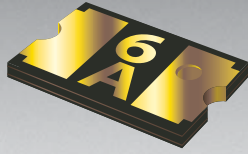



RoHS COMPLIANT



COPAL ELECTRONICS

Features

- Fast tripping resettable circuit protection
- Surface mount packaging for automated assembly
- Small footprint size (1210)
- RoHS compliant* and halogen free**
- Agency recognition: 

Applications

- Game consoles
- PC motherboards
- USB current-limiting compliance
- IEEE 1394 ports
- Mobile phones
- Digital cameras

PRCP-USMF Series - Polymer Resettable Circuit Protectors

Electrical Characteristics

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 23 °C	Seconds at 23 °C	Watts at 23 °C
			Hold	Trip	R _{Min.}	R _{1Max.}			Typ.
PRCP-USMF005	30	10	0.05	0.15	2.800	50.000	0.25	1.50	0.6
PRCP-USMF010	30	10	0.10	0.30	0.800	15.000	0.50	0.60	0.6
PRCP-USMF020	30	10	0.20	0.40	0.400	5.000	8.00	0.02	0.6
PRCP-USMF035	6	40	0.35	0.75	0.200	1.300	8.00	0.20	0.6
PRCP-USMF050	13.2	40	0.50	1.00	0.180	0.900	8.00	0.10	0.6
PRCP-USMF075	6	40	0.75	1.50	0.070	0.450	8.00	0.10	0.6
PRCP-USMF110	6	40	1.10	2.20	0.050	0.210	5.00	1.00	0.6
PRCP-USMF150*	6	40	1.50	3.00	0.030	0.110	5.00	5.00	0.6

*CSA, TÜV approval pending.

Environmental Characteristics

Operating Temperature-40 °C to +85 °C
 Maximum Device Surface Temperature
 in Tripped State125 °C
 Passive Aging.....+85 °C, 1000 hours±5 % typical resistance change
 Humidity Aging.....+85 °C, 85 % R.H. 1000 hours±5 % typical resistance change
 Thermal Shock.....+85 °C to -40 °C, 20 times±10 % typical resistance change
 Solvent ResistanceMIL-STD-202, Method 215No change
 VibrationMIL-STD-883C, Method 2007.1,No change
 Condition A

Test Procedures And Requirements For Model PRCP-USMF Series

Test	Test Conditions	Accept/Reject Criteria
Visual/Mech.....	Verify dimensions and materials	Per PRCP physical description
Resistance	In still air @ 23 °C.....	R _{min} ≤ R ≤ R _{1max}
Time to Trip	At specified current, V _{max} , 23 °C	T ≤ 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
Solderability	ANSI/J-STD-002	95 % min. coverage

UL File NumberE300792

CSA File NumberCA1730526

TÜV Certificate NumberR 50075506

Thermal Derating Chart - I_{hold} / I_{trip} (Amps)

Model	Ambient Operating Temperature								
	-40 °C	-20 °C	0 °C	23 °C	40 °C	50 °C	60 °C	70 °C	85 °C
PRCP-USMF005	0.08 / 0.24	0.07 / 0.21	0.06 / 0.18	0.05 / 0.15	0.04 / 0.12	0.04 / 0.12	0.03 / 0.09	0.03 / 0.09	0.02 / 0.06
PRCP-USMF010	0.15 / 0.30	0.13 / 0.26	0.12 / 0.24	0.10 / 0.20	0.09 / 0.18	0.08 / 0.16	0.07 / 0.14	0.06 / 0.12	0.05 / 0.10
PRCP-USMF020	0.32 / 0.64	0.28 / 0.56	0.24 / 0.48	0.20 / 0.40	0.18 / 0.36	0.16 / 0.32	0.14 / 0.28	0.12 / 0.24	0.10 / 0.20
PRCP-USMF035	0.51 / 1.10	0.46 / 0.99	0.40 / 0.86	0.34 / 0.73	0.30 / 0.65	0.27 / 0.58	0.24 / 0.52	0.22 / 0.47	0.18 / 0.39
PRCP-USMF050	0.76 / 1.52	0.66 / 1.32	0.58 / 1.16	0.48 / 0.96	0.42 / 0.84	0.38 / 0.76	0.35 / 0.70	0.29 / 0.58	0.23 / 0.46
PRCP-USMF075	1.10 / 2.20	0.97 / 1.94	0.86 / 1.72	0.72 / 1.44	0.64 / 1.28	0.58 / 1.16	0.55 / 1.10	0.47 / 0.94	0.39 / 0.78
PRCP-USMF110	1.60 / 3.20	1.42 / 2.84	1.26 / 2.52	1.10 / 2.20	0.94 / 1.88	0.86 / 1.72	0.80 / 1.60	0.70 / 1.40	0.58 / 1.16
PRCP-USMF150	2.30 / 4.60	2.02 / 4.04	1.76 / 3.52	1.43 / 2.86	1.24 / 2.48	1.11 / 2.22	1.00 / 2.00	0.85 / 1.70	0.65 / 1.30

*RoHS Directive 2002/95/EC Jan 27 2003 including Annex

**To be considered halogen free, each homogenous material can have a maximum concentration of 900 ppm of either bromine or chlorine. Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications.

PRCP-USMF Series - Polymer Resettable Circuit Protectors

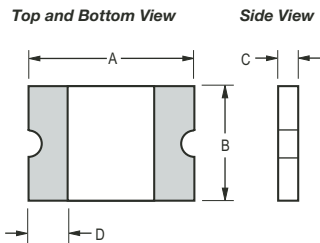
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Product Dimensions

Model	A		B		C		D
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PRCP-USMF005	$\frac{3.00}{(0.118)}$	$\frac{3.43}{(0.135)}$	$\frac{2.35}{(0.093)}$	$\frac{2.80}{(0.110)}$	$\frac{0.80}{(0.031)}$	$\frac{1.1}{(0.043)}$	$\frac{0.30}{(0.012)}$
PRCP-USMF010	$\frac{3.00}{(0.118)}$	$\frac{3.43}{(0.135)}$	$\frac{2.35}{(0.093)}$	$\frac{2.80}{(0.110)}$	$\frac{0.80}{(0.031)}$	$\frac{1.1}{(0.043)}$	$\frac{0.30}{(0.012)}$
PRCP-USMF020	$\frac{3.00}{(0.118)}$	$\frac{3.43}{(0.135)}$	$\frac{2.35}{(0.093)}$	$\frac{2.80}{(0.110)}$	$\frac{0.80}{(0.031)}$	$\frac{1.1}{(0.043)}$	$\frac{0.30}{(0.012)}$
PRCP-USMF035	$\frac{3.00}{(0.118)}$	$\frac{3.43}{(0.135)}$	$\frac{2.35}{(0.093)}$	$\frac{2.80}{(0.110)}$	$\frac{0.55}{(0.022)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$
PRCP-USMF050	$\frac{3.00}{(0.118)}$	$\frac{3.43}{(0.135)}$	$\frac{2.35}{(0.093)}$	$\frac{2.80}{(0.110)}$	$\frac{0.55}{(0.022)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$
PRCP-USMF075	$\frac{3.00}{(0.118)}$	$\frac{3.43}{(0.135)}$	$\frac{2.35}{(0.093)}$	$\frac{2.80}{(0.110)}$	$\frac{0.55}{(0.022)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$
PRCP-USMF110	$\frac{3.00}{(0.118)}$	$\frac{3.43}{(0.135)}$	$\frac{2.35}{(0.093)}$	$\frac{2.80}{(0.110)}$	$\frac{0.55}{(0.022)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$
PRCP-USMF150	$\frac{3.00}{(0.118)}$	$\frac{3.43}{(0.135)}$	$\frac{2.35}{(0.093)}$	$\frac{2.80}{(0.110)}$	$\frac{0.40}{(0.016)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$

Packaging: 3000 pcs. per reel.

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



Terminal material:

Electroless Ni under immersion Au

Termination pad solderability:

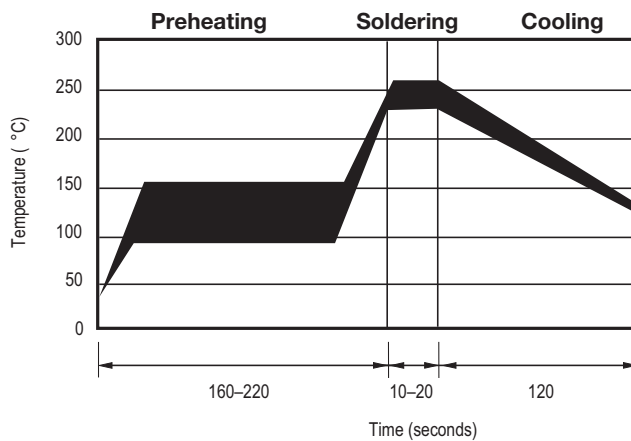
Standard Au finish:

Meets ANSI/J-STD-002 Category 2.

Recommended Storage:

40 °C max./70 % RH max.

Solder Reflow Recommendations



Notes:

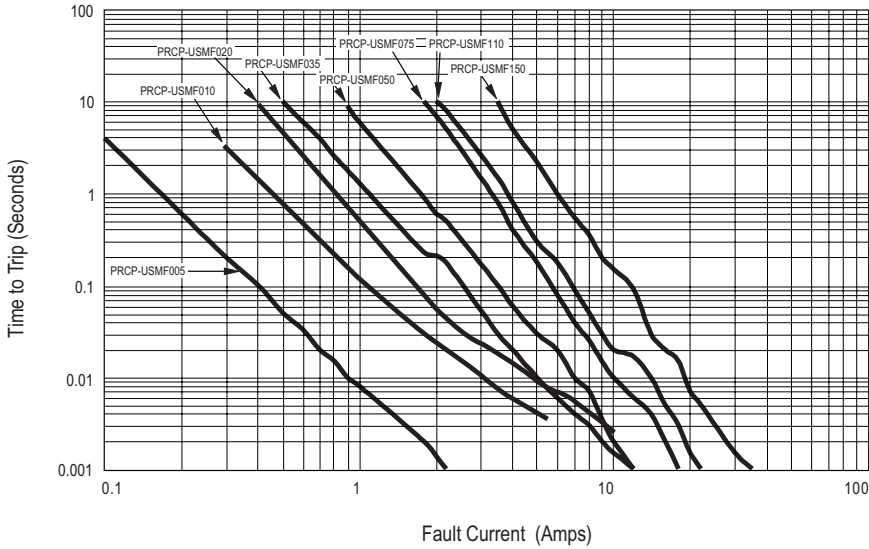
- PRCP-USMF models cannot be wave soldered.
- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
- Compatible with Pb and Pb-free solder reflow profiles.

Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications.

PRCP-USMF Series - Polymer Resettable Circuit Protectors **COPAL ELECTRONICS**

Typical Time to Trip at 23 °C



The Time to Trip curves represent typical performance of a device in a simulated application environment. Actual performance in specific customer applications may differ from these values due to the influence of other variables.

How to Order

PRCP - USMF 010 - 2 C

Product Designator _____

Series _____
 USMF = 1210 Surface Mount Component

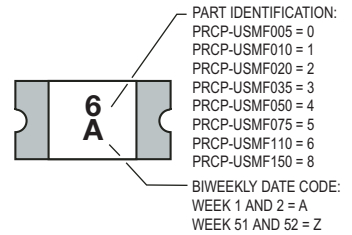
Hold Current, I_{hold} _____
 005-150 (0.05-1.50 Amps)

Packaging _____
 Packaged per EIA 481-1
 -2 = Tape and Reel

Halogen Free _____

Typical Part Marking

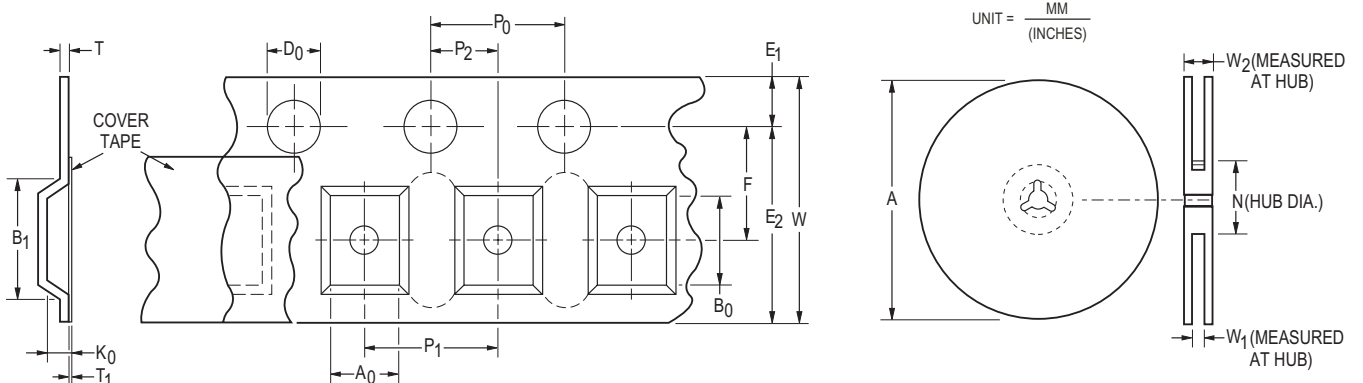
Represents total content. Layout may vary.



PRCP-USMF Series
per EIA 481-2

Tape Dimensions

W	$\frac{8.0 \pm 0.3}{(0.315 \pm 0.012)}$
P ₀	$\frac{4.0 \pm 0.1}{(0.157 \pm 0.004)}$
P ₁	$\frac{4.0 \pm 0.1}{(0.157 \pm 0.004)}$
P ₂	$\frac{2.0 \pm 0.05}{(0.079 \pm 0.002)}$
A ₀	$\frac{2.76 \pm 0.10}{(0.109 \pm 0.004)}$
B ₀	$\frac{3.50 \pm 0.10}{(0.138 \pm 0.004)}$
B ₁ max.	$\frac{4.35}{(0.171)}$
D ₀	$\frac{1.5 + 0.1/-0.0}{(0.059 + 0.004/-0)}$
F	$\frac{3.5 \pm 0.05}{(0.138 \pm 0.002)}$
E ₁	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
E ₂ min.	$\frac{6.25}{(0.246)}$
T max.	$\frac{0.6}{(0.024)}$
T ₁ max.	$\frac{0.1}{(0.004)}$
K ₀	$\frac{1.07 \pm 0.10}{(0.042 \pm 0.004)}$
Leader min.	$\frac{390}{(15.35)}$
Trailer min.	$\frac{160}{(6.30)}$
Reel Dimensions	
A max.	$\frac{185}{(7.283)}$
N min.	$\frac{50}{(1.97)}$
W ₁	$\frac{8.4 + 1.5/-0.0}{(0.331 + 0.059/-0.0)}$
W ₂ max.	$\frac{14.4}{(0.567)}$



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

Revision History

Date	Rev.	Reason
02/06/2006	A	Initial issue
03/13/2006	B	Updated TÜV File Number
03/30/2006	C	Updated UL, CSA File Number
06/28/2007	D	Updated Typical Time to Trip at 23°C
07/19/2007	E	Updated Thermal Derating Chart
01/14/2009	F	Updated How to Order

COPAL ELECTRONICS

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Revision : F
Issue date : 01/14/09

PRCP-USMF SERIES

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