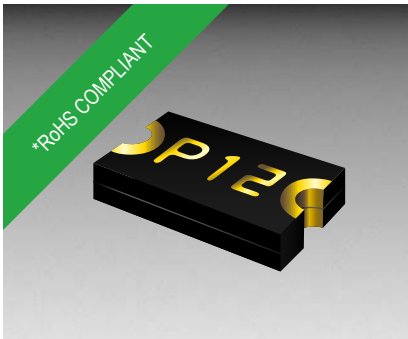




Features

- 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.

Specifications are subject to change without notice

Users should verify actual device performance in their specific applications.

PRCP-NSML/X Series - Polymer Resettable Circuit Protectors

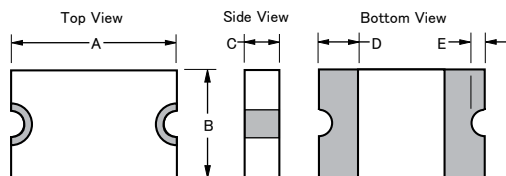
Test Procedures and Requirements

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	$T \leq \text{max. time to trip (seconds)}$
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

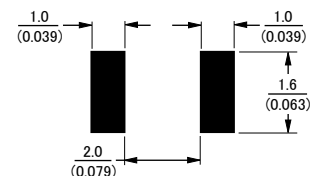
Model	A		B		C		D	E	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Max.
PRCP-NSML150/6	$\frac{3.0}{(0.118)}$	$\frac{3.5}{(0.138)}$	$\frac{1.4}{(0.055)}$	$\frac{1.8}{(0.071)}$	$\frac{0.4}{(0.016)}$	$\frac{0.7}{(0.028)}$	$\frac{0.25}{(0.010)}$	$\frac{0.05}{(0.002)}$	$\frac{0.45}{(0.018)}$
PRCP-NSML150/12									
PRCP-NSML175/6									
PRCP-NSML175/12									
PRCP-NSML200/6									
PRCP-NSML200/12									
PRCP-NSML260/6	$\frac{3.0}{(0.118)}$	$\frac{3.5}{(0.0138)}$	$\frac{1.4}{(0.055)}$	$\frac{1.8}{(0.071)}$	$\frac{0.4}{(0.016)}$	$\frac{1.0}{(0.039)}$			
PRCP-NSML260/12									
PRCP-NSML300/6	$\frac{3.0}{(0.118)}$	$\frac{3.5}{(0.138)}$	$\frac{1.4}{(0.055)}$	$\frac{1.8}{(0.071)}$	$\frac{0.4}{(0.016)}$	$\frac{1.4}{(0.055)}$			
PRCP-NSML300/12									
PRCP-NSML350/6									
PRCP-NSML350/12									
PRCP-NSML380/6	$\frac{3.0}{(0.118)}$	$\frac{3.5}{(0.138)}$	$\frac{1.4}{(0.055)}$	$\frac{1.8}{(0.071)}$	$\frac{0.6}{(0.024)}$				
PRCP-NSML380/12									
PRCP-NSML400/6									
PRCP-NSML400/12									
PRCP-NSML450/12									
PRCP-NSML450/6	$\frac{3.0}{(0.118)}$	$\frac{3.5}{(0.138)}$	$\frac{1.4}{(0.055)}$	$\frac{1.8}{(0.071)}$	$\frac{0.6}{(0.024)}$	$\frac{1.0}{(0.039)}$			
PRCP-NSML500/6									
PRCP-NSML550/6									
PRCP-NSML600/6									

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



Terminal material:
ENIG-plated terminals

Recommended Pad Layout



PRCP-NSML/X Series - Polymer Resettable Circuit Protectors

Packaging Quantity

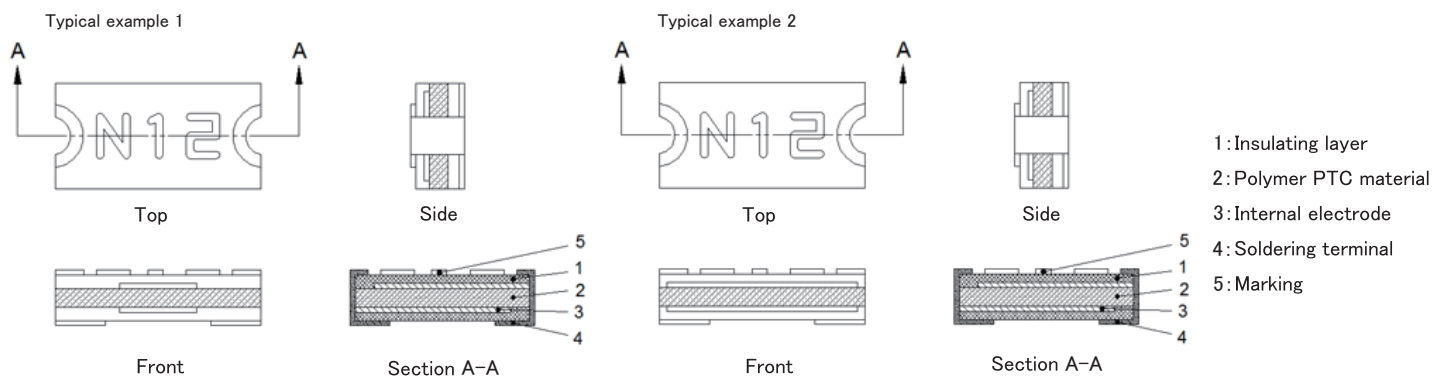
PRCP-NSML150/6~PRCP-NSML260/6 = 5000 pcs. per reel
 PRCP-NSML150/12~PRCP-NSML260/12 = 5000 pcs. per reel

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)

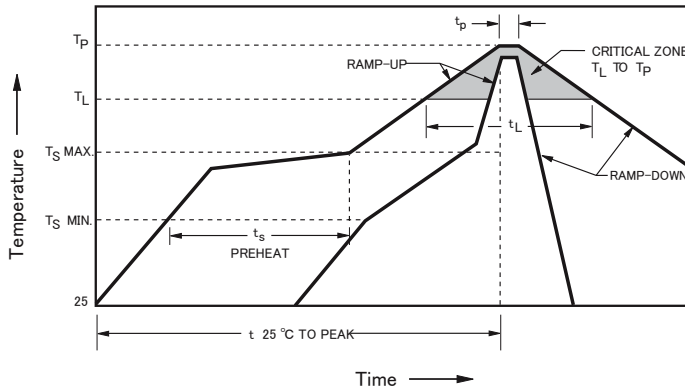
Model	Ambient Operating Temperature								
	-40°C	-20 °C	0 °C	23 °C	40 °C	50 °C	60 °C	70 °C	85°C
PRCP-NSML150/6	2.2	2.0	1.77	1.5	1.28	1.15	1.07	0.85	0.7
PRCP-NSML150/12	2.2	2.0	1.77	1.5	1.28	1.15	1.07	0.85	0.7
PRCP-NSML175/6	2.57	2.33	2.07	1.75	1.49	1.34	1.24	1.0	0.8
PRCP-NSML175/12	2.57	2.33	2.07	1.75	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



PRCP-NSML/X Series - Polymer Resettable Circuit Protectors

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 $T_{s\max}$) (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.

How to Order

PRCP - NSML380 / 12 - 2

Product Designator

Series

NSML = 1206 Low Ohmic Surface Mount Component

Hold Current, I_{hold}

150 - 600 (1.5 Amps - 6.0 Amps)

Maximum Voltage, V_{max}

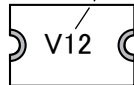
6 = 6 Volts
12 = 12 Volts

Packaging

-2 = Tape and Reel
Packaged per EIA-481

Typical Part Marking

Represents total content. Layout may vary.



MANUFACTURING
DATE CODE IS
LOCATED ON
PACKING LABEL.

PART IDENTIFICATION:

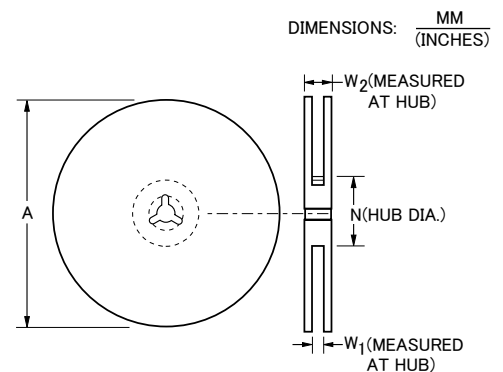
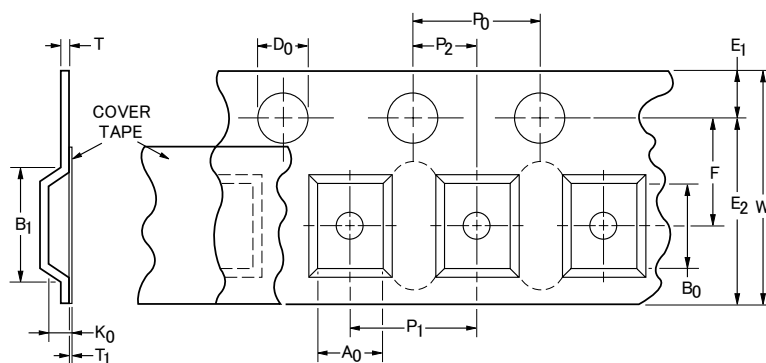
PRCP-NSML150/6 = G6
PRCP-NSML150/12 = G12
PRCP-NSML175/6 = H6
PRCP-NSML175/12 = H12
PRCP-NSML200/6 = J6
PRCP-NSML200/12 = J12
PRCP-NSML260/6 = N6
PRCP-NSML260/12 = N12
PRCP-NSML300/6 = P6
PRCP-NSML300/12 = P12
PRCP-NSML350/6 = S6
PRCP-NSML350/12 = S12
PRCP-NSML380/6 = V6
PRCP-NSML380/12 = V12
PRCP-NSML400/6 = 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

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

PRCP-NSML/X Series Tape and Reel Specifications

Tape Dimensions		PRCP-NSML/X Series per EIA-481
W		12.0 ± 0.30 (0.472 $\pm$ 0.012)
P ₀		4.0 ± 0.10 (0.157 $\pm$ 0.004)
10 P ₀		40.0 ± 0.20 (1.575 $\pm$ 0.008)
P ₁		4.0 ± 0.10 (0.157 $\pm$ 0.004)
P ₂		2.0 ± 0.05 (0.079 $\pm$ 0.002)
A ₀		1.90 ± 0.10 (0.075 $\pm$ 0.004)
B ₀		3.50 ± 0.10 (0.138 $\pm$ 0.004)
B ₁ max.		4.5 (0.177)
D ₀		$1.5 + 0.10/-0.0$ (0.059 + 0.004/-0)
F		5.5 ± 0.05 (0.216 + 0.002)
E ₁		1.75 ± 0.10 (0.069 $\pm$ 0.004)
E ₂ typ.		10.25 (0.404)
T max.		0.6 (0.024)
T ₁ max.		0.1 (0.004)
K ₀ (PRCP-NSML150/6~PRCP-NSML260/6, PRCP-NSML150/12~PRCP-NSML260/12)		0.65 ± 0.10 (0.026 $\pm$ 0.004)
K ₀ (PRCP-NSML300/6~PRCP-NSML600/6, PRCP-NSML300/12~PRCP-NSML450/12)		1.10 ± 0.10 (0.043 $\pm$ 0.004)
Leader min.		390 (15.35)
Trailer min.		160 (6.30)
Reel Dimensions		
A max.		185 (7.283)
N min.		50 (1.97)
W ₁		$12.4 + 1/-0$ (0.488 + 0.039/-0)
W ₂ max.		15.4 (0.606)



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