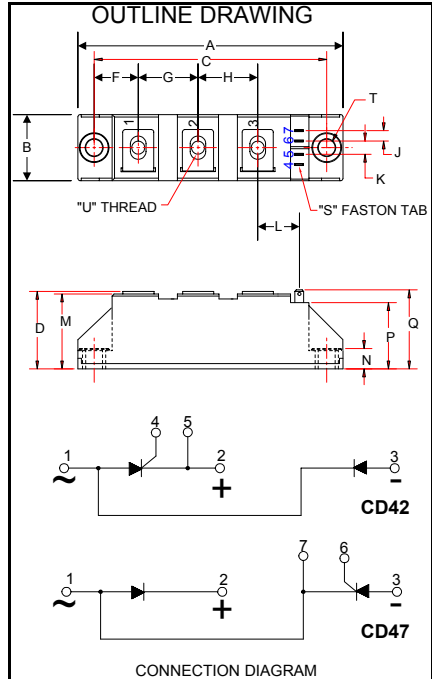


POW-R-BLOK™

Dual SCR/Diode Isolated Module
90 Amperes / Up to 1800 Volts



CD42__90B, CD47__90B
Dual SCR/Diode Isolated
POW-R-BLOK™ Module
90 Amperes / Up to 1800 Volts

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:

Features:

- Electrically Isolated Heatsinking
- DBC Alumina (Al₂O₃) Insulator
- Copper Baseplate
- Low Thermal Impedance for Improved Current Capability
- UL Recognition Pending

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: CD421690B is a 1600Volt, 90 Ampere Dual SCR/Diode Isolated POW-R-BLOK™ Module

Type	Voltage Volts (x100)	Current Amperes	Version
CD42	08	90	B
CD47	12		
	14		
	16		
	18		



CD42__90B
CD47__90B

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

POW-R-BLOK™
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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, $T_C=85^\circ\text{C}$	$I_{T(RMS)}$	150	A
Average Forward Current	180° Conduction, $T_C=85^\circ\text{C}$	$I_{T(AV)}$	95	A
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	1570	A
	60 Hz, No V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	1870	A
	60 Hz, No V_{RRM} reapplied, $T_J=25^\circ\text{C}$	I_{TSM}	2100	A
	50 Hz, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	1500	A
	50 Hz, No V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	1785	A
	50 Hz, No V_{RRM} reapplied, $T_J=25^\circ\text{C}$	I_{TSM}	2000	A
I^2t for Fusing for One Cycle, 8.3 milliseconds	8.3 ms, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I^2t	10,270	A^2sec
	8.3 ms, No V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I^2t	14,520	A^2sec
	8.3 ms, No V_{RRM} reapplied, $T_J=25^\circ\text{C}$	I^2t	18,300	A^2sec
	10 ms, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I^2t	11,250	A^2sec
	10 ms, No V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I^2t	15,910	A^2sec
	10 ms, No V_{RRM} reapplied, $T_J=25^\circ\text{C}$	I^2t	20,000	A^2sec
Maximum Rate-of-Rise of On-State Current, (Non-Repetitive)	$T_J=25^\circ\text{C}$	di/dt	150	$\text{A}/\mu\text{s}$
Operating Temperature		T_J	-40 to +125	$^\circ\text{C}$
Storage Temperature		T_{stg}	-40 to +125	$^\circ\text{C}$
Max. Mounting Torque, M5 Mounting Screw on Terminals			25	in.-Lb.
			3	Nm
Max. Mounting Torque, Module to Heatsink			44	in.-Lb.
			5	Nm
Module Weight, Typical			95	g
			3.35	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

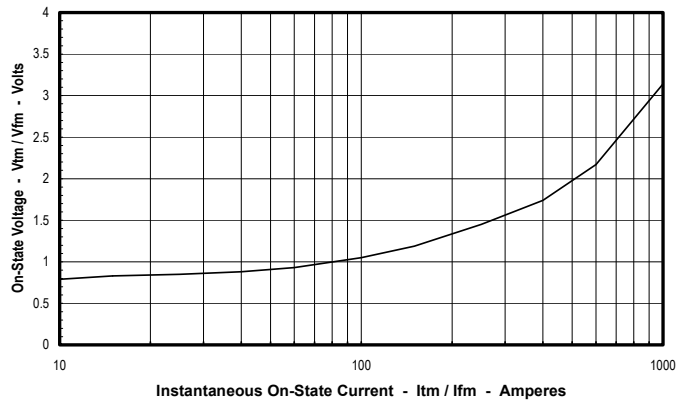
Electrical Characteristics, $T_J=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Forward Leakage Current	I_{DRM}	Up to 1800V, $T_J=125^\circ\text{C}$		20	mA
Repetitive Peak Reverse Leakage Current	I_{RRM}	Up to 1800V, $T_J=125^\circ\text{C}$		20	mA
Peak On-State Voltage	$V_{\text{TM}} / V_{\text{FM}}$	$I_{\text{TM}} / I_{\text{FM}}=300\text{A}$		1.65	V
Threshold Voltage, Low-level	$V_{(\text{TO})1}$	$T_J = 125^\circ\text{C}$, $I = 16.7\% \times \pi I_{\text{T(AV)}}$ to $\pi I_{\text{T(AV)}}$		0.9	V
Slope Resistance, Low-level	r_{T1}			2.0	$\text{m}\Omega$
Minimum dV/dt	dV/dt	$T_J=125^\circ\text{C}$, Up to 800V $T_J=125^\circ\text{C}$, 1200 - 1800V	500 1000		V/ μs V/ μs
Turn-Off Time (Typical)	t_{off}	$T_J = 25^\circ\text{C}$	40 - 100	(Typical)	μs
Gate Trigger Current	I_{GT}	$T_J= 25^\circ\text{C}$, $V_D=6\text{V}$, Resistive Load		150	mA
Gate Trigger Voltage	V_{GT}	$T_J= 25^\circ\text{C}$, $V_D=6\text{V}$, Resistive Load		3.0	Volts
Non-Triggering Gate Voltage	V_{GDM}	$T_J=125^\circ\text{C}$, $V_D=V_{\text{DRM}}$		0.25	Volts
Non-Triggering Gate Current	I_{GDM}	$T_J=125^\circ\text{C}$, $V_D=V_{\text{DRM}}$		6	mA
Holding Current	I_{H}	$T_J = 25^\circ\text{C}$		250	mA
Latching Current	I_{L}	$T_J = 25^\circ\text{C}$		600	mA

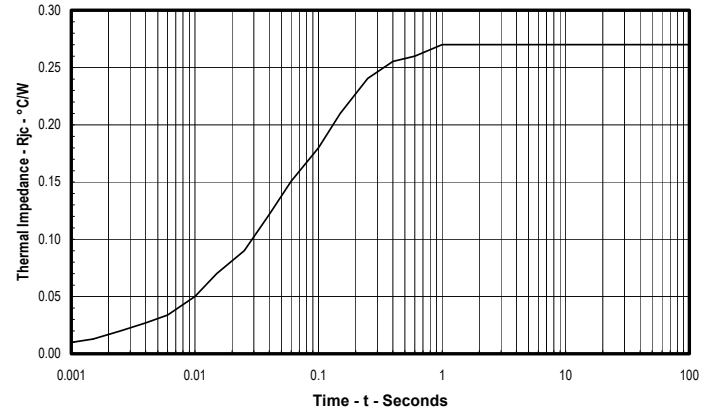
Thermal Characteristics

Characteristics	Symbol		Max.	Units
Thermal Resistance, Junction to Case	$R_{\Theta\text{J-C}}$	Per Module, both conducting	0.14	$^\circ\text{C/W}$
DC Operation		Per Junction, both conducting	0.28	$^\circ\text{C/W}$
Thermal Resistance, Case to Sink Lubricated	$R_{\Theta\text{C-S}}$	Per Module	0.1	$^\circ\text{C/W}$

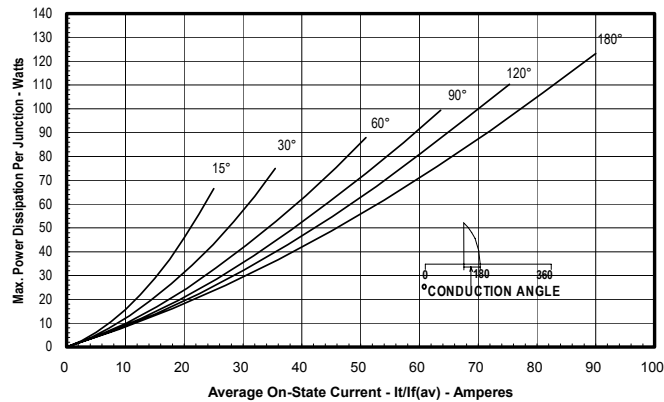
Maximum On-State Forward Voltage Drop
($T_J = 125^\circ\text{C}$)



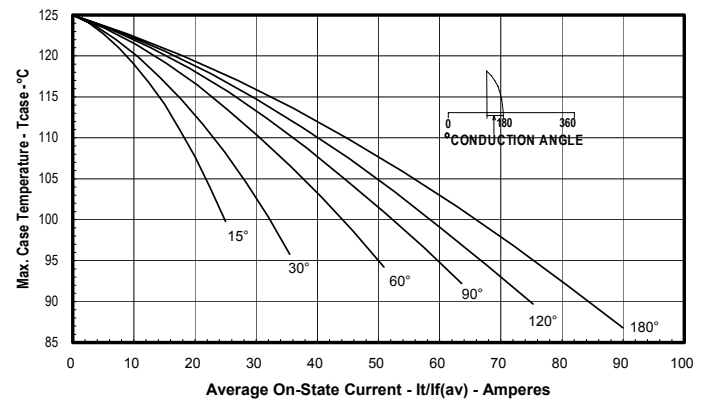
Maximum Transient Thermal Impedance
(Junction to Case)



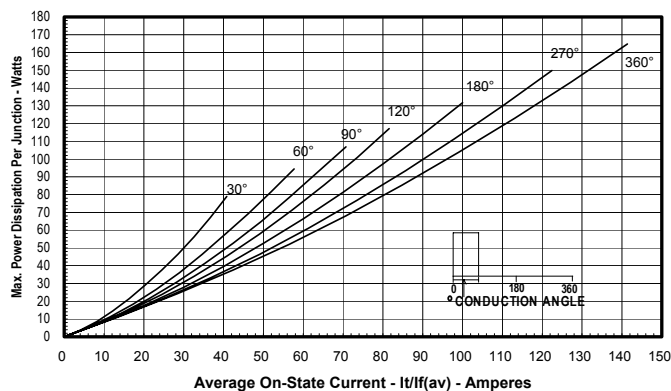
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

