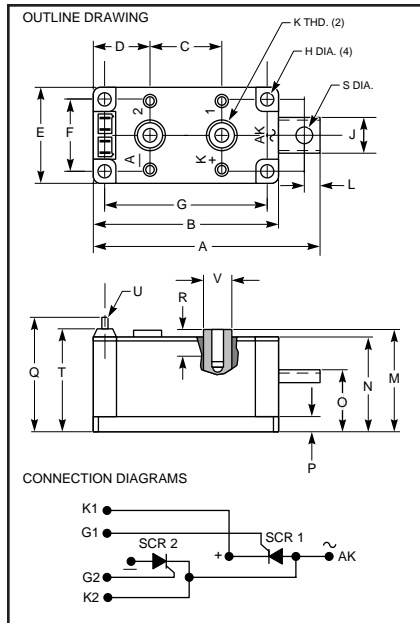


## Dual SCR Isolated POW-R-BLOK™ Module 250 Amperes/600-1600 Volts



### 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**  
**POW-R-BLOK™ Module**  
250 Amperes/600-1600 Volts

### 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
- Low Thermal Impedance
- Metal Baseplate

### Benefits:

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

### 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 08 thru 16	25



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

**ED43\_25**  
**Dual SCR Isolated**  
**POW-R-BLOK™ Module**  
 250 Amperes/600-1600 Volts

**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 <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 \_25  
 Dual SCR Isolated  
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**Electrical and Thermal Characteristics,  $T_j = 25^\circ\text{C}$  unless otherwise specified**

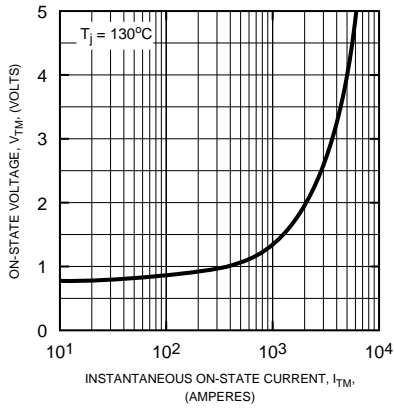
Characteristics	Symbol	Test Conditions	ED43 _25	Units
<b>Blocking State Maximums</b>				
Forward Leakage Current, Peak	$I_{\text{DRM}}$	$T_j = 130^\circ\text{C}$ , $V_{\text{DRM}} = \text{Rated}$	50	mA
Reverse Leakage Current, Peak	$I_{\text{RRM}}$	$T_j = 130^\circ\text{C}$ , $V_{\text{RRM}} = \text{Rated}$	50	mA
<b>Conducting State Maximums</b>				
Peak On-State Voltage	$V_{\text{TM}}$	$I_{\text{TM}} = 625\text{A}$	1.30	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:**

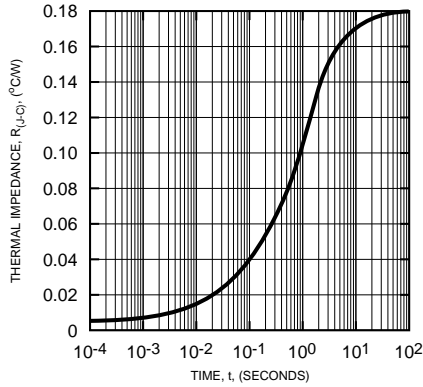
Internal insulation used is Beryllium Oxide.  
 User should avoid grinding, crushing, or abrading these portions.  
 Care must be exercised in properly disposing of unwanted devices.

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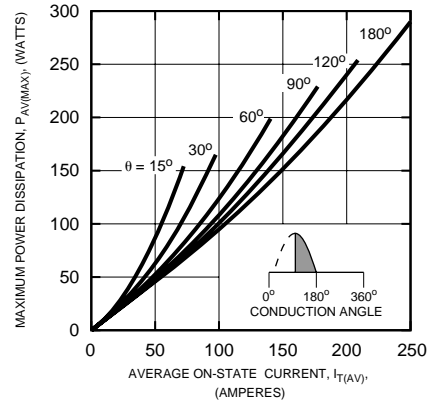
**MAXIMUM ON-STATE FORWARD VOLTAGE DROP**



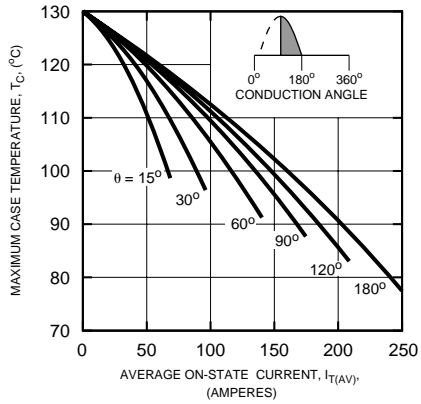
**MAXIMUM TRANSIENT THERMAL IMPEDANCE (JUNCTION-TO-CASE) (PER SCR)**



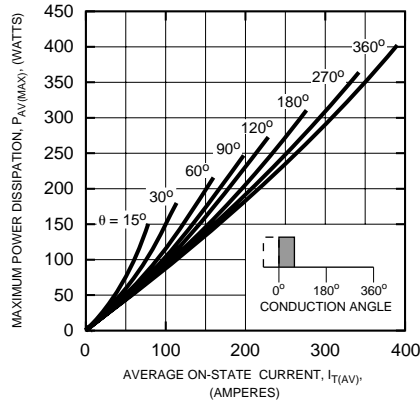
**MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM) (PER SCR)**



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



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



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

