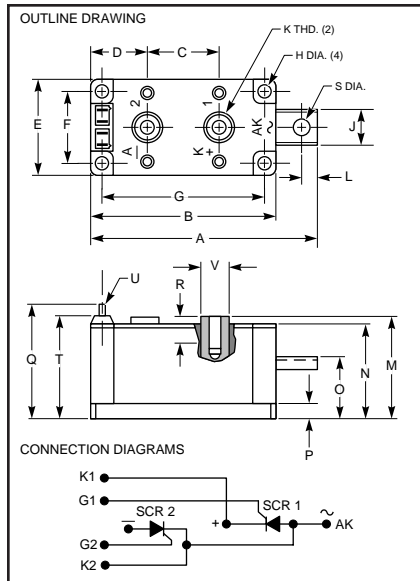
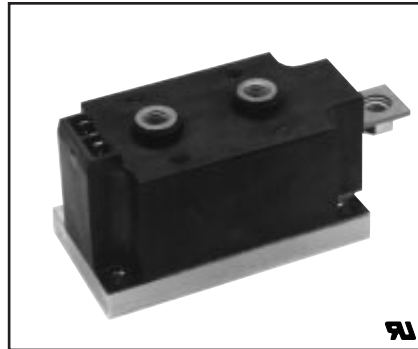


## Dual SCR Isolated POW-R-BLOK™ Module 210 Amperes/600-2000 Volts



### 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
K	—	M8
L	0.35	9
M	2.05	52
N	1.93	49
O	1.34	34
P	0.394	10
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\_ \_21**  
**Dual Diode Isolated**  
**POW-R-BLOK™ Module**  
210 Amperes/600-2000 Volts

### Ordering Information:

Select the complete eight digit module part number you desire from the table below.  
Example: ED432021 is a 2000 Volt, 210 Ampere Dual SCR Isolated POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Rating Amperes (x10)
ED43	06	21
	08	
	12	
	14	
	16	
	18	
	20	

### 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 ( $\geq 2500$  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
- Metal Baseplate
- Low Thermal Impedance
- UL Recognized

### Benefits:

- No Additional Insulating Components Required
- Easy Installation
- Reduce Engineering Time
- Improved Heat Transfer
- Voltage Stability



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

ED43\_21  
Dual SCR Isolated  
POW-R-BLOK™ Module  
210 Amperes/600-2000 Volts

### Absolute Maximum Ratings

Characteristics	Symbol	ED43_21	Units
Repetitive Peak Forward Blocking Voltage	$V_{DRM}$	2000	Volts
Repetitive Peak Reverse Blocking Voltage	$V_{RRM}$	2000	Volts
Transient Peak Reverse Blocking Voltage (Non-Repetitive), $t < 5ms$	$V_{RSM}$	2200	Volts
DC Reverse Blocking Voltage	$V_{R(DC)}$	1600	Volts
RMS On-State Current	$I_{T(RMS)}$	330	Amperes
Average On-State Current	$I_{T(AV)}$	210	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	$I_{TSM}$	6000	Amperes
Peak Three-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	$I_{TSM}$	4325	Amperes
Peak Ten-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	$I_{TSM}$	3730	Amperes
$I^2t$ (for Fusing) for One-Cycle	$I^2t$	149,000	A <sup>2</sup> sec
Critical Rate-of-Rise of On-State Current (Non-Repetitive)*	$di/dt$	800	Amperes/ $\mu s$
Peak Gate Power Dissipation	$P_{GM}$	16	Watts
Average Gate Power Dissipation	$P_{G(AV)}$	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.

ED43 \_ 21  
 Dual SCR Isolated  
 POW-R-BLOK™ Module  
 210 Amperes/600-2000 Volts

**Electrical and Thermal Characteristics,  $T_j = 25^\circ\text{C}$  unless otherwise specified**

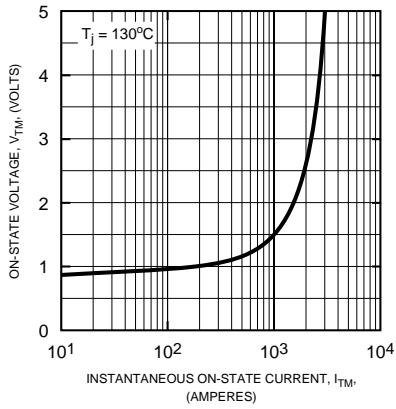
Characteristics	Symbol	Test Conditions	ED43 _ 21	Units
<b>Blocking State Maximums</b>				
Forward Leakage Current, Peak	$I_{\text{DRM}}$	$T_j = 130^\circ\text{C}$ , $V_{\text{DRM}} = \text{Rated}$	50	mA
Reverse Leakage Current, Peak	$I_{\text{RRM}}$	$T_j = 130^\circ\text{C}$ , $V_{\text{RRM}} = \text{Rated}$	50	mA
<b>Conducting State Maximums</b>				
Peak On-State Voltage	$V_{\text{TM}}$	$I_{\text{TM}} = 625\text{A}$ ,	1.40	Volts
<b>Switching Minimums</b>				
Critical Rate-of-Rise of Off-State Voltage	dv/dt	$T_j = 130^\circ\text{C}$ , $V_{\text{D}} = 2/3 V_{\text{DRM}}$	500	Volts/ $\mu\text{s}$
Turn-Off Time (Typical)	$t_{\text{q}}$	$T_j = 130^\circ\text{C}$ , $I_{\text{T}} = 250\text{A}$ Reapplied dv/dt = 20V/ $\mu\text{s}$ Linear to 0.8 $V_{\text{DRM}}$	150	$\mu\text{s}$
Turn-On Time (Typical)	$t_{\text{on}}$	$I_{\text{TM}} = 100\text{A}$ , $V_{\text{D}} = 100\text{V}$	7	$\mu\text{s}$
<b>Thermal Maximums</b>				
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{J-C})}$	Per Module	0.09	$^\circ\text{C}/\text{Watt}$
Thermal Resistance, Case-to-Sink (Lubricated)	$R_{\theta(\text{C-S})}$	Per Module	0.03	$^\circ\text{C}/\text{Watt}$
<b>Gate Parameters Maximums</b>				
Gate Current-to-Trigger	$I_{\text{GT}}$	$V_{\text{D}} = 12\text{V}$	150	mA
Gate Voltage-to-Trigger	$V_{\text{GT}}$	$V_{\text{D}} = 12\text{V}$	3	Volts
Non-Triggering Gate Voltage	$V_{\text{GDM}}$	$T_j = 130^\circ\text{C}$ , $V_{\text{D}} = 1/2 V_{\text{DRM}}$	0.15	Volts

**WARNING:**

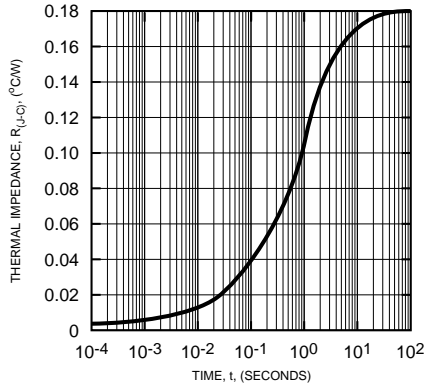
Internal insulation used is Beryllium Oxide.  
 User should avoid grinding, crushing, or abrading these portions.  
 Care must be exercised in properly disposing of unwanted devices.

**ED43 \_21**  
**Dual SCR Isolated**  
**POW-R-BLOK™ Module**  
 210 Amperes/600-2000 Volts

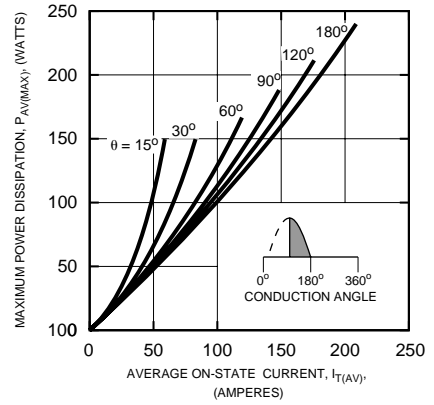
**MAXIMUM ON-STATE FORWARD VOLTAGE DROP**



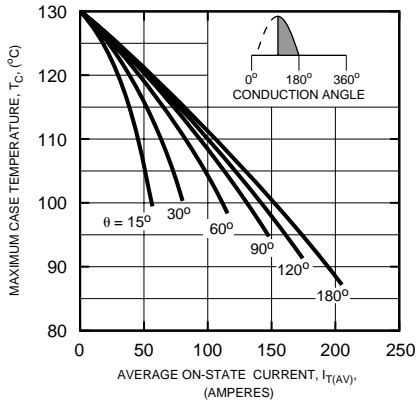
**MAXIMUM TRANSIENT THERMAL IMPEDANCE (JUNCTION-TO-CASE) (PER SCR)**



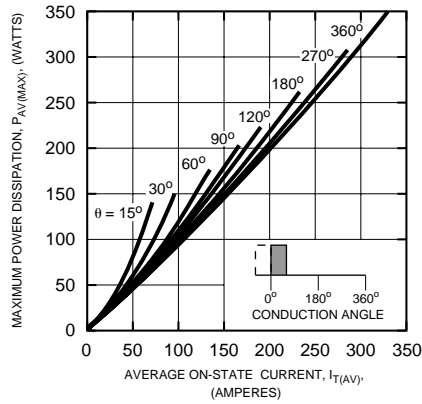
**MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM) (PER SCR)**



**MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)**



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



**MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)**

