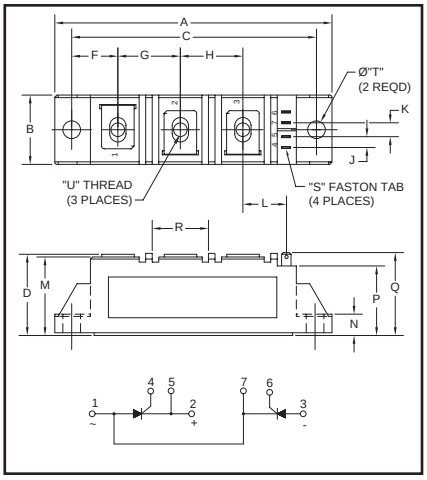
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

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



Outline Drawing

Dimension	Inches	Millimeters
A	3.62	92.0
B	0.81	20.5
C	3.15	80.0
D	1.18	30.0
F	0.59	15.0
G	0.79	20.0
H	0.79	20.0
J	0.16	4.0
K	0.23	5.8
L	0.61	15.5
M	1.14	29.0
N	0.24	6.1
P	0.94	24.0
Q	1.18	30.0
R	0.71	18.0
S	0.11 x 0.03	2.8 x 0.8
T	0.25 Dia.	6.3 Dia.
U	M5	M5

CD43_ _90
Dual SCR POW-R-BLOK™ Module
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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

☐ Metal Baseplate

☐ Low Thermal Impedance

☐ Quick Connect Gate Terminal

☐ UL Recognized

Applications:

☐ Battery Supplies

☐ Bridge Circuits

☐ AC and DC Motor Control

☐ Tap Changers

☐ Lighting Control

Ordering Information:
Select the complete eight digit module part number you desire from the table below.
Example: CD431690 is a 1600 Volt, 90 Ampere Dual SCR POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Rating Amperes
CD43	08	90
	12	
	14	
	16	

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CD43_ _90
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Absolute Maximum Ratings

Characteristics	Symbol	Conditions	CD43_ _90 1200	CD43_ _90 1400-1600	Units
Repetitive Peak Forward Blocking Voltage	V_{DRM}	—	1200	1400-1600	Volts
Repetitive Peak Reverse Blocking Voltage	V_{RRM}	—	1200	1400-1600	Volts
Non-Repetitive Peak Forward Blocking Voltage	V_{DSM}	—	V_{DRM} + 100		Volts
Non-Repetitive Peak Reverse Blocking Voltage	V_{RSM}	—	V_{RRM} + 100		Volts
RMS Forward Current	$I_{T(RMS)}$	—	141		Amperes
Average Forward Current	$I_{T(AV)}$	T_C = 84°C, 180° Conduction	90	—	Amperes
	$I_{T(AV)}$	T_C = 82°C, 180° Conduction	—	90	Amperes
Peak Half-Cycle Surge (Non-Repetitive) On-State Current	I_{TSM}	t = 8.3ms, 100% V_{RRM} Reapplied	1570	1500	Amperes
		t = 10ms, 100% V_{RRM} Reapplied	1500	1435	Amperes
I^2t (for Fusing) for One-Cycle	I^2t	t = 8.3ms, 100% V_{RRM} Reapplied	10270	9400	A^2sec
		t = 10ms, 100% V_{RRM} Reapplied	11250	10300	A^2sec
Maximum Rate-of-Rise of On-State Current (Non-Repetitive)*	di/dt	$I_{TM} = \pi I_{T(AV)}$, $t_r < 0.5\mu s$, $t_p > 6\mu s$*	150		Amperes/μs
Storage Temperature	T_{STG}	—	-40 to 125		°C
Operating Temperature	T_j	—	-40 to 125		°C
Maximum Mounting Torque M5 Mounting Screw	—	—	4.5 to 5.5		Nm
Maximum Mounting Torque M5 Terminal Screw	—	—	2.7 to 3.3		Nm
Module Weight (Typical)	—	—	140		Grams
			5		oz.
V Isolation	V_{RMS}	—	3500		Volts

*T_j = 25°C, I_G = 500mA, $V_D = 0.67V_{DRM}$ (Rated)

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Electrical Characteristics, T_j = 25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	CD43_ _90 1200	CD43_ _90 1400-1600	Units
Blocking State Maximums					
Forward Off-State Current, Peak	I_{DRM}	T_j = 125°C	15	20	mA
Reverse Off-State Current, Peak	I_{RRM}	T_j = 125°C	15	20	mA
Conducting State Maximums					
Peak On-State Voltage	V_{TM}	I_{TM} = 283A	1.55	1.62	Volts
Peak On-State Voltage Coefficients, Full Range	V_{TM}	T_j = 125°C, I = 15% $I_{T(AV)}$ to I_{TSM} V_{TM} = A + B Ln I + C I + D Sqrt I	A = 0.964 B = -0.205 C = -0.00043 D = 0.117	A = 0.982 B = -0.159 C = 0.0000023 D = 0.0965	
Threshold Voltage, Low-Level	$V_{(TO)1}$	T_j = 125°C, I = 15% $I_{T(AV)}$ to π$I_{T(AV)}$	0.849	0.989	Volts
Slope Resistance, Low-Level	r_{T1}		2.596	2.38	mΩ
Threshold Voltage, High-Level	$V_{(TO)2}$	T_j = 125°C, I = π$I_{T(AV)}$ to I_{TSM}	1.645	1.61	Volts
Slope Resistance, High-Level	r_{T2}		1.03	1.22	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}	500	500	Volts/μs
Gate Parameters Maximums					
Gate Current-to-Trigger	I_{GT}	T_j = 25°C, V_D = 6V	120	120	mA
Gate Voltage-to-Trigger	V_{GT}	T_j = 25°C, V_D = 6V	2.5	2.5	Volts
Non-Triggering Gate Voltage	V_{GDM}	T_j = 125°C, V_D = V_{DRM}	0.25	0.25	Volts
Peak Forward Gate Current	I_{GTM}	—	3.0	3.0	Amperes
Peak Reverse Gate Voltage	V_{GRM}	—	10	10	Volts

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Thermal Characteristics

Characteristics	Symbol	Test Conditions	CD43_ _90	Units
Thermal Maximums				
Thermal Resistance, Junction-to-Case	$R_{\theta(J\text{-}C)}$	Per Module, Both Conducting	0.145	°C/Watt
		Per SCR, Both Conducting	0.290	°C/Watt
Thermal Resistance, Case-to-Sink (Lubricated)	$R_{\theta(C\text{-}S)}$	Per Module	0.1	°C/Watt