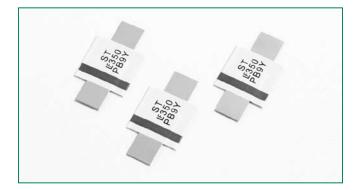
## **POLYFUSE® Resettable PTCs**

Axial Leaded Strap

### **RoHS M** ST Series

📶 Littelfuse

## 



| Agency A                    | Approvals          |
|-----------------------------|--------------------|
| AGENCY                      | AGENCY FILE NUMBER |
| c <b>PL</b> <sup>°</sup> us | E183209            |
| <u>Д</u><br>тüv             | R50082521          |

### Description

The new ST 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

- Low resistance
- Provides overcurrent protection at 125°C trip temperature

### Applications

• Rechargeable battery cell protection

|             | ا<br><sub>hold</sub> | ا<br><sub>trip</sub> | V <sub>max</sub> | l <sub>max</sub> | Р <sub>d</sub> |                |                | Resistance              |                         |                          |        |          |  |
|-------------|----------------------|----------------------|------------------|------------------|----------------|----------------|----------------|-------------------------|-------------------------|--------------------------|--------|----------|--|
| Part Number | (A)                  | (Å)                  | (Vdc)            | (A)              | max.<br>(W)    | Current<br>(A) | Time<br>(Sec.) | R <sub>min</sub><br>(Ω) | R <sub>typ</sub><br>(Ω) | R <sub>1max</sub><br>(Ω) | c 🔁 us | Д<br>тüv |  |
| 15ST120     | 1.2                  | 2.7                  | 15               | 100              | 1.2            | 6.00           | 5.00           | 0.085                   | 0.160                   | 0.220                    | Х      | Х        |  |
| 15ST120S    | 1.2                  | 2.7                  | 15               | 100              | 1.2            | 6.00           | 5.00           | 0.085                   | 0.160                   | 0.220                    | Х      | Х        |  |
| 15ST175     | 1.75                 | 3.8                  | 15               | 100              | 2.5            | 8.75           | 5.00           | 0.050                   | 0.090                   | 0.120                    | Х      | Х        |  |
| 15ST175S    | 1.75                 | 3.8                  | 15               | 100              | 2.5            | 8.75           | 5.00           | 0.050                   | 0.090                   | 0.120                    | Х      | Х        |  |

I held = Hold current: maximum current device will pass without tripping in 20°C still air.

I  $_{\rm trip}$  = Trip current: minimum current at which the device will trip in 20°C still air.

V <sub>max</sub> = 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<sub>d</sub> = 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 <sub>tvn</sub> = Typical resistance of device in initial (un-soldered) state.

R  $_{\rm max}$  = Maximum resistance of device at 20°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

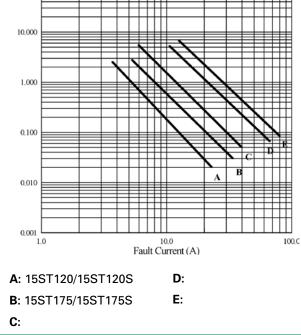
Caution: Operation beyond the specified rating may result in damage and possible arcing and flame.

### 

### **Temperature Rerating**

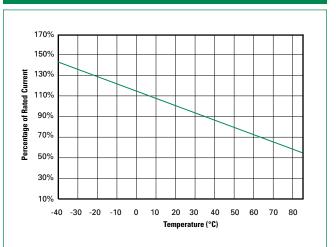
|             | Ambient Operation Temperature |                  |      |      |      |      |      |      |      |  |
|-------------|-------------------------------|------------------|------|------|------|------|------|------|------|--|
|             | -40°C                         | -20°C            | 0°C  | 23°C | 40°C | 50°C | 60°C | 70°C | 85°C |  |
| Part Number |                               | Hold Current (A) |      |      |      |      |      |      |      |  |
| 15ST120     | 1.90                          | 1.70             | 1.50 | 1.20 | 1.00 | 0.90 | 0.80 | 0.70 | 0.50 |  |
| 15ST120S    | 1.90                          | 1.70             | 1.50 | 1.20 | 1.00 | 0.90 | 0.80 | 0.70 | 0.50 |  |
| 15ST175     | 2.50                          | 2.30             | 2.00 | 1.75 | 1.50 | 1.30 | 1.20 | 1.10 | 0.90 |  |
| 15ST175S    | 2.50                          | 2.30             | 2.00 | 1.75 | 1.50 | 1.30 | 1.20 | 1.10 | 0.90 |  |

# 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**





Axial Leaded Strap

| Physical Specifications |  |  |  |  |  |  |  |
|-------------------------|--|--|--|--|--|--|--|
| Lead Material           | 0.13mm nominal thickness,<br>quarter-hard nickel |  |  |  |  |  |  |
| Insulating Material     | Polyester tape                                   |  |  |  |  |  |  |

### **Environmental Specifications**

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

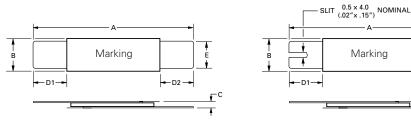
-D2-

₽c

Figure 2

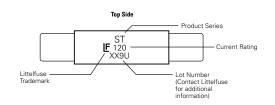
### Dimensions



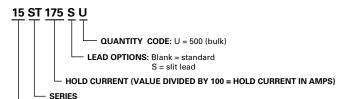


|                |      | ļ    | ٩    |      |      | E    | 3    |      |      | С    |       |      | D1 D2  |      |        | E    |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|-------|------|--------|------|--------|------|------|------|------|------|------|
| Part<br>Number | Inc  | hes  | m    | m    | Inc  | hes  | m    | m    | Inc  | hes  | mm lı |      | Inches | mm   | Inches | mm   | Inc  | hes  | m    | m    | Fig. |
| Number         | Min. | Max. | Min.  | Max. | Min.   | Min. | Min.   | Min. | Min  | Max. | Min. | Max. |      |
| 15ST120        | 0.78 | 0.87 | 19.9 | 22.1 | 0.19 | 0.20 | 4.9  | 5.2  | 0.02 | 0.04 | 0.6   | 1    | 0.22   | 5.5  | 0.22   | 5.5  | 0.01 | 0.22 | 3.9  | 4.1  | 1    |
| 15ST120S       | 0.78 | 0.87 | 19.9 | 22.1 | 0.19 | 0.20 | 4.9  | 5.2  | 0.02 | 0.04 | 0.6   | 1    | 0.22   | 5.5  | 0.22   | 5.5  | 0.01 | 0.22 | 3.9  | 4.1  | 2    |
| 15ST175        | 0.82 | 0.91 | 20.9 | 23.1 | 0.19 | 0.20 | 4.9  | 5.2  | 0.02 | 0.04 | 0.6   | 1    | 0.16   | 4.1  | 0.16   | 4.1  | 0.01 | 0.16 | 3.9  | 4.1  | 1    |
| 15ST175S       | 0.82 | 0.91 | 20.9 | 23.1 | 0.19 | 0.20 | 4.9  | 5.2  | 0.02 | 0.04 | 0.6   | 1    | 0.16   | 4.1  | 0.16   | 4.1  | 0.01 | 0.16 | 3.8  | 4.2  | 2    |

### **Part Marking System**



### Part Numbering System



VOLTAGE RATING (VDC)

### Packaging

| l <sub>hold</sub> | Packaging | Quantity | Quantity &      |
|-------------------|-----------|----------|-----------------|
| (A)               | Option    |          | Packaging Codes |
| All Ratings       | Bulk      | 500      | U               |