



Features

- Axial leaded
- Fully compatible with current industry standards
- Weldable nickel terminals
- Very low internal resistance
- Low switching temperature
- RoHS compliant*, 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

| Model | V max. Volts | I max. Amps | I_{hold} | I_{trip} | Initial Resistance | | | 1 Hour (R_1) 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. | | | Typ. |
| 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 |
| 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, Condition A No change |

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 | $R_{min} \leq R \leq R_{1max}$ |
| Time to Trip | At specified current, V_{max} , 23 °C | $T \leq$ 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)

| 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 |
| 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} .

Additional Features

- Patents pending

MF-VS Series - PTC Resettable Fuses



Product Dimensions

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

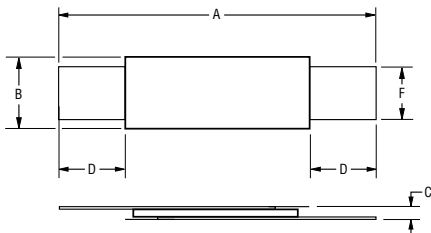
Packaging: Bulk - 500 pcs. per bag. Tape and Reel - Consult factory.

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

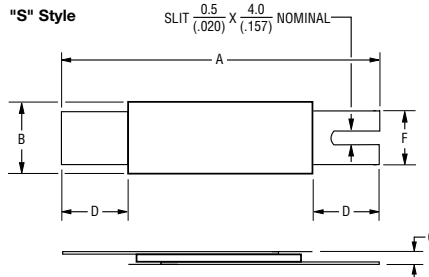
DIMENSIONS = $\frac{\text{MM}}{\text{(INCHES)}}$

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

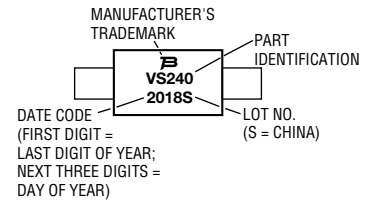


"S" Style

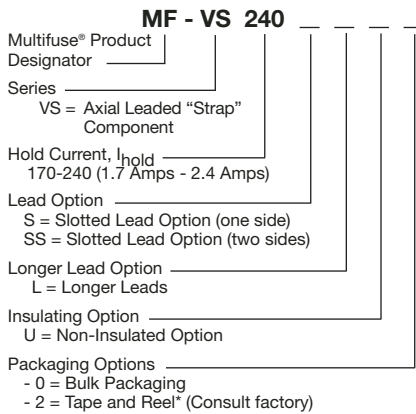


Typical Part Marking

Represents total content. Layout may vary.

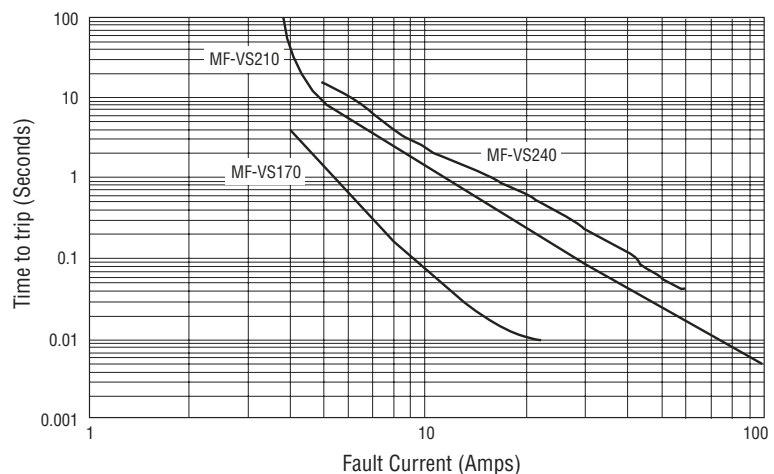


How To Order



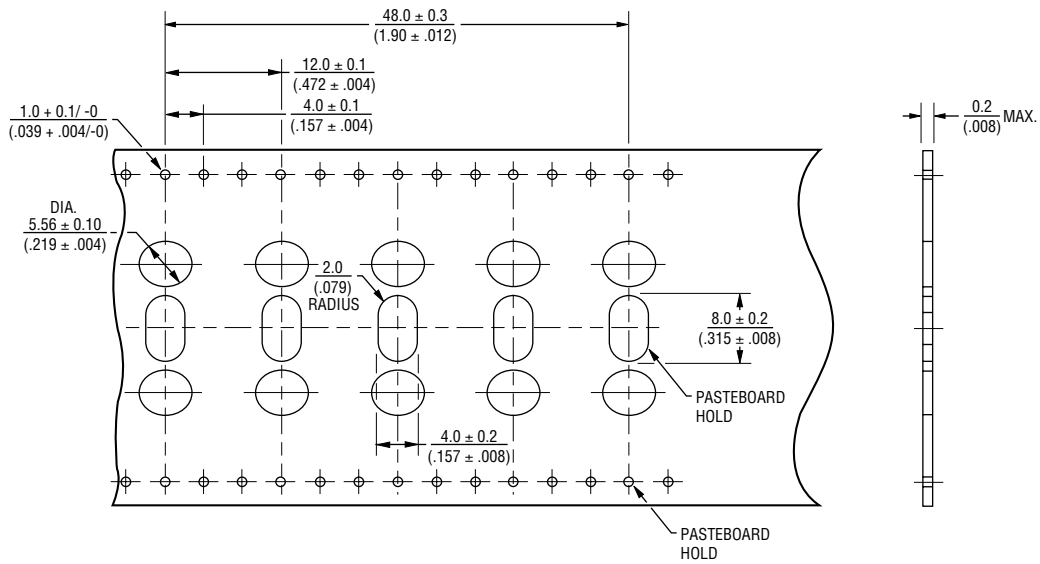
*Packaged per EIA 486-B

Typical Time to Trip at 23 °C



MF-S, MF-LS, MF-LR and MF-VS Series Tape and Reel Specifications **BOURNS®**

Taped Component Dimensions



Reel Dimensions

