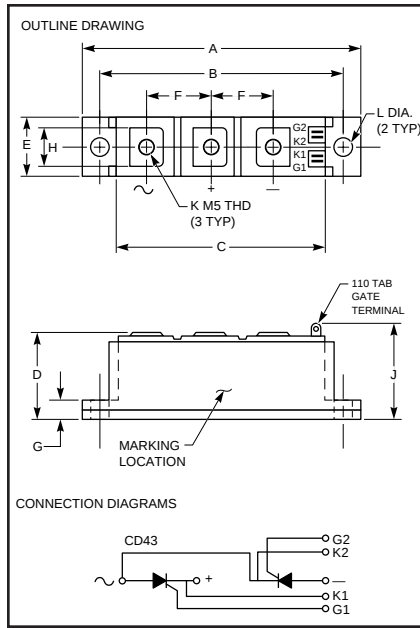
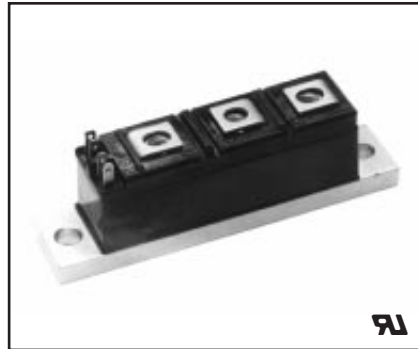


Dual SCR POW-R-BLOK™ Module 40 Amperes/1600 Volts



Outline Drawing

Dimension	Inches		Metric	
	Min.	Max.	Min.	Max.
A	3.602	3.642	91.50	92.51
B	3.145	3.155	79.88	80.14
C	2.697	2.737	68.50	69.51
D	1.160	1.200	29.46	30.48
E	0.783	0.793	19.88	20.14
F	0.783	0.793	19.88	20.14
G	0.228	0.240	5.80	6.10
H	0.374	0.414	9.50	10.51
J	1.224	1.256	31.1	31.9
K	—	—	M5 x 0.8	
LØ	0.240	0.250	6.10	6.35



CD43_ _40
Dual SCR POW-R-BLOK™ Module
40 Amperes/1600 Volts

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 (QQX2 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: CD431640 is a 1600 Volt, 40 Ampere Dual SCR POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Rating Amperes
CD43	08	40
	12	
	14	
	16	

CD43 _ 40

Dual SCR POW-R-BLOK™ Module

40 Amperes/1600 Volts

Absolute Maximum Ratings

Characteristics	Symbol	Conditions	CD43 _ 40		Units
			1200	1400-1600	
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	$I_{T(RMS)}$	—	63		Amperes
Average Forward Current	$I_{T(AV)}$	$T_C = 86^\circ\text{C}$, 180° Conduction	40	—	Amperes
	$I_{T(AV)}$	$T_C = 81^\circ\text{C}$, 180° Conduction	—	40	Amperes
Peak Half-Cycle Surge (Non-Repetitive)	I_{TSM}	$t = 8.3\text{ms}$,	750	680	Amperes
On-State Current		100% V_{RRM} Reapplied			
		$t = 10\text{ms}$,	715	650	Amperes
		100% V_{RRM} Reapplied			
I^2t (for Fusing) for One-Cycle	I^2t	$t = 8.3\text{ms}$,	2330	1930	A^2sec
		100% V_{RRM} Reapplied			
		$t = 10\text{ms}$,	2560	2110	A^2sec
		100% V_{RRM} Reapplied			
Maximum Rate-of-Rise of On-State Current (Non-Repetitive)*	di/dt	$I_{TM} = \pi I_{T(AV)}$, $t_r < 0.5\mu\text{s}$, $t_p > 6\mu\text{s}$	150		Amperes/ μs
Storage Temperature	T_{STG}	—	-40 to 125		$^\circ\text{C}$
Operating Temperature	T_j	—	-40 to 125		$^\circ\text{C}$
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

* $T_j = 25^\circ\text{C}$, $I_G = 500\text{mA}$, $V_D = 0.67V_{DRM}$ (Rated)

CD43__40
Dual SCR POW-R-BLOK™ Module
 40 Amperes/1600 Volts

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

CD43__40					
Characteristics	Symbol	Test Conditions	1200	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} = 126A	1.75	1.77	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 A + B Ln I + C I + D Sqrt I	A = 0.628 B = 0.0698 C = 0.00444 D = 0.00977	A = 1.033 B = 0.159 C = 0.00486 D = -0.0569	
Threshold Voltage, Low-Level	V _{(TO)1}	T _j = 125°C,	0.862	1.24	Volts
Slope Resistance, Low-Level	r _{T1}	I = 15% I _{T(AV)} to πI _{T(AV)}	6.55	4.40	mΩ
Threshold Voltage, High-Level	V _{(TO)2}	T _j = 125°C,	1.073	1.233	Volts
Slope Resistance, High-Level	r _{T2}	I = πI _{T(AV)} to I _{TSM}	4.82	3.95	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	100	100	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}	—	2.5	2.5	Amperes
Peak Reverse Gate Voltage	V _{GRM}	—	10	10	Volts



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

CD43_ _40

Dual SCR POW-R-BLOK™ Module

40 Amperes/1600 Volts

Thermal Characteristics

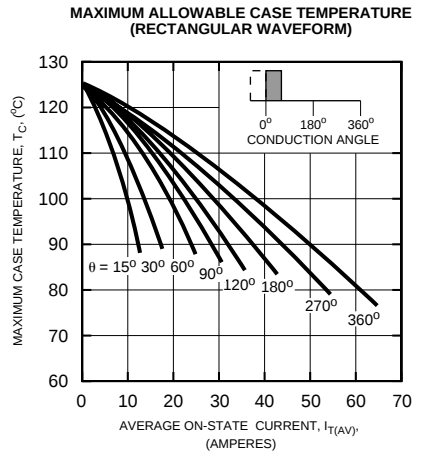
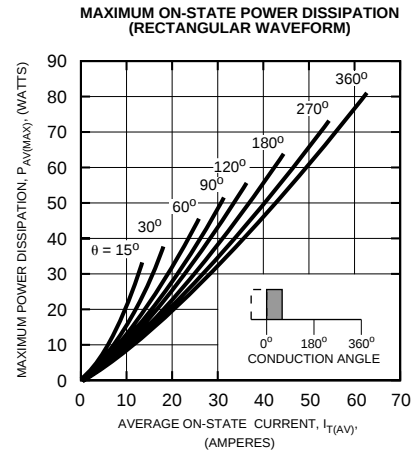
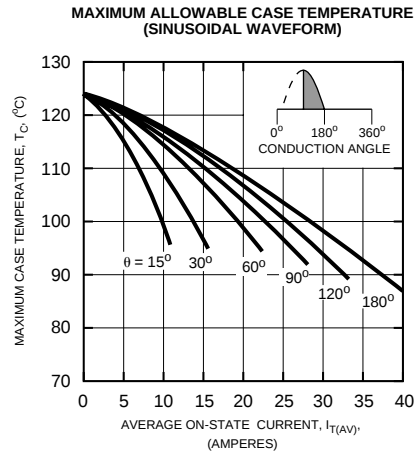
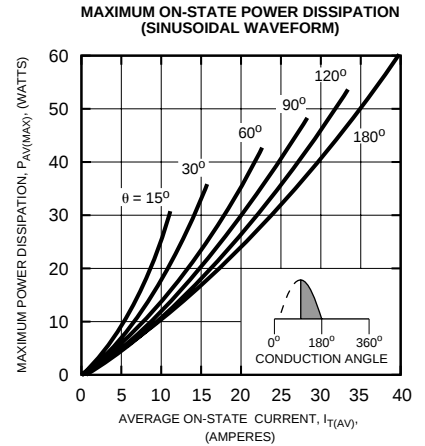
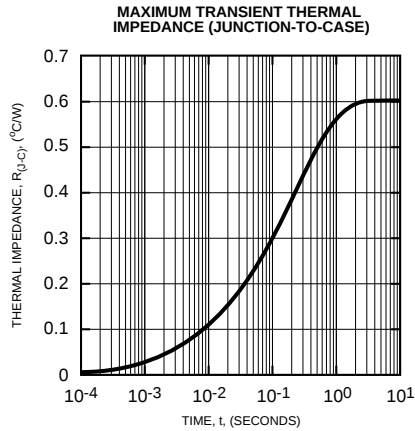
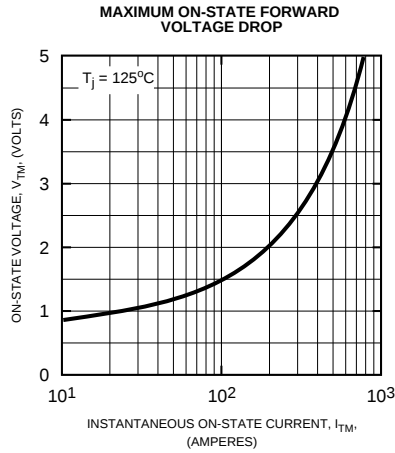
Characteristics	Symbol	Test Conditions	CD43_ _40	Units
Thermal Maximums				
Thermal Resistance, Junction-to-Case	$R_{\theta(J-C)}$	Per Module, Both Conducting	0.300	°C/Watt
		Per SCR, Both Conducting	0.600	°C/Watt
Thermal Resistance, Case-to-Sink (Lubricated)	$R_{\theta(C-S)}$	Per Module	0.1	°C/Watt

CD43 _ _40

Dual SCR POW-R-BLOK™ Module

40 Amperes/1600 Volts

1200 Volts



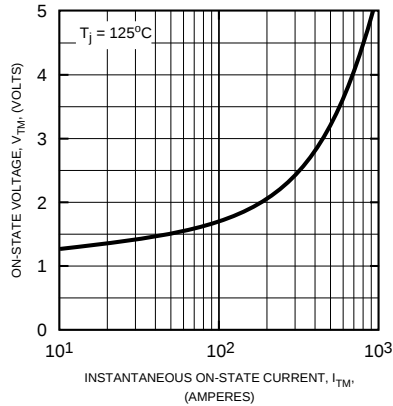
CD43_40

Dual SCR POW-R-BLOK™ Module

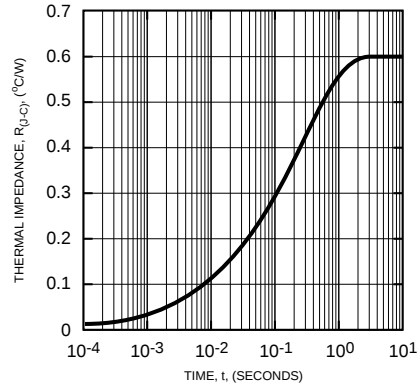
40 Amperes/1600 Volts

1400-1600 Volts

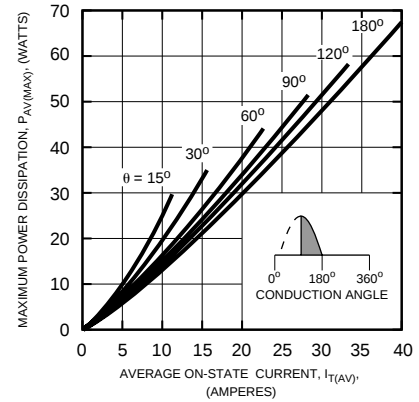
MAXIMUM ON-STATE FORWARD VOLTAGE DROP



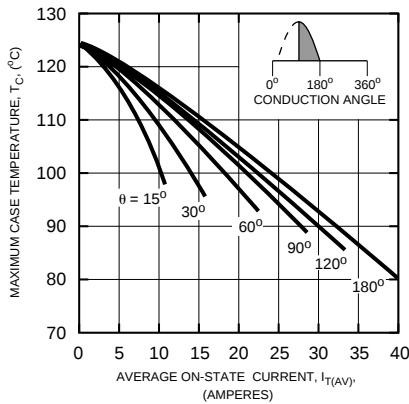
MAXIMUM TRANSIENT THERMAL IMPEDANCE (JUNCTION-TO-CASE)



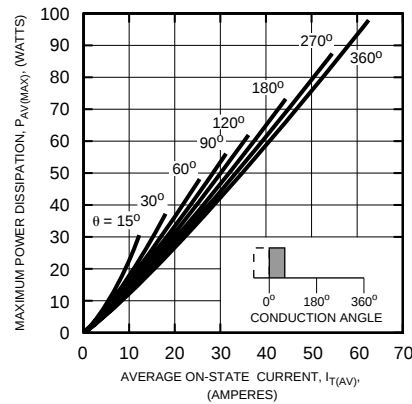
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)

