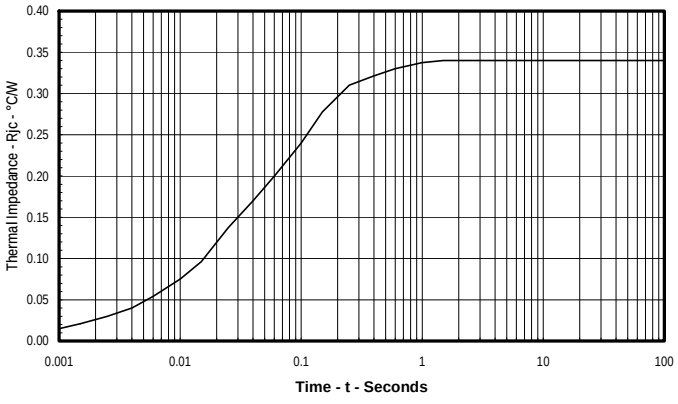
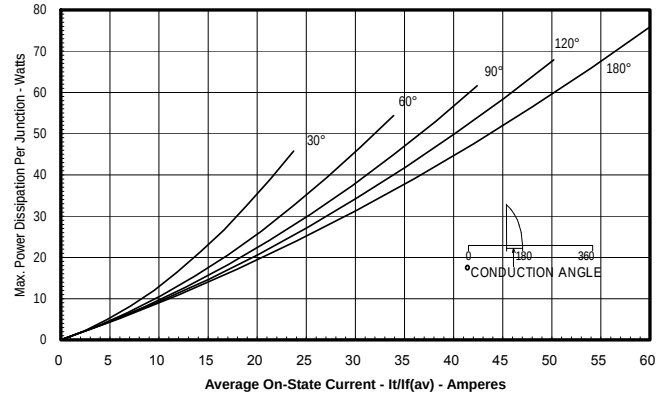
Maximum On-State Forward Voltage Drop
(Tj = 125 °C)



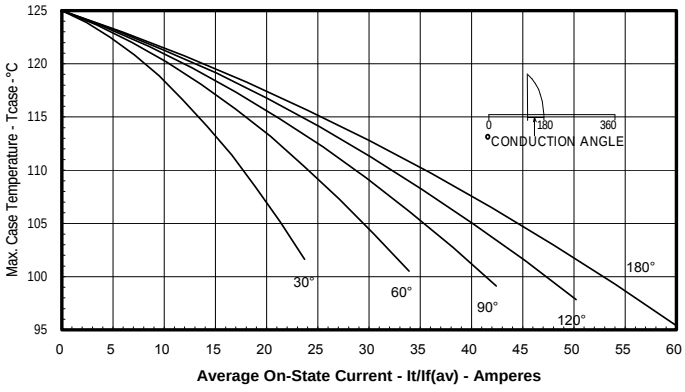
Maximum Transient Thermal Impedance
(Junction to Case)



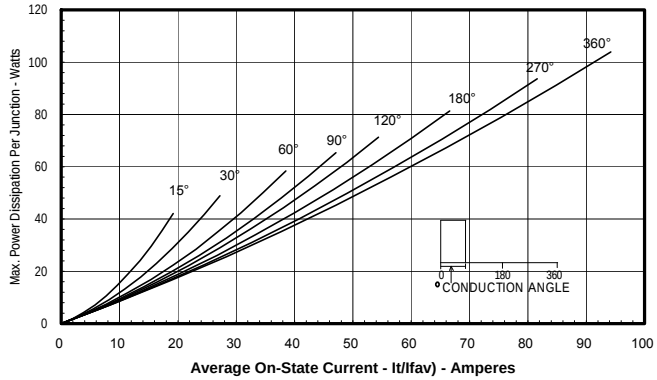
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)