



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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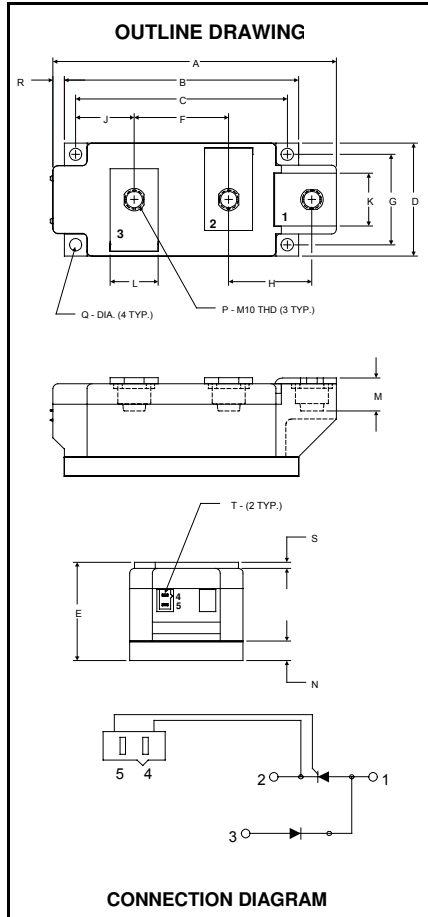
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POW-R-BLOK™ Dual SCR/Diode Isolated Module 430 Amperes / Up to 2200 Volts



Ordering Information:

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

Example: LD421843 is a 1800 Volt, 430 Ampere Dual SCR Isolated POW-R-BLOK™ Module

Type	Voltage Volts (x100)	Current Amperes (x10)
LD42	18	43
	20	
	22	



LD42__43
Dual SCR/Diode
POW-R-BLOK™ Module
430 Amperes / 1800-2200 Volts

LD42 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.

Description:

Powerex Dual SCR/Diode 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}	up to 2200 V
Non-Repetitive Peak Blocking Voltage ($t < 5$ msec)		V_{RSM}	$V_{RRM} + 100$ V
RMS Forward Current	$T_C = 70^\circ\text{C}$	$I_{T(RMS)}$	800 A
Average Forward Current	180° Conduction, $T_C = 80^\circ\text{C}$	$I_{T(AV)}$	430 A
	180° Conduction, $T_C = 70^\circ\text{C}$	$I_{T(AV)}$	510 A
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, $T_j = 25^\circ\text{C}$	I_{TSM}	14,000 A
	60 Hz, No V_{RRM} reapplied, $T_j = 25^\circ\text{C}$	I_{TSM}	16,000 A
	60 Hz, 100% V_{RRM} reapplied, $T_j = 125^\circ\text{C}$	I_{TSM}	12,000 A
	60 Hz, No V_{RRM} reapplied, $T_j = 125^\circ\text{C}$	I_{TSM}	14,000 A
	50 Hz, 100% V_{RRM} reapplied, $T_j = 25^\circ\text{C}$	I_{TSM}	12,000 A
	50 Hz, No V_{RRM} reapplied, $T_j = 25^\circ\text{C}$	I_{TSM}	14,000 A
	50 Hz, 100% V_{RRM} reapplied, $T_j = 125^\circ\text{C}$	I_{TSM}	10,000 A
	50 Hz, No V_{RRM} reapplied, $T_j = 125^\circ\text{C}$	I_{TSM}	12,000 A
Peak Three Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, $T_j = 125^\circ\text{C}$	I_{TSM}	8,600 A
Peak Ten Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied, $T_j = 125^\circ\text{C}$	I_{TSM}	7,500 A
I^2t for Fusing for One Cycle	8.3 milliseconds, $T_j = 25^\circ\text{C}$	I^2t	1.07×10^6 A ² sec
	8.3 milliseconds, $T_j = 125^\circ\text{C}$	I^2t	0.82×10^6 A ² sec
	10 milliseconds, $T_j = 25^\circ\text{C}$	I^2t	0.98×10^6 A ² sec
	10 milliseconds, $T_j = 125^\circ\text{C}$	I^2t	0.72×10^6 A ² sec
Maximum Rate-of-Rise of On-State Current, (Repetitive)	Per JEDEC Standard 397 5.2.2.6	di/dt	200 A/ μ s
Operating Temperature		T_j	-40 to +125 °C
Storage Temperature		T_{stg}	-40 to +150 °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

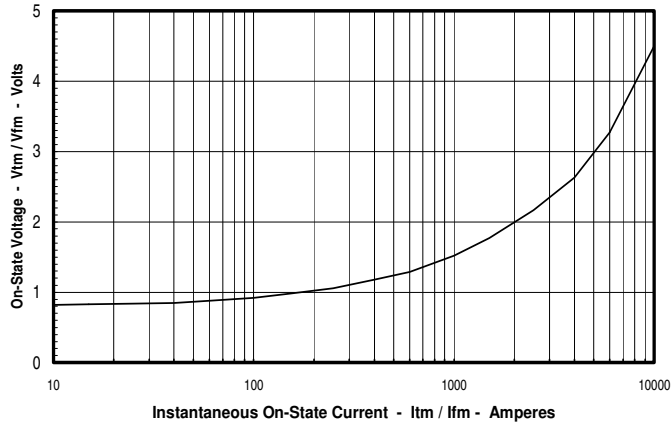
Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Forward Leakage Current	I _{DRM}	Up to 2200V, T _J =125°C		80	mA
Repetitive Peak Reverse Leakage Current	I _{RRM}	Up to 2200V, T _J =125°C		80	mA
Peak On-State Voltage	V _{TM} / V _{FM}	I _{TM} / I _{FM} =1500A		1.77	V
Threshold Voltage, Low-level	V _{(TO)1}	T _J = 125°C, I = 15%I _{T(AV)} to π I _{T(AV)}		0.88	V
Slope Resistance, Low-level	r _{T1}	V _{TM} = V _{(TO)1} + r _{T1} I		0.66	mΩ
Threshold Voltage, High-level	V _{(TO)2}	T _J = 125°C, I = π I _{T(AV)} to I _{TSM}		1.34	V
Slope Resistance, High-level	r _{T2}	V _{TM} = V _{(TO)2} + r _{T2} I		0.32	mΩ
V _{TM} Coefficients, Full Range		T _J = 125°C, I = 10A to 6kA V _{TM} / V _{TM} = A + B Ln I + C I + D Sqrt I	A = B = C = D =	0.766 -1.046E-02 1.805E-04 2.00E-02	
Minimum dV/dt	dV/dt	Exponential to V _{DRM} T _J =125°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 =125°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

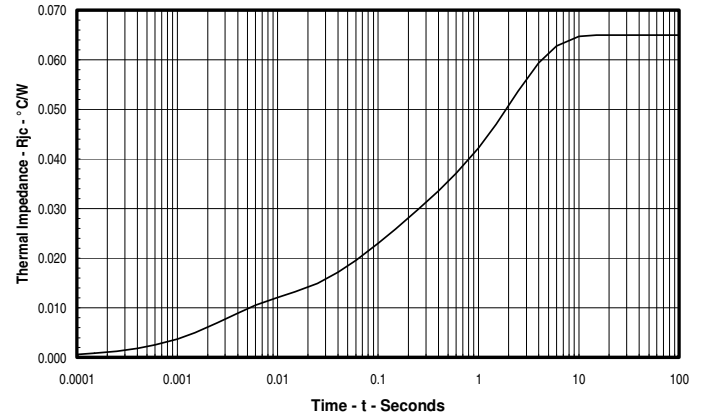
Characteristics	Symbol		Max.	Units
Thermal Resistance, Junction to Case	R _{ΘJ-C}	Per Module, both conducting Per Junction, both conducting	0.0325 0.0650	°C/W °C/W
Thermal Impedance Coefficients	Z _{ΘJ-C}	Z _{ΘJ-C} = K ₁ (1-exp(-t/τ ₁)) + K ₂ (1-exp(-t/τ ₂)) + K ₃ (1-exp(-t/τ ₃)) + K ₄ (1-exp(-t/τ ₄))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

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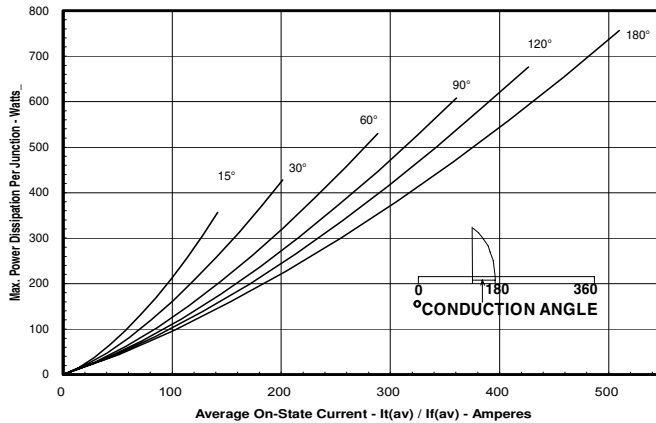
Maximum On-State Forward Voltage Drop
($T_j = 125^\circ\text{C}$)



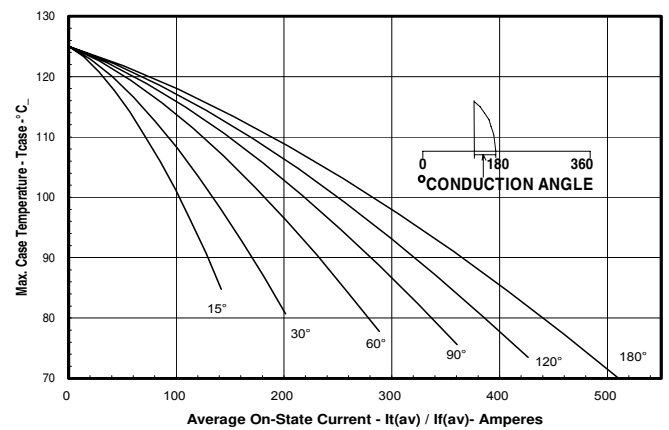
Maximum Transient Thermal Impedance
(Junction to Case, Per Junction)



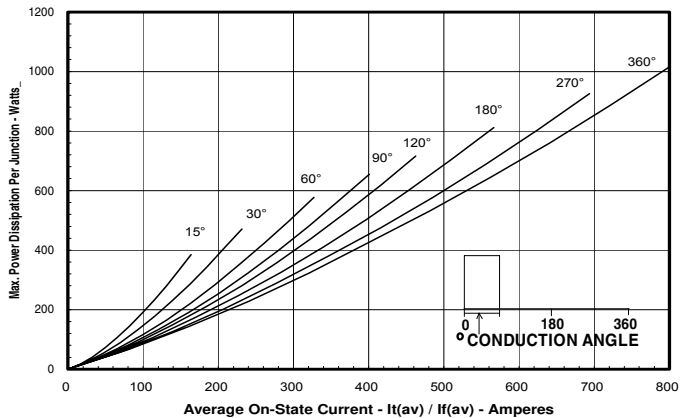
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

