



VLD-Axial Leaded Strap Lead(Pb) Free PTC Devices





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Description



- The new VRD Axial Leaded Strap Lead(Pb) Free PTC device are designed based on a proprietary conductive polymer material, to provide both overcurrent protection for rechargeable battery cells.
- The VLD Axial Leaded Strap Lead(Pb) Free devices featuring a slim, low profile and low resistance design and are ideal to be installed directly on the latest generations of battery cells for longer battery run time.
- LRD products provide reliable, non-cycling protection against overcharging and short circuits events and increase the battery safety level.



Agency Approval and Environmental Compliance

Agency	File Number	Regulation	Standard
	E201431		2011/65/EU
	R50103314		IEC 61249-2-21:2003

Electrical Characteristics

Part Number	I _{hold} (A)	I _{trip} (A)	V _{max} (Vdc)	I _{max} (A)	P _{d typ} (W)	Maximum Time To Trip		Resistance			Agency Approval	
						Current (A)	Time (Sec.)	R _{min} (Ω)	R _{max} (Ω)	R _{1max} (Ω)		
VLD170F	1.70	4.1	12	100	1.4	8.50	5.0	0.018	0.032	0.064	✓	✓
VLD175F	1.75	4.2	12	100	1.4	8.75	5.0	0.017	0.031	0.062	✓	✓
VLD175LF	1.75	4.2	12	100	1.4	8.75	5.0	0.017	0.031	0.062	✓	✓
VLD175LF-2	1.75	4.2	12	100	1.4	8.75	5.0	0.017	0.031	0.062	✓	✓
VLD175XLF	1.75	4.2	12	100	1.4	8.75	5.0	0.017	0.031	0.062	✓	✓
VLD230F	2.30	5.0	12	100	2.5	10.0	5.0	0.012	0.018	0.036	✓	✓

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How to Select a Polymer PTC fuse

(1) Determine the following operating parameters for the circuits:

- (A) Normal Operating Current (I hold)
- (B) Maximum Circuit Voltage (V max)
- (C) Maximum Interrupt Current (I max)
- (D) Normal Operating Temperature (min °C /max °C)

(2) Select the device form factor and dimension suitable for the application:

Axial Leaded Strap Device (SLD, VTD, LTD, LRD, STD, LTD Series)

Surface Mount Device (SMD Series)

Radial Leaded Device (RLD Series)

Other Custom-designed Device (Disc/Chip)

(3) Compare the maximum ratings for V max and I max of the PTC device with the circuit in application and make sure that the circuit's requirement does not exceed the device ratings.

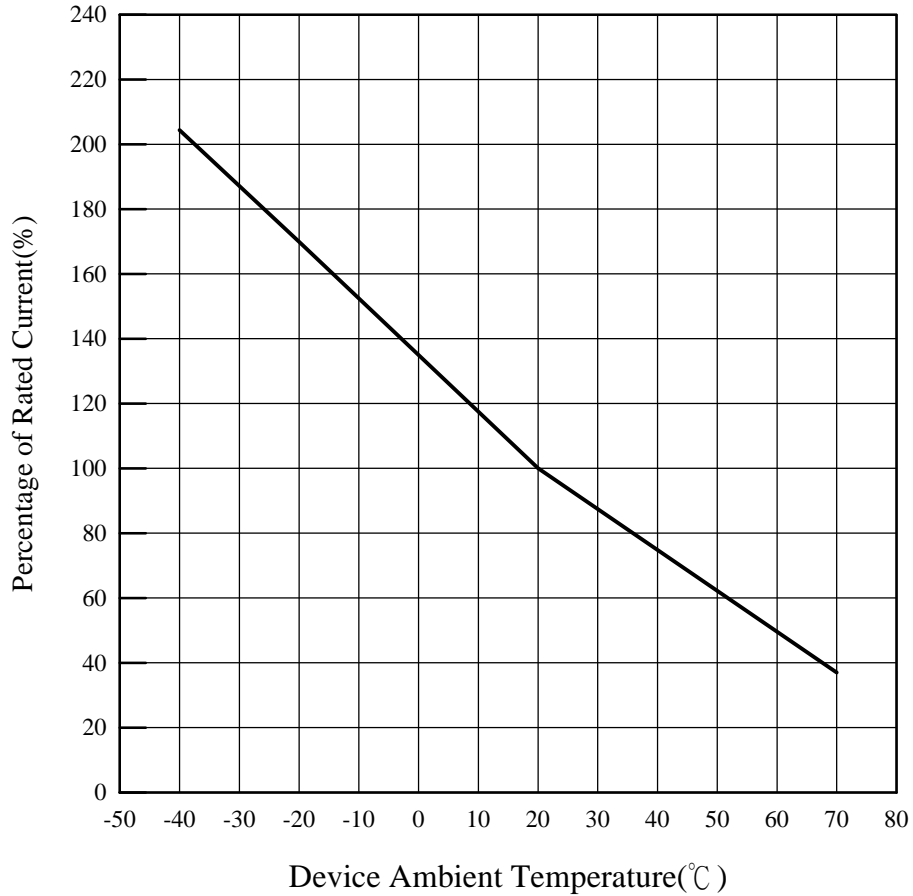
(4) Check that the PTC device's trip time (time-to-trip) will protect the circuit.

(5) Verify that the circuit operating temperatures are within the PTC device's normal operating temperature range.

(6) Verify the performance and suitability of the chosen PTC device in the application.

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THERMAL DERATING CURVE FOR VLD LF SERIES

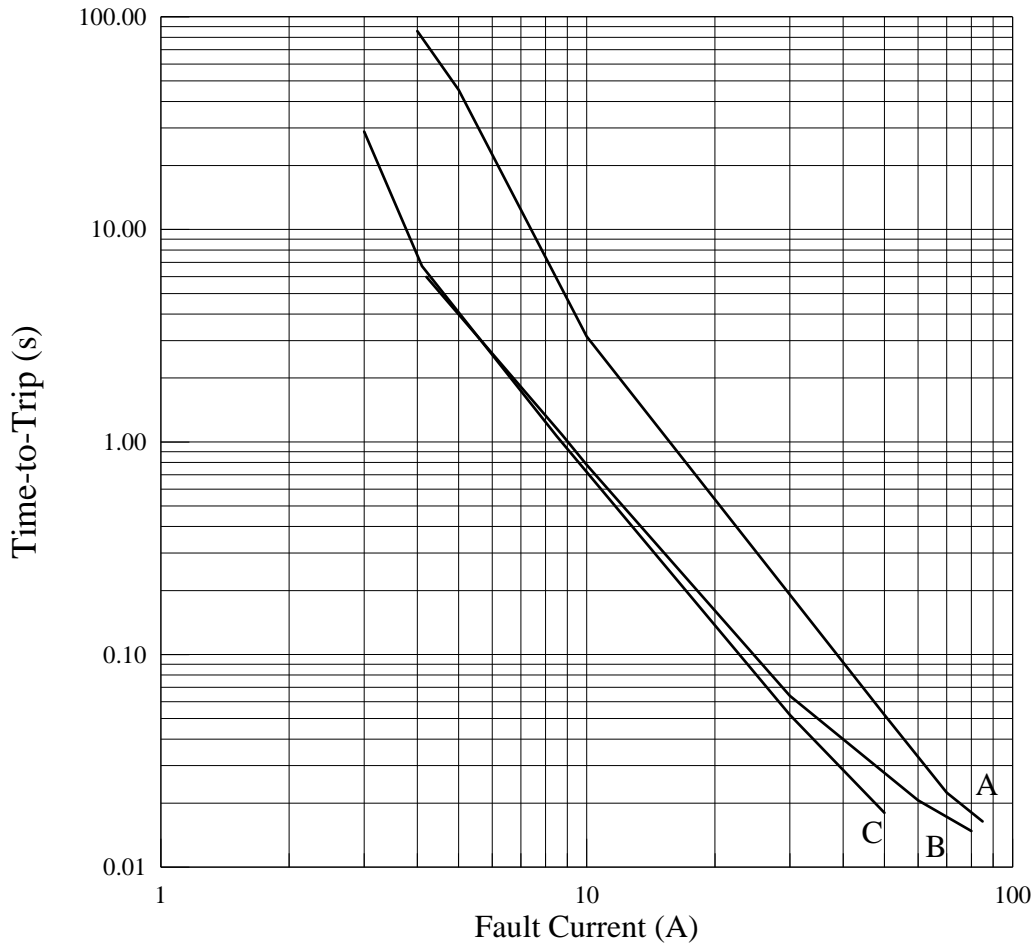


THERMAL DERATING CHART FOR VLD LF SERIES - Ihold (Amps)

Model	Ambient Operation Temperature							
	-40 °C	-20 °C	0 °C	25 °C	40 °C	50 °C	60 °C	70 °C
VLD170F	3.5	2.9	2.4	1.70	1.2	1.0	0.7	0.3
VLD175F	3.5	2.9	2.4	1.75	1.3	1.0	0.8	0.3
VLD175LF	3.5	2.9	2.4	1.75	1.3	1.0	0.8	0.3
VLD175LF-2	3.5	2.9	2.4	1.75	1.3	1.0	0.8	0.3
VLD175XLF	3.5	2.9	2.4	1.75	1.3	1.0	0.8	0.3
VLD230F	5.0	4.2	3.4	2.30	1.7	1.3	0.9	0.4

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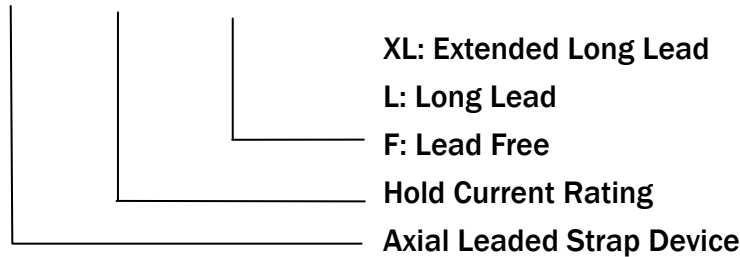
AVERAGE TIME-CURRENT CURVE FOR VLD LF SERIES



A = VLD230F
B = VLD175F,
VLD175LF,
VLD175LF-2,
& VLD175XLF
C = VLD230F

PART NUMBERING SYSTEM

VLD □ □ □ □ □ □



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PHYSICAL DIMENSIONS (mm)

Figure 1

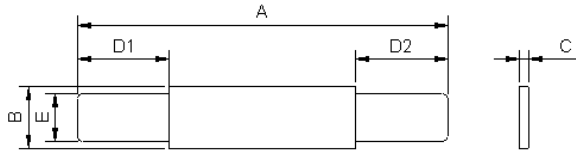
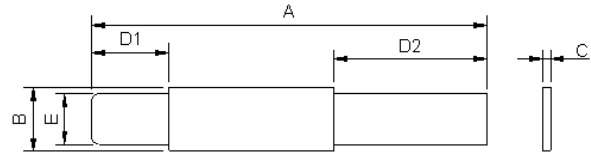


Figure 2



Part Number	Fig	A		B		C		D1		D2		E	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
VLD170F	1	20.8	23.2	3.5	3.9	-	0.8	4.5	6.5	4.5	6.5	2.4	2.6
VLD175F	2	23.0	24.5	2.9	3.3	-	0.8	4.7	7.2	3.8	5.4	2.4	2.6
VLD175LF	2	29.3	31.7	2.9	3.3	-	0.8	5.2	6.8	10.0	12.5	2.4	2.6
VLD175LF-2	2	29.3	31.7	2.9	3.3	-	0.8	5.2	6.8	10.0	12.5	2.4	2.6
VLD175XLF	1	25.5	28.2	3.5	3.9	-	0.8	8.7	10.3	5.7	7.3	2.4	2.6
VLD230F	1	20.9	23.1	4.9	5.3	-	0.8	4.1	5.8	4.1	5.8	3.9	4.1

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40°C to +85°C	
Passive Aging	+60°C, 1000 hours	±20% typical resistance change
	-40°C, 1000 hours	±5% typical resistance change
Humidity Aging	+60°C, 95%R.H. 1000 hours	±30% typical resistance change
Thermal Shock	MIL-STD-202G, Method 107G	
	+85°C to -40°C, 10 times	±5% typical resistance change
Vibration	MIL-STD-883E, Method 2026	No change
Storage Condition	0°C to 35°C, ≤ 70%RH	

PHYSICAL SPECIFICATIONS

Lead Material	0.13 mm nominal thickness, quarter-hard nickel
Insulating Material	Polyester tape

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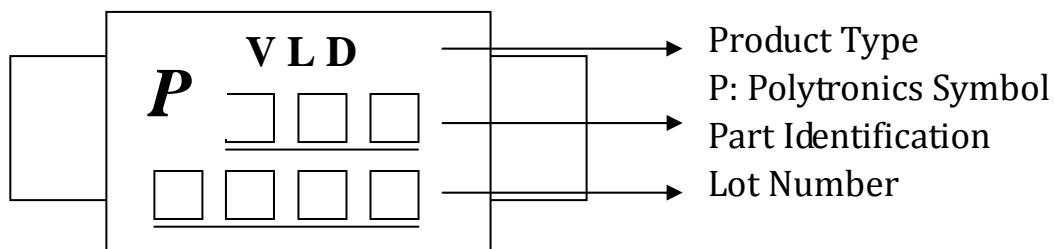
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PACKAGING INFORMATION

Product Description	Bag Quantity(ea)	Standard Package(ea)
VLD170F	500	10,000
VLD175F	500	10,000
VLD175LF	500	10,000
VLD175LF-2	500	10,000
VLD175XLF	500	10,000
VLD230F	500	10,000

©All models are packaged in bulk.

PART MARKING SYSTEM



CROSS REFERENCE

Polytronics/ EVERFUSE [†]	Cross Reference	
	Raychem/ PolySwitch [®]	Bourns/ Multifuse [®]
VLD170F	VLR170F	N/A
VLD175F	N/A	N/A
VLD175LF	VLR175LF	N/A
VLD175LF-2	N/A	N/A
VLD175XLF	N/A	N/A
VLD230F	VLR230F	N/A

“EVERFUSE” is a registered trademark of Polytronics Technology Corp.

“Multifuse” is a registered trademark of Bourns , Inc.

“PolySwitch” is a registered trademark of Raychem Corporation.

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