



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





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Description

- The new LRD 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 LRD 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)		
LRD260F	2.6	5.8	15	100	2.5	13.0	5.0	0.020	0.042	0.063	✓	✓
LRD380F	3.8	8.3	15	100	2.5	19.0	5.0	0.013	0.026	0.037	✓	✓
LRD450F	4.5	8.9	20	100	2.5	22.5	5.0	0.011	0.020	0.028	✓	✓
LRD550F	5.5	10.5	20	100	2.8	27.5	5.0	0.009	0.016	0.022	✓	✓
LRD600F	6.0	11.7	20	100	2.8	30.0	5.0	0.007	0.014	0.019	✓	✓
LRD730F	7.3	14.1	20	100	3.3	30.0	5.0	0.006	0.012	0.015	✓	✓
LRD900F	9.0	16.7	20	100	3.8	45.0	5.0	0.006	0.010	0.014	✓	✓
LRD1000F	10.0	19.0	20	100	3.6	50.0	5.0	0.004	0.009	0.013	✓	✓

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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.

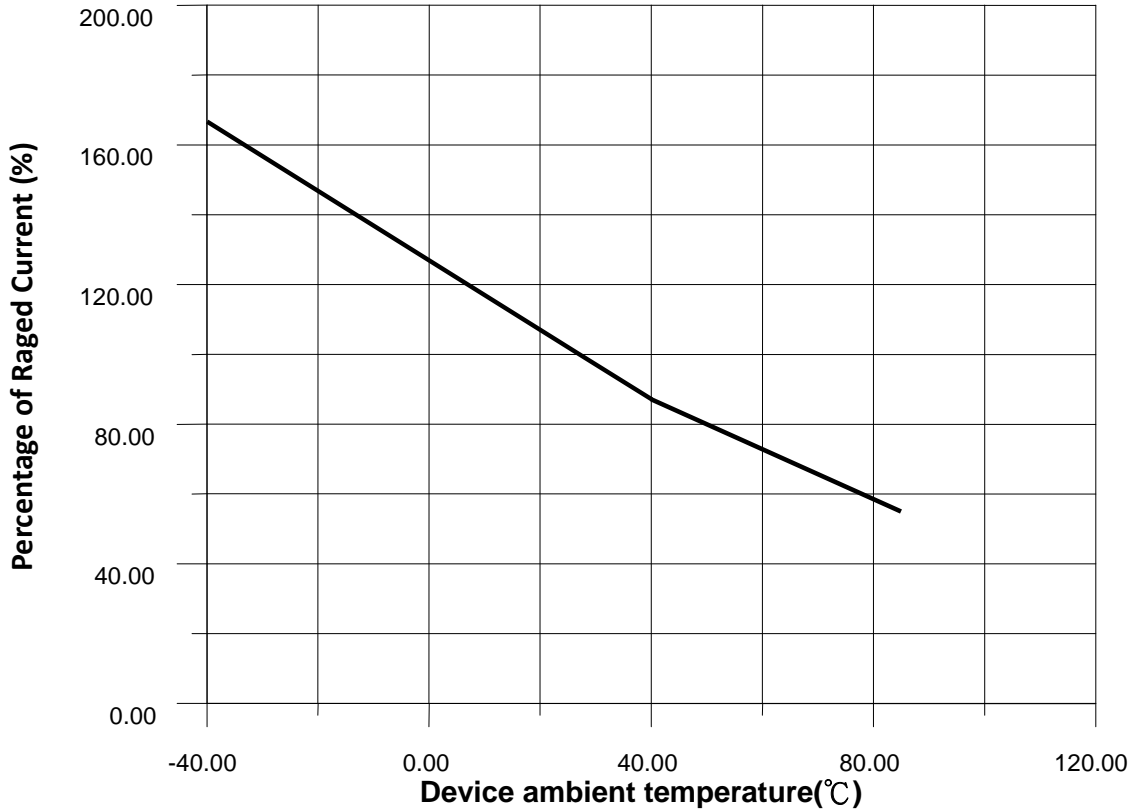
(4) Check that the PTC device's trip time (time-to-trip) will protect the circuit.

(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 LRD LF SERIES

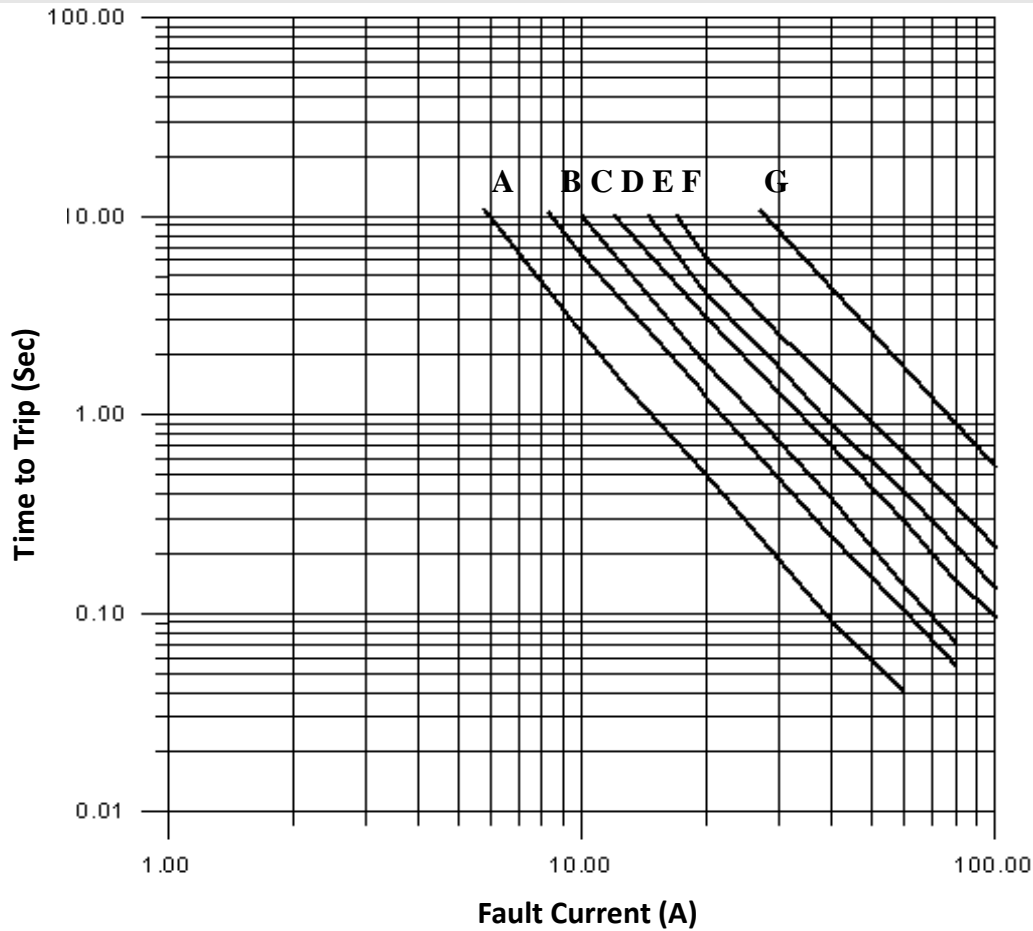


THERMAL DERATING CHART FOR LRD LF SERIES - Ihold (Amps)

Model	Ambient Operation Temperature								
	-40 °C	-20 °C	0 °C	25 °C	40 °C	50 °C	60 °C	70 °C	85 °C
LRD260F	3.8	3.4	3.1	2.6	2.2	2.0	1.9	1.7	1.4
LRD380F	5.5	4.9	4.4	3.8	3.3	3.0	2.8	2.5	2.1
LRD450F	6.5	5.8	5.3	4.5	3.9	3.6	3.3	2.9	2.5
LRD550F	8.0	7.1	6.2	5.5	4.7	4.3	4.0	3.6	3.0
LRD600F	8.7	7.8	7.1	6.0	5.2	4.7	4.4	3.9	3.3
LRD730F	10.6	9.5	8.6	7.3	6.3	5.7	5.4	4.7	4.0
LRD900F	12.7	11.4	10.0	9.0	7.5	6.8	6.2	5.5	4.5
LRD1000F	14.0	12.6	11.1	10.0	8.3	7.6	6.9	6.2	5.2

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AVERAGE TIME-CURRENT CURVE FOR LRD LF SERIES



- A = LRD260F**
- B = LRD380F**
- C = LRD450F**
- D = LRD550F**
- E = LRD600F**
- F = LRD730F**
- G = LRD900F
& LRD1000F**

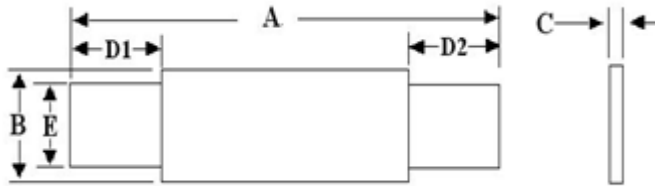
PART NUMBERING SYSTEM

LRD **(S)F**



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PHYSICAL DIMENSIONS (mm)



Part Number	A		B		C		D1		D2		E	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
LRD260F	20.9	23.1	4.9	5.5	0.6	1.0	4.1	-	4.1	-	3.9	4.1
LRD380F	24.0	26.0	6.9	7.5	0.6	1.0	4.1	-	4.1	-	4.9	5.1
LRD450F	24.0	26.0	9.9	10.5	0.6	1.0	5.3	-	5.3	-	5.9	6.1
LRD550F	35.0	37.0	6.9	7.5	0.6	1.0	5.3	-	5.3	-	4.9	5.1
LRD600F	24.0	26.0	13.9	14.5	0.6	1.0	4.1	-	4.1	-	5.9	6.1
LRD730F	27.1	29.1	13.9	14.5	0.6	1.0	4.1	-	4.1	-	5.9	6.1
LRD900F	45.4	47.6	7.9	8.5	-	1.3	4.6	-	4.6	-	5.9	6.1
LRD1000F	50.0	52.0	7.9	8.5	-	1.3	5.2	-	5.2	-	5.9	6.1

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40°C to +85°C	
Maximum Device Surface Temperature in Tripped State	125 °C	
Passive Aging	+70°C, 1000 hours	±10% typical resistance change
Humidity Aging	+85°C, 85%R.H. 7 days	±10% typical resistance change
Vibration	MIL-STD-883C, Condition A	No change
Storage Condition	0°C to 35°C, ≤ 70%RH	

PHYSICAL SPECIFICATIONS

Lead Material	0.13 mm nominal thickness, quarter-hard nickel 0.3 mm nominal thickness, quarter-hard nickel (LRD900F and LRD1000F)
Insulating Material	Polyester tape

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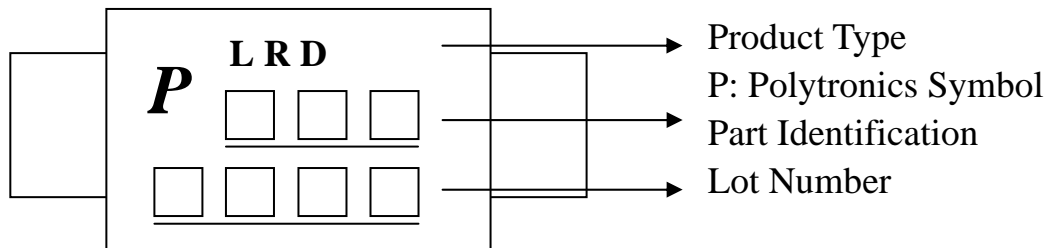
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PACKAGING INFORMATION

Product Description	Bag Quantity(ea)	Standard Package(ea)
LRD260F	500	10,000
LRD380F	500	10,000
LRD450F	500	10,000
LRD550F	500	10,000
LRD600F	500	10,000
LRD730F	500	10,000
LRD900F	500	10,000
LRD1000F	500	10,000

©All models are packaged in bulk.

PART MARKING SYSTEM



CROSS REFERENCE

Polytronics/ EVERFUSE [†]	Cross Reference	
	Raychem/ PolySwitch [®]	Bourns/ Multifuse [®]
LRD260F	LR4-260F	MF-LR260
LRD380F	LR4-380F	MF-LR380
LRD450F	LR4-450F	MF-LR450
LRD550F	LR4-550F	MF-LR550
LRD600F	LR4-600F	MF-LR600
LRD730F	LR4-730F	MF-LR730
LRD900F	LR4-900F	N/A
LRD1000F	N/A	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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