COPAL ELECTRONICS

Features

- Compliant with AEC-Q200 Rev-C-Stress Test Qualification for Passive Components in Automotive Applications
- Surface Mount Devices
- Fully compatible with current industry standards
- Packaged per EIA 481-2 standard
- RoHS compliant* and halogen free**
- Agency recognition:
- Patents pending

PRCP-SM 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.	R1 Max.		Max.	Typ.
PRCP-SM030	60	40	0.30	0.60	0.90	4.80	1.5	3.0	1.7
PRCP-SM050	60	40	0.50	1.00	0.35	1.40	2.5	4.0	1.7
PRCP-SM075	30	80	0.75	1.50	0.23	1.00	8.0	0.3	1.7
PRCP-SM100	30	80	1.10	2.20	0.12	0.48	8.0	0.5	1.7
PRCP-SM100/33	33	40	1.10	2.20	0.12	0.41	8.0	0.5	1.7
PRCP-SM125	15	100	1.25	2.50	0.07	0.25	8.0	2.0	1.7
PRCP-SM150	15	100	1.50	3.00	0.06	0.25	8.0	5.0	1.9
PRCP-SM150/33	33	40	1.50	3.00	0.06	0.23	8.0	5.0	1.9
PRCP-SM185/33	33	40	1.80	3.60	0.04	0.15	8.0	5.0	1.9
PRCP-SM200	15	100	2.00	4.00	0.045	0.125	8.0	12.0	1.9
PRCP-SM250	15	100	2.50	5.00	0.024	0.085	8.0	25.0	1.9
PRCP-SM260	6	100	2.60	5.20	0.025	0.075	8.0	20.0	1.7

Environmental Characteristics

Operating Temperature.....-40 °C to +85 °C
Maximum Device Surface Temperature in Tripped State.....125 °C
Passive Aging.....+85 °C,1000 hours.....±5 % typical resistance change
Humidity Aging.....+85 °C,85 % R.H. 7 days.....±5 % typical resistance change
Thermal Shock.....MIL-STD-202F,Method 107G, ...±10 % typical resistance change
-40 °C to +85 °C, 20 cycles .....-20 % typical resistance change
Vibration.....MIL-STD-883C,Method 2007.1, ...Rmin ≤ R ≤ R1 max
Condition A

Test Procedures And Requirements For Model PRCP-SM 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 ≤ R1 max
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	MIL-STD-202F,Method 208F	95% min. coverage

UL File Number E300792
CSA File Number.....CA1730526
TÜV Certificate Number.....R 50075506

Thermal Derating Chart - I_{hold} (Amps)

Model	Ambient Operating Temperature								
	-40 ºC	-20 ºC	0 ºC	23 ºC	40 ºC	50 ºC	60 ºC	70 ºC	85 ºC
PRCP-SM030	0.45 / 0.90	0.40 / 0.80	0.35 / 0.70	0.30 / 0.60	0.25 / 0.50	0.23 / 0.46	0.20 / 0.4	0.17 / 0.34	0.14 / 0.28
PRCP-SM050	0.76 / 1.52	0.67 / 1.34	0.59 / 1.18	0.50 / 1.00	0.42 / 0.84	0.38 / 0.76	0.33 / 0.6	0.29 / 0.58	0.23 / 0.46
PRCP-SM075	1.11 / 2.22	0.99 / 1.98	0.84 / 1.68	0.75 / 1.50	0.63 / 1.26	0.57 / 1.14	0.49 / 0.9	0.45 / 0.90	0.36 / 0.72
PRCP-SM100	1.66 / 3.32	1.47 / 2.94	1.29 / 2.58	1.10 / 2.20	0.91 / 1.82	0.83 / 1.66	0.73 / 1.4	0.64 / 1.28	0.50 / 1.00
PRCP-SM100/33	1.66 / 3.32	1.47 / 2.94	1.29 / 2.58	1.10 / 2.20	0.91 / 1.82	0.83 / 1.66	0.73 / 1.4	0.64 / 1.28	0.50 / 1.00
PRCP-SM125	1.89 / 3.78	1.68 / 3.36	1.46 / 2.92	1.25 / 2.50	1.04 / 2.08	0.94 / 1.88	0.83 / 1.6	0.73 / 1.46	0.56 / 1.12
PRCP-SM150	2.27 / 4.54	2.01 / 4.02	1.76 / 3.52	1.50 / 3.00	1.25 / 2.50	1.13 / 2.26	0.99 / 1.9	0.87 / 1.74	0.68 / 1.36
PRCP-SM150/33	2.27 / 4.54	2.01 / 4.02	1.76 / 3.52	1.50 / 3.00	1.25 / 2.50	1.13 / 2.26	0.99 / 1.9	0.87 / 1.74	0.68 / 1.36
PRCP-SM185/33	2.56 / 5.12	2.32 / 4.64	2.08 / 4.16	1.85 / 3.70	1.60 / 3.20	1.44 / 2.88	1.28 / 2.5	1.12 / 2.24	0.88 / 1.76
PRCP-SM200	3.02 / 6.04	2.68 / 5.36	2.34 / 4.68	2.00 / 4.00	1.66 / 3.32	1.50 / 3.00	1.32 / 2.6	1.16 / 2.32	0.90 / 1.80
PRCP-SM250	3.78 / 7.56	3.35 / 6.70	2.93 / 5.86	2.50 / 5.00	2.08 / 4.16	1.88 / 3.76	1.65 / 3.3	1.45 / 2.90	1.13 / 2.26
PRCP-SM260	3.64 / 7.28	3.25 / 6.50	2.91 / 5.82	2.60 / 5.20	2.26 / 4.52	2.08 / 4.16	1.95 / 3.9	1.74 / 3.48	1.48 / 2.96

*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.
**COPAL follows the prevailing definition of "halogen free" in the industry.COPAL considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Cholrine(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.
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.
Customers should verify actual device performance in their specific applications.

Applications

Almost anywhere there is a low voltage power supply and a load to be protected, including:

- Computers & peripherals
- General electronics
- Automotive applications

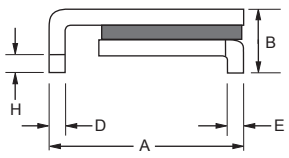
PRCP-SM Series - Polymer Resettable Circuit Protectors

COPAL ELECTRONICS

Product Dimensions

Model	A		B	C	D		E		F		G		H
	Min.	Max.	Max.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PRCP-SM030	6.73 (0.265)	7.98 (0.314)	3.18 (0.125)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM050	6.73 (0.265)	7.98 (0.314)	3.18 (0.125)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM075	6.73 (0.265)	7.98 (0.314)	3.18 (0.125)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM100	6.73 (0.265)	7.98 (0.314)	3.0 (0.118)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM100/33	6.73 (0.265)	7.98 (0.314)	3.0 (0.118)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM125	6.73 (0.265)	7.98 (0.314)	3.0 (0.118)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM150	8.00 (0.315)	9.50 (0.374)	3.0 (0.118)	6.71 (0.264)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	3.68 (0.145)	3.94 (0.155)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM150/33	8.00 (0.315)	9.50 (0.374)	3.0 (0.118)	6.71 (0.264)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	3.68 (0.145)	3.94 (0.155)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM185/33	8.00 (0.315)	9.50 (0.374)	3.0 (0.118)	6.71 (0.264)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	3.68 (0.145)	3.94 (0.155)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM200	8.00 (0.315)	9.50 (0.374)	3.0 (0.118)	6.71 (0.264)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	3.68 (0.145)	3.94 (0.155)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM250	8.00 (0.315)	9.50 (0.374)	3.0 (0.118)	6.71 (0.264)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	3.68 (0.145)	3.94 (0.155)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)
PRCP-SM260	6.73 (0.265)	7.98 (0.314)	3.0 (0.118)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)

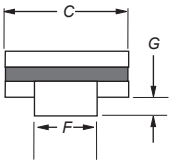
Packaging:
TAPE & REEL: PRCP-SM030, 050, 075, 100, 100/33, 125, 260 = 2000 pcs. per reel;
PRCP-SM150, 150/33, 185/33, 200, 250 = 1500 pcs. per reel.



Side View

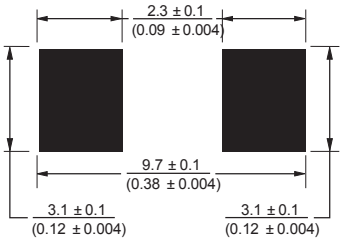
UNIT = MM / (INCHES)

Terminal material:
Tin-plated brass

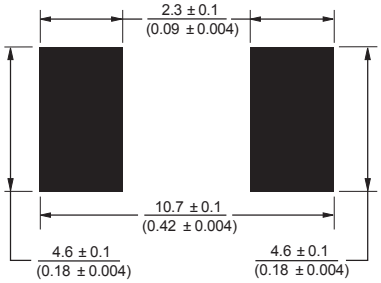


End View

Recommended Pad Layout
PRCP-SM030, 050, 075, 100, 100/33, 125, 260



Recommended Pad Layout
PRCP-SM150, 150/33, 185/33, 200, 250



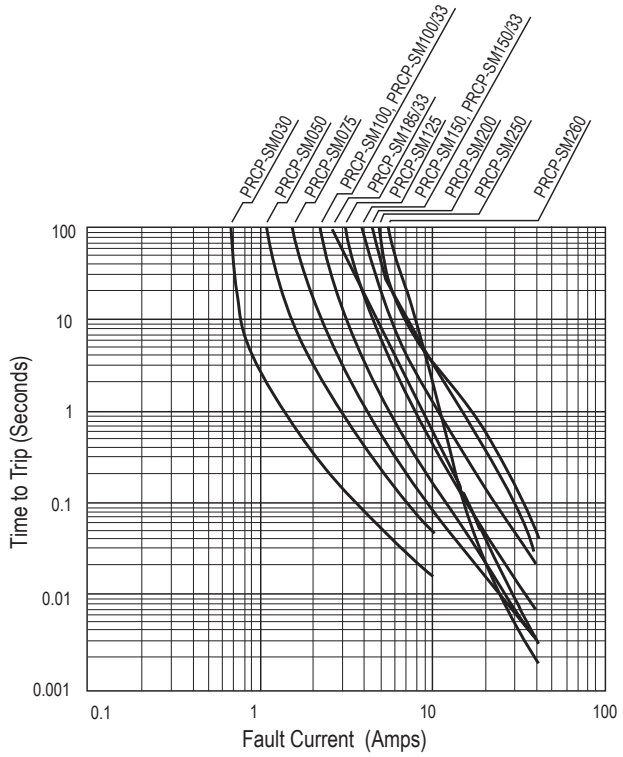
How to Order

PRCP - SM 100/33 - 2 - 99

- Product Designator
- Series
  - SM = Surface Mount Component
- Hold Current, Ihold/Vmax*
  - 030 - 260 (0.3 - 2.6 Amps)
- Packaging Options
  - 2 = Tape and Reel**
- Part Number Suffix Option
  - 99 = As of date code April 1, 2005 all PRCP-SM models are RoHS compliant. The suffix "-99" can be used if a new part number is required to reference the RoHS compliance.

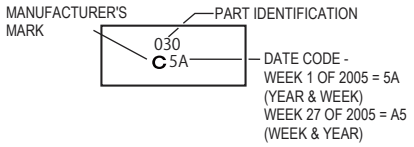
*Vmax entry applies only to models PRCP-SM100/33, PRCP-SM150/33 & PRCP-SM185/33.
**Packaged per EIA-481-2

Typical Time to Trip at 23 °C

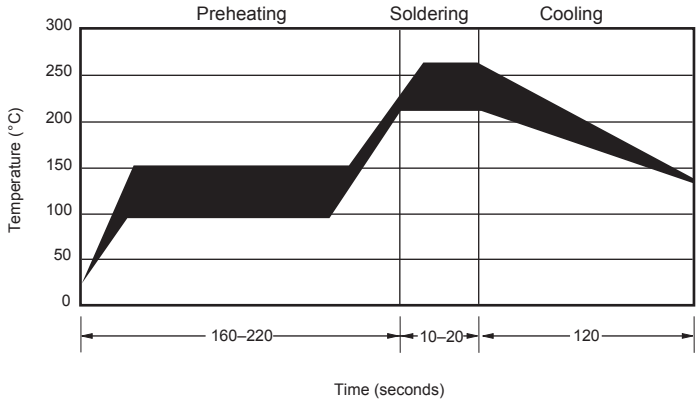


Typical Part Marking

Represents total content. Layout may vary.



Solder Reflow Recommendations



Solder reflow

- Recommended reflow methods: IR, vapor phase oven, hot air oven.
- Devices are not designed to be wave soldered to the bottom side of the board.
- Gluing the devices is not recommended.
- Recommended maximum paste thickness is 0.25 mm (.010 inch).
- Devices can be cleaned using standard industry methods and solvents.

Note:

- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

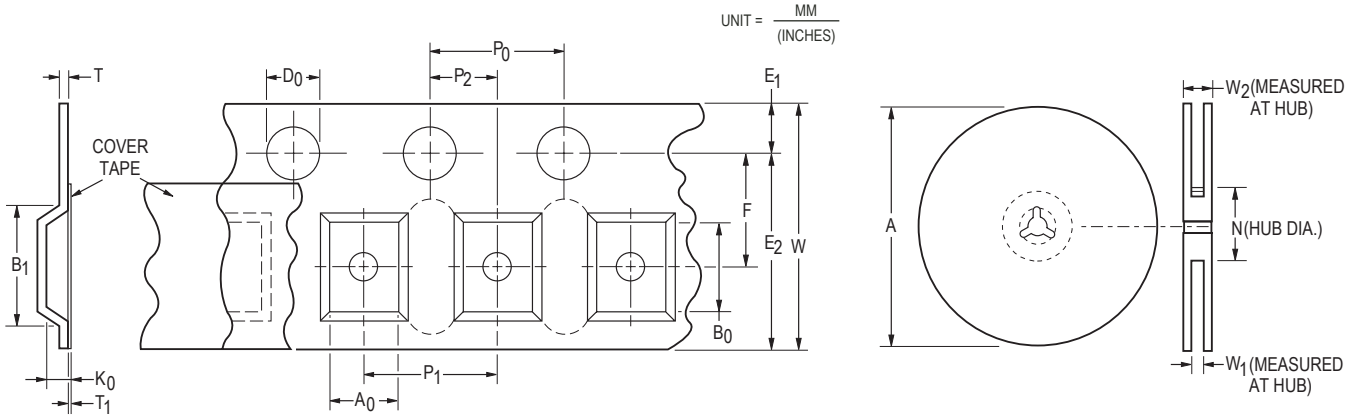
Rework

- A device should not be reworked.

Storage Recommendations

The recommended long term storage conditions for Polymer Resettable Circuit Protectors are 40 °C maximum and 70 % RH maximum. All devices should remain in the original sealed packaging prior to use. Devices may not conform with data sheet specifications if these storage recommendations are exceeded. Devices stored in this manner have an indefinite shelf life.

Tape Dimensions	PRCP-SM030, 050, 075, 100, 125, 260; PRCP-SM100/33 per EIA-481-2	PRCP-SM150, 200, 250; PRCP-SM150/33, PRCP-SM185/33; per EIA-481-2
W	16.0 ± 0.3 (0.630 ± 0.012)	16.0 ± 0.3 (0.630 ± 0.012)
P_0	4.0 ± 0.1 (0.157 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)
P_1	8.0 ± 0.1 (0.315 ± 0.004)	12.0 ± 0.1 (0.472 ± 0.004)
P_2	2.0 ± 0.1 (0.079 ± 0.004)	2.0 ± 0.1 (0.079 ± 0.004)
A_0	5.7 ± 0.1 (0.224 ± 0.004)	6.9 ± 0.1 (0.272 ± 0.004)
B_0	8.1 ± 0.1 (0.319 ± 0.004)	9.6 ± 0.1 (0.378 ± 0.004)
B_1 max.	12.1 (0.476)	12.1 (0.476)
D_0	1.5 + 0.1/-0.0 (0.059 + 0.004/-0)	1.5 + 0.1/-0.0 (0.059 + 0.004/-0)
F	7.5 ± 0.1 (0.295 + 0.004)	7.5 ± 0.1 (0.295 + 0.004)
E_1	1.75 ± 0.1 (0.069 ± 0.004)	1.75 ± 0.1 (0.069 ± 0.004)
E_2 min.	14.25 (0.561)	14.25 (0.561)
T max.	0.6 (0.024)	0.6 (0.024)
T_1 max.	0.1 (0.004)	0.1 (0.004)
K_0	3.4 ± 0.1 (0.134 ± 0.004)	3.4 ± 0.1 (0.134 ± 0.004)
Leader min.	390 (15.35)	390 (15.35)
Trailer min.	160 (6.30)	160 (6.30)
Reel Dimensions		
A max.	360 (14.17)	360 (14.17)
N min.	50 (1.97)	50 (1.97)
W_1	16.4 + 2.0/ -0.0 (0.646 + 0.079/-0)	16.4 + 2.0/ -0.0 (0.646 + 0.079/-0)
W_2 max.	22.4 (0.882)	22.4 (0.882)



Revision History

Date	Rev.	Reason
11/02/2005	A	Initial issue
12/12/2005	B	Updated UL, CSA, TÜV File Number
06/10/2010	C	Added SM185/33 model Added Storage Recommendations
05/10/2014	D	Update Thermal Derating Chart
08/19/2015	E	Update Features and Environmental Characteristics