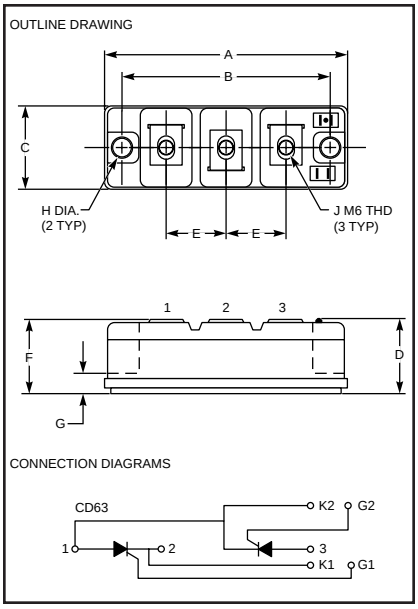
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

Dual SCR
POW-R-BLOK™ Module
150 Amperes/1600 Volts



Outline Drawing

Dimension	Inches		Metric	
	Min.	Max.	Min.	Max.
A	3.681	3.721	93.50	94.51
B	3.145	3.155	79.88	80.14
C	1.329	1.349	33.76	34.26
D	1.181	1.240	30.00	31.50
E	0.901	0.911	22.88	23.14
F	1.161	1.201	29.49	30.51
G	0.305	0.325	7.75	8.26
HØ	0.251	0.261	6.38	6.63
J	—	—	M6 x 1.0	

CD63_ _15
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Ordering Information:
Select the complete eight digit module part number you desire from the table below.
Example: CD631215 is a 1200 Volt, 150 Ampere Dual SCR POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Rating Amperes (x10)
CD63	08	15
	12	
	14	
	16	

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 (QQQX2 Power Semiconductors).

Features:

- ☐ Electrically Isolated Heatsinking
- ☐ Compression Bonded Elements
- ☐ Metal Baseplate
- ☐ Low Thermal Impedance
- ☐ Quick Connect Gate Terminal with Provision for Keyed Mating Plug
- ☐ UL Recognized

Applications:

- ☐ Battery Supplies
- ☐ Bridge Circuits
- ☐ AC and DC Motor Control
- ☐ Tap Changers
- ☐ Lighting Control

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Absolute Maximum Ratings

Characteristics	Symbol	Conditions	CD63_ _15	Units
Repetitive Peak Forward Blocking Voltage	V_{DRM}	—	1600	Volts
Repetitive Peak Reverse Blocking Voltage	V_{RRM}	—	1600	Volts
Non-Repetitive Peak Forward Blocking Voltage	V_{DRM}	—	V_{DRM} + 100	Volts
Non-Repetitive Peak Reverse Blocking Voltage	V_{RSM}	—	V_{RRM} + 100	Volts
RMS Forward Current	$I_{T(RMS)}$	—	250	Amperes
Average Forward Current	$I_{T(AV)}$	180° Conduction, T_C = 89°C	150	Amperes
Peak Half-Cycle Surge (Non-Repetitive) On-State Current	I_{TSM}	t = 8.3ms, 100%V_{RRM} Reapplied	4500	Amperes
		t = 10ms, 100%V_{RRM} Reapplied	4300	Amperes
I^2t (for Fusing) for One-Cycle	I^2t	t = 8.3ms, 100%V_{RRM} Reapplied	84400	A^2sec
		t = 10ms, 100%V_{RRM} Reapplied	92500	A^2sec
Maximum Rate-of-Rise of On-State Current (Non-Repetitive)*	di/dt	$I_{TM} = \pi I_{T(AV)}$, $t_r < 0.5\mu s$, $t_p > 6\mu s$	500	Amperes/μs
Storage Temperature	T_{STG}	—	-40 to 150	°C
Operating Temperature	T_j	—	-40 to 125	°C
Maximum Mounting Torque M6 Mounting Screw	—	—	4 to 6	Nm
Maximum Mounting Torque M6 Terminal Screw	—	—	4 to 6	Nm
Module Weight (Typical)	—	—	500	Grams
			17.8	oz.
V Isolation	V_{RMS}	—	3000	Volts

*T_j = 125°C, I_G = 500mA, V_D = 0.67 $V_{DRM\ (Rated)}$

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Electrical and Thermal Characteristics, T_j = 25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	CD63_ _15 Min.	Typ.	Max.	Units
Blocking State Maximums						
Forward Off-State Current, Peak	I_{DRM}	T_j = 125°C, $V_D = V_{DRM}$	—	—	50	mA
Reverse Off-State Current, Peak	I_{RRM}	T_j = 125°C, $V_R = V_{RRM}$	—	—	50	mA
Conducting State Maximums						
Peak On-State Voltage	V_{TM}	T_j = 125°C, I_{TM} = 500A, Duty Cycle < 0.1%	—	—	1.50	Volts
Peak On-State Voltage Coefficients, Full Range	V_{TM}	T_j = 125°C, I = 15% $I_{T(AV)}$ to I_{TSM}, V_T = A + B Ln I_T + C I_T + D Sqrt I_T		A = 0.873 B = -0.0776 C = 0.000434 D = 0.0409		
Threshold Voltage, Low-Level	$V_{(TO)1}$	T_j = 125°C, I = 15% $I_{T(AV)}$ to $\pi I_{T(AV)}$	—	—	0.837	Volts
Slope Resistance, Low-Level	r_{T1}		—	—	1.34	mΩ
Threshold Voltage, High-Level	$V_{(TO)2}$	T_j = 125°C, I = $\pi I_{T(AV)}$ to I_{TSM}	—	—	1.20	Volts
Slope Resistance, High-Level	r_{T2}		—	—	0.818	mΩ
Switching Minimums						
Critical Rate-of-Rise of Off-State Voltage	dv/dt	T_j = 125°C, Gate Open, Linear to 0.67 V_{DRM}		1000		Volts/μs
Thermal Maximums						
Thermal Resistance, Junction-to-Case	$R_{\theta(J-C)}$	Per Module, Both Conducting	—	—	0.085	°C/Watt
		Per SCR, Both Conducting	—	—	0.17	°C/Watt
Thermal Resistance, Case-to-Sink (Lubricated)	$R_{\theta(C-S)}$	Per Module	—	—	0.05	°C/Watt
Gate Parameters Maximums						
Gate Current-to-Trigger	I_{GT}	T_j = 25°C, V_D = 12V	—	200	—	mA
Gate Voltage-to-Trigger	V_{GT}	T_j = 25°C, V_D = 12V	—	3.0	—	Volts
Non-Triggering Gate Voltage	V_{GDM}	T_j = 125°C, $V_D = V_{DRM}$	—	0.30	—	Volts
Peak Forward Gate Current	I_{GTM}	—	—	3.0	—	Amperes
Peak Reverse Gate Voltage	V_{GRM}	—	—	5.0	—	Volts

WARNING:
Internal insulation used is Beryllium Oxide.
User should avoid grinding, crushing, or abrading these portions.
Care must be exercised in properly disposing of unwanted devices.

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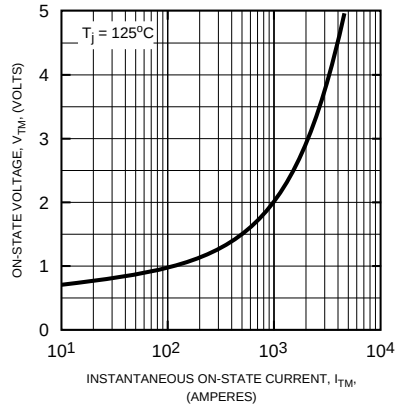
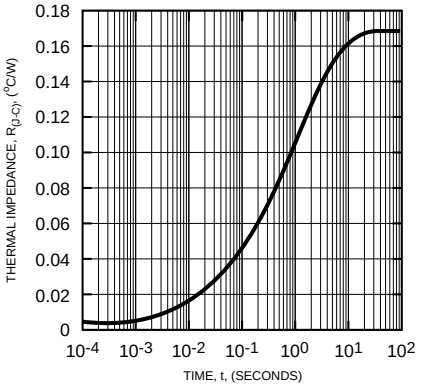
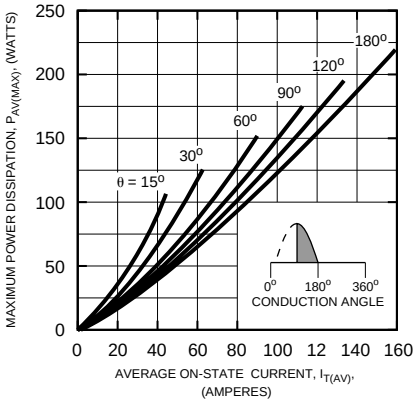
MAXIMUM ON-STATE FORWARD VOLTAGE DROP



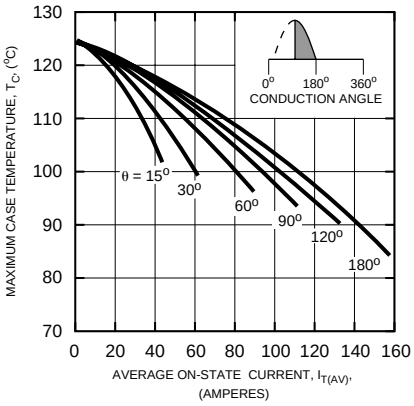
MAXIMUM TRANSIENT THERMAL IMPEDANCE (JUNCTION-TO-CASE)



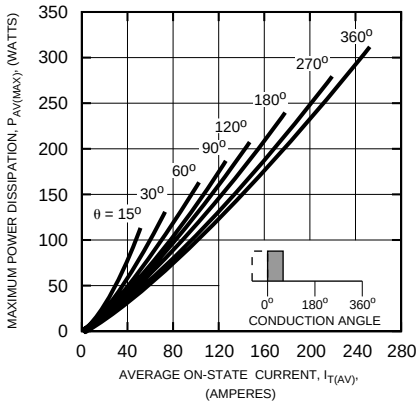
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)