


## Features

- Axial leaded
- Weldable nickel terminals
- Very low internal resistance
- Operating currents to 9.0 amps
- RoHS compliant\*
- Agency recognition: 

## Applications

- Any application that requires protection at low resistances:
- Rechargeable battery pack protection
  - Cellular phones
  - Laptop computers

## MF-LR Series - PTC Resettable Fuses

### Electrical Characteristics

| Model       | V <sub>max</sub> | I <sub>max</sub> | I <sub>hold</sub> | I <sub>trip</sub> | Initial Resistance |                  | 1 Hour Post-Trip Resistance | Max. Time to Trip |         | Tripped Power Dissipation | Agency Recognition |           |
|-------------|------------------|------------------|-------------------|-------------------|--------------------|------------------|-----------------------------|-------------------|---------|---------------------------|--------------------|-----------|
|             |                  |                  | at 23 °C          |                   | at 23 °C (Ohms)    |                  | at 23 °C (Ohms)             | at 23 °C          |         | at 23 °C (Watts)          | cUL                | TÜV       |
|             | Volts            | Amps             | Amps              | Amps              | R <sub>min</sub>   | R <sub>max</sub> | R <sub>1max</sub>           | Amps              | Seconds | Typ.                      | E174545            | R50410733 |
| MF-LR190    | 15               | 100              | 1.9               | 3.9               | 0.039              | 0.072            | 0.102                       | 9.5               | 5.0     | 1.2                       | ✓                  | ✓         |
| MF-LR260    | 15               | 100              | 2.6               | 5.8               | 0.020              | 0.042            | 0.083                       | 13.0              | 5.0     | 1.3                       | ✓                  | ✓         |
| MF-LR380    | 15               | 100              | 3.8               | 8.3               | 0.013              | 0.026            | 0.037                       | 19.0              | 5.0     | 2.5                       | ✓                  | ✓         |
| MF-LR450    | 16               | 100              | 4.5               | 8.9               | 0.011              | 0.020            | 0.028                       | 22.5              | 5.0     | 1.4                       | ✓                  | ✓         |
| MF-LR550    | 10               | 100              | 5.5               | 10.5              | 0.009              | 0.016            | 0.022                       | 27.5              | 5.0     | 1.4                       | ✓                  | ✓         |
| MF-LR550/20 | 20               | 100              | 5.5               | 10.5              | 0.009              | 0.016            | 0.022                       | 27.5              | 5.0     | 1.4                       | ✓                  | Pending   |
| MF-LR600    | 10               | 100              | 6.0               | 11.7              | 0.007              | 0.014            | 0.019                       | 30.0              | 5.0     | 2.8                       | ✓                  | ✓         |
| MF-LR730    | 10               | 100              | 7.3               | 14.1              | 0.006              | 0.012            | 0.015                       | 30.0              | 5.0     | 3.0                       | ✓                  | ✓         |
| MF-LR730/20 | 20               | 100              | 7.3               | 14.1              | 0.006              | 0.012            | 0.015                       | 30.0              | 5.0     | 3.0                       | ✓                  | Pending   |
| MF-LR900/20 | 20               | 100              | 9.0               | 16.7              | 0.006              | 0.010            | 0.014                       | 45.0              | 5.0     | 3.0                       | ✓                  | Pending   |

### Environmental Characteristics

|                                       |  |
|---------------------------------------|--|
| Operating Temperature.....            | -40 °C to +85 °C   |
| Recommended Storage.....              | +40 °C max. / 70 % RH max.   |
| Passive Aging.....                    | +70 °C, 1000 hours.....±10 % typical resistance change                                   |
| Humidity Aging.....                   | +85 °C, 85% R.H. 7 days.....±10 % typical resistance change                              |
| Vibration.....                        | MIL-STD-883C,.....R <sub>min</sub> ≤ R ≤ R <sub>1max</sub><br>Method 2007.1, Condition A |
| Moisture Sensitivity Level (MSL)..... | <a href="#">See Note</a>   |
| ESD Classification.....               | Class 6 (per AEC-Q200-2, HBM)  |

### Test Procedures and Requirements

| 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                     |



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

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

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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# MF-LR Series - PTC Resettable Fuses

**BOURNS®**

**Thermal Derating Table - I<sub>hold</sub> (Amps)**

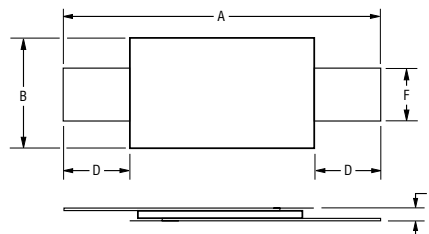
| Model       | Ambient Operating Temperature |        |      |       |       |       |       |       |       |
|-------------|-------------------------------|--------|------|-------|-------|-------|-------|-------|-------|
|             | -40 °C                        | -20 °C | 0 °C | 23 °C | 40 °C | 50 °C | 60 °C | 70 °C | 85 °C |
| MF-LR190    | 2.8                           | 2.5    | 2.3  | 1.9   | 1.6   | 1.5   | 1.4   | 1.2   | 1.0   |
| MF-LR260    | 3.8                           | 3.4    | 3.1  | 2.6   | 2.2   | 2.0   | 1.9   | 1.7   | 1.4   |
| MF-LR380    | 5.5                           | 4.9    | 4.4  | 3.8   | 3.3   | 3.0   | 2.8   | 2.5   | 2.1   |
| MF-LR450    | 6.5                           | 5.8    | 5.3  | 4.5   | 3.9   | 3.6   | 3.3   | 2.9   | 2.5   |
| MF-LR550    | 8.0                           | 7.1    | 6.2  | 5.5   | 4.7   | 4.3   | 4.0   | 3.6   | 3.0   |
| MF-LR550/20 | 8.0                           | 7.1    | 6.2  | 5.5   | 4.7   | 4.3   | 4.0   | 3.6   | 3.0   |
| MF-LR600    | 8.7                           | 7.8    | 7.1  | 6.0   | 5.2   | 4.7   | 4.4   | 3.9   | 3.3   |
| MF-LR730    | 10.5                          | 9.5    | 8.6  | 7.3   | 7.4   | 6.8   | 6.2   | 5.5   | 4.5   |
| MF-LR730/20 | 10.5                          | 9.5    | 8.6  | 7.3   | 7.4   | 6.8   | 6.2   | 5.5   | 4.5   |
| MF-LR900/20 | 12.7                          | 11.4   | 10.0 | 9.0   | 7.5   | 6.8   | 6.2   | 5.5   | 4.5   |

I<sub>trip</sub> is approximately two times I<sub>hold</sub>.

## Product Dimensions

| Model       | A               |                 | B               |                 | C              |                | D              |                | F              |                |
|-------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|             | Min.            | Max.            | Min.            | Max.            | Min.           | Max.           | Min.           | Max.           | Min.           | Max.           |
| MF-LR190    | 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) | 3.9<br>(0.154) | 4.1<br>(0.161) |
| MF-LR260    | 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) | 3.9<br>(0.154) | 4.1<br>(0.161) |
| MF-LR380    | 24.0<br>(0.945) | 26.0<br>(1.024) | 6.9<br>(0.272)  | 7.5<br>(0.295)  | 0.6<br>(0.024) | 1.0<br>(0.039) | 4.1<br>(0.161) | 5.5<br>(0.217) | 4.9<br>(0.193) | 5.1<br>(0.201) |
| MF-LR450    | 24.0<br>(0.945) | 26.0<br>(1.024) | 9.9<br>(0.390)  | 10.5<br>(0.414) | 0.6<br>(0.024) | 1.0<br>(0.039) | 5.3<br>(0.209) | 6.7<br>(0.264) | 5.9<br>(0.232) | 6.1<br>(0.240) |
| MF-LR550    | 35.0<br>(1.378) | 37.0<br>(1.457) | 6.9<br>(0.272)  | 7.5<br>(0.295)  | 0.6<br>(0.024) | 1.0<br>(0.039) | 5.3<br>(0.209) | 6.7<br>(0.264) | 4.9<br>(0.193) | 5.1<br>(0.201) |
| MF-LR550/20 | 35.0<br>(1.378) | 37.0<br>(1.457) | 6.9<br>(0.272)  | 7.5<br>(0.295)  | 0.6<br>(0.024) | 1.0<br>(0.039) | 5.3<br>(0.209) | 6.7<br>(0.264) | 4.9<br>(0.193) | 5.1<br>(0.201) |
| MF-LR600    | 24.0<br>(0.945) | 26.0<br>(1.024) | 14.8<br>(0.583) | 15.9<br>(0.626) | 0.6<br>(0.024) | 1.0<br>(0.039) | 4.1<br>(0.161) | 5.5<br>(0.217) | 5.9<br>(0.232) | 6.1<br>(0.240) |
| MF-LR730    | 28.0<br>(1.102) | 30.0<br>(1.181) | 14.0<br>(0.551) | 15.0<br>(0.590) | 0.6<br>(0.024) | 1.0<br>(0.039) | 4.8<br>(0.189) | 5.7<br>(0.224) | 5.9<br>(0.232) | 6.1<br>(0.240) |
| MF-LR730/20 | 27.1<br>(1.067) | 29.1<br>(1.146) | 13.9<br>(0.547) | 14.5<br>(0.571) | 0.6<br>(0.024) | 1.0<br>(0.039) | 4.1<br>(0.161) | 5.5<br>(0.217) | 5.9<br>(0.232) | 6.1<br>(0.240) |
| MF-LR900/20 | 45.4<br>(1.787) | 47.6<br>(1.874) | 7.9<br>(0.311)  | 8.5<br>(0.335)  | 0.6<br>(0.024) | 1.3<br>(0.051) | 4.6<br>(0.181) | 9.2<br>(0.362) | 5.9<br>(0.232) | 6.1<br>(0.240) |

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$



Specifications are subject to change without notice.

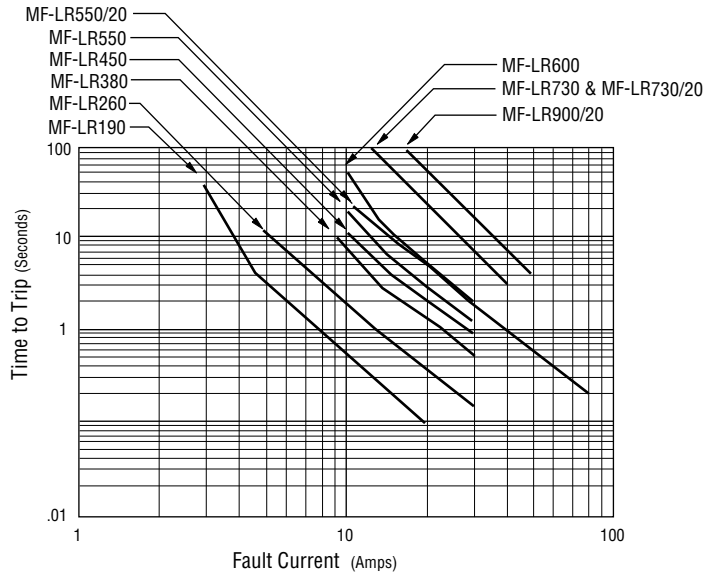
Users should verify actual device performance in their specific applications.

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# MF-LR Series - PTC Resettable Fuses



## Typical Time to Trip at 23 °C

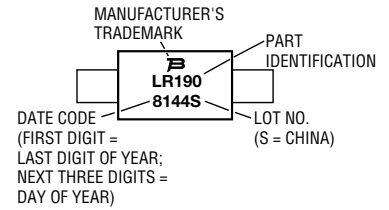


## Packaging Quantity

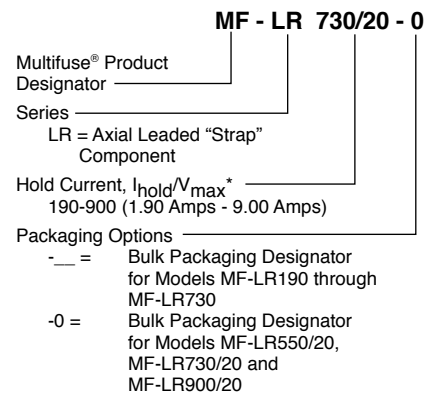
Packaging: Bulk - 500 pcs. per bag

## Typical Part Marking

Represents total content. Layout may vary.



## How to Order



\* $V_{max}$  entry applies only to Models MF-LR550/20, MF-LR730/20 & MF-LR900/20.

**Application Notice**

- 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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