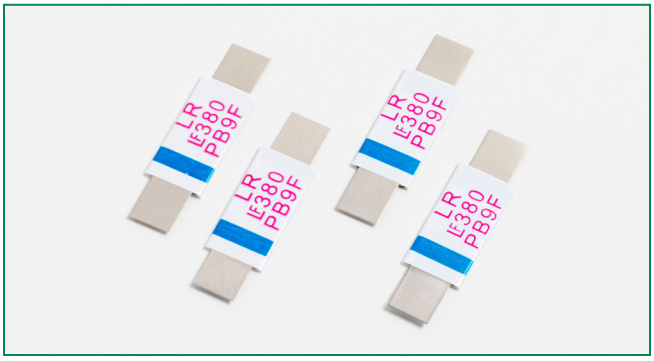
# POLY-FUSE® Resettable PTCs

## Axial Lead Battery Strap Type > LR Series

## LR Series




## Description

The new LR Series device provides reliable, noncycling protection against overcharging and short circuits events for rechargeable battery cells where resettable protection is desired.

## Features

- RoHS compliant and lead–free
- Weldable Nickel terminals
- Slim, low profile design
- Compact design saves board space
- Low resistance
- Fast trip time

## Agency Approvals

| AGENCY | AGENCY FILE NUMBER |
|---|---|
| c UL us | E183209 |
| TÜV | R50119583 |

## Applications

- Rechargeable battery cell protection
- Portable Computers
- Camcorders

## Additional Information

Datasheet | Resources | Samples

## Electrical Characteristics

| Part Number | $I_{hold}$ (A) | $I_{trip}$ (A) | $V_{max}$ (Vdc) | $I_{max}$ (A) | $P_d$ max. (W) | Maximum Time To Trip | | Resistance | | | Agency Approvals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Current (A) | Time (Sec.) | $R_{min}$ (Ω) | $R_{typ}$ (Ω) | $R_{1max}$ (Ω) | c UL us | TÜV |
| 15LR260 | 2.6 | 5.8 | 15 | 100 | 2.5 | 13.00 | 5.00 | 0.020 | 0.042 | 0.063 | X | X |
| 15LR380 | 3.8 | 8.3 | 15 | 100 | 2.5 | 19.00 | 5.00 | 0.013 | 0.026 | 0.037 | X | X |
| 20LR450 | 4.5 | 8.9 | 20 | 100 | 2.5 | 22.50 | 5.00 | 0.011 | 0.020 | 0.028 | X | X |
| 20LR730 | 7.3 | 14.1 | 20 | 100 | 3.3 | 30.00 | 5.00 | 0.006 | 0.012 | 0.015 | X | X |

$I_{hold}$ = Hold current: maximum current device will pass without tripping in 20°C still air.
$I_{trip}$ = Trip current: minimum current at which the device will trip in 20°C still air.
$V_{max}$ = Maximum voltage device can withstand without damage at rated current (I max)
$I_{max}$ = Maximum fault current device can withstand without damage at rated voltage ($V_{max}$)
$P_d$ = Power dissipated from device when in the tripped state at 20°C still air.
$R_{min}$ = Minimum resistance of device in initial (un-soldered) state.
$R_{typ}$ = Typical resistance of device in initial (un-soldered) state.
$R_{1max}$ = Maximum resistance of device at 20°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

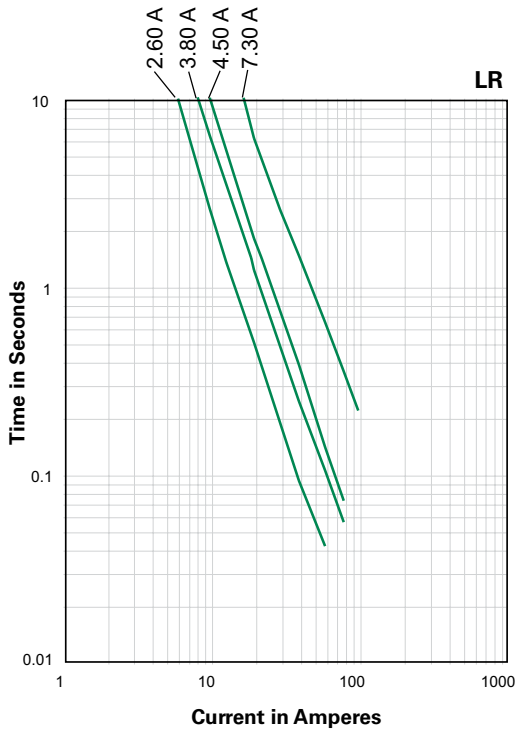
**Caution:** Operation beyond the specified rating may result in damage and possible arcing and flame.

## Temperature Rerating

| | Ambient Operation Temperature | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | -40°C | -20°C | 0°C | 20°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| Part Number | Hold Current (A) | | | | | | | | |
| 15LR260 | 3.80 | 3.40 | 3.10 | 2.60 | 2.20 | 2.00 | 1.90 | 1.70 | 1.40 |
| 15LR380 | 5.50 | 4.90 | 4.40 | 3.80 | 3.30 | 3.00 | 2.80 | 2.50 | 2.10 |
| 20LR450 | 6.50 | 5.80 | 5.30 | 4.50 | 3.90 | 3.60 | 3.30 | 2.90 | 2.50 |
| 20LR730 | 10.60 | 9.50 | 8.60 | 7.30 | 6.30 | 5.70 | 5.40 | 4.70 | 4.00 |

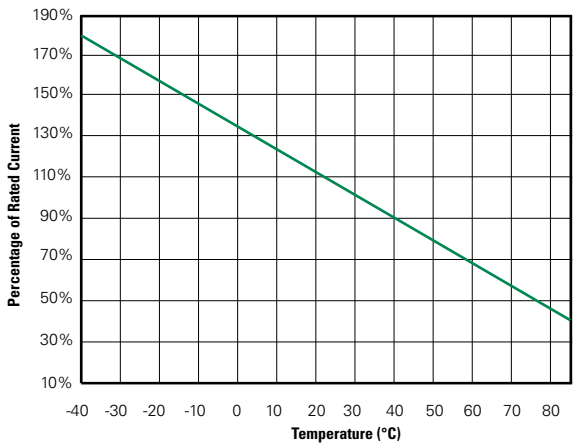

Revised: 03/22/17

## Average Time Current Curves




The average time current curves and Temperature Rerating curve performance is affected by a number or variables, and these curves provided as guidance only. Customer must verify the performance in their application.

## Temperature Rerating Curve




Note:
Typical Temperature rerating curve, refer to table for derating data

## Physical Specifications

| | |
|---|---|
| **Terminal Material** | 0.13mm nominal thickness, quarter-hard Nickel |
| **Insulating Material** | Polyester tape |

## Environmental Specifications

| | |
|---|---|
| **Operating/Storage Temperature** | -40°C to +85°C |
| **Maximum Device Surface Temperature in Tripped State** | 125°C |
| **Passive Aging** | +70°C, 1000 hours<br>-/+10% typical resistance change |
| **Humidity Aging** | +85°C, 85% R.H., 7 days<br>-/+5% typical resistance change |
| **Vibration** | MIL–STD–883, Method 2007, Condition A, No change |

**WARNING**

- Users shall independently assess the suitability of these devices for each of their applications
- Operation of these devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire
- These devices are intended to protect against the effects of temporary over-current or over-temperature conditions and are not intended to perform as protective devices where such conditions are expected to be repetitive or prolonged in duration
- Exposure to silicon-based oils, solvents, electrolytes, acids, and similar materials can adversely affect the performance of these PPTC devices
- These devices undergo thermal expansion under fault conditions, and thus shall be provided with adequate space and be protected against mechanical stresses
- Circuits with inductance may generate a voltage (L di/dt) above the rated voltage of the PPTC device.



Revised: 03/22/17

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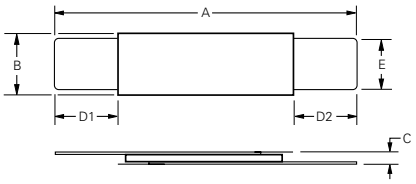
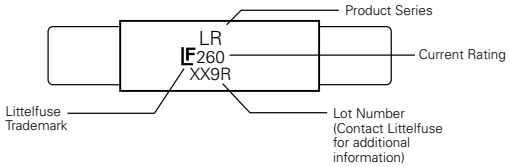
## Dimensions




| Part Number | A | | | | B | | | | C | | | | D1 | | D2 | | E | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Inches | | mm | | Inches | | mm | | Inches | | mm | | Inches | mm | Inches | mm | Inches | | mm | |
| | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Min. | Min. | Min. | Min | Max. | Min. | Max. |
| 15LR260 | 0.82 | 0.91 | 20.90 | 23.10 | 0.19 | 0.22 | 4.90 | 5.50 | 0.02 | 0.04 | 0.60 | 1.00 | 0.16 | 4.10 | 0.16 | 4.10 | 0.01 | 0.16 | 3.90 | 4.10 |
| 15LR380 | 0.94 | 1.02 | 24.00 | 26.00 | 0.27 | 0.30 | 6.90 | 7.50 | 0.02 | 0.04 | 0.60 | 1.00 | 0.16 | 4.10 | 0.16 | 4.10 | 0.01 | 0.16 | 4.90 | 5.10 |
| 20LR450 | 0.94 | 1.02 | 24.00 | 26.00 | 0.39 | 0.41 | 9.90 | 10.50 | 0.02 | 0.04 | 0.60 | 1.00 | 0.21 | 5.30 | 0.21 | 5.30 | 0.01 | 0.21 | 5.90 | 6.10 |
| 20LR730 | 1.07 | 1.15 | 27.10 | 29.10 | 0.55 | 0.57 | 13.90 | 14.50 | 0.02 | 0.04 | 0.60 | 1.00 | 0.16 | 4.10 | 0.16 | 4.10 | 0.01 | 0.16 | 5.90 | 6.10 |

## Part Marking System

**Top Side**




## Part Ordering Number System

**15 LR 260 U**

- **15** — **Voltage Rating (VDC)**
- **LR** — **SERIES**
- **260** — **HOLD CURRENT** (VALUE DIVIDED BY 100 = HOLD CURRENT IN AMPS)
- **U** — **LEAD OPTIONS:** Blank = standard
- **QUANTITY CODE** — **U:** 500 (bulk)

## Packaging

| Part Number | Ordering Number | $I_{hold}$ (A) | $I_{hold}$ Code | Packaging Option | Quantity | Quantity & Packaging Codes |
|---|---|---|---|---|---|---|
| 15LR260 | 15LR260U | 2.6 | 260 | Bulk | 500 | U |
| 15LR380 | 15LR380U | 3.8 | 380 | Bulk | 500 | U |
| 20LR450 | 20LR450U | 4.5 | 450 | Bulk | 500 | U |
| 20LR730 | 20LR730U | 7.3 | 730 | Bulk | 500 | U |

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