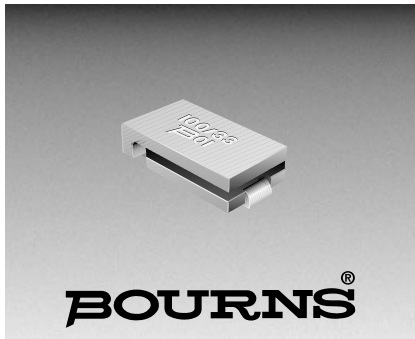




## Features

- Surface Mount Devices
- Fully compatible with current industry standards
- Packaged per EIA 481-2 standard
- Agency recognition:   
- Patents pending

## Applications

Almost anywhere there is a low voltage power supply and a load to be protected, including:

- IEEE 1394
- Computers & peripherals
- General electronics

## MF-SM/33 Series - PTC Resettable Fuses

### Electrical Characteristics

| Model       | V max.<br>Volts | I max.<br>Amps | I <sub>hold</sub> | I <sub>trip</sub> | Resistance        |                    | Max. Time To Trip |                 | Tripped Power Dissipation |
|-------------|-----------------|----------------|-------------------|-------------------|-------------------|--------------------|-------------------|-----------------|---------------------------|
|             |                 |                | Amperes at 23°C   |                   | Ohms at 23°C      |                    | Amperes at 23°C   | Seconds at 23°C | Watts at 23°C             |
|             |                 |                | Hold              | Trip              | R <sub>Min.</sub> | R <sub>1Max.</sub> |                   |                 |                           |
| MF-SM100/33 | 33              | 40             | 1.0               | 2.00              | 0.12              | 0.41               | 8.0               | 0.5             | 1.7                       |
| MF-SM150/33 | 33              | 40             | 1.5               | 3.00              | 0.06              | 0.23               | 8.0               | 5.0             | 1.9                       |

### Environmental Characteristics

Operating/Storage Temperature .....-40°C to +85°C  
 Maximum Device Surface Temperature  
 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  
 Thermal Shock .....MIL-STD-202F, Method 107G, .....±10% typical resistance change  
 +125°C to -55°C, 10 cycles  
 Vibration .....MIL-STD-883C, Method 2007.1, .....No change  
 Condition A

### Test Procedures And Requirements For Model MF-SM/33 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>max</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                    |
| Solderability .....   | MIL-STD-202F, Method 208F .....                        | 95% min. coverage                       |

UL File Number.....E 174545S  
 CSA File Number .....CA 110338  
 TÜV File Number .....R2057213

### Thermal Derating Chart - 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-SM100/33 | 1.66                          | 1.47  | 1.29 | 1.10 | 0.91 | 0.83 | 0.73 | 0.64 | 0.50 |
| MF-SM150/33 | 2.27                          | 2.01  | 1.76 | 1.50 | 1.25 | 1.13 | 1.00 | 0.87 | 0.68 |

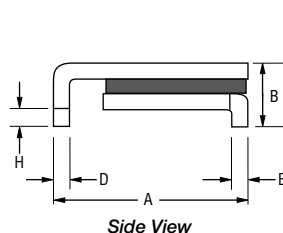
\*I<sub>trip</sub> is approximately two times I<sub>hold</sub>.

# MF-SM/33 Series - PTC Resettable Fuses

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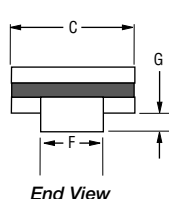
## Product Dimensions

| Model       | A                      |                        | B                      | C                      | D                      |                        | E                      |                        | F                      |                        | G                      |                        | H                      |
|-------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|             | Min.                   | Max.                   | Max.                   | Max.                   | Min.                   | Max.                   | Min.                   | Max.                   | Min.                   | Max.                   | Min.                   | Max.                   | Min.                   |
| MF-SM100/33 | <u>6.73</u><br>(0.265) | <u>7.98</u><br>(0.314) | <u>3.00</u><br>(0.118) | <u>5.44</u><br>(0.214) | <u>0.56</u><br>(0.022) | <u>0.71</u><br>(0.028) | <u>0.56</u><br>(0.022) | <u>0.71</u><br>(0.028) | <u>2.16</u><br>(0.085) | <u>2.41</u><br>(0.095) | <u>0.66</u><br>(0.026) | <u>1.37</u><br>(0.054) | <u>0.43</u><br>(0.017) |
| MF-SM150/33 | <u>8.00</u><br>(0.315) | <u>9.50</u><br>(0.374) | <u>3.00</u><br>(0.118) | <u>6.71</u><br>(0.264) | <u>0.56</u><br>(0.022) | <u>0.71</u><br>(0.028) | <u>0.56</u><br>(0.022) | <u>0.71</u><br>(0.028) | <u>3.68</u><br>(0.145) | <u>3.94</u><br>(0.155) | <u>0.66</u><br>(0.026) | <u>1.37</u><br>(0.054) | <u>0.43</u><br>(0.017) |



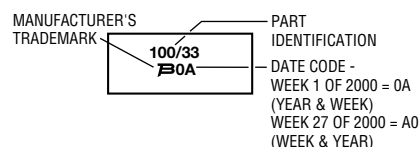
DIMENSIONS =  $\frac{\text{MM}}{(\text{INCHES})}$

Terminal material:  
Tin-plated brass

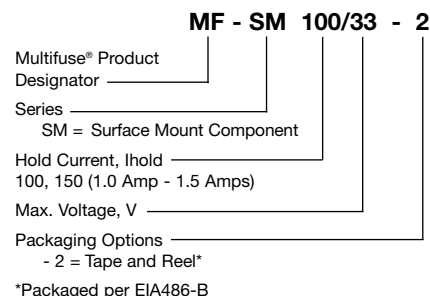


## Typical Part Marking

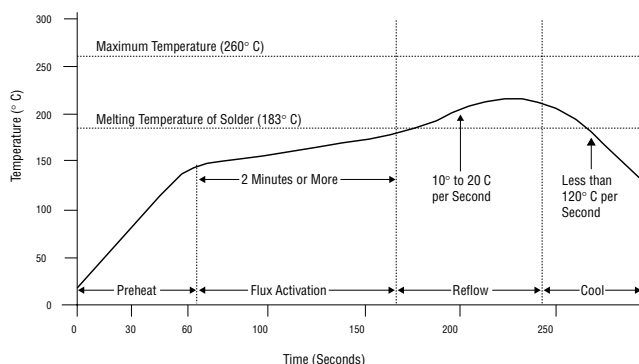
Represents total content. Layout may vary.



## How to Order



## Solder Reflow Recommendations



### Solder reflow

- Recommended reflow methods: IR, vapor phase oven, hot air oven.
- Devices are not designed to be wave soldered to the bottom side of the board.
- Gluing the devices is not recommended.
- Recommended maximum paste thickness is 0.25 mm (.010 inch).
- Devices can be cleaned using standard industry methods and solvents.

### Note:

- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

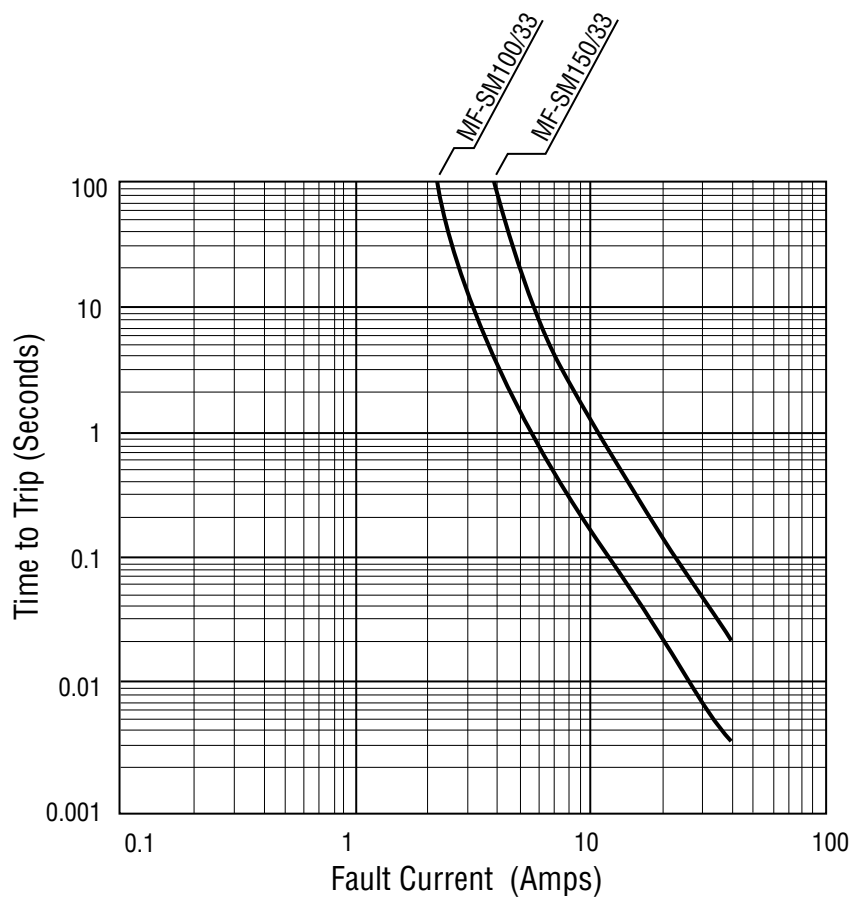
### Rework

- A device should not be reworked.

## MF-SM/33 Series - PTC Resettable Fuses

**BOURNS®**

Typical Time to Trip at 23°C



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