

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

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) |  |  |
| 15ST120 | 1.2 | 2.7 | 15 | 100 | 1.2 | 6.00 | 5.00 | 0.085 | 0.160 | 0.220 | X | X |
| 15ST120S | 1.2 | 2.7 | 15 | 100 | 1.2 | 6.00 | 5.00 | 0.085 | 0.160 | 0.220 | X | X |
| 15ST175 | 1.75 | 3.8 | 15 | 100 | 2.5 | 8.75 | 5.00 | 0.050 | 0.090 | 0.120 | X | X |
| 15ST175S | 1.75 | 3.8 | 15 | 100 | 2.5 | 8.75 | 5.00 | 0.050 | 0.090 | 0.120 | X | X |
| 30ST200 | 2.00 | 4.4 | 30 | 100 | 1.9 | 10.00 | 4.00 | 0.030 | 0.060 | 0.100 | X | X |
| 30ST350 | 3.50 | 6.3 | 30 | 100 | 2.5 | 20.00 | 3.00 | 0.017 | 0.031 | 0.050 | X | X |
| 30ST420 | 4.20 | 7.6 | 30 | 100 | 2.9 | 20.00 | 6.00 | 0.012 | 0.024 | 0.040 | X | X |

Items with S at end of part number identify items with slit lead option. See Dimension Drawing and Part Ordering Number System sections of this document for more information.

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.

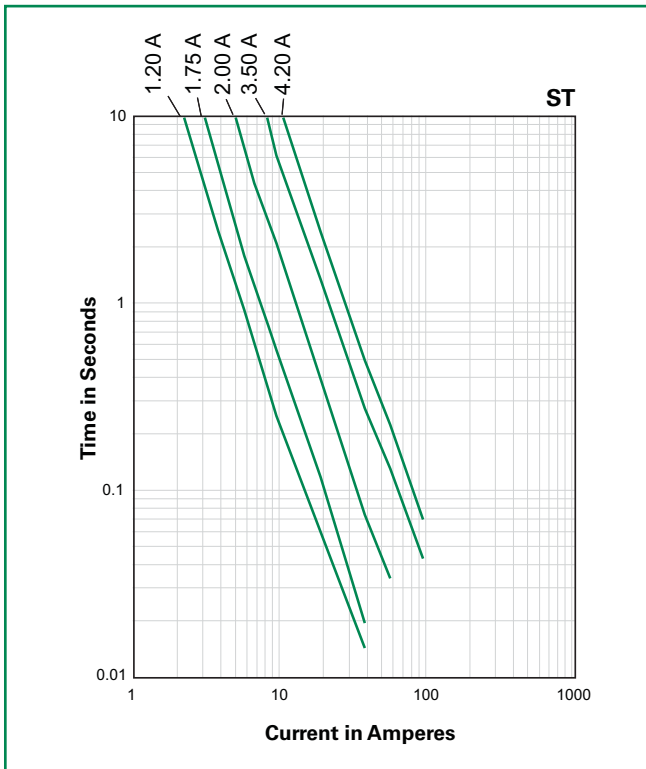
R_{1max} = Maximum resistance of device at 20°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

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

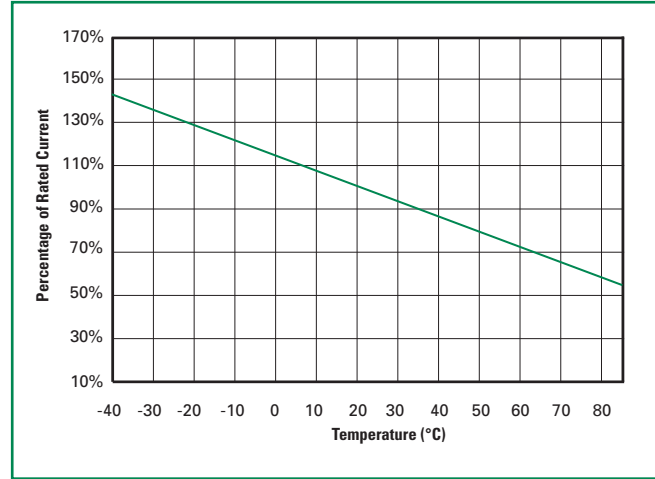
Temperature Rerating

| Part Number | Ambient Operation Temperature | | | | | | | | |
|-------------|-------------------------------|-------|------|------|------|------|------|------|------|
| | -40°C | -20°C | 0°C | 23°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| | 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 |
| 30ST200 | 3.20 | 2.80 | 2.50 | 2.00 | 1.70 | 1.60 | 1.40 | 1.20 | 0.90 |
| 30ST350 | 5.40 | 4.80 | 4.30 | 3.50 | 3.00 | 2.80 | 2.50 | 2.20 | 1.70 |
| 30ST420 | 6.40 | 5.70 | 5.10 | 4.20 | 3.60 | 3.30 | 3.00 | 2.60 | 2.10 |

Average Time Current Curves



Temperature Rerating Curve



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.

Physical Specifications

| | |
|----------------------------|---|
| Lead 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 -/+5% typical resistance change |
| Humidity Aging | +85°C, 85% R.H., 7 days, -/+5% typical resistance change |
| Vibration | MIL-STD-883C, Condition A, No change |

Dimensions

Figure 1

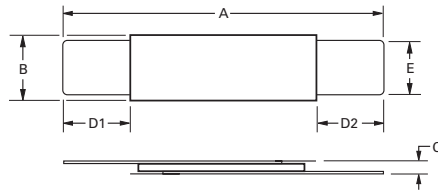
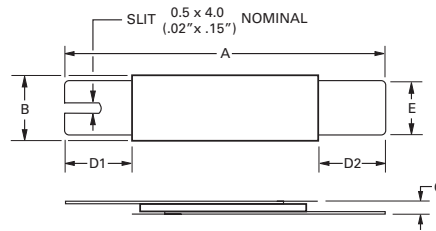


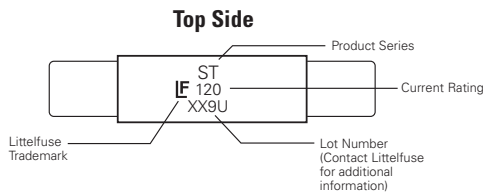
Figure 2

(Items with S at end of part number)

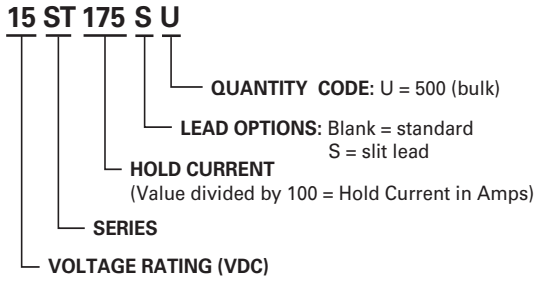


| Part Number | Fig. | A | | | | B | | | | C | | | | D1 | | D2 | | E | | | |
|-------------|------|--------|------|------|------|--------|------|------|------|--------|------|------|------|--------|------|--------|------|--------|------|------|------|
| | | Inches | | mm | | Inches | | mm | | Inches | | mm | | Inches | mm | Inches | mm | Inches | | mm | |
| | | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| 15ST120 | 1 | 0.78 | 0.87 | 19.9 | 22.1 | 0.19 | 0.20 | 4.9 | 5.2 | 0.02 | 0.04 | 0.6 | 1.0 | 0.22 | 5.5 | 0.22 | 5.5 | 0.01 | 0.22 | 3.9 | 4.1 |
| 15ST120S | 2 | 0.78 | 0.87 | 19.9 | 22.1 | 0.19 | 0.20 | 4.9 | 5.2 | 0.02 | 0.04 | 0.6 | 1.0 | 0.22 | 5.5 | 0.22 | 5.5 | 0.01 | 0.22 | 3.9 | 4.1 |
| 15ST175 | 1 | 0.82 | 0.91 | 20.9 | 23.1 | 0.19 | 0.20 | 4.9 | 5.2 | 0.02 | 0.04 | 0.6 | 1.0 | 0.16 | 4.1 | 0.16 | 4.1 | 0.01 | 0.16 | 3.9 | 4.1 |
| 15ST175S | 2 | 0.82 | 0.91 | 20.9 | 23.1 | 0.19 | 0.20 | 4.9 | 5.2 | 0.02 | 0.04 | 0.6 | 1.0 | 0.16 | 4.1 | 0.16 | 4.1 | 0.01 | 0.16 | 3.8 | 4.2 |
| 30ST200 | 1 | 0.84 | 0.92 | 21.3 | 23.4 | 0.40 | 0.43 | 10.2 | 11.0 | 0.02 | 0.04 | 0.5 | 1.1 | 0.20 | 5.0 | 0.20 | 5.0 | 0.19 | 0.21 | 4.8 | 5.4 |
| 30ST350 | 1 | 1.12 | 1.25 | 28.4 | 31.8 | 0.51 | 0.53 | 13.0 | 13.5 | 0.02 | 0.04 | 0.5 | 1.1 | 0.25 | 6.3 | 0.25 | 6.3 | 0.24 | 0.26 | 6.0 | 6.6 |
| 30ST420 | 1 | 1.20 | 1.28 | 30.6 | 32.4 | 0.51 | 0.54 | 12.9 | 13.6 | 0.02 | 0.04 | 0.5 | 1.1 | 0.20 | 5.0 | 0.20 | 5.0 | 0.24 | 0.26 | 6.0 | 6.7 |

Part Marking System



Part Ordering Number System



Packaging

| Part Number | Ordering Number | I_{hold} (A) | I_{hold} Code | Packaging Option | Quantity | Quantity & Packaging Codes |
|-------------|-----------------|----------------|-----------------|------------------|----------|----------------------------|
| 15ST120 | 15ST120U | 1.2 | 120 | Bulk | 500 | U |
| 15ST120S | 15ST120SU | 1.2 | 120 | Bulk | 500 | U |
| 15ST175 | 15ST175U | 1.75 | 175 | Bulk | 500 | U |
| 15ST175S | 15ST175SU | 1.75 | 175 | Bulk | 500 | U |
| 30ST200 | STD200U | 2.00 | 200 | Bulk | 500 | U |
| 30ST350 | STD350U | 3.50 | 350 | Bulk | 500 | U |
| 30ST420 | STD420U | 4.20 | 420 | Bulk | 500 | U |