



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



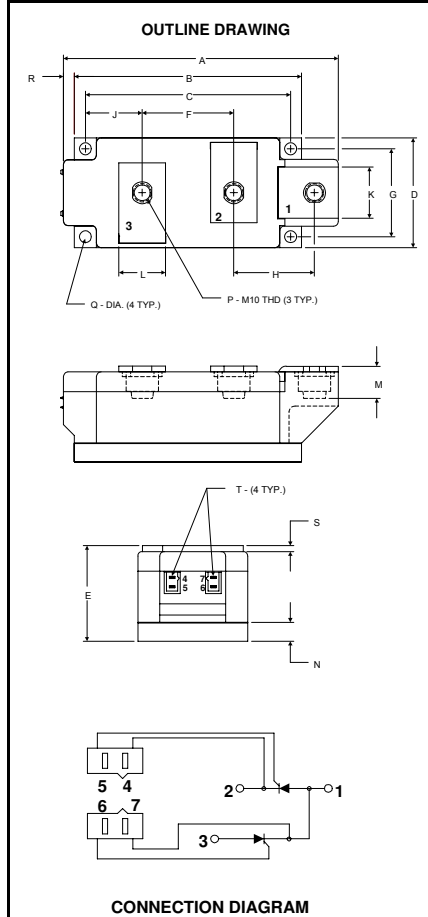
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**POW-R-BLOK™
Dual SCR Isolated Module
500 Amperes / 1800 Volts**

**LD431850
Dual SCR
POW-R-BLOK™ Module
500 Amperes / 1800 Volts**
LD43 Outline Dimensions

Dimension	Inches	Millimeters
A	5.91	150.0
B	4.88	124.0
C	4.41	112.0
D	2.36	60.0
E	2.05	52.0
F	1.97	50.0
G	1.89	48.0
H	1.73	44.0
J	1.22	31.0
K	1.10	28.0
L	1.00	25.4
M	0.69	17.5
N	0.39	10.0
P	M10 Metric	M10
Q	0.26 Dia.	6.5 Dia.
R	0.24	6.0
S	0.12	3.0
T	.110 x .032	2.5 x 0.8

Note: Dimensions are for reference only.

Ordering Information:

Select the complete eight-digit module part number from the table below.

Example: LD431850 is a 1800V, 500 Ampere Dual SCR Isolated POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Amperes (x10)
LD43	18	50

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.

Features:

- Electrically Isolated Heatsinking
- Aluminum Nitride Isolator
- Compression Bonded Elements
- Metal Baseplate
- Low Thermal Impedance for Improved Current Capability
- UL Recognized

Benefits:

- No Additional Insulation Components Required
- Easy Installation
- No Clamping Components Required
- Reduce Engineering Time

Applications:

- Bridge Circuits
- AC & DC Motor Drives
- Battery Supplies
- Power Supplies
- Large IGBT Circuit Front Ends

Absolute Maximum Ratings

Characteristics	Conditions	Symbol		Units
Repetitive Peak Forward and Reverse Blocking Voltage		V_{DRM} & V_{RRM}	1800	V
Non-Repetitive Peak Blocking Voltage ($t < 5$ msec)		V_{RSM}	1900	V
RMS Forward Current		$I_{T(RMS)}$	900	A
Average Forward Current	180° Conduction, $T_C=84^\circ\text{C}$	$I_{T(AV)}$	500	A
	180° Conduction, $T_C=80^\circ\text{C}$	$I_{T(AV)}$	540	A
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied	I_{TSM}	17,000	A
	50 Hz, 100% V_{RRM} reapplied	I_{TSM}	16,300	A
Peak Three Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied	I_{TSM}	12,250	A
Peak Ten Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied	I_{TSM}	10,500	A
I^2t for Fusing for One Cycle	8.3 milliseconds	I^2t	1.20×10^6	$\text{A}^2 \text{sec}$
	10 milliseconds	I^2t	1.33×10^6	$\text{A}^2 \text{sec}$
Maximum Rate-of-Rise of On-State Current, (Repetitive)	Per JEDEC Standard 397 5.2.2.6	di/dt	200	$\text{A}/\mu\text{s}$
Operating Temperature		T_J	-40 to +130	$^\circ\text{C}$
Storage Temperature		T_{stg}	-40 to +150	$^\circ\text{C}$
Max. Mounting Torque, M6 Mounting Screw			55	in. – Lb.
			6	Nm
Max. Mounting Torque, M10 Terminal Screw			110	in. – Lb.
			12	Nm
Module Weight, Typical			1500	g
			3.30	lb
V Isolation @ 25C		V_{rms}	3000	V

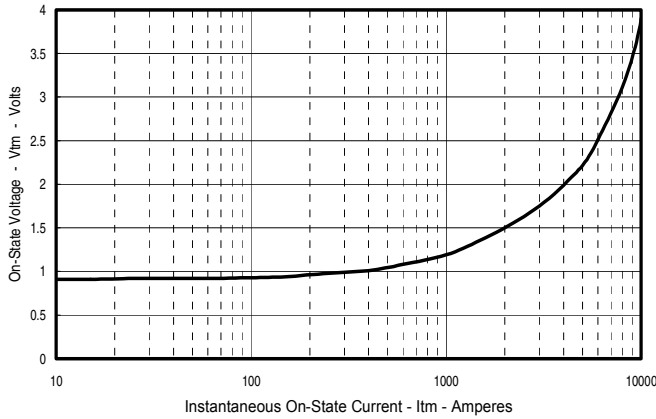
Electrical Characteristics, T_J=25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Forward Leakage Current	I _{DRM}	Up to 1800V, T _J =130°C		80	mA
Repetitive Peak Reverse Leakage Current	I _{RDM}	Up to 1800V, T _J =130°C		80	mA
Peak On-State Voltage	V _{FM}	I _{TM} =1500A, T _J =25°C		1.45	V
	V _{FM}	I _{TM} =1500A, T _J =130°C		1.40	V
Threshold Voltage, Low-level	V _{(TO)1}	T _J = 130°C, I = 15%I _{T(AV)} to 1I _{T(AV)}		0.916	V
Slope Resistance, Low-level	r _{T1}			0.28	mΩ
Threshold Voltage, High-level	V _{(TO)2}	T _J = 130°C, I = 1I _{T(AV)} to I _{TSM}		1.01	V
Slope Resistance, High-level	r _{T2}			0.25	mΩ
V _{TM} Coefficients, Full Range		T _J = 130°C, I = 10A to 6kA	A =	0.9032	
			B =	-5.98E-03	
		V _{TM} = A+ B Ln I +C I + D Sqrt I	C =	2.23E-04	
			D =	4.05E-03	
Minimum dV/dt	dV/dt	Exponential to V _{DRM} T _J =130°C, Gate Open	1000 Typ.		V/μs
Gate Trigger Current	I _{GT}	T _J =25°C, V _D =12V		200	mA
Gate Trigger Voltage	V _{GT}	T _J =25°C, V _D =12V		3.0	Volts
Non-Triggering Gate Voltage	V _{GDM}	T _J =130°C, V _D = ½ V _{DRM}		0.25	Volts
Peak Forward Gate Current	I _{GTM}			4.0	Amp
Peak Reverse Gate Voltage	V _{GRM}			5	Volts

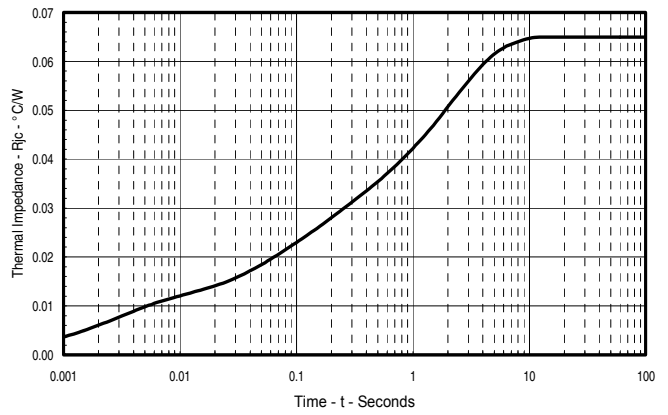
Thermal Characteristics

Characteristics	Symbol		Max.	Units
Thermal Resistance, Junction to Case	R _{θJ-C}	Per Module, both conducting	0.0325	°C/W
		Per Junction, both conducting	0.0650	°C/W
Thermal Impedance Coefficients	Z _{θJ-C}	Z _{θJ-C} = K ₁ (1-exp(-t/τ ₁))	K ₁ = 8.03E-04	τ ₁ = 3.39E-04
		+ K ₂ (1-exp(-t/τ ₂))	K ₂ = 1.03E-02	τ ₂ = 3.15E-03
		+ K ₃ (1-exp(-t/τ ₃))	K ₃ = 1.64E-02	τ ₃ = 0.106
		+ K ₄ (1-exp(-t/τ ₄))	K ₄ = 3.75E-02	τ ₄ = 2.066
Thermal Resistance, Case to Sink Lubricated	R _{θC-S}	Per Module	0.01	°C/W

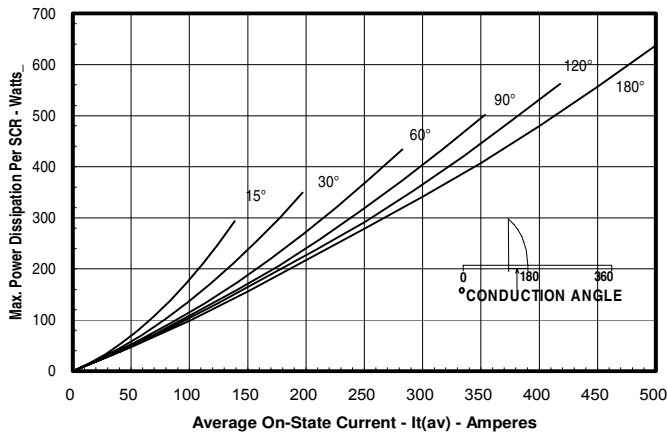
Typical On-State Forward Voltage Drop
 (T_J = 125°C)



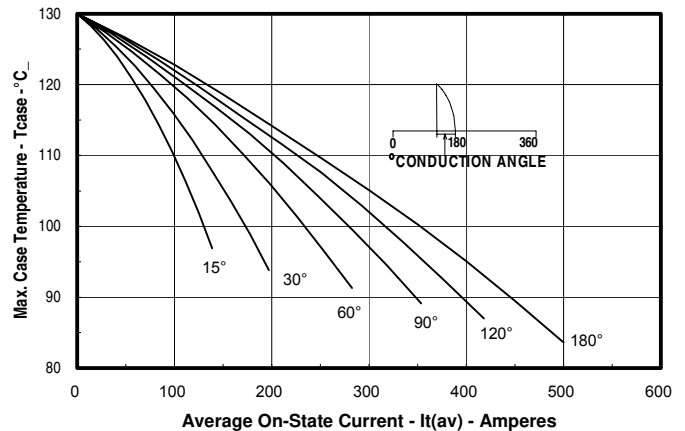
Maximum Transient Thermal Impedance
 (Junction To Case)



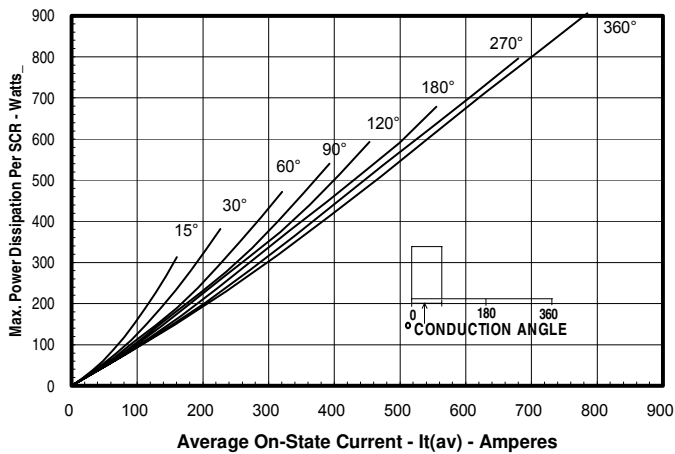
Maximum On-State Power Dissipation
 (Sinusoidal Waveform)



Maximum Allowable Case Temperature
 (Sinusoidal Waveform)



Maximum On-State Power Dissipation
 (Rectangular Waveform)



Maximum Allowable Case Temperature
 (Rectangular Waveform)

