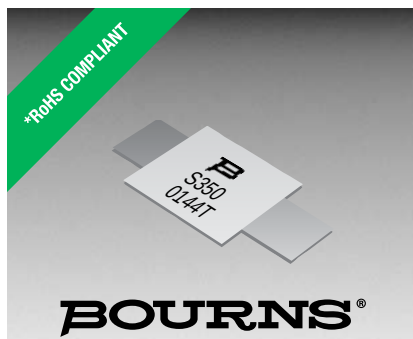




## Features

- Axial leaded
- Fully compatible with current industry standards
- Weldable nickel terminals
- Very low internal resistance
- Agency recognition:  
- RoHS compliant\*

## Additional Information

Click these links for more information:



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## MF-S Series - PTC Resettable Fuses

### Electrical Characteristics

| Model   | V max.<br>Volts | I max.<br>Amps | I <sub>hold</sub>   | I <sub>trip</sub> | Initial Resistance |       | 1 Hour (R <sub>1</sub> )<br>Post-Trip Resistance | Max. Time to Trip   |                     | Tripped Power<br>Dissipation |
|---------|-----------------|----------------|---------------------|-------------------|--------------------|-------|--------------------------------------------------|---------------------|---------------------|------------------------------|
|         |                 |                | Amperes<br>at 23 °C |                   | Ohms<br>at 23 °C   |       | Ohms<br>at 23 °C                                 | Amperes<br>at 23 °C | Seconds<br>at 23 °C | Watts<br>at 23 °C            |
|         |                 |                | Hold                | Trip              | Min.               | Max.  | Max.                                             |                     |                     | Typ.                         |
| MF-S120 | 15              | 100            | 1.20                | 2.70              | 0.085              | 0.160 | 0.220                                            | 6                   | 5.0                 | 1.20                         |
| MF-S150 | 15              | 100            | 1.50                | 3.00              | 0.050              | 0.090 | 0.113                                            | 8                   | 5.0                 | 1.30                         |
| MF-S175 | 15              | 100            | 1.75                | 3.80              | 0.050              | 0.090 | 0.120                                            | 9                   | 4.0                 | 1.50                         |
| MF-S200 | 30              | 100            | 2.00                | 4.40              | 0.030              | 0.060 | 0.080                                            | 10                  | 4.0                 | 1.90                         |
| MF-S350 | 30              | 100            | 3.50                | 6.30              | 0.017              | 0.031 | 0.040                                            | 20                  | 3.0                 | 2.50                         |
| MF-S420 | 30              | 100            | 4.20                | 7.60              | 0.012              | 0.024 | 0.040                                            | 20                  | 6.0                 | 2.90                         |

### Environmental Characteristics

|                                                              |                                                             |
|--------------------------------------------------------------|-------------------------------------------------------------|
| Operating/Storage Temperature .....                          | -40 °C to +85 °C                                            |
| Maximum Device Surface Temperature<br>in Tripped State ..... | 125 °C                                                      |
| Passive Aging .....                                          | +85 °C, 1000 hours..... ±5 % typical resistance change      |
| Humidity Aging .....                                         | +85 °C, 85% R.H. 7 days..... ±5 % typical resistance change |
| Vibration .....                                              | MIL-STD-883C, Method 2007.1..... No change                  |
|                                                              | Condition A                                                 |
| Moisture Sensitivity Level .....                             | 1                                                           |
| ESD Classification (HBM) .....                               | 6                                                           |

### Test Procedures And Requirements For Model MF-S Series

| Test                  | Test Conditions                                                                                                                              | Accept/Reject Criteria                   |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| Visual/Mech. ....     | Verify dimensions and materials .....                                                                                                        | Per MF physical description              |
| Resistance .....      | In still air @ 23 °C .....                                                                                                                   | R <sub>min</sub> ≤ R ≤ R <sub>1max</sub> |
| Time to Trip .....    | At specified current, V <sub>max</sub> , 23 °C .....                                                                                         | T ≤ max. time to trip (seconds)          |
| Hold Current .....    | 30 min. at I <sub>hold</sub> .....                                                                                                           | No trip                                  |
| Trip Cycle Life ..... | V <sub>max</sub> , I <sub>max</sub> , 100 cycles .....                                                                                       | No arcing or burning                     |
| Trip Endurance .....  | V <sub>max</sub> , 48 hours .....                                                                                                            | No arcing or burning                     |
| UL File Number .....  | E174545<br>http://www.ul.com/ Follow link to Online Certificates Directory, then enter UL File No.<br>E174545, or <a href="#">click here</a> |                                          |
| TÜV File Number ..... | R 2057213<br>http://www.tuvdotcom.com/ Follow link to "other certificates", enter File No. 2057213<br>or <a href="#">click here</a>          |                                          |

### Thermal Derating Chart - I<sub>hold</sub>/ I<sub>trip</sub> (Amps)

| Model   | Ambient Operating Temperature |             |             |             |             |             |             |             |             |
|---------|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|         | -40 °C                        | -20 °C      | 0 °C        | 23 °C       | 40 °C       | 50 °C       | 60 °C       | 70 °C       | 85 °C       |
| MF-S120 | 1.90 / 4.28                   | 1.70 / 3.83 | 1.50 / 3.38 | 1.20 / 2.70 | 1.00 / 2.25 | 0.90 / 2.03 | 0.80 / 1.80 | 0.70 / 1.58 | 0.50 / 1.13 |
| MF-S150 | 2.20 / 4.40                   | 2.00 / 4.00 | 1.80 / 3.60 | 1.50 / 3.00 | 1.30 / 2.60 | 1.10 / 2.20 | 1.00 / 2.00 | 0.90 / 1.80 | 0.70 / 1.40 |
| MF-S175 | 2.50 / 5.59                   | 2.30 / 5.14 | 2.00 / 4.47 | 1.70 / 3.80 | 1.50 / 3.35 | 1.30 / 2.91 | 1.20 / 2.68 | 1.10 / 2.46 | 0.90 / 2.01 |
| MF-S200 | 3.20 / 7.04                   | 2.80 / 6.16 | 2.50 / 5.50 | 2.00 / 4.40 | 1.70 / 3.74 | 1.60 / 3.52 | 1.40 / 3.08 | 1.20 / 2.64 | 0.90 / 1.98 |
| MF-S350 | 5.40 / 9.72                   | 4.80 / 8.64 | 4.30 / 7.74 | 3.50 / 6.30 | 3.00 / 5.40 | 2.80 / 5.04 | 2.50 / 4.50 | 2.20 / 3.96 | 1.70 / 3.06 |
| MF-S420 | 6.40 / 11.5                   | 5.70 / 10.3 | 5.10 / 9.23 | 4.20 / 7.60 | 3.60 / 6.51 | 3.30 / 5.97 | 3.00 / 5.43 | 2.60 / 4.70 | 2.10 / 3.80 |



**WARNING**  
Cancer and Reproductive Harm  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.  
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## Applications

- Rechargeable battery pack protection
- Provides overcurrent protection with 125 °C trip temperature

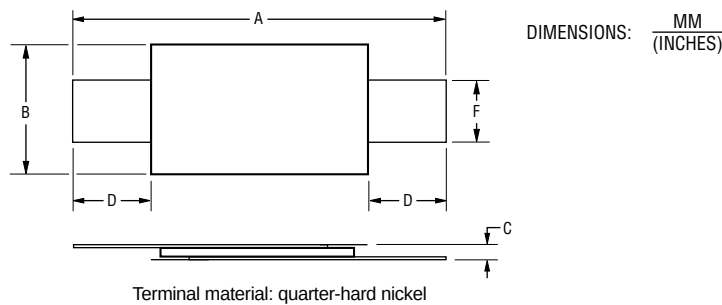
## MF-S Series - PTC Resettable Fuses

**BOURNS®**

### Product Dimensions

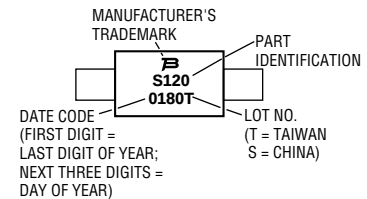
| Model   | A               |                 | B               |                 | C              |                | D              |                | F              |                |
|---------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|         | Min.            | Max.            | Min.            | Max.            | Min.           | Max.           | Min.           | Max.           | Min.           | Max.           |
| MF-S120 | 19.9<br>(0.783) | 22.1<br>(0.870) | 4.9<br>(0.193)  | 5.2<br>(0.205)  | 0.6<br>(0.024) | 1.0<br>(0.039) | 5.5<br>(0.217) | 7.5<br>(0.295) | 3.8<br>(0.150) | 4.1<br>(0.161) |
| MF-S150 | 21.3<br>(0.839) | 23.4<br>(0.921) | 10.2<br>(0.402) | 11.0<br>(0.433) | 0.5<br>(0.020) | 1.1<br>(0.043) | 4.1<br>(0.161) | 5.5<br>(0.217) | 4.8<br>(0.189) | 5.4<br>(0.213) |
| MF-S175 | 20.9<br>(0.823) | 23.1<br>(0.909) | 4.9<br>(0.193)  | 5.2<br>(0.205)  | 0.6<br>(0.024) | 1.0<br>(0.039) | 4.1<br>(0.161) | 5.5<br>(0.217) | 3.8<br>(0.150) | 4.1<br>(0.161) |
| MF-S200 | 21.3<br>(0.839) | 23.4<br>(0.921) | 10.2<br>(0.402) | 11.0<br>(0.433) | 0.5<br>(0.020) | 1.1<br>(0.043) | 5.0<br>(0.197) | 7.6<br>(0.299) | 4.8<br>(0.189) | 5.4<br>(0.213) |
| MF-S350 | 28.4<br>(1.119) | 31.8<br>(1.252) | 13.0<br>(0.512) | 13.5<br>(0.531) | 0.5<br>(0.020) | 1.1<br>(0.043) | 6.3<br>(0.248) | 8.9<br>(0.350) | 6.0<br>(0.236) | 6.6<br>(0.260) |
| MF-S420 | 30.6<br>(1.205) | 32.4<br>(1.276) | 12.9<br>(0.508) | 13.6<br>(0.535) | 0.5<br>(0.020) | 1.1<br>(0.043) | 5.0<br>(0.197) | 7.5<br>(0.295) | 6.0<br>(0.236) | 6.6<br>(0.260) |

Packaging: Bulk - 500 pcs. per bag. Tape and Reel - Consult factory.

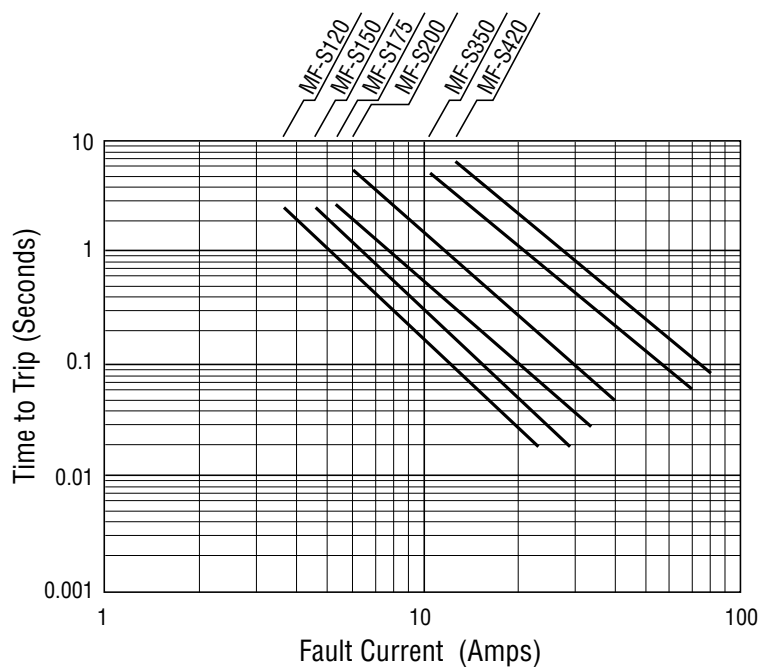


### Typical Part Marking

Represents total content. Layout may vary.



### Typical Time to Trip at 23 °C



### How to Order

MF - S 120

Multifuse® Product Designator

Series S = Axial Leaded "Strap" Component

Hold Current,  $I_{hold}$  120-420 (1.20 Amps - 4.20 Amps)

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MF-S, REV. Q, 07/18

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- Users are responsible for independent and adequate evaluation of Bourns® Multifuse® Polymer PTC devices in the user's application, including the PPTC device characteristics stated in the applicable data sheet.
- Polymer PTC devices must not be allowed to operate beyond their stated maximum ratings. Operation in excess of such maximum ratings could result in damage to the PTC device and possibly lead to electrical arcing and/or fire. Circuits with inductance may generate a voltage above the rated voltage of the polymer PTC device and should be thoroughly evaluated within the user's application during the PTC selection and qualification process.
- Polymer PTC devices are intended to protect against adverse effects of temporary overcurrent or overtemperature conditions up to rated limits and are not intended to serve as protective devices where overcurrent or overvoltage conditions are expected to be repetitive or prolonged.
- In normal operation, polymer PTC devices experience thermal expansion under fault conditions. Thus, a polymer PTC device must be protected against mechanical stress, and must be given adequate clearance within the user's application to accommodate such thermal expansion. Rigid potting materials or fixed housings or coverings that do not provide adequate clearance should be thoroughly examined and tested by the user, as they may result in the malfunction of polymer PTC devices if the thermal expansion is inhibited.
- Exposure to lubricants, silicon-based oils, solvents, gels, electrolytes, acids, and other related or similar materials may adversely affect the performance of polymer PTC devices.
- Aggressive solvents may adversely affect the performance of polymer PTC devices. Conformal coating, encapsulating, potting, molding, and sealing materials may contain aggressive solvents including but not limited to xylene and toluene, which are known to cause adverse effects on the performance of polymer PTCs. Such aggressive solvents must be thoroughly cured or baked to ensure their complete removal from polymer PTCs to minimize the possible adverse effect on the device.
- Recommended storage conditions should be followed at all times. Such conditions can be found on the applicable data sheet and on the Multifuse® Polymer PTC Moisture/Reflow Sensitivity Classification (MSL) note:  
[https://www.bourns.com/docs/RoHS-MSL/msl\\_mf.pdf](https://www.bourns.com/docs/RoHS-MSL/msl_mf.pdf)

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