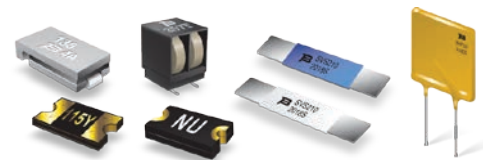


Bourns® Multifuse® PPTC Resettable Fuses

Product Selection Worksheet

Selecting the appropriate Multifuse® Polymer PTC Resettable Fuse for your application is easy - *just follow these simple steps:*



Step 1. What is the preferred product form factor?

Radial Through-Hole – refer to the following data sheets:



- [MF-R Series](#)
- [MF-RX/72 Series](#)
- [MF-RX/250 Series](#) for telecom applications
- [MF-RHT Series](#) for high temperature applications
- [MF-R/90 Series](#) for telecom applications
- [MF-R/600 Series](#) for telecom applications
- [MF-RG Series](#) for automotive applications
- [MF-RM Series](#) for AC power applications

Surface Mount – refer to the following data sheets:



- [MF-FSMF Series](#) (0603)
- [MF-PSMF Series](#) (0805)
- [MF-NSMF Series](#) (1206)
- [MF-USMF Series](#) (1210)
- [MF-MSMF Series](#) (1812)
- [MF-SMDF Series](#) (2018)
- [MF-LSMF Series](#) (2920)
- [MF-PSHT Series](#) (0805) for automotive applications
- [MF-NSHT Series](#) (1206) for automotive applications
- [MF-USHT Series](#) (1210) for automotive applications
- [MF-PSML Series](#) (0805) for extra low resistance application
- [MF-NSML Series](#) (1206) for extra low resistance application
- [MF-USML Series](#) (1210) for extra low resistance application
- [MF-SM Series](#)
- [MF-SMHT Series](#) for automotive applications
- [MF-SM/250 Series](#) for telecom applications
- [MF-SM/250V Series](#) for telecom applications
- [MF-SD/250 Series](#) for dual package telecom applications

Strap (typically for battery packs) – refer to the following data sheets:



- [MF-S Series](#)
- [MF-LS Series](#)
- [MF-SVS Series](#)
- [MF-VS Series](#)
- [MF-VS Narrow Body Series](#)
- [MF-LR Series](#)

Step 2. What is the normal operating current of the circuit?

(This is the equivalent of the I_{hold} specification of the Multifuse® Polymer PTC device.)

Hint: Select a Multifuse® Polymer PTC device with an I_{hold} greater than the operating current.

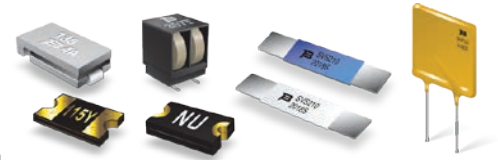
For example, if a customer wants a surface mount PTC device (e.g. one of the MF-MSMF models) and has an operating current of 900 mA, the MF-MSMF110 would be a suitable model as the I_{hold} of 1.1 A is greater than 900 mA.

Model	V max. Volts	I max. Amps	I_{hold}	I_{trip}	Resistance		Max. Time To Trip		Tripped Power Dissipation
			Amperes at 23 °C		Ohms at 23 °C		Amperes at	Seconds at	Watts at 23 °C
			Hold	Trip	RMin.	R1Max.	23 °C	23 °C	Typ.
MF-MSMF010	60.0	40	0.10	0.30	0.70	15.00	0.5	1.50	0.8
MF-MSMF014	60.0	40	0.14	0.34	0.40	6.50	1.5	0.15	0.8
MF-MSMF020	30.0	80	0.20	0.40	0.40	6.50	6.0	0.06	0.8
MF-MSMF030	30.0	10	0.30	0.60	0.40	6.50	8.0	0.10	0.8
MF-MSMF050	15.0	100	0.50	1.00	0.15	1.00	8.0	0.15	0.8
MF-MSMF075	13.2	100	0.75	1.50	0.11	0.45	8.0	0.20	0.8
MF-MSMF110	6.0	100	1.10	2.20	0.04	0.21	8.0	0.30	0.8
MF-MSMF125	6.0	100	1.25	2.50	0.035	0.14	8.0	0.40	0.8
MF-MSMF150	6.0	100	1.50	3.00	0.03	0.120	8.0	0.5	0.8

I_{hold} of 1.1 A is greater than operating current of 900 mA

Bourns® Multifuse® PPTC Resettable Fuses

Product Selection Worksheet



Step 3. What is the maximum circuit voltage?

Hint: Select a Multifuse® Polymer PTC device with a V_{max} greater than the circuit voltage.

For example, if a customer wants a surface mount PTC (e.g. one of the MF-MSMF models) and

has a maximum circuit voltage of 5 V, the MF-MSMF110 would be a suitable model as the V_{max} of 6 V is greater than 5 V.

Model	V max. Volts	I max. Amps	I_{hold}	I_{trip}	Resistance		Max. Time To Trip		Tripped Power Dissipation
			Amperes at 23 °C		Ohms at 23 °C		Amperes at	Seconds at	Watts at 23 °C
			Hold	Trip	RMin.	R1Max.	23 °C	23 °C	Typ.
MF-MSMF010	60.0	40	0.10	0.30	0.70	15.00	0.5	1.50	0.8
MF-MSMF014	60.0	40	0.11	0.34	0.40	6.50	1.5	0.15	0.8
MF-MSMF020	30.0	80	0.11	0.34	0.40	6.00	6.0	0.06	0.8
MF-MSMF030	30.0	10	0.11	0.34	0.30	3.00	8.0	0.10	0.8
MF-MSMF050	15.0	100	0.50	1.00	0.15	1.00	8.0	0.15	0.8
MF-MSMF075	13.2	100	0.75	1.50	0.11	0.45	8.0	0.20	0.8
MF-MSMF110	6.0	100	1.10	2.20	0.04	0.21	8.0	0.30	0.8
MF-MSMF125	6.0	100	1.25	2.50	0.035	0.14	8.0	0.40	0.8
MF-MSMF150	6.0	100	1.50	3.00	0.03	0.120	8.0	0.5	0.8

V_{max} of 6 V is greater than circuit voltage of 5 V

Step 4. What is the ambient temperature of the circuit?

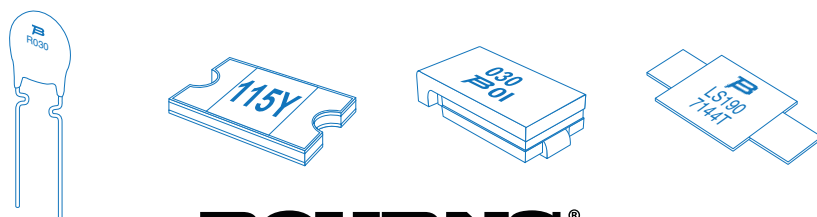
Hint: Refer to the thermal derating chart of the data sheet and select a Multifuse® Polymer PTC device with an I_{hold} greater than the operating current at that ambient temperature.

For example, if a customer wants a surface mount PTC device (e.g. one of the MF-MSMF models) and has an operating current of 900 mA with a circuit ambient temperature of 40 °C, then the MF-MSMF110 would still be a suitable model as the I_{hold} of 950 mA at 40 °C is greater than the operating current of 900 mA.

Model	Ambient Operating Temperature								
	-40 °C	-20 °C	0 °C	23 °C	40 °C	50 °C	60 °C	70 °C	85 °C
MF-MSMF010	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
MF-MSMF014	0.23	0.19	0.17	0.14	0.12	0.10	0.09	0.08	0.06
MF-MSMF020	0.29	0.26	0.23	0.20	0.17	0.15	0.12	0.10	0.10
MF-MSMF030	0.44	0.39	0.35	0.30	0.26	0.23	0.18	0.15	0.15
MF-MSMF050	0.77	0.68	0.59	0.50	0.44	0.40	0.33	0.29	0.29
MF-MSMF075	1.15	1.01	0.88	0.75	0.65	0.60	0.55	0.49	0.43
MF-MSMF110	1.59	1.43	1.26	1.10	0.95	0.87	0.80	0.71	0.60
MF-MSMF125	1.80	1.63	1.43	1.25	1.08	0.99	0.91	0.81	0.68
MF-MSMF150	2.17	1.95	1.72	1.50	1.30	1.18	1.09	0.97	0.82

I_{hold} of 950 mA is greater than operating current of 900 mA

Step 5. Request samples from your nearest Bourns representative and start testing in your application.



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