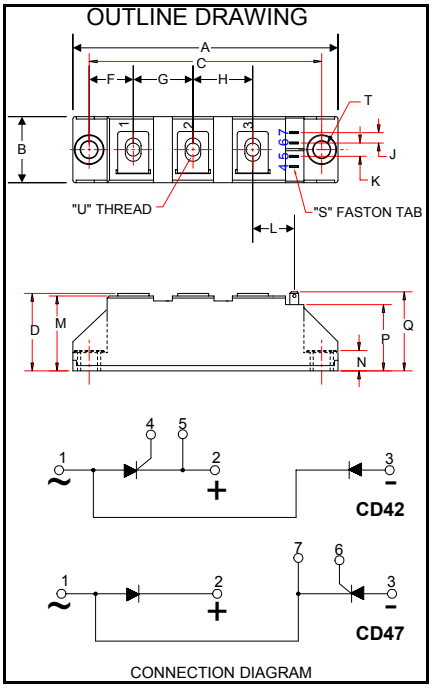
CD42__90B
CD47__90B

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

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



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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:

Features:

- Electrically Isolated Heatsinking
- DBC Alumina (Al_2O_3) 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		

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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°C	$I_{T(RMS)}$	150	A
Average Forward Current	180° Conduction, T_C=85°C	$I_{T(AV)}$	95	A
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, T_j=125°C	I_{TSM}	1570	A
	60 Hz, No V_{RRM} reapplied, T_j=125°C	I_{TSM}	1870	A
	60 Hz, No V_{RRM} reapplied, T_j=25°C	I_{TSM}	2100	A
	50 Hz, 100% V_{RRM} reapplied, T_j=125°C	I_{TSM}	1500	A
	50 Hz, No V_{RRM} reapplied, T_j=125°C	I_{TSM}	1785	A
	50 Hz, No V_{RRM} reapplied, T_j=25°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°C	I^2t	10,270	A^2 sec
	8.3 ms, No V_{RRM} reapplied, T_j=125°C	I^2t	14,520	A^2 sec
	8.3 ms, No V_{RRM} reapplied, T_j=25°C	I^2t	18,300	A^2 sec
	10 ms, 100% V_{RRM} reapplied, T_j=125°C	I^2t	11,250	A^2 sec
	10 ms, No V_{RRM} reapplied, T_j=125°C	I^2t	15,910	A^2 sec
	10 ms, No V_{RRM} reapplied, T_j=25°C	I^2t	20,000	A^2 sec
Maximum Rate-of-Rise of On-State Current, (Non-Repetitive)	T_j=25°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

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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		1.65	V
Threshold Voltage, Low-level	$V_{(TO)1}$	T_J = 125°C, I = 16.7% x $\pi I_{T(AV)}$ to $\pi I_{T(AV)}$		0.9	V
Slope Resistance, Low-level	r_{T1}			2.0	mΩ
Minimum dV/dt	dV/dt	T_j=125°C, Up to 800V	500		V/µs
		T_j=125°C, 1200 - 1800V	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		250	mA
Latching Current	I_L	T_J = 25°C		600	mA

Thermal Characteristics

Characteristics	Symbol		Max.	Units
Thermal Resistance, Junction to Case	$R_{ΘJ-C}$	Per Module, both conducting	0.14	°C/W
DC Operation		Per Junction, both conducting	0.28	°C/W
Thermal Resistance, Case to Sink Lubricated	$R_{ΘC-S}$	Per Module	0.1	°C/W

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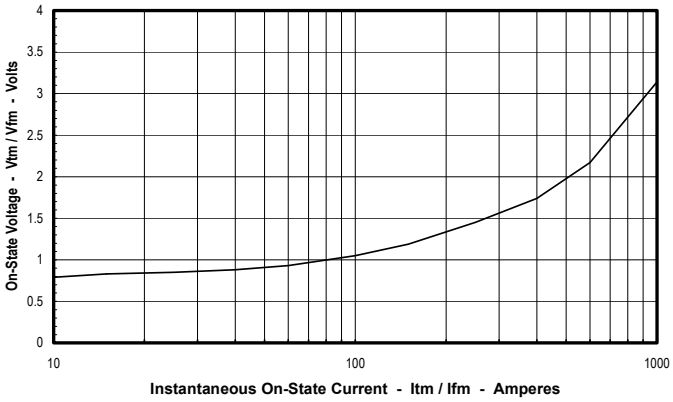
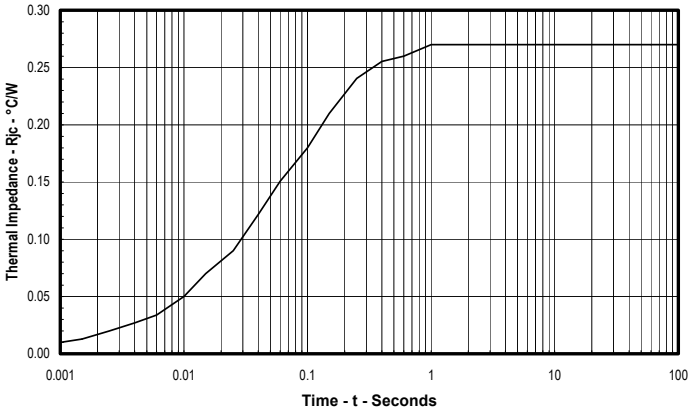
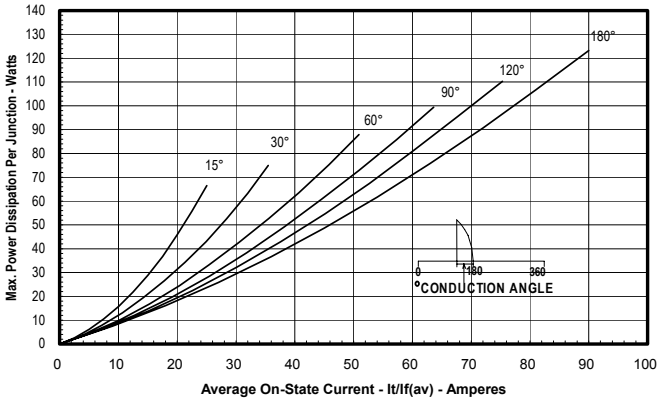
Maximum On-State Forward Voltage Drop
(Tj = 125 °C)



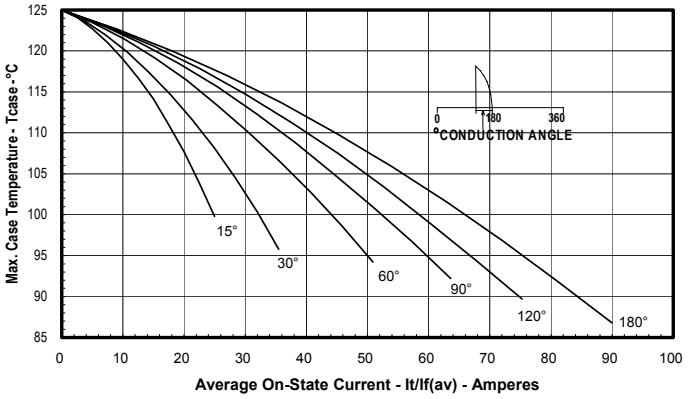
Maximum Transient Thermal Impedance
(Junction to Case)



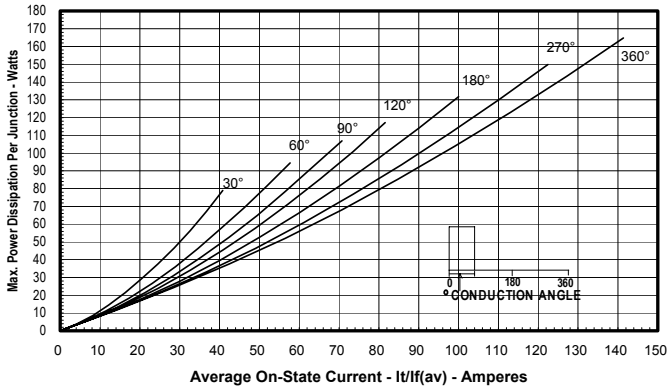
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



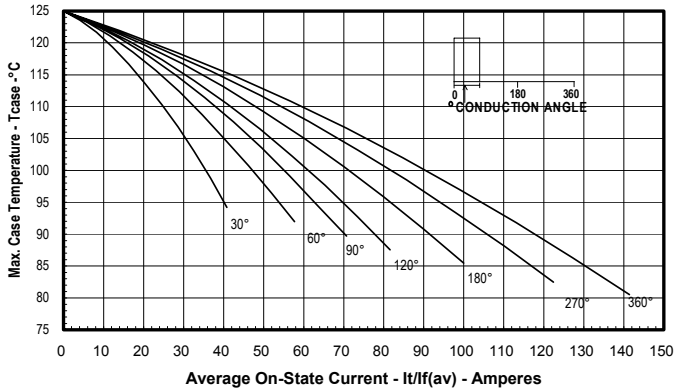
Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)



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