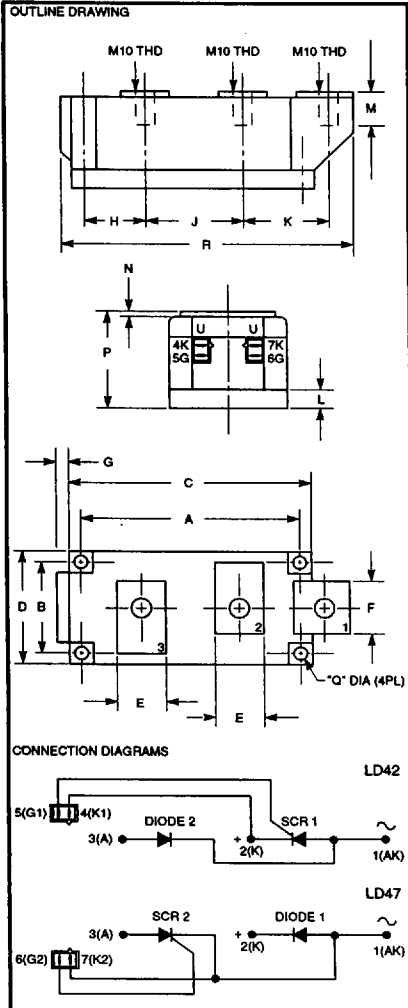


SCR/Diode POW-R-BLOK™ Module 500 Amperes/1600 Volts



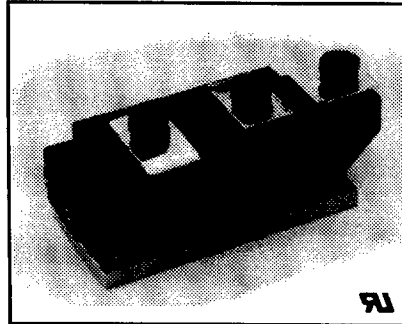
Outline Drawing

Ordering Information:

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

Example: LD421650 is a 1600 Volt, 500 Ampere SCR Diode POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Rating Amperes (x10)
LD42	08	50
LD47	12 thru 24	



LD42 _50, LD47 _50
SCR/Diode POW-R-BLOK™ Module
500 Amperes/1600 Volts

Dimension	Inches	Millimeters
A	4.41	112
B	1.89	48
C	4.88	124
D	2.36	60
E	0.98	25
F	1.10	28
G	0.24	6
H	1.22	31
J	1.97	50
K	1.73	44
L	0.39	10
M	0.71	18
N	0.12	3
P	2.05	52
Q	0.26	6.5
R	5.91	150
U	0.110 x 0.032	2.5 x 0.8

Description:

The LD42 and LD47 is the combination of a SCR and a Diode mounted in an electrically isolated module. The semiconductor elements are secured by compression bonding for excellent cycling performance. The LD42 and LD47 feature a self contained electrical isolation system. By using high thermal conductivity BeO ceramic isolators, excellent circuit-to-base-plate isolation (≥ 3000 volts RMS) has been achieved, while maintaining efficient cooling of the semiconductor elements. All LD Series SCRs use the "di/Namic" gate structure for ease of triggering and high di/dt capability.

Features:

- ☐ Low On-State Voltage
- ☐ High di/dt Capability
- ☐ High dv/dt Capability
- ☐ Excellent Surge and I²t Ratings
- ☐ Low Thermal Impedance
- ☐ UL Recognized 

Applications:

- ☐ Power Supplies
- ☐ Motor Control
- ☐ Large IGBT Circuit "Front Ends"

LD42_50, LD47_50
SCR/Diode POW-R-BLOK™ Module
500 Amperes/1600 Volts

Absolute Maximum Ratings

Characteristics	Symbol	Conditions	LD42_50 LD47_50	Units
Repetitive Peak Forward Blocking Voltage	V_{DRM}	—	1600	Volts
Repetitive Peak Reverse Blocking Voltage	V_{RRM}	—	1600	Volts
Non-Repetitive Peak Forward Blocking Voltage	V_{DRM}	—	$V_{DRM} + 100$	Volts
Non-Repetitive Peak Reverse Blocking Voltage	V_{RSM}	—	$V_{RRM} + 100$	Volts
RMS Forward Current	$I_T(RMS)$	—	785	Amperes
Average Forward Current	$I_T(AV)$	180° Conduction, $T_C = 75^\circ C$	500	Amperes
Peak Half-Cycle Surge (Non-Repetitive) On-State Current	I_{TSM}	$t = 8.3ms, 100\%V_{RRM}$ Reapplied	13000	Amperes
		$t = 10ms, 100\%V_{RRM}$ Reapplied	12500	Amperes
I^2t (for Fusing) for One-Cycle	I^2t	$t = 8.3ms, 100\%V_{RRM}$ Reapplied	715,000	A^2sec
		$t = 10ms, 100\%V_{RRM}$ Reapplied	781,000	A^2sec
Maximum Rate-of-Rise of On-State Current (Non-Repetitive)*	di/dt	$I_{TM} = \pi I_T(AV), t_r < 0.5\mu s, t_p > 6\mu s$	120	Amperes/ μs
Storage Temperature	T_{STG}	—	-40 to 130	$^\circ C$
Operating Temperature	T_j	—	-40 to 125	$^\circ C$
Maximum Mounting Torque M6 Mounting Screw	—	—	6	Nm
Maximum Mounting Torque M10 Terminal Screw	—	—	12	Nm
Module Weight (Typical)	—	—	900	Grams
			2	lb.
V Isolation	V_{RMS}	—	3000	Volts

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

LD42_50, LD47_50
SCR/Diode POW-R-BLOK™ Module
500 Amperes/1600 Volts

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

Characteristics	Symbol	Test Conditions	LD42_50/LD47_50			Units
			Min.	Typ.	Max.	
Blocking State Maximums						
Forward Leakage Current, Peak	I_{DRM}	$T_j = 125^{\circ}\text{C}, V_D = V_{\text{DRM}}$	—	—	80	mA
Reverse Leakage Current, Peak	I_{RRM}	$T_j = 125^{\circ}\text{C}, V_R = V_{\text{RRM}}$	—	—	80	mA
Conducting State Maximums						
Peak On-State Voltage	V_{TM}	$T_j = 125^{\circ}\text{C}, I_{\text{FM}} = 1500\text{A},$ Duty Cycle < 0.1%	—	—	1.36	Volts
Peak On-State Voltage Coefficients, Full Range	V_{TM}	$T_j = 125^{\circ}\text{C},$ $I = 15\% I_{\text{T(AV)}} \text{ to } I_{\text{TSM}}$ $V_{\text{TM}} =$ $A + B \ln I + C I + D \text{ Sqrt } I$	A = 0.4774 B = 0.0409 C = 0.00018 D = 0.00763			
Threshold Voltage, Low-Level	$V_{\text{(TO)1}}$	$T_j = 125^{\circ}\text{C},$	—	—	0.768	Volts
Slope Resistance, Low-Level	r_{T1}	$I = 15\% I_{\text{T(AV)}} \text{ to } \pi I_{\text{T(AV)}}$	—	—	0.361	mΩ
Threshold Voltage, High-Level	$V_{\text{(TO)2}}$	$T_j = 125^{\circ}\text{C},$	—	—	1.052	Volts
Slope Resistance, High-Level	r_{T2}	$I = \pi I_{\text{T(AV)}} \text{ to } I_{\text{TSM}}$	—	—	0.234	mΩ
Switching Minimums						
Critical Rate-of-Rise of Off-State Voltage	dv/dt	$T_j = 125^{\circ}\text{C},$ Gate Open, Exponential to V_{DRM}	1000			Volts/μs
Thermal Maximums						
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{J-C})}$	Per Module, Both Conducting	—	—	0.035	°C/Watt
		Per Element, Both Conducting	—	—	0.07	°C/Watt
Thermal Resistance, Case-to-Sink (Lubricated)	$R_{\theta(\text{C-S})}$	Per Module	—	—	0.01	°C/Watt
Gate Parameters Maximums						
Gate Current-to-Trigger	I_{GT}	$T_j = 25^{\circ}\text{C}, V_D = 6\text{V}$	—	250	—	mA
Gate Voltage-to-Trigger	V_{GT}	$T_j = 25^{\circ}\text{C}, V_D = 6\text{V}$	—	1.5	—	Volts
Non-Triggering Gate Voltage	V_{GDM}	$T_j = 125^{\circ}\text{C}, V_D = 1/2 V_{\text{DRM}}$	—	0.20	—	Volts
Peak Forward Gate Current	I_{GTM}	—	—	4.0	—	Amperes
Peak Reverse Gate Voltage	V_{GRM}	—	—	5.0	—	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.

LD42_50, LD47_50
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