





**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:  

**PRCP-SM Series - Polymer Resettable Circuit Protectors**

**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 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 P.R.C.P. 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	
TÜV Certificate Number.....	R50383874	

**Thermal Derating Chart - I<sub>hold</sub> (Amps)**

Model	Ambient Operating Temperature								
	-40 °C	-20 °C	0 °C	23 °C	40 °C	50 °C	60 °C	70 °C	85 °C
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 2015/863 Mar. 31, 2015 and Annex.

\*\*NIDEC COMPONENTS follows the prevailing definition of "halogen free" in the industry.NIDEC COMPONENTS 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.

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

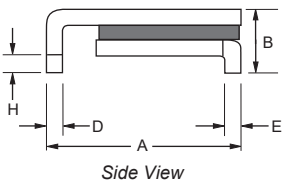
## PRCP-SM Series - Polymer Resettable Circuit Protectors

### 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)

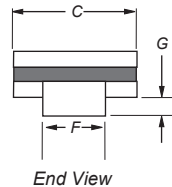
**Packaging:**

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.



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

Terminal material:  
Tin-plated brass



### How to Order

PRCP - SM 100/33 - 2 - 99

Product Designator \_\_\_\_\_

Series \_\_\_\_\_  
SM = Surface Mount Component

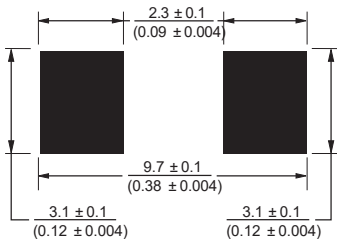
Hold Current, I<sub>hold</sub>/V<sub>max</sub>\* \_\_\_\_\_  
030 - 260 (0.3 - 2.6 Amps)

Packaging Options \_\_\_\_\_  
- 2 = Tape and Reel\*\*

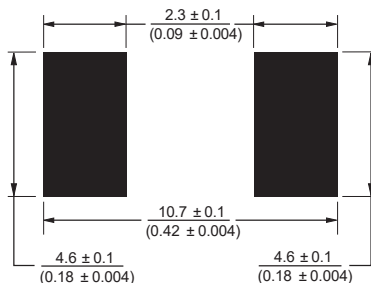
Part Number Suffix Option \_\_\_\_\_  
- 99 = As of date code April 1, 2005 all PRCP-SM models are RoHS compliant. The suffix "-99" can be used if a new part number is required to reference the RoHS compliance.

\*V<sub>max</sub> entry applies only to models PRCP-SM100/33, PRCP-SM150/33 & PRCP-SM185/33.  
\*\*Packaged per EIA-481-2

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



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



### Storage Recommendations

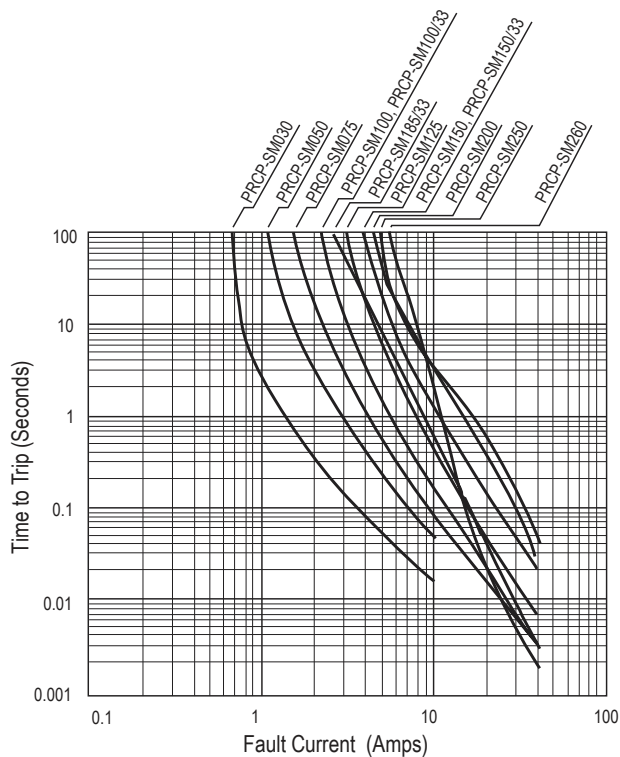
The recommended long term storage conditions for Polymer Resettable Circuit Protectors are 40 °C maximum and 70 % RH maximum. All devices should remain in the original sealed packaging prior to use. Devices may not conform with data sheet specifications if these storage recommendations are exceeded.

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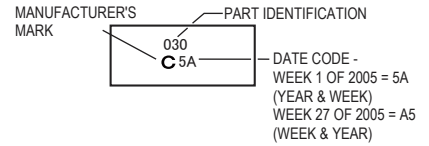
# PRCP-SM Series - Polymer Resettable Circuit Protectors

## Typical Time to Trip at 23 °C

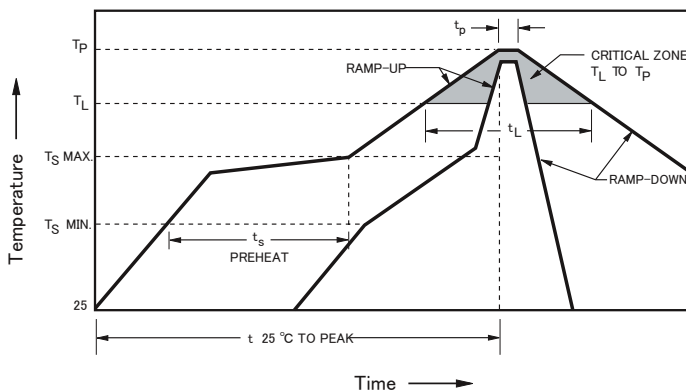


## Typical Part Marking

Represents total content. Layout may vary.



## Solder Reflow Recommendations



### Notes:

- PRCP-SM models are intended for reflow soldering (including, but not limited to heating plate, hot air, IR, nitrogen, and vapor phase).
- Wave soldering is permissible only if the device is on the top of the PCB, opposite the heat source.
- Hand soldering is not recommended for these devices.
- All temperatures refer to the topside of the device, measured on the device body surface.
- If reflow temperatures exceed the recommended profile, devices may not meet the published specifications.
- Compatible with Pb and Pb-free solder reflow profile.
- Excess solder may cause a short circuit.

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 $T_{s\ max}$ ) ( $t_s$ )	150 °C 200 °C 60~180 seconds
TIME MAINTAINED ABOVE: Temperature ( $T_L$ ) Time ( $t_L$ )	217 °C 60~150 seconds
Peak 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 25 °C to Peak Temperature	8 minutes max.

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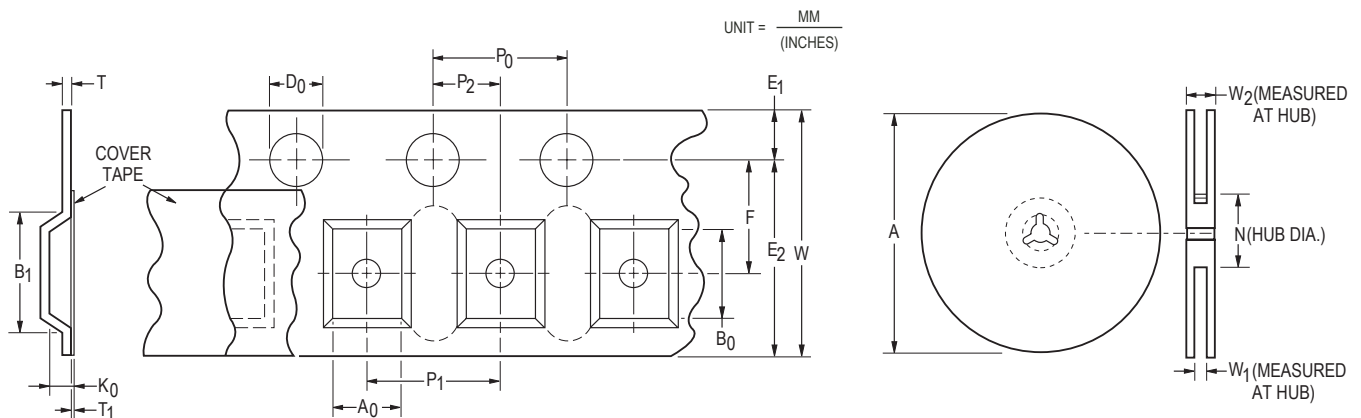
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**PRCP-SM & PRCP-SM/33 Series Tape and Reel Specifications**

**PRCP-SM030, 050, 075, 100, 125, 260;  
PRCP-SM100/33**

**PRCP-SM150, 200, 250;  
PRCP-SM150/33, PRCP-SM185/33;**

Tape Dimensions	per EIA-481-2	per EIA-481-2
W	16.0 ± 0.3 (0.630 ± 0.012)	16.0 ± 0.3 (0.630 ± 0.012)
P <sub>0</sub>	4.0 ± 0.1 (0.157 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)
P <sub>1</sub>	8.0 ± 0.1 (0.315 ± 0.004)	12.0 ± 0.1 (0.472 ± 0.004)
P <sub>2</sub>	2.0 ± 0.1 (0.079 ± 0.004)	2.0 ± 0.1 (0.079 ± 0.004)
A <sub>0</sub>	5.7 ± 0.1 (0.224 ± 0.004)	6.9 ± 0.1 (0.272 ± 0.004)
B <sub>0</sub>	8.1 ± 0.1 (0.319 ± 0.004)	9.6 ± 0.1 (0.378 ± 0.004)
B <sub>1</sub> max.	12.1 (0.476)	12.1 (0.476)
D <sub>0</sub>	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 <sub>1</sub>	1.75 ± 0.1 (0.069 ± 0.004)	1.75 ± 0.1 (0.069 ± 0.004)
E <sub>2</sub> min.	14.25 (0.561)	14.25 (0.561)
T max.	0.6 (0.024)	0.6 (0.024)
T <sub>1</sub> max.	0.1 (0.004)	0.1 (0.004)
K <sub>0</sub>	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)
<b>Reel Dimensions</b>		
A max.	360 (14.17)	360 (14.17)
N min.	50 (1.97)	50 (1.97)
W <sub>1</sub>	16.4 + 2.0/-0.0 (0.646 + 0.079/-0)	16.4 + 2.0/-0.0 (0.646 + 0.079/-0)
W <sub>2</sub> max.	22.4 (0.882)	22.4 (0.882)



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