



## Features

- Axial leaded
- Fully compatible with current industry standards
- Weldable nickel terminals
- Very low internal resistance
- Low switching temperature
- 100% lead-free

## Applications

- Any application that requires protection at low resistances
- Rechargeable battery packs; designed for NiMH and Li-Ion chemical characteristics
- Cellular phones
- Laptop computers

## MF-VS Series - PTC Resettable Fuses

### Electrical Characteristics

NEW!

| Model         | V max.<br>Volts | I max.<br>Amps | $I_{hold}$      | $I_{trip}$ | Initial Resistance |       |       | 1 Hour ( $R_1$ )<br>Post-Trip Resistance | Max. Time To Trip |                 | Tripped Power Dissipation |
|---------------|-----------------|----------------|-----------------|------------|--------------------|-------|-------|------------------------------------------|-------------------|-----------------|---------------------------|
|               |                 |                | Amperes At 23°C |            | Ohms At 23°C       |       |       | Ohms At 23°C                             | Amperes At 23°C   | Seconds At 23°C | Watts At 23°C             |
|               |                 |                | Hold            | Trip       | Min.               | Max.  | Typ.  | Max.                                     |                   |                 |                           |
| MF-VS170      | 16              | 100            | 1.7             | 3.4        | 0.030              | 0.052 | 0.040 | 0.105                                    | 8.5               | 3.0             | 1.4                       |
| MF-VS210      | 16              | 100            | 2.1             | 4.7        | 0.018              | 0.030 | 0.022 | 0.060                                    | 10.0              | 5.0             | 1.5                       |
| NEW! MF-VS240 | 16              | 100            | 2.4             | 5.9        | 0.014              | 0.026 | 0.020 | 0.052                                    | 12.0              | 6.0             | 1.9                       |

### Environmental Characteristics

Operating/Storage Temperature .....-40°C to +85°C  
 Maximum Device Surface Temperature  
 in Tripped State .....125°C  
 Passive Aging .....+60°C, 1000 hours .....±10% typical resistance change  
 Humidity Aging .....+60°C, 85% R.H.1000 hours .....±10% typical resistance change  
 Thermal Shock .....MIL-STD-202F, Method 107G .....±5% typical resistance change  
 +85°C to -40°C, 10 times  
 Vibration .....MIL-STD-883C, .....No change  
 Condition A

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

| Test                  | Test Conditions                              | Accept/Reject Criteria                      |
|-----------------------|----------------------------------------------|---------------------------------------------|
| Visual/Mech. ....     | Verify dimensions and materials.....         | Per MF physical description                 |
| Resistance .....      | In still air @ 23°C .....                    | $R_{min} \leq R \leq R_{max}$               |
| Time to Trip .....    | At specified current, $V_{max}$ , 23°C ..... | $T \leq \text{max. time to trip (seconds)}$ |
| Hold Current .....    | 30 min. at $I_{hold}$ .....                  | No trip                                     |
| Trip Cycle Life ..... | $V_{max}$ , $I_{max}$ , 100 cycles .....     | No arcing or burning                        |
| Trip Endurance.....   | $V_{max}$ , 48 hours .....                   | No arcing or burning                        |
| UL File Number .....  | E 174545S                                    |                                             |
| CSA File Number ..... | CA 110338                                    |                                             |
| TÜV File Number ..... | R2057213                                     |                                             |

### Thermal Derating Chart - $I_{hold}$ (Amps)

NEW!

| Model         | Ambient Operating Temperature |       |     |      |      |      |      |      |      |
|---------------|-------------------------------|-------|-----|------|------|------|------|------|------|
|               | -40°C                         | -20°C | 0°C | 23°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| MF-VS170      | 3.2                           | 2.7   | 2.2 | 1.7  | 1.3  | 1.1  | 0.8  | 0.6  | 0.1  |
| MF-VS210      | 4.1                           | 3.5   | 2.9 | 2.1  | 1.6  | 1.3  | 1.0  | 0.7  | 0.1  |
| NEW! MF-VS240 | 4.2                           | 3.6   | 3.0 | 2.4  | 1.9  | 1.5  | 1.2  | 0.8  | 0.1  |

\* $I_{trip}$  is approximately two times  $I_{hold}$ .



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## Additional Features

- Patents pending

# MF-VS Series - PTC Resettable Fuses

**BOURNS®**

## Product Dimensions

| Model                 | A               |                 | B              |                | C              |                | D              |                | F              |                | Pkg. Style |
|-----------------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------|
|                       | Min.            | Max.            | Min.           | Max.           | Min.           | Max.           | Min.           | Max.           | Min.           | Max.           |            |
| MF-VS170              | 16.0<br>(0.630) | 18.0<br>(0.709) | 4.9<br>(0.193) | 5.5<br>(0.217) | 0.6<br>(0.024) | 0.9<br>(0.035) | 4.1<br>(0.161) | 5.8<br>(0.228) | 3.9<br>(0.154) | 4.1<br>(0.161) | Std.       |
| MF-VS170S             | 16.0<br>(0.630) | 18.0<br>(0.709) | 4.9<br>(0.193) | 5.5<br>(0.217) | 0.6<br>(0.024) | 0.9<br>(0.035) | 4.1<br>(0.161) | 5.8<br>(0.228) | 3.9<br>(0.154) | 4.1<br>(0.161) | Std.       |
| MF-VS210              | 20.9<br>(0.823) | 23.1<br>(0.909) | 4.9<br>(0.193) | 5.5<br>(0.217) | 0.6<br>(0.024) | 0.9<br>(0.035) | 4.1<br>(0.161) | 5.8<br>(0.228) | 3.9<br>(0.154) | 4.1<br>(0.161) | Std.       |
| MF-VS210L             | 24.0<br>(0.945) | 26.5<br>(1.043) | 4.9<br>(0.193) | 5.5<br>(0.217) | 0.6<br>(0.024) | 0.9<br>(0.035) | 5.0<br>(0.197) | 7.1<br>(0.280) | 3.9<br>(0.154) | 4.1<br>(0.161) | Std.       |
| MF-VS210S             | 20.9<br>(0.823) | 23.1<br>(0.909) | 4.9<br>(0.193) | 5.5<br>(0.217) | 0.6<br>(0.024) | 0.9<br>(0.035) | 4.1<br>(0.161) | 5.8<br>(0.228) | 3.9<br>(0.154) | 4.1<br>(0.161) | S          |
| <b>NEW!</b> MF-VS240  | 24.0<br>(0.945) | 26.2<br>(1.031) | 4.9<br>(0.193) | 5.5<br>(0.217) | 0.6<br>(0.024) | 0.9<br>(0.035) | 4.1<br>(0.161) | 5.8<br>(0.228) | 3.9<br>(0.154) | 4.1<br>(0.161) | Std.       |
| <b>NEW!</b> MF-VS240S | 24.0<br>(0.945) | 26.2<br>(1.031) | 4.9<br>(0.193) | 5.5<br>(0.217) | 0.6<br>(0.024) | 0.9<br>(0.035) | 4.1<br>(0.161) | 5.8<br>(0.228) | 3.9<br>(0.154) | 4.1<br>(0.161) | S          |

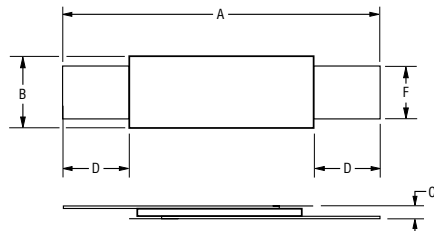
Packaging: Bulk - 500 pcs. per bag. Tape and Reel - Consult factory.

Leads: 1/4 Hardened Nickel 0.125mm (.005") nom.

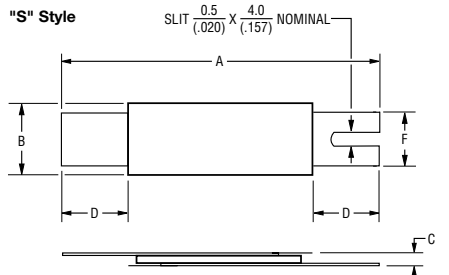
DIMENSIONS =  $\frac{\text{MM}}{(\text{INCHES})}$

NOTE: All "S" style models available with 1 or 2 slots. The dimensions and shape of the leads can be modified to suit the battery pack design. All models are available without insulation wrapping.

### Standard Style

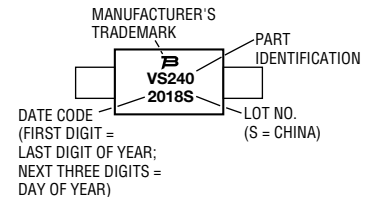


### "S" Style



### Typical Part Marking

Represents total content. Layout may vary.



## How To Order

**MF - VS 240**

Multifuse® Product Designator

Series VS = Axial Leaded "Strap" Component

Hold Current,  $I_{\text{hold}}$  170-240 (1.7 Amps - 2.4 Amps)

Lead Option S = Slotted Lead Option (one side) SS = Slotted Lead Option (two sides)

Longer Lead Option L = Longer Leads

Insulating Option U = Non-Insulated Option

Packaging Options 0 = Bulk Packaging 2 = Tape and Reel\* (Consult factory)

\*Packaged per EIA 486-B

## Typical Time to Trip at 23°C

