

Features

- Surface mount packaging for automated assembly
- Small footprint size (1206) and low profile for space-constrained mobile applications
- Ultra-low resistance
- Utilizes innovative freeXpansion™ design
- RoHS compliant* and halogen free**
- Agency recognition:  

PRCP-NSML/X 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	Agency Recognition	
			(A) at 23 °C	(A) at 23 °C	(Ω) at 23 °C	(Ω) at 23 °C	(A) at 23 °C	(Sec) at 23 °C	(W) at 23 °C	cUL	TÜV
					R _{min}	R _{1max}			Typ.	E300792	R50458724
PRCP-NSML150/6	6	50	1.5	3.0	0.01	0.065	8	5	1.0	✓	✓
PRCP-NSML150/12	12	50	1.5	3.0	0.01	0.065	8	5	1.0	✓	✓
PRCP-NSML175/6	6	50	1.75	3.5	0.006	0.05	8	5	1.0	✓	✓
PRCP-NSML175/12	12	50	1.75	3.5	0.006	0.05	8	5	1.0	✓	✓
PRCP-NSML200/6	6	50	2.0	4.0	0.005	0.04	8	5	1.0	✓	✓
PRCP-NSML200/12	12	50	2.0	4.0	0.005	0.04	8	5	1.0	✓	✓
PRCP-NSML260/6	6	50	2.6	5.2	0.004	0.03	8	5	1.0	✓	✓
PRCP-NSML260/12	12	50	2.6	5.2	0.004	0.03	8	5	1.0	✓	✓
PRCP-NSML300/6	6	50	3.0	6.0	0.003	0.024	8	5	1.0	✓	✓
PRCP-NSML300/12	12	50	3.0	6.0	0.003	0.024	8	5	1.0	✓	✓
PRCP-NSML350/6	6	50	3.5	7.0	0.002	0.022	10	5	1.0	✓	✓
PRCP-NSML350/12	12	50	3.5	7.0	0.002	0.022	10	5	1.0	✓	✓
PRCP-NSML380/6	6	50	3.8	7.6	0.002	0.02	10	5	1.0	✓	✓
PRCP-NSML380/12	12	50	3.8	7.6	0.002	0.02	10	5	1.0	✓	✓
PRCP-NSML400/6	6	50	4.0	8.0	0.002	0.018	10	5	1.0	✓	✓
PRCP-NSML400/12	12	50	4.0	8.0	0.002	0.018	10	5	1.0	✓	✓
PRCP-NSML450/6	6	50	4.5	9.0	0.002	0.014	22.5	2	1.0	✓	✓
PRCP-NSML450/12	12	50	4.5	9.0	0.002	0.014	22.5	2	1.0	✓	✓
PRCP-NSML500/6	6	50	5.0	10	0.002	0.011	25	5	1.0	✓	✓
PRCP-NSML550/6	6	50	5.5	11	0.002	0.01	27.5	5	1.0	✓	✓
PRCP-NSML600/6	6	50	6.0	12	0.002	0.009	30	5	1.0	✓	✓

Environmental Characteristics

Item	Condition	Criteria
Operating Temperature	-40 °C to +85 °C	
Storage Condition	Before Opening	+40 °C max. / 70 % RH max.
	After Opening	+40 °C max. / 10 % RH max.
Floor Condition After Opening	Consumption within 4 weeks at floor condition +30 °C max. / 60 % RH max.	
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	-40 °C to +85 °C, 20 times	±30 % typical resistance change
Solvent Resistance	MIL-STD-202, Method 215	No change (marking still legible)
Vibration	MIL-STD-883C, Method 2007.1 Condition A	No change (R _{min} < R < R _{1max})
Moisture Sensitivity Level (MSL)	2a	
ESD Classification	Class 6 (per AEC-Q200-2, HBM)	

* RoHS Directive 2015/863, Mar 31, 2015 and Annex.

** 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.

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PRCP-NSML/X Series - Polymer Resettable Circuit Protectors

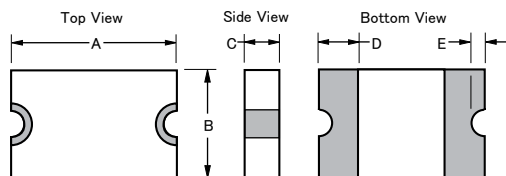
Test Procedures and Requirements

Item	Test Condition	Accept/Reject Criteria
Visual/Mechanical	Verify dimensions and materials	Per P.R.C.P. physical description
Resistance	In still air @ 23 °C	$R_{min} \leq R \leq R_{1max}$
Time to Trip	At specified current, V_{max} , 23°C, still air	$T \leq$ max. time to trip (seconds)
Hold Current	30 min. at I_{hold} , still air	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	245 °C \pm 5°C, 5 seconds	95 % min. coverage

Product Dimensions

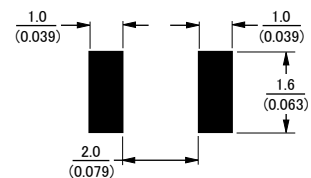
Model	A		B		C		D	E	
	Min.	Max.	Min.	Max.	Min.	Max.		Min.	Max.
PRCP-NSML150/6	3.0 (0.118)	3.5 (0.138)	1.4 (0.055)	1.8 (0.071)	0.4 (0.016)	0.7 (0.028)	0.25 (0.010)	0.05 (0.002)	0.45 (0.018)
PRCP-NSML150/12									
PRCP-NSML175/6									
PRCP-NSML175/12									
PRCP-NSML200/6									
PRCP-NSML200/12									
PRCP-NSML260/6	3.0 (0.118)	3.5 (0.138)	1.4 (0.055)	1.8 (0.071)	0.4 (0.016)	1.0 (0.039)			
PRCP-NSML260/12									
PRCP-NSML300/6	3.0 (0.118)	3.5 (0.138)	1.4 (0.055)	1.8 (0.071)	0.4 (0.016)	1.4 (0.055)			
PRCP-NSML300/12									
PRCP-NSML350/6									
PRCP-NSML350/12									
PRCP-NSML380/6	3.0 (0.118)	3.5 (0.138)	1.4 (0.055)	1.8 (0.071)	0.6 (0.024)	1.4 (0.055)			
PRCP-NSML380/12									
PRCP-NSML400/6									
PRCP-NSML400/12									
PRCP-NSML450/12	3.0 (0.118)	3.5 (0.138)	1.4 (0.055)	1.8 (0.071)	0.6 (0.024)	1.0 (0.039)			
PRCP-NSML450/6									
PRCP-NSML500/6									
PRCP-NSML550/6									
PRCP-NSML600/6									

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



Terminal material:
ENIG-plated terminals

Recommended Pad Layout



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Packaging Quantity

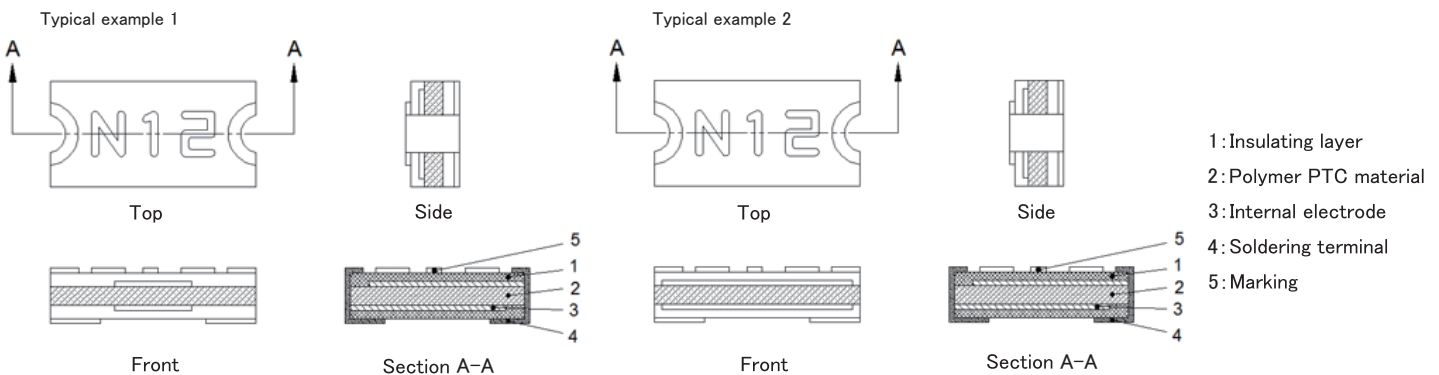
PRCP-NSML150/6~PRCP-NSML260/6 = 5000 pcs. per reel
 PRCP-NSML150/12~PRCP-NSML260/12 = 5000 pcs. per reel

PRCP-NSML300/6~PRCP-NSML600/6 = 3500 pcs. per reel
 PRCP-NSML300/12~PRCP-NSML450/12 = 3500 pcs. per reel

Thermal Derating Table - 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
PRCP-NSML150/6	2.2	2.0	1.77	1.5	1.28	1.15	1.07	0.85	0.7
PRCP-NSML150/12	2.2	2.0	1.77	1.5	1.28	1.15	1.07	0.85	0.7
PRCP-NSML175/6	2.57	2.33	2.07	1.75	1.49	1.34	1.24	1.0	0.8
PRCP-NSML175/12	2.57	2.33	2.07	1.75	1.49	1.34	1.24	1.0	0.8
PRCP-NSML200/6	2.94	2.65	2.35	2.0	1.7	1.53	1.42	1.14	0.93
PRCP-NSML200/12	2.94	2.65	2.35	2.0	1.7	1.53	1.42	1.14	0.93
PRCP-NSML260/6	3.82	3.46	3.07	2.6	2.21	1.95	1.85	1.48	1.2
PRCP-NSML260/12	3.82	3.46	3.07	2.6	2.21	1.95	1.85	1.48	1.2
PRCP-NSML300/6	4.41	3.99	3.54	3.0	2.55	2.32	2.13	1.71	1.38
PRCP-NSML300/12	4.41	3.99	3.54	3.0	2.55	2.32	2.13	1.71	1.38
PRCP-NSML350/6	5.15	4.66	4.13	3.5	2.98	2.71	2.49	2.0	1.65
PRCP-NSML350/12	5.15	4.66	4.13	3.5	2.98	2.71	2.49	2.0	1.65
PRCP-NSML380/6	5.59	5.05	4.48	3.8	3.23	2.95	2.60	2.15	1.75
PRCP-NSML380/12	5.59	5.05	4.48	3.8	3.23	2.95	2.60	2.15	1.75
PRCP-NSML400/6	5.8	5.25	4.65	4.0	3.4	3.1	2.65	2.2	1.8
PRCP-NSML400/12	5.8	5.25	4.65	4.0	3.4	3.1	2.65	2.2	1.8
PRCP-NSML450/6	6.1	5.4	4.7	4.5	3.6	3.15	2.7	2.25	1.85
PRCP-NSML450/12	6.1	5.4	4.7	4.5	3.6	3.15	2.7	2.25	1.85
PRCP-NSML500/6	6.8	6.0	5.25	5.0	4.0	3.5	3.0	2.5	1.9
PRCP-NSML550/6	7.5	6.6	5.8	5.5	4.4	3.85	3.3	2.75	2.1
PRCP-NSML600/6	8.15	7.2	6.35	6.0	4.8	4.2	3.6	3.0	2.3

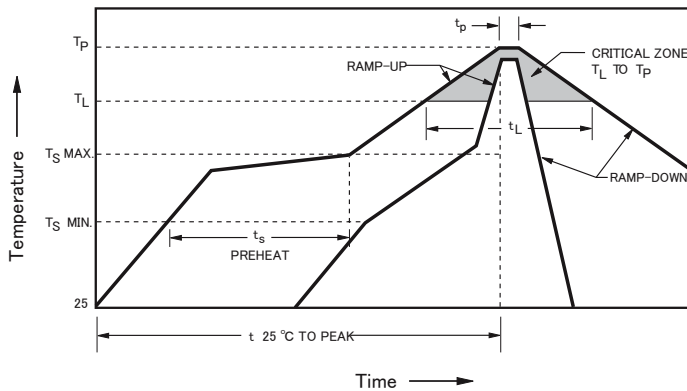
Structure



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Solder Reflow Recommendations

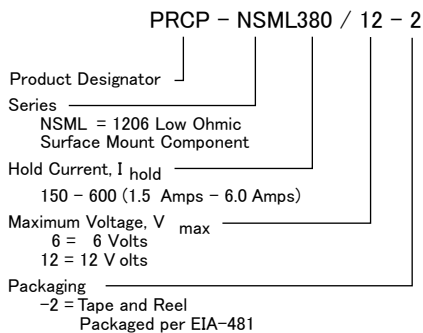


Notes:

- PRCP-NSML/X 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 profiles.
- Excess solder may cause a short circuit.

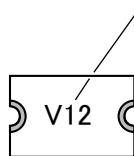
Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate ($T_{s\ max}$ to T_p)	3 °C / second max.
PREHEAT: Temperature Min. ($T_{s\ min}$) Temperature Max. ($T_{s\ max}$) Time ($T_{s\ min}$ to $T_{s\ max}$) (ts)	150 °C 200 °C 60~180 seconds
TIME MAINTAINED ABOVE: Temperature (T_L) Time (t_L)	217 °C 60~150 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.

How to Order



Typical Part Marking

Represents total content. Layout may vary.

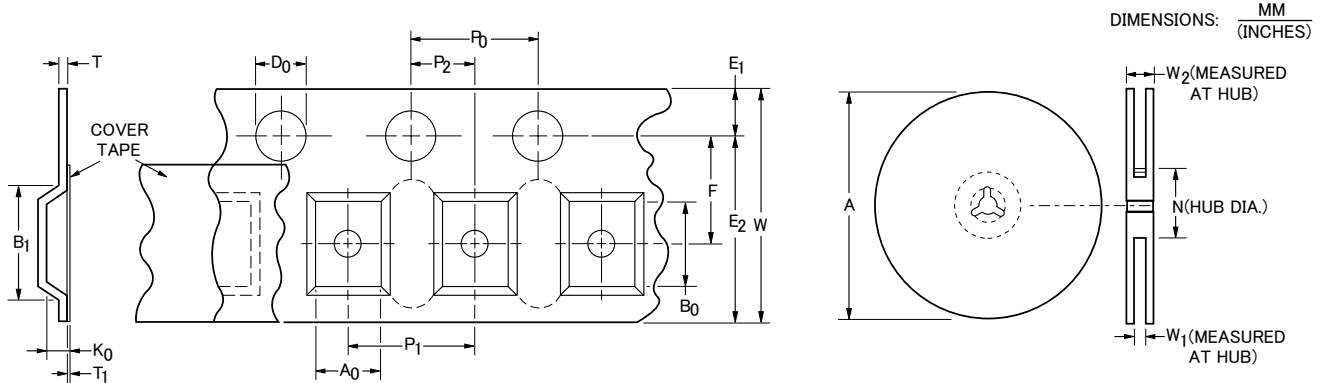


MANUFACTURING DATE CODE IS LOCATED ON PACKING LABEL.

- PART IDENTIFICATION:
- PRCP-NSML150/6 = G6
 - PRCP-NSML150/12 = G12
 - PRCP-NSML175/6 = H6
 - PRCP-NSML175/12 = H12
 - PRCP-NSML200/6 = J6
 - PRCP-NSML200/12 = J12
 - PRCP-NSML260/6 = N6
 - PRCP-NSML260/12 = N12
 - PRCP-NSML300/6 = P6
 - PRCP-NSML300/12 = P12
 - PRCP-NSML350/6 = S6
 - PRCP-NSML350/12 = S12
 - PRCP-NSML380/6 = V6
 - PRCP-NSML380/12 = V12
 - PRCP-NSML400/6 = U6
 - PRCP-NSML400/12 = U12
 - PRCP-NSML450/6 = X6
 - PRCP-NSML450/12 = X12
 - PRCP-NSML500/6 = Y6
 - PRCP-NSML550/6 = T6
 - PRCP-NSML600/6 = Z6

PRCP-NSML/X Series Tape and Reel Specifications

Tape Dimensions	PRCP-NSML/X Series per EIA-481
W	$\frac{12.0 \pm 0.30}{(0.472 \pm 0.012)}$
P ₀	$\frac{4.0 \pm 0.10}{(0.157 \pm 0.004)}$
10 P ₀	$\frac{40.0 \pm 0.20}{(1.575 \pm 0.008)}$
P ₁	$\frac{4.0 \pm 0.10}{(0.157 \pm 0.004)}$
P ₂	$\frac{2.0 \pm 0.05}{(0.079 \pm 0.002)}$
A ₀	$\frac{1.90 \pm 0.10}{(0.075 \pm 0.004)}$
B ₀	$\frac{3.50 \pm 0.10}{(0.138 \pm 0.004)}$
B ₁ max.	$\frac{4.5}{(0.177)}$
D ₀	$\frac{1.5 + 0.10/-0.0}{(0.059 + 0.004/-0)}$
F	$\frac{5.5 \pm 0.05}{(0.216 + 0.002)}$
E ₁	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
E ₂ typ.	$\frac{10.25}{(0.404)}$
T max.	$\frac{0.6}{(0.024)}$
T ₁ max.	$\frac{0.1}{(0.004)}$
K ₀ (PRCP-NSML150/6~PRCP-NSML260/6, PRCP-NSML150/12~PRCP-NSML260/12)	$\frac{0.65 \pm 0.10}{(0.026 \pm 0.004)}$
K ₀ (PRCP-NSML300/6~PRCP-NSML600/6, PRCP-NSML300/12~PRCP-NSML450/12)	$\frac{1.10 \pm 0.10}{(0.043 \pm 0.004)}$
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	$\frac{12.4 + 1/-0}{(0.488 + 0.039/-0)}$
W ₂ max.	$\frac{15.4}{(0.606)}$



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