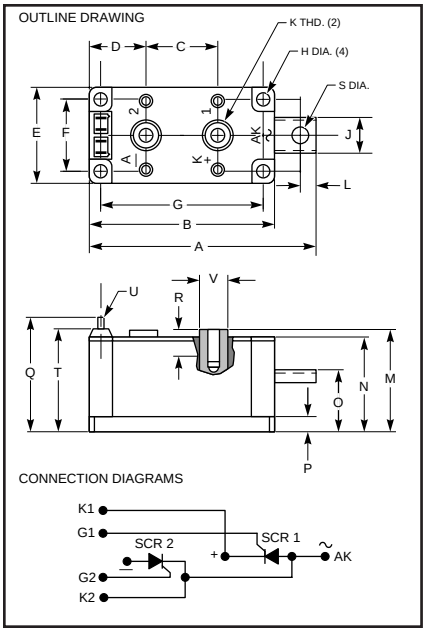
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

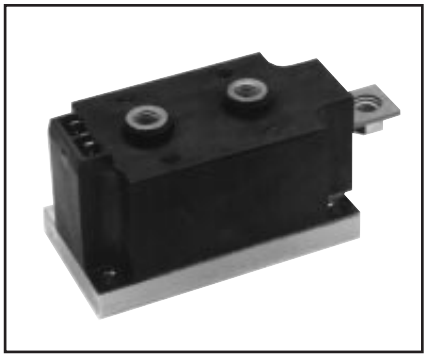
Dual SCR Isolated POW-R-BLOK™ Module

250 Amperes/600-1600 Volts



Outline Drawing

Dimension	Inches	Millimeters
A	4.57	116
B	3.66	93
C	1.38	35
D	1.12	28.5
E	1.97	50
F	1.50	38
G	3.15	80
H	0.22	5.5
J	0.71	18.0
K	—	M8
L	0.35	9
M	2.05	52
N	1.93	49
O	1.34	34
P	0.394	10.0
Q	2.16	55
R	0.55	14
S	—	M8
T	2.09	53.1
U	0.110 x 0.032	2.8 x 0.8
V	0.54	14



ED43_ _25
Dual SCR Isolated
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Ordering Information:
Select the complete eight digit module part number you desire from the table below.
Example: ED431625 is a 1600 Volt, 250 Ampere Dual SCR Isolated POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Rating Amperes (x10)
ED43	06	25
	08 thru 16	

Description:
The POW-R-BLOK™ combines multiple power semiconductor devices in a single, electrically isolated module. POW-R-BLOK™ can serve as the essential circuit element in many industrial applications, such as motor speed control and battery chargers. This dual SCR module is available for use in 120, 240, 480 or 575 volt power line applications.
POW-R-BLOK™ features a self contained electrical isolation system. By using high thermal conductivity BeO ceramic isolators, excellent circuit-to-baseplate isolation (≥ 2500 volts RMS) has been achieved, while maintaining efficient cooling of the semiconductors. All ED Series SCRs use the “di/Namic” gate structure for ease of triggering and high di/dt capability.

Features:

- ☐ Compression Bonded Elements
- ☐ Isolated Baseplate
- ☐ Insulated Package
- ☐ Low Thermal Impedance
- ☐ Metal Baseplate

Benefits:

- ☐ No Additional insulating Conponents Required
- ☐ Easy installation
- ☐ Reduced Engineering Time
- ☐ Improved Heat Transfer
- ☐ Voltage Stability

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Absolute Maximum Ratings

Characteristics	Symbol	Conditions	ED43_ _25	Units
Peak Forward Blocking Voltage	V_{DRM}	—	1600	Volts
Peak Reverse Blocking Voltage	V_{RRM}	—	1600	Volts
Transient Peak Reverse Blocking Voltage (Non-Repetitive) t < 5ms	V_{RSM}	—	1800	Volts
DC Reverse Blocking Voltage	$V_{R(DC)}$	—	1600	Volts
RMS On-State Current	$I_{T(RMS)}$	—	393	Amperes
Average On-State Current	$I_{T(AV)}$	—	250	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	I_{TSM}	—	6500	Amperes
Peak Three-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	I_{TSM}	—	4685	Amperes
Peak Ten-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	I_{TSM}	—	4040	Amperes
I^2t (for Fusing), 8.3 milliseconds	I^2t	—	175,000	A^2sec
Critical Rate-of Rise of On-State Current (Non-Repetitive)*	di/dt	—	800	Amperes/μs
Peak Gate Power Dissipitation	P_{GM}	—	16	Watts
Average Gate Power Dissipitation	$P_{G(AV)}$	—	3.0	Watts
Peak Forward Gate Voltage	V_{GFM}	—	10	Volts
Peak Reverse Gate Voltage	V_{GRM}	—	5.0	Volts
Peak Forward Gate Current	I_{GFM}	—	4.0	Amperes
Storage Temperature	T_{STG}	—	-40 to 150	°C
Operating Temperature	T_j	—	-40 to 130	°C
Maximum Mounting Torque M6 Mounting Screw	—	—	50	lb.-in.
Maximum Mounting Torque M8 Terminal Screw	—	—	130	lb.-in.
V Isolation	V_{RMS}	—	2500	Volts

*Per JEDEC STD RS-397, 5.2.2.6.
With Recommended Gate Drive.

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

Characteristics	Symbol	Test Conditions	ED43_ _25	Units
Blocking State Maximums				
Forward Leakage Current, Peak	I_{DRM}	T_j = 130°C, V_{DRM} = Rated	50	mA
Reverse Leakage Current, Peak	I_{RRM}	T_j = 130°C, V_{RRM} = Rated	50	mA
Conducting State Maximums				
Peak On-State Voltage	V_{TM}	I_{TM} = 625A	1.30	Volts
Switching Minimums				
Critical Rate-of-Rise of Off-State Voltage	dv/dt	T_j = 130°C, V_D = 2/3 V_{DRM}	500	Volts/μs
Turn-Off Time (Typical)	t_q	T_j = 130°C, I_T = 250A Reapplied dv/dt = 20V/μs Linear to 0.8 V_{DRM}	150	μs
Turn-On Time (Typical)	t_{on}	I_{TM} = 100A, V_D = 100V	7	μs
Thermal Maximums				
Thermal Resistance, Junction-to-Case	$R_{\theta(J-C)}$	Per Module	0.09	°C/Watt
Thermal Resistance, Case-to-Sink (Lubricated)	$R_{\theta(C-S)}$	Per Module	0.03	°C/Watt
Gate Parameters Maximums				
Gate Current-to-Trigger	I_{GT}	V_D = 12V	150	mA
Gate Voltage-to-Trigger	V_{GT}	V_D = 12V	3	Volts
Non-Triggering Gate Voltage	V_{GDM}	T_j = 130°C, V_D = 1/2 V_{DRM}	0.15	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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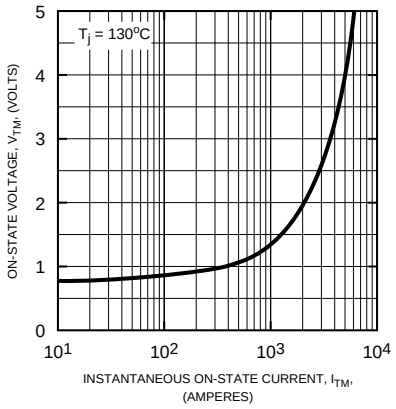
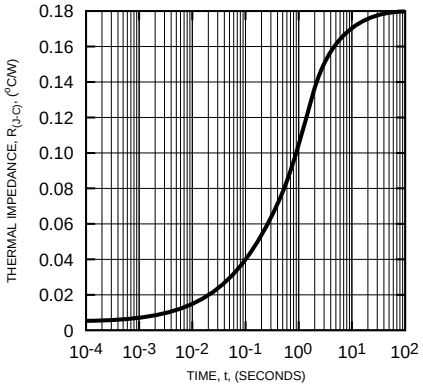
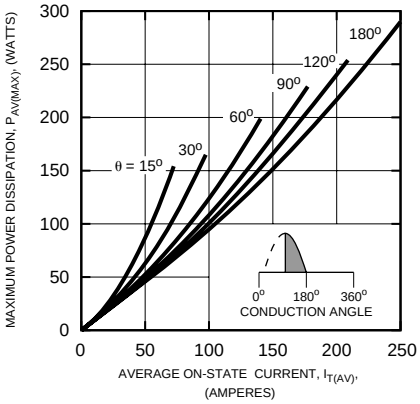
MAXIMUM ON-STATE FORWARD VOLTAGE DROP



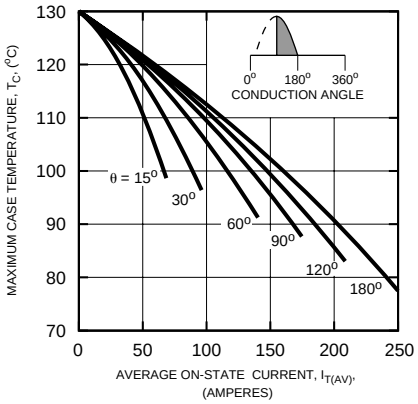
MAXIMUM TRANSIENT THERMAL IMPEDANCE (JUNCTION-TO-CASE) (PER SCR)



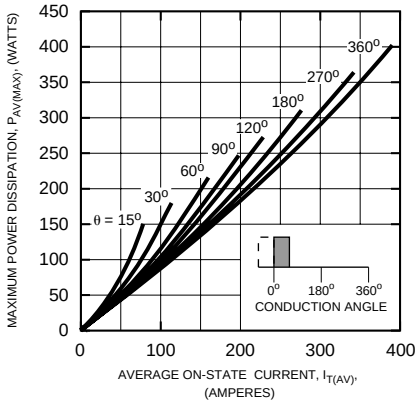
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM) (PER SCR)



MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM) (PER SCR)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)