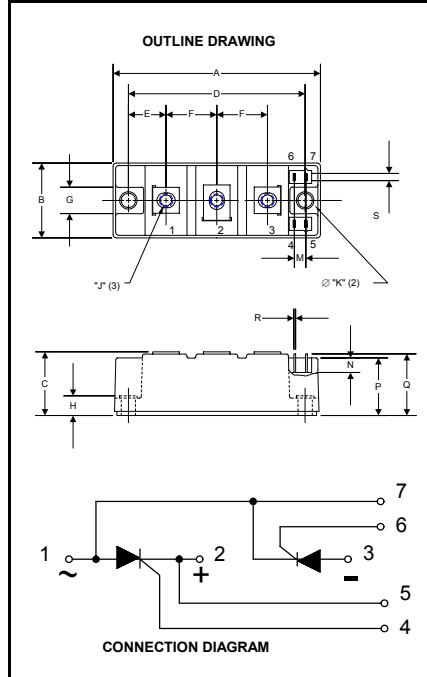


POW-R-BLOK™
Dual SCR Isolated Module
150 Amperes / Up to 1800 Volts



CD63__15B
Dual SCR Isolated
POW-R-BLOK™ Module
 150 Amperes / Up to 1800 Volts

Description:

Powerex Dual SCR 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 (Al₂O₃) Insulator
- Glass Passivated Chips
- Metal Baseplate
- Low Thermal Impedance for Improved Current Capability
- Quick Connect Gate Terminal with Provision for Keyed Mating Plug
- UL Recognition Pending

CD63_15B Outline Dimensions

Dimension	Inches	Millimeters
A	3.70	94
B	1.34	34
C	1.18	30
D	3.15	80
E	0.67	17
F	0.91	23
G	0.51	13
H	0.35	8.3
J	M6	M6
K	0.26	6.4
M	.020	5
N	0.28	6
P	1.06	27
Q	1.14	29
R	0.03	0.8
S	0.11	2.8

Note: Dimensions are for reference only.

Ordering Information:

Select the complete nine digit module part number from the table below. Example: CD631615B is a 1600Volt, 150 Ampere Dual SCR Isolated POW-R-BLOK™ Module

Type	Voltage Volts (x100)	Current Amperes (x 10)	Version
CD63	08 12 14 16 18	15	B

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

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, $T_C=85^\circ\text{C}$	$I_{T(RMS)}$	250 A
	180° Conduction, $T_C=85^\circ\text{C}$ (AC Switch)	$I_{T(RMS)}$	355 A
Average Forward Current	180° Conduction, $T_C=85^\circ\text{C}$	$I_{T(AV)}$	160 A
	180° Conduction, $T_C=90^\circ\text{C}$	$I_{T(AV)}$	150 A
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	4300 A
	60 Hz, No V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	5100 A
	50 Hz, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	4100 A
	50 Hz, No V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	4870 A
Peak Three Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	3250 A
	50 Hz, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	3150 A
Peak Ten Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	2650 A
	50 Hz, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I_{TSM}	2550 A
I^2t for Fusing for One Cycle	8.3 ms, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I^2t	76,700 A^2sec
	8.3 ms, No V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I^2t	108,000 A^2sec
	10 ms, 100% V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I^2t	84,000 A^2sec
	10 ms, No V_{RRM} reapplied, $T_J=125^\circ\text{C}$	I^2t	119,000 A^2sec
Maximum Rate-of-Rise of On-State Current, Non Repetitive	$T_J=125^\circ\text{C}$, $V_D = V_{DRM}$ (Rated), $I_{TM}=400\text{A}$, $I_G=0.5\text{A}$, $T_r < 0.25\mu\text{s}$, $t_p > 6\mu\text{s}$	di/dt	300 $\text{A}/\mu\text{s}$
Peak Gate Power Dissipation	$T_p < 5$ ms, $T_J = 125^\circ\text{C}$	P_{GM}	12 W
Average Gate Power Dissipation	$F = 50$ Hz, $T_J = 125^\circ\text{C}$	$P_{G(AV)}$	3 W
Peak Forward Gate Current	$T_p < 5$ ms, $T_J = 125^\circ\text{C}$	I_{GFM}	3 A
Peak Reverse Gate Voltage	$T_p < 5$ ms, $T_J = 125^\circ\text{C}$	V_{GRM}	10 V
Operating Temperature		T_J	-40 to +125 $^\circ\text{C}$
Storage Temperature		T_{stg}	-40 to +125 $^\circ\text{C}$
Max. Mounting Torque, M6 Mounting Screw on Terminals			35 - 50 in.-Lb.
			4 - 6 Nm
Max. Mounting Torque, Module to Heatsink			35 - 50 in.-Lb.
			4 - 6 Nm
Module Weight, Typical			165 g
			5.82 oz.
V Isolation @ 25C		V_{rms}	3500 V

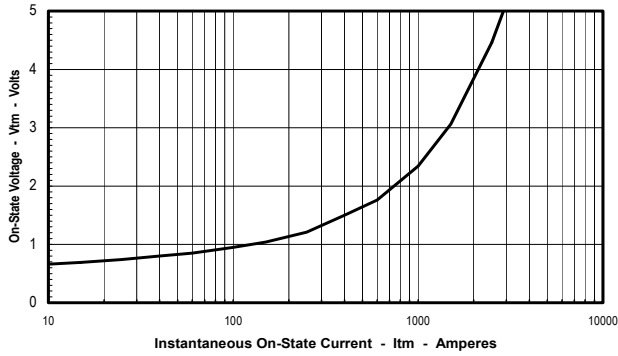
Electrical Characteristics, $T_J=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Forward Leakage Current	I_{DRM}	Up to 1800V, $T_J=125^\circ\text{C}$		50	mA
Repetitive Peak Reverse Leakage Current	I_{RRM}	Up to 1800V, $T_J=125^\circ\text{C}$		50	mA
Peak On-State Voltage	V_{TM}	$I_{TM}=500\text{A}$		1.6	V
Threshold Voltage, Low-level	$V_{(TO)1}$	$T_J = 125^\circ\text{C}$, $I = 16.7\% \times \pi I_{T(AV)}$ to $\pi I_{T(AV)}$		0.85	V
Slope Resistance, Low-level	r_{T1}			1.5	$\text{m}\Omega$
Minimum dV/dt	dV/dt	Exponential to $2/3 V_{DRM}$ $T_J=125^\circ\text{C}$, Gate Open	1000		V/ μs
Turn-Off Time (Typical)	t_{off}	$T_J = 125^\circ\text{C}$, $I_T = 300\text{A}$, $R_{gk} = 100\Omega$ $V_r = 50\text{V}$, $-di/dt = 15\text{A}/\mu\text{s}$ Re-Applied dV/dt = $20\text{V}/\mu\text{s}$, Linear to $2/3 V_{DRM}$	50 - 200	(Typical)	μs
Gate Trigger Current	I_{GT}	$T_J = 25^\circ\text{C}$, $V_D=6\text{V}$, $R_g=1\Omega$, Resistive Load		150	mA
Gate Trigger Voltage	V_{GT}	$T_J = 25^\circ\text{C}$, $V_D=6\text{V}$, $R_g=1\Omega$, Resistive Load		2.0	Volts
Non-Triggering Gate Voltage	V_{GDM}	$T_J=125^\circ\text{C}$, $V_D=V_{DRM}$		0.25	Volts
Non-Triggering Gate Current	I_{GDM}	$T_J=125^\circ\text{C}$, $V_D=V_{DRM}$		10	mA
Holding Current	I_H	$T_J=25^\circ\text{C}$	150	(Typical)	mA
Latching Current	I_L	$T_J=25^\circ\text{C}$	300	(Typical)	mA

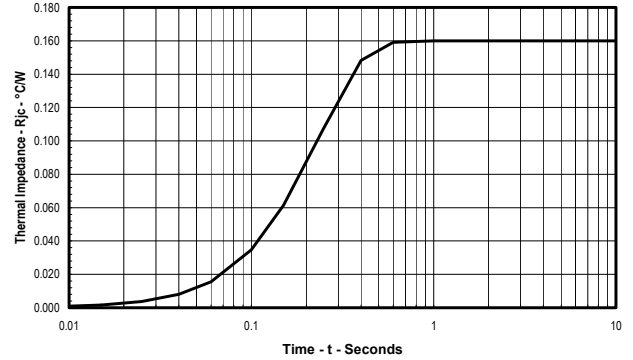
Thermal Characteristics

Characteristics	Symbol		Max.	Units
Thermal Resistance, Junction to Case DC Operation	$R_{\theta J-C}$	Per Module, both conducting Per Junction, both conducting	0.085 0.17	$^\circ\text{C}/\text{W}$ $^\circ\text{C}/\text{W}$
Thermal Resistance, Case to Sink Lubricated	$R_{\theta C-S}$	Per Module	0.05	$^\circ\text{C}/\text{W}$

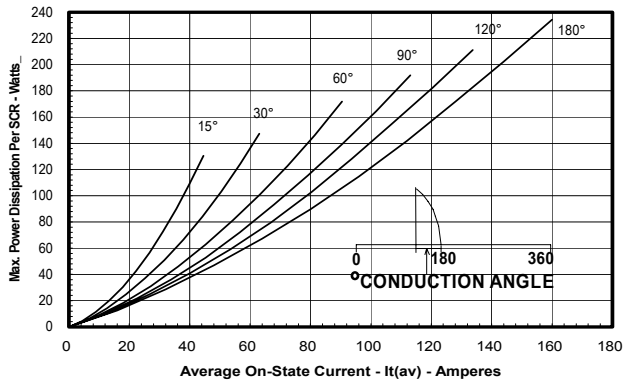
Maximum On-State Forward Voltage Drop
 (T_J = 125 °C)



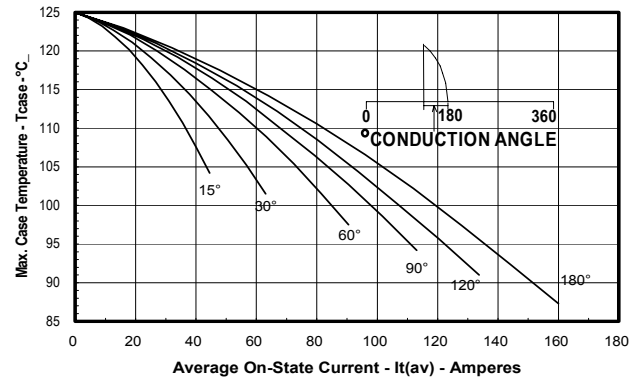
Maximum Transient Thermal Impedance
 (Junction to Case)



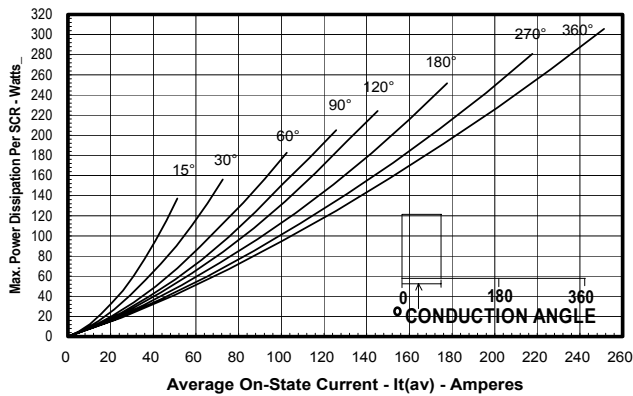
Maximum On-State Power Dissipation
 (Sinusoidal Waveform)



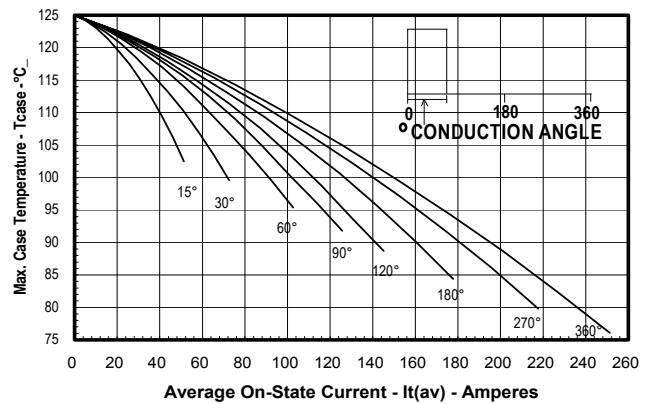
Maximum Allowable Case Temperature
 (Sinusoidal Waveform)

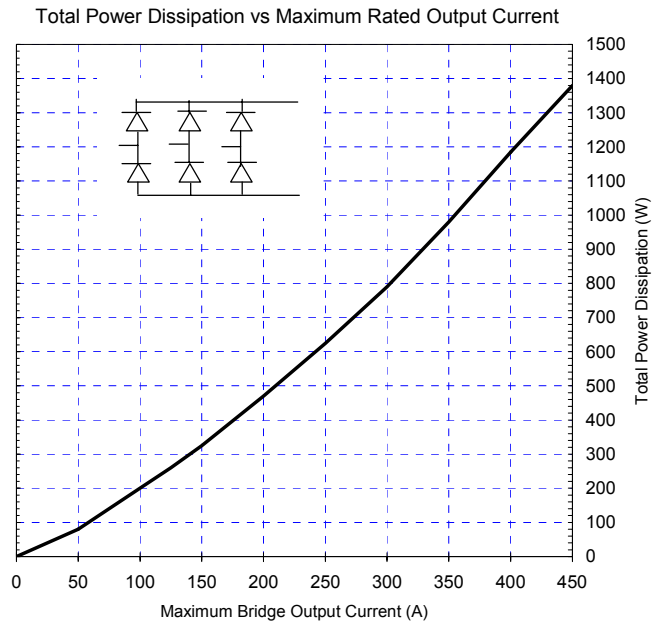
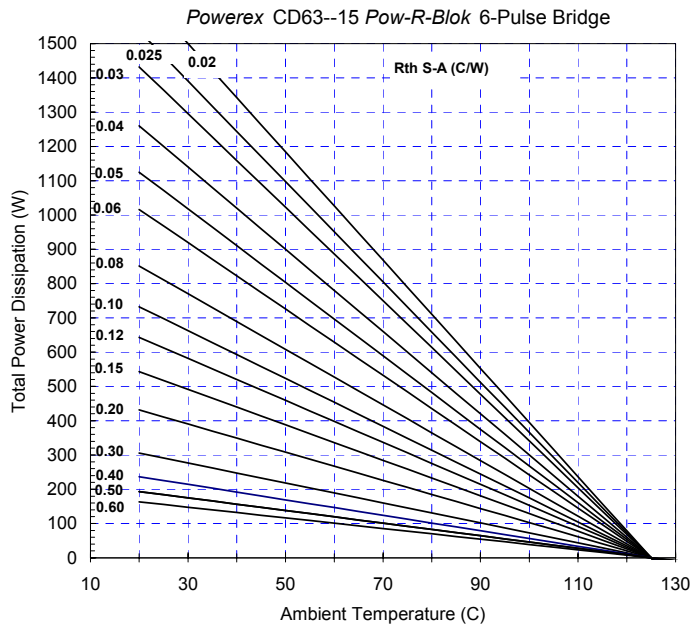


Maximum On-State Power Dissipation
 (Rectangular Waveform)



Maximum Allowable Case Temperature
 (Rectangular Waveform)





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