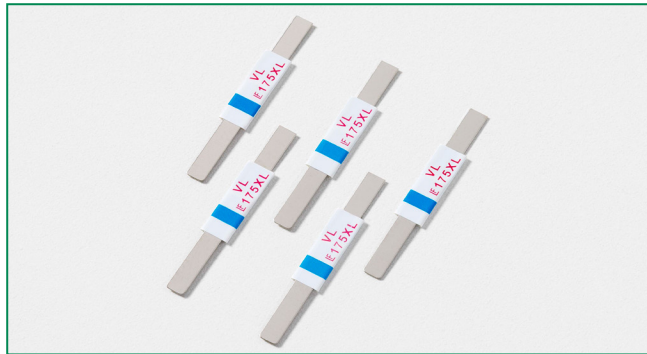


VL Series



Description

The new VL 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
- Compact design saves board space
- Weldable Nickel terminals
- Low resistance
- Slim, low profile design

Applications

- Rechargeable battery cell protection

Agency Approvals

| AGENCY | AGENCY FILE NUMBER |
|--------|--------------------|
| | E183209 |
| | R50119583 |

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) | | |
| 12VL175XL | 1.75 | 4.20 | 12 | 100 | 1.4 | 8.75 | 5.00 | 0.017 | 0.031 | 0.062 | 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.

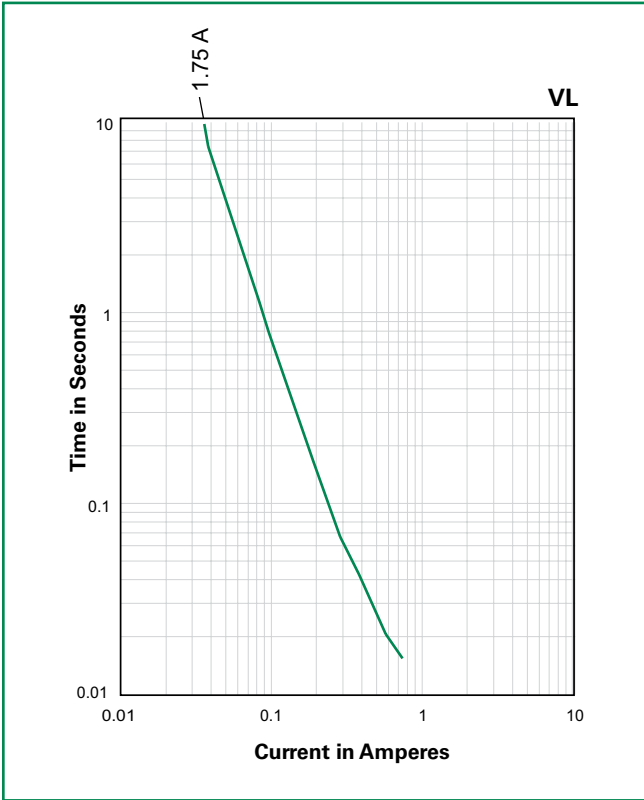
Temperature Derating

| Part Number | Ambient Operation Temperature | | | | | | | |
|-------------|-------------------------------|-------|-----|------|------|------|------|------|
| | -40°C | -20°C | 0°C | 20°C | 40°C | 50°C | 60°C | 70°C |
| 12VL175XL | Hold Current (A) | | | | | | | |
| | 3.5 | 2.9 | 2.4 | 1.75 | 1.3 | 1.0 | 0.8 | 0.3 |

WARNING

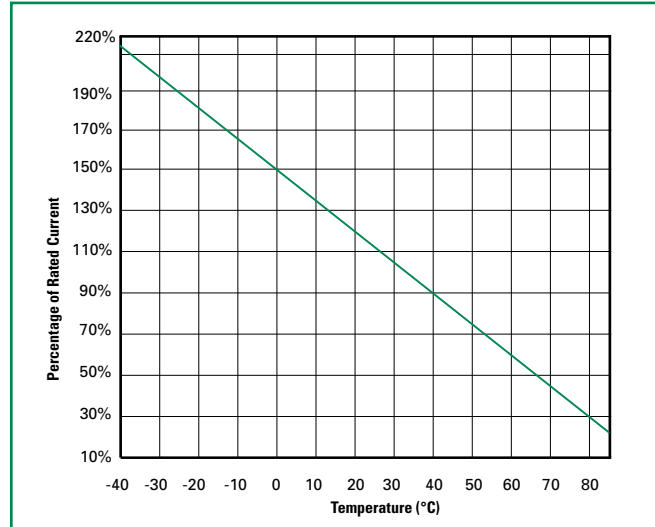
- Users shall independently assess the suitability of these devices for each of their applications
- Operation of these devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire
- These devices are intended to protect against the effects 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.

Average Time Current Curves



The average time current curves and Temperature Rerating curve performance is affected by a number of 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 |
| 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, -/+10% typical resistance change |
| Thermal Shock | MIL-STD-202, Method 107, +85°C to -40°C 10 times -/+5% typical resistance change |
| Vibration | MIL-STD-883, Method 202, No change |

Additional Information



Datasheet

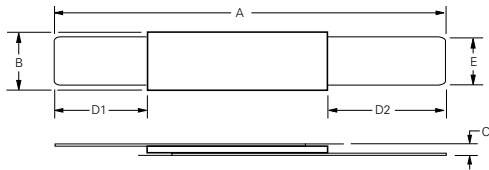


Resources



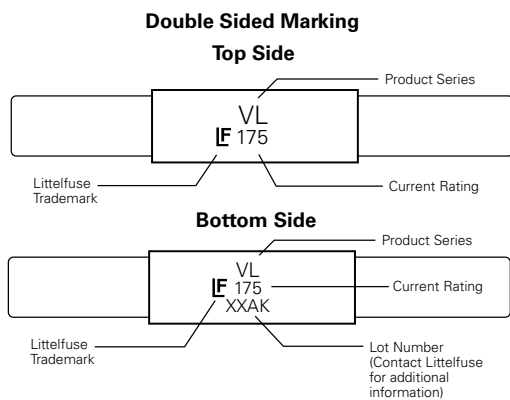
Samples

Dimensions

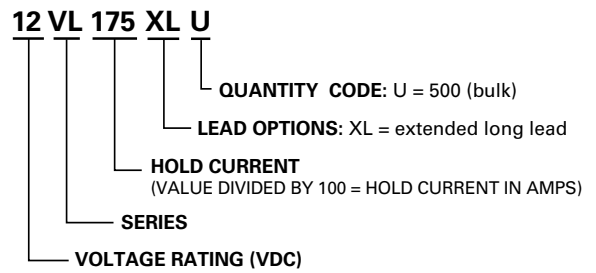


| Part Number | Figure | A | | | | B | | | | C | | | | D1 | | D2 | | E | | | | | | | |
|-------------|--------|--------|------|-------|-------|--------|------|------|------|--------|------|------|------|--------|------|------|-------|--------|------|------|------|------|------|------|------|
| | | Inches | | mm | | Inches | | mm | | Inches | | mm | | Inches | | mm | | Inches | | mm | | | | | |
| | | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | | | | |
| 12VL175XL | 2 | 1.00 | 1.11 | 25.50 | 28.20 | 0.14 | 0.15 | 3.50 | 3.90 | -- | 0.03 | -- | 0.80 | 0.34 | 0.41 | 8.70 | 10.30 | 0.22 | 0.29 | 5.70 | 7.30 | 0.09 | 0.10 | 2.40 | 2.60 |

Part Marking System



Part Ordering Number System



Packaging

| Part Number | Ordering Number | I_{hold} (A) | I_{hold} Codes | Packaging Option | Quantity | Quantity & Packaging Codes |
|-------------|-----------------|----------------|------------------|------------------|----------|----------------------------|
| 12VL175XL | 12VL175XLU | 1.75 | 175 | Bulk | 500 | U |

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