



Features

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

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	$T \leq \text{max. time to trip (seconds)}$
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 NumberE 174545S
 CSA File NumberCA 110338
 TÜV File NumberR2057213

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

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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

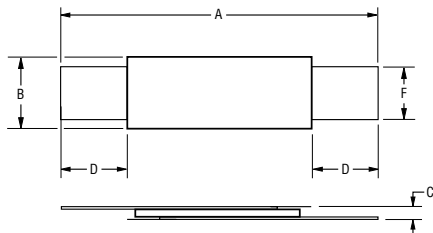
Packaging: Bulk - 500 pcs. per bag. Tape and Reel - Consult factory.

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

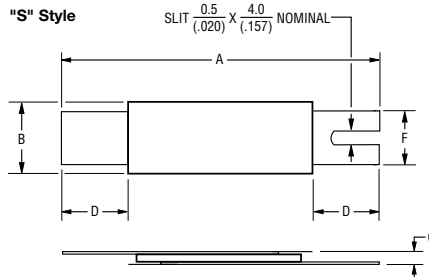
DIMENSIONS = $\frac{\text{MM}}{\text{(INCHES)}}$

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

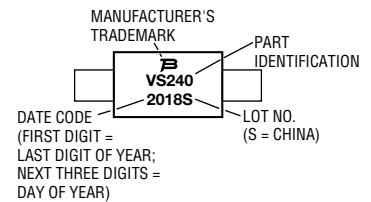


"S" Style

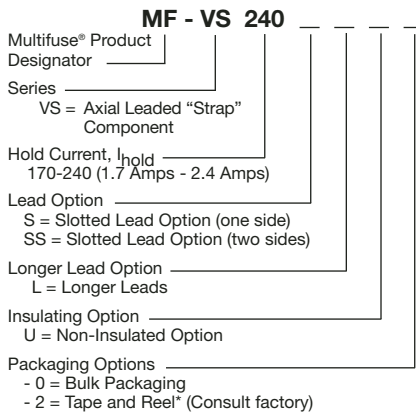


Typical Part Marking

Represents total content. Layout may vary.

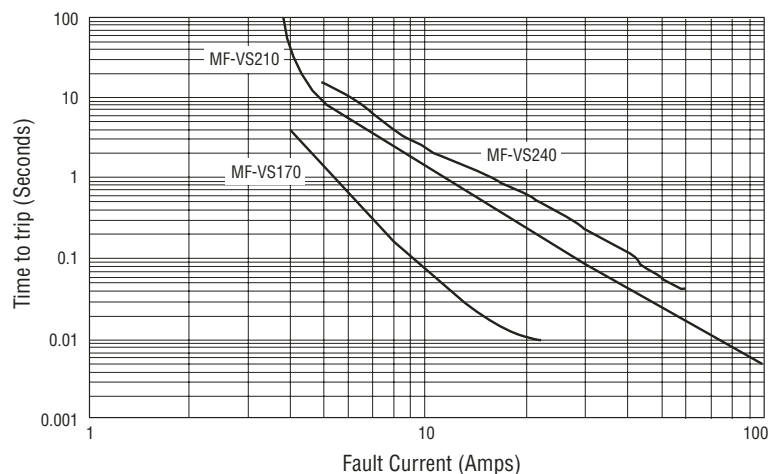


How To Order



*Packaged per EIA 486-B

Typical Time to Trip at 23 °C

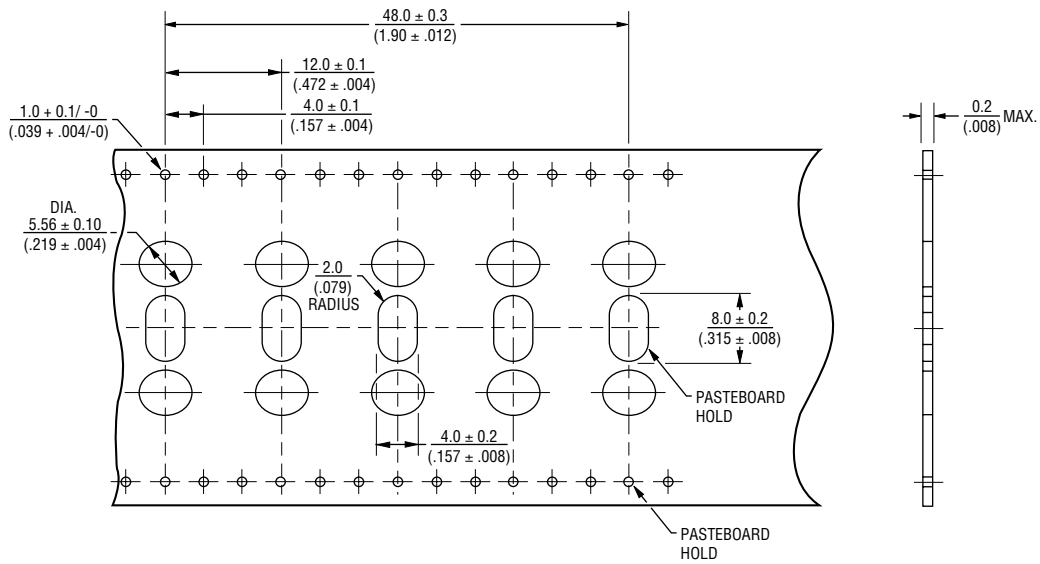


MF-VS SERIES, REV. J, 11/04

Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.

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

Taped Component Dimensions



Reel Dimensions

