





## Features

- Small footprint size (0805) and low profile for space-constrained mobile applications
- Ultra-low resistance
- Symmetrical design
- Surface mount packaging for automated assembly
- RoHS compliant\* and halogen free\*\*
- Agency recognition:  

## Applications

- USB port protection - USB 2.0, 3.0 & OTG
- HDMI 1.4 Source protection
- PC motherboards - Plug & Play protection
- Mobile phones - Battery & port protection
- PDAs / digital cameras
- Bluetooth® earphone power protection
- Game console port protection

# MF-PSML Series - Low Ohmic PTC Resettable Fuses

## Electrical Characteristics

Model	V max. Volts	I max. 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>			Typ.
MF-PSML110	6	50	1.10	1.80	0.0175	0.130	8.00	0.3	0.6
MF-PSML150	6	50	1.50	3.00	0.015	0.065	8.00	0.5	0.6
MF-PSML175	6	50	1.75	3.50	0.005	0.055	8.00	0.6	0.6
MF-PSML200	6	50	2.00	4.00	0.005	0.045	8.00	1.0	0.6
MF-PSML260	6	50	2.60	5.00	0.003	0.035	8.00	4.0	0.6
MF-PSML300	6	50	3.00	6.00	0.003	0.030	8.00	5.0	0.6
MF-PSML350***	6	50	3.50	7.00	0.003	0.025	8.00	5.0	0.6

\*\*\* TÜV approval pending.

## Environmental Characteristics

Operating Temperature.....	-40 °C to +85 °C	
Passive Aging.....	+85 °C, 1000 hours.....	±10 % typical resistance change
Humidity Aging.....	+85 °C, 85 % R.H. 100 hours.....	±15 % typical resistance change
Thermal Shock.....	+85 °C to -40 °C, 20 times.....	±30 % typical resistance change
Solvent Resistance.....	MIL-STD-202, Method 215.....	No change
Vibration.....	MIL-STD-883C, Method 2007.1, Condition A.....	No change
Moisture Sensitivity Level (MSL).....	Level 1.....	
ESD Classification - HBM.....	Class 6.....	

## Test Procedures And Requirements For Model MF-PSML 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>1max</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.....	ANSI/J-STD-002.....	95 % min. coverage
UL File Number.....	E174545 <a href="http://www.ul.com/">http://www.ul.com/</a> Follow link to Certifications, then UL File No., enter E174545	
TÜV Certificate Number.....	R 50171531 <a href="http://www.tuvdotcom.com/">http://www.tuvdotcom.com/</a> Follow link to "other certificates", enter File No. 50171531	

\* RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

\*\*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

Specifications are subject to change without notice.

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# MF-PSML Series - Low Ohmic PTC Resettable Fuses

# BOURNS®

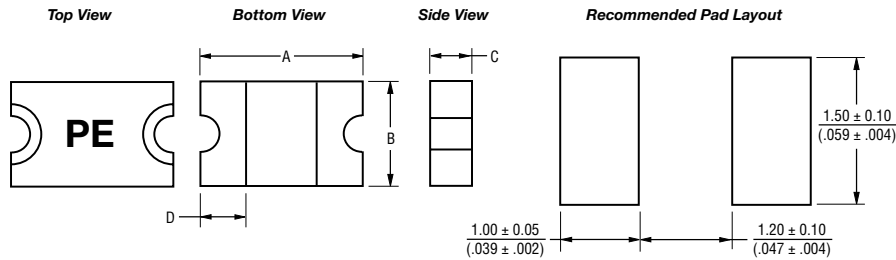
## Product Dimensions

Model	A		B		C		D
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
MF-PSML110	$\frac{2.00}{(0.079)}$	$\frac{2.30}{(0.091)}$	$\frac{1.20}{(0.047)}$	$\frac{1.50}{(0.059)}$	$\frac{0.30}{(0.012)}$	$\frac{0.60}{(0.024)}$	$\frac{0.20}{(0.008)}$
MF-PSML150							
MF-PSML175							
MF-PSML200							
MF-PSML260	$\frac{2.00}{(0.079)}$	$\frac{2.30}{(0.091)}$	$\frac{1.20}{(0.047)}$	$\frac{1.50}{(0.059)}$	$\frac{0.45}{(0.018)}$	$\frac{0.80}{(0.031)}$	$\frac{0.20}{(0.008)}$
MF-PSML300							
MF-PSML350							

**Packaging:**

MF-PSML110~MF-PSML200 = 6000 pcs. per reel  
 MF-PSML260~MF-PSML350 = 4500 pcs. per reel

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



**Terminal material:**  
 Nickel/gold plated.

**Termination pad solderability:**  
 Standard Au finish:  
 Meets ANSI/J-STD-002 Category 2.

**Recommended Storage:**  
 40 °C max./70 % RH max.

## 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-PSML110	1.93	1.65	1.37	1.10	0.83	0.69	0.55	0.41	0.31
MF-PSML150	2.37	2.07	1.80	1.50	1.25	1.08	0.93	0.74	0.50
MF-PSML175	2.57	2.33	2.07	1.75	1.49	1.36	1.24	1.00	0.91
MF-PSML200	2.94	2.66	2.36	2.00	1.70	1.55	1.42	1.14	1.04
MF-PSML260	3.82	3.46	3.07	2.60	2.21	2.02	1.85	1.48	1.35
MF-PSML300	4.41	3.99	3.54	3.00	2.55	2.33	2.13	1.71	1.56
MF-PSML350	5.51	4.66	4.13	3.50	2.98	2.71	2.49	2.00	1.82

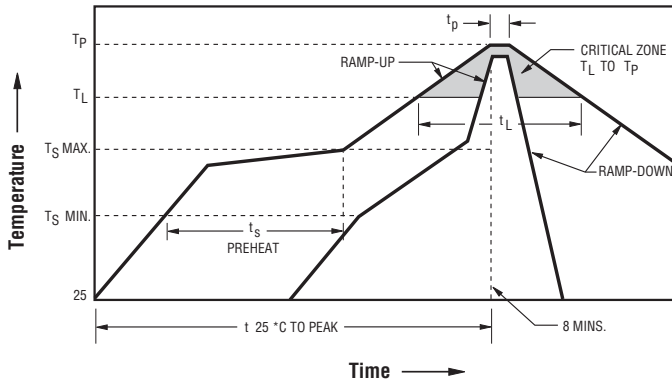
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# MF-PSML Series - Low Ohmic PTC Resettable Fuses



## Solder Reflow Recommendations



### Notes:

- MF-PSML models cannot be wave soldered or hand soldered. Please contact Bourns for soldering recommendations.
- All temperatures refer to topside of the package, measured on the package body surface.
- If reflow temperatures exceed the recommended profile, devices may not meet the published specifications.
- Compatible with Pb and Pb-free solder reflow profiles.
- Excess solder may cause a short circuit, especially during hand soldering. Please refer to the Multifuse® Polymer PTC Soldering Recommendation guidelines.
- Designed for single solder reflow operations.

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate ( $T_{S_{max}}$ to $T_p$ )	3 °C / second max.
PREHEAT: Temperature Min. ( $T_{S_{min}}$ ) Temperature Max. ( $T_{S_{max}}$ ) Time ( $t_{s_{min}}$ to $t_{s_{max}}$ )	150 °C 200 °C 60~180 seconds
TIME MAINTAINED ABOVE: Temperature ( $T_L$ ) Time ( $t_L$ )	217 °C 60~150 seconds
Peak / Classification Temperature ( $T_p$ )	260 °C
Time within 5 °C of Actual Peak Temperature ( $t_p$ )	20~40 seconds
Ramp-Down Rate	6 °C / second max.
Time within 25 °C to Peak Temperature	8 minutes max.

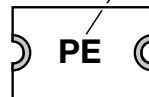
### How to Order

**MF - PSML 110 - 2**

Multifuse® Product Designator \_\_\_\_\_  
 Series \_\_\_\_\_  
 PSML = 0805 Surface Mount Component  
 Hold Current,  $I_{hold}$  \_\_\_\_\_  
 110 - 350 (1.10 Amps - 3.50 Amps)  
 Packaging \_\_\_\_\_  
 Packaged per EIA 481-1  
 -2 = Tape and Reel

### Typical Part Marking

Represents total content. Layout may vary.



PART IDENTIFICATION:  
 MF-PSML110 = PE  
 MF-PSML150 = PG  
 MF-PSML175 = PH  
 MF-PSML200 = PJ  
 MF-PSML260 = PN  
 MF-PSML300 = PP  
 MF-PSML350 = PS

BIWEEKLY DATE CODE WILL APPEAR ON THE PACKAGING LABEL:  
 WEEK 1 AND 2 = A  
 WEEK 51 AND 52 = Z



### Asia-Pacific:

Tel: +886-2 2562-4117  
 Email: asiacus@bourns.com

### Europe:

Tel: +36 88 520 390  
 Email: eurocus@bourns.com

### The Americas:

Tel: +1-951 781-5500  
 Email: americus@bourns.com

[www.bourns.com](http://www.bourns.com)

MF-PSML SERIES, REV. A, 05/17

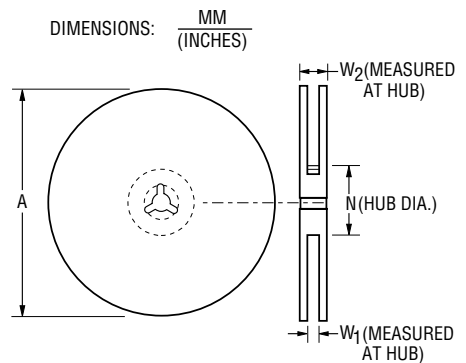
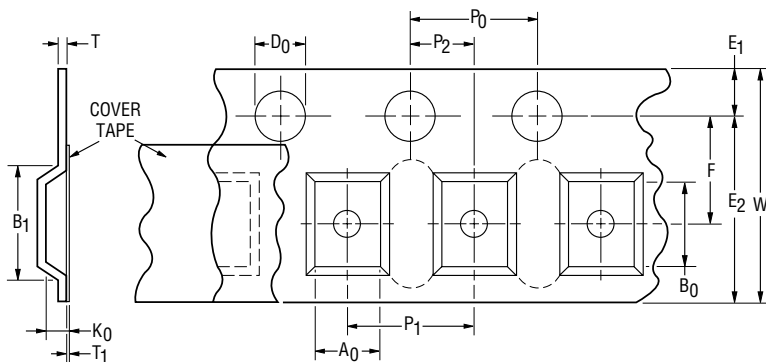
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# MF-PSML Series Tape and Reel Specifications

# BOURNS®

Tape Dimensions	MF-PSML Series per EIA 481-1
W	$8.0 \pm 0.30$ (0.315 ± 0.012)
P <sub>0</sub>	$4.0 \pm 0.10$ (0.157 ± 0.004)
P <sub>1</sub>	$4.0 \pm 0.10$ (0.157 ± 0.004)
P <sub>2</sub>	$2.0 \pm 0.05$ (0.079 ± 0.002)
A <sub>0</sub>	$1.70 \pm 0.10$ (0.067 ± 0.004)
B <sub>0</sub>	$2.45 \pm 0.10$ (0.096 ± 0.004)
B <sub>1</sub> max.	$4.35$ (0.171)
D <sub>0</sub>	$1.5 + 0.10/-0.0$ (0.059 + 0.004/-0)
F	$3.5 \pm 0.05$ (0.138 ± 0.002)
E <sub>1</sub>	$1.75 \pm 0.10$ (0.069 ± 0.004)
E <sub>2</sub> min.	$6.25$ (0.246)
T max.	$0.6$ (0.024)
T <sub>1</sub> max.	$0.1$ (0.004)
K <sub>0</sub> (MF-PSML110~MF-PSML200)	$0.65 \pm 0.10$ (0.026 ± 0.004)
K <sub>0</sub> (MF-PSML260~MF-PSML350)	$0.95 \pm 0.10$ (0.037 ± 0.004)
Leader min.	$390$ (15.35)
Trailer min.	$160$ (6.30)
Reel Dimensions	
A max.	$185$ (7.28)
N min.	$50$ (1.97)
W <sub>1</sub>	$8.4 + 1.5/-0.0$ (0.331 + 0.059/-0.0)
W <sub>2</sub> max.	$14.4$ (0.567)



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