Product Change Notification

LDR3__50 To Be Offered as Replacement for LD43__50 POW-R-BLOK™

: 2017-024 Rev.: 01

Date: 2017 / AUG / 28

Author: Ron Yurko

Subject of Change:

Introduction of new part type LDR3__50 to be offered as a direct replacement for Powerex LD43__50 dual SCR modules. They are drop in replacements both mechanically and electrically with minor differences noted below.

Description of Change:

Resulting from the transfer of the manufacturing operations for the LD43 module from the former Powerex facility located in Morocco to the Powerex manufacturing partner facility located in Poland to provide increased options in supply, Powerex will be offering a new product LDR3__50 for consideration as a replacement for the LD43__50 module. It is an equivalent replacement, but there will be differences in the mechanical and electrical characteristics. Please review the product data sheet and make determination as to whether this product will be a suitable replacement for use in their application. These differences include, but are not limited, to the following:

- Slightly less overall length dimension (149 mm) for the LDR3 as compared to the 150 mm overall length of the LD43.
- Slightly wider terminals (26 mm on terminals 2 & 3) for the LDR3 as compared to the terminal widths for the LD43 (25.4 mm on terminals 2 & 3)
- A slightly smaller screw depth under the terminals of 17 mm for the LDR3 as compared to the 17.5 mm depth for the LD43

This module is being developed with a manufacturing partner with a country of origin of Russia that has a quality management system that is in compliance with ISO 9001. This product is RoHS and REACH compliant and is UL Recognized.

Reason for Change:

A new product is being introduced to assist with customer demand after unforeseen issues and difficulties with the transition of the LD43__50 dual SCR modules from the former Powerex manufacturing facility located in Morocco which was to be transferred to the former Westinghouse site and manufacturing partner facility located in Poland earlier this year.

Identification of Change:

This new product will be identified by a new part number LDR3__50 and will be labeled with PRX RU.
This module package has slightly different physical characteristics that differentiate it from the original LD43__50 modules.

Time Schedule for Change:

Delivery Begins: Third Quarter of 2017

Supporting Documentation:

Attachment – LDR3__50 Data Sheet

Quality Management system:

The Powerex partner manufacturing facility has a quality system that is in compliance with ISO 9001.
Parts will be qualified at the Powerex Youngwood, PA facility which has a quality system that is in compliance with ISO 9001 and AS9100.

Continued on following page

Product Change Notification

Customer Approval for: PCN # 2017-024 REV 1

- Please check the appropriate box and return this form to Powerex or our manufacturing representative within 30 days.
- According to JEDEC Standard JESD46, a lack of response to this product change notification within 30 days constitutes the customer's acceptance of the change.

☐ We agree with this change and its schedule.

☐ We have objection(s) as noted here:

☐ We request additional information:

Customer: **Signature:**

Product Change Notification

PCN 2017-024

Recommended Replacements for LD43__50 Dual SCR Modules

LD43 Part	Recommended Replacement
LD430850	LDR30850
LD431050	LDR31050
LD431250	LDR31250
LD431450	LDR31450
LD431650	LDR31650
LD431850	LDR31850

Product Change Notification

PCN 2017-024

Differences between the LD43__50 modules and LDR3__50 modules include, but are not limited to, the following:

Ratings and Electrical Characteristics:

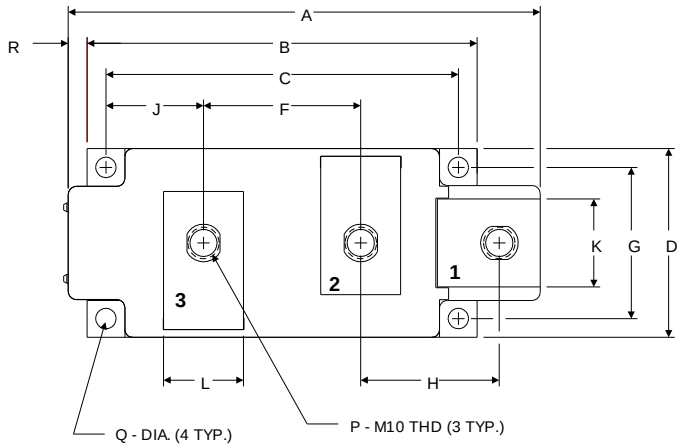
Characteristic	Symbol	LD43__50 Limit	LD43__50 Test Conditions	LDR3__50 Limit	LDR3__50 Test Conditions
Average Forward Current	IT(AV)	500 A	180° Conduction, T_C=86°C	500 A	180° Conduction, T_C=85°C
RMS Forward Current	IT(RMS)	900 A	180° Conduction, T_C=86°C	785 A	180° Conduction, T_C=85°C
Peak One Cycle Surge Current, Non-Repetitive	ITSM	25,500 A	60 Hz, 0V reapplied, T_j=125°C	17,000 A	60 Hz, 0V reapplied, T_j= $T_{j\,MAX}$
	ITSM	24,450 A	50 Hz, 0V reapplied, T_j=125°C	15,500 A	50 Hz, 0V reapplied, T_j= $T_{j\,MAX}$
I2t for Fusing for One Cycle	I^2t	2.70 x 10^6 A^2sec	60 Hz, 0V reapplied, T_j=125°C	1.19 x 10^6 A^2sec	60 Hz, 0V reapplied, T_j= $T_{j\,MAX}$
	I^2t	2.90 x 10^6 A^2sec	50 Hz, 0V reapplied, T_j=125°C	1.20 x 10^6 A^2sec	50 Hz, 0V reapplied, T_j= $T_{j\,MAX}$
Average Forward Gate Power	$P_{G(AV)}$	5 W		4 W	
Maximum Rate-of-Rise of On-State Current, (Repetitive)	di/dt	200 A/µs	Per JEDEC Standard 397 5.2.2.6	400 A/µs	T= $T_{j\,max}$, V_D= 0.67 V_{DRM}, I_{TM}= 2 I_{TAV}, Gate Pulse: I_G= 2 A, t_{GP}= 50 µs, di_G/dt>= 1 A/µs
Storage Temperature	T_{stg}	-40 to +150 °C		-40 to +125 °C	
Repetitive Peak Forward Leakage Current	I_{DRM}	80 mA max	V=V_{DRM}, T_j=130°C	70 mA max	V=V_{DRM}, T_j=130°C
Repetitive Peak Reverse Leakage Current	I_{RRM}	80 mA max	V=V_{RRM}, T_j=130°C	70 mA max	V=V_{RRM}, T_j=130°C
Peak On-State Voltage	V_{TM}	1.30 V max	T_j=25°C, I_{TM}=1500 A	1.50 V max	T_j=25°C, I_{TM}=1570 A
Gate Trigger Current	I_{GT}	200 mA max	T_j=25°C, V_D=12V	250 mA max	T_j=25°C, V_D=12V
Gate Trigger Voltage	V_{GT}	3.0 V max	T_j=25°C, V_D=12V	2.50 V max	T_j=25°C, V_D=12V
Peak Forward Gate Current	I_{GTM}	4.0 A max	T_j=25°C	10 mA max	T_j=130°C, V_D=0.67 V_{DRM}
Peak Reverse Gate Voltage	V_{GRM}	5 V max.	T_j=25°C	0.25 V max	T_j=130°C, V_D=0.67 V_{DRM}
Latching Current	I_L	600 mA	T_j=25°C	1000 mA max	T_j=25°C, V_D=12V
Holding Current	I_H	200 mA	T_j=25°C	300 mA max	T_j=25°C, V_D=12V
Turn-Off Time	t_q	150 µs typical	I_{TM}=1000A, t_p=1ms, dI/dt=10A/µs, dV_R/dt=200V/µs, V_{DR}=80%V_{DRM}, V_R=50V, T_j=130°C	250 µs max	T_j=130°C, dv/dt= 50 V/µs, I_{TM}= $I_{T(AV)}$, di/dt= 10 A/µs, V_R= 100 V, V_D= 0.67 V_{DRM}
Recovered Charge	Q_{rr}	1250 µC typical	I_{TM}=1000A, t_p=1ms, dI/dt=10A/µs, V_R=50V, T_j=130°C	1690 µC max	T_j=130°C, I_{TM}= 500 A, di_R/dt= 10 A/µs, V_R= 100 V
Recovered Charge (50% Chord)	Q_{ra}	960 µC typical		---	
Reverse Recovery Current	I_{rm}	115 A typical		135 A typical	
Reverse Recovery Time	t_{rr}	16 µs typical (50% chord)		25 µs max	

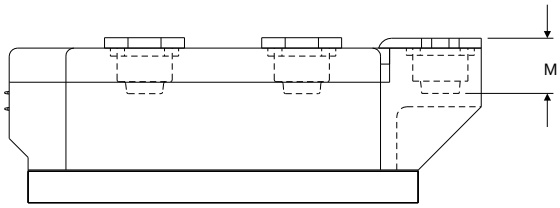
Product Change Notification

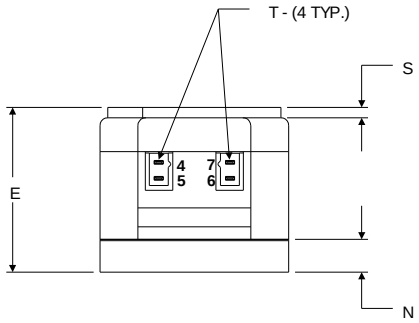
PCN 2017-024

Mechanical differences between the LD43__50 modules and LDR3__50 modules include, but are not limited to, the following:

OUTLINE DRAWING







Dimension	LD43 (mm)	LDR3 (mm)
A	150	149
L	25.4	26
M	17.5	17
R	6	5