

Resettable Fuse PTC SMD1206 Series

Features

RoHS Compliant & Halogen Free

faster tripping, 1206 Dimension, Surface mountable, Solid state

Operation Current: 0.05A~2.0A

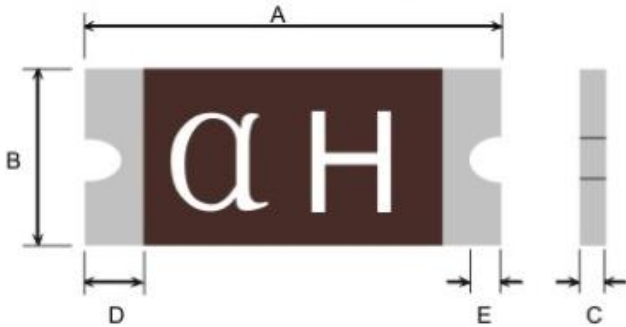
Maximum Voltage: 6V~60Vdc

Operating Temperature: -40℃ to +85℃

Agency recognition:



Dimensions(3216mm/ 1206 mils) Unit: mm



Terminal pad materials :Tin-Plated Nickle-copper
Terminal pad solderability : Meets EIA specification
RS 186-9E and ANSI/J-STD-002 Category 3.

Part number	Marking	A		B		C		D	E	Certification		Delivery Time	
		Min	max	Min	Max	Min	Max	Min	Min	UL	TUV	in stock	Produce
nSMD005	JZ	3.00	3.50	1.50	1.8	0.6	1.10	0.15	0.10	√	√	3days	18days
nSMD010	JN	3.00	3.50	1.50	1.8	0.6	1.10	0.15	0.10	√	√	3days	18days
nSMD010-33	JN	3.00	3.50	1.50	1.8	0.5	1.10	0.15	0.10	√	√	3days	18days
nSMD12	JN	3.00	3.50	1.50	1.8	0.6	1.10	0.15	0.10	√	√	3days	18days
nSMD016	JF	3.00	3.50	1.50	1.8	0.4	0.90	0.15	0.10	√	√	3days	18days
nSMD020	JF	3.00	3.50	1.50	1.8	0.4	0.90	0.15	0.10	√	√	3days	18days
nSMD025	JF	3.00	3.50	1.50	1.8	0.4	0.90	0.15	0.10	√	√	3days	18days
nSMD030	JB	3.00	3.50	1.50	1.8	0.4	0.90	0.15	0.10	-	√	3days	18days
nSMD035	JB	3.00	3.50	1.50	1.8	0.4	0.90	0.15	0.10	√	√	3days	18days
nSMD050	JG	3.00	3.50	1.50	1.8	0.35	0.85	0.15	0.10	√	√	3days	18days
nSMD050-13.2	JG	3.00	3.50	1.50	1.8	0.35	0.85	0.15	0.10	√	√	3days	18days
nSMD050-16	JG	3.00	3.50	1.50	1.8	0.35	0.85	0.15	0.10	-	√	3days	18days
nSMD050-24	JG	3.00	3.50	1.50	1.8	0.35	1.20	0.15	0.10	√	√	3days	18days
nSMD050-30	JG	3.00	3.50	1.50	1.8	0.35	1.20	0.15	0.10	√	√	3days	18days

Specifications are subject to change without notice

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Dimensions(3216mm/ 1206 mils) Unit: mm



Part number	Marking	A		B		C		D	E	Certification		Delivery Time	
		Min	max	Min	Max	Min	Max	Min	Min	UL	TUV	in stock	Produce
nSMD075	JA	3.00	3.50	1.50	1.8	0.35	0.85	0.15	0.10	√	√	3days	18days
nSMD075-13.2	JA	3.00	3.50	1.50	1.8	0.35	0.85	0.15	0.10	√	√	3days	18days
nSMD075-16	JA	3.00	3.50	1.50	1.8	0.6	1.30	0.15	0.10	√	√	3days	18days
nSMD100	JH	3.00	3.50	1.50	1.8	0.4	0.8	0.15	0.10	√	√	3days	18days
nSMD100-13.2	JH	3.00	3.50	1.50	1.8	0.4	1.3	0.15	0.10	-	√	3days	18days
nSMD100-16	JH	3.00	3.50	1.50	1.8	0.4	1.3	0.15	0.10	√	√	3days	18days
nSMD110	JH	3.00	3.50	1.50	1.8	0.4	0.8	0.15	0.10	√	√	3days	18days
nSMD150	JI	3.00	3.50	1.50	1.8	0.6	1.50	0.15	0.10	√	√	3days	18days
nSMD200	JK	3.00	3.50	1.50	1.8	0.7	1.70	0.15	0.10	√	√	3days	18days

thermal Derating Chart-IH(A)

Maximum ambient operating temperatures °C

Part Number	-40℃	-20℃	0℃	25℃	40℃	50℃	60℃	70℃	85℃
nSMD005	0.09	0.08	0.06	0.05	0.04	0.036	0.033	0.029	0.02
nSMD010	0.18	0.16	0.12	0.1	0.08	0.072	0.066	0.058	0.04
nSMD010-33	0.18	0.16	0.12	0.1	0.08	0.072	0.066	0.058	0.04
nSMD12	0.216	0.192	0.144	0.12	0.096	0.086	0.079	0.070	0.048
nSMD016	0.288	0.256	0.192	0.16	0.128	0.115	0.106	0.093	0.064
nSMD020	0.31	0.26	0.22	0.20	0.18	0.16	0.15	0.13	0.07
nSMD025	0.37	0.33	0.29	0.25	0.22	0.20	0.17	0.15	0.12
nSMD030	0.444	0.396	0.348	0.30	0.264	0.24	0.204	0.18	0.144
nSMD035	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
nSMD050	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
nSMD050-13.2	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
nSMD050-16	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
nSMD050-24	0.639	0.576	0.513	0.50	0.378	0.351	0.315	0.279	0.225
nSMD050-30	0.639	0.576	0.513	0.50	0.378	0.351	0.315	0.279	0.225
nSMD075	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
nSMD075-13.2	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
nSMD075-16	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
nSMD100	1.45	1.31	1.15	1.00	0.84	0.77	0.69	0.61	0.48
nSMD100-13.2	1.305	1.179	1.035	1.00	0.756	0.693	0.621	0.549	0.432
nSMD100-16	1.305	1.179	1.035	1.00	0.756	0.693	0.621	0.549	0.432

Maximum ambient operating temperatures °C

Part Number	-40℃	-20℃	0℃	25℃	40℃	50℃	60℃	70℃	85℃
nSMD110	1.595	1.441	1.265	1.10	0.924	0.847	0.759	0.671	0.528
nSMD150	2.18	1.94	1.72	1.50	1.28	1.17	1.06	0.96	0.77
nSMD200	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10

Electrical characteristics(25℃)

Part Number	I Hold	I Trip	V _{max}	I _{max}	P _d Max	Maximum Time to Trip		Resistance (Ω)		Certification		Delivery Time	
	A	A	DC	A	W	Current (A)	Time (S)	R _{imin}	R _{1max}	UL	TUV	in stock	Produce
nSMD005	0.05	0.15	60V	100	0.6	0.25	1.50	3.600	50.0	√	√	3days	18days
nSMD010	0.10	0.25	60V	100	0.6	0.5	1.00	1.600	15.0	√	√	3days	18days
nSMD010-33	0.10	0.25	33V	100	0.6	0.5	1.00	1.600	15.0	√	√	3days	18days
nSMD12	0.12	0.29	30V	100	0.6	1.00	0.20	1.350	10.0	√	√	3days	18days
nSMD016	0.16	0.37	30V	100	0.6	1.00	0.30	1.000	4.50	√	√	3days	18days
nSMD020	0.20	0.46	24V	100	0.6	8.0	0.08	0.350	3.50	√	√	3days	18days
nSMD025	0.25	0.50	16V	100	0.6	8.0	0.08	0.350	2.50	√	√	3days	18days
nSMD030	0.30	0.65	16V	100	0.6	8.0	0.10	0.250	2.00	-	√	3days	18days
nSMD035	0.35	0.75	16V	100	0.6	8.0	0.10	0.250	1.30	√	√	3days	18days
nSMD050	0.50	1.00	6V	100	0.6	8.0	0.10	0.150	0.70	√	√	3days	18days
nSMD050-13.2	0.50	1.00	13.2V	100	0.6	8.0	0.10	0.150	0.70	√	√	3days	18days
nSMD050-16	0.50	1.00	16V	100	0.6	8.0	0.10	0.150	0.75	-	√	3days	18days
nSMD050-24	0.50	1.00	24V	100	0.6	8.0	0.10	0.150	0.75	√	√	3days	18days
nSMD050-30	0.50	1.00	30V	100	0.6	8.0	0.10	0.150	0.75	√	√	3days	18days
nSMD075	0.75	1.50	6V	100	0.6	8.0	0.2	0.090	0.50	√	√	3days	18days
nSMD075-13.2	0.75	1.50	13.2V	100	0.6	8.0	0.2	0.090	0.50	√	√	3days	18days
nSMD075-16	0.75	1.50	16V	100	0.6	8.0	0.2	0.090	0.50	√	√	3days	18days
nSMD100	1.00	1.80	6V	100	0.8	8.0	0.3	0.055	0.27	√	√	3days	18days
nSMD100-13.2	1.00	1.80	13.2V	100	0.8	8.0	0.3	0.055	0.27	-	√	3days	18days
nSMD100-16	1.00	1.80	16V	100	0.8	8.0	0.3	0.055	0.33	√	√	3days	18days
nSMD110	1.10	1.80	8V	100	0.8	8.0	0.3	0.050	0.23	√	√	3days	18days
nSMD150	1.50	3.00	6V	100	0.8	8.0	1.0	0.040	0.13	√	√	3days	18days
nSMD200	2.00	3.50	6V	100	0.8	8.0	1.0	0.018	0.08	√	√	3days	18days

Electrical characteristics(25°C)

I_{hold} = Hold Current. Maximum current device will not trip in 25°C still air.

I_{trip} = Trip Current. Minimum current at which the device will always trip in 25°C still air.

V_{max} = Maximum operating voltage device can withstand without damage at rated current (I_{max}).

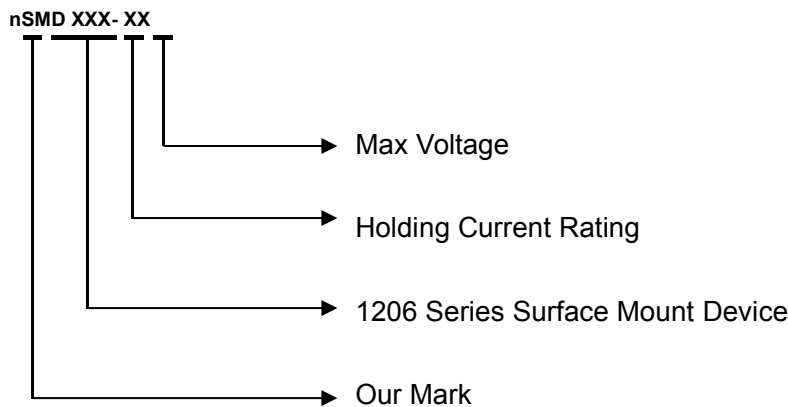
I_{max} = Maximum fault current device can withstand without damage at rated voltage (V_{max}).

P_d = Maximum power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

$R_{imin/max}$ = Minimum/Maximum device resistance prior to tripping at 25°C.

R_{1max} = Maximum device resistance is measured one hour post reflow.

Part number System



Test Procedures and Requirements

Test	Test Conditions	Accept/Reject Criteria
Resistance	In still air @ 25°C	$R_{min} \leq R \leq R_{max}$
Time to Trip	Specified current, V_{max} , 25°C	Tmaximum Time to Trip
Hold Current	30min ,at I_H	No trip
Trip Cycle Life	V_{max} , I_{max} , 100cycles	No arcing or burning
Trip Endurance	V_{max} , 1hours	No arcing or burning

Physical Characteristics and Environmental Specifications

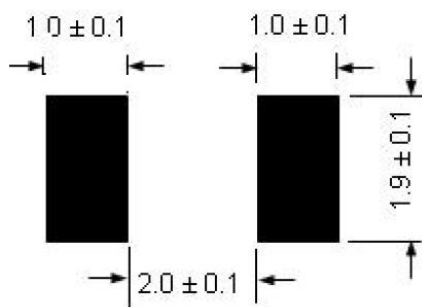
Physical Characteristics

Terminal materials :	Tin-Plated Nickle-copper
Soldering zone	Meets EIA specification RS 186-9E and ANSI/J-STD-002 Category 3.

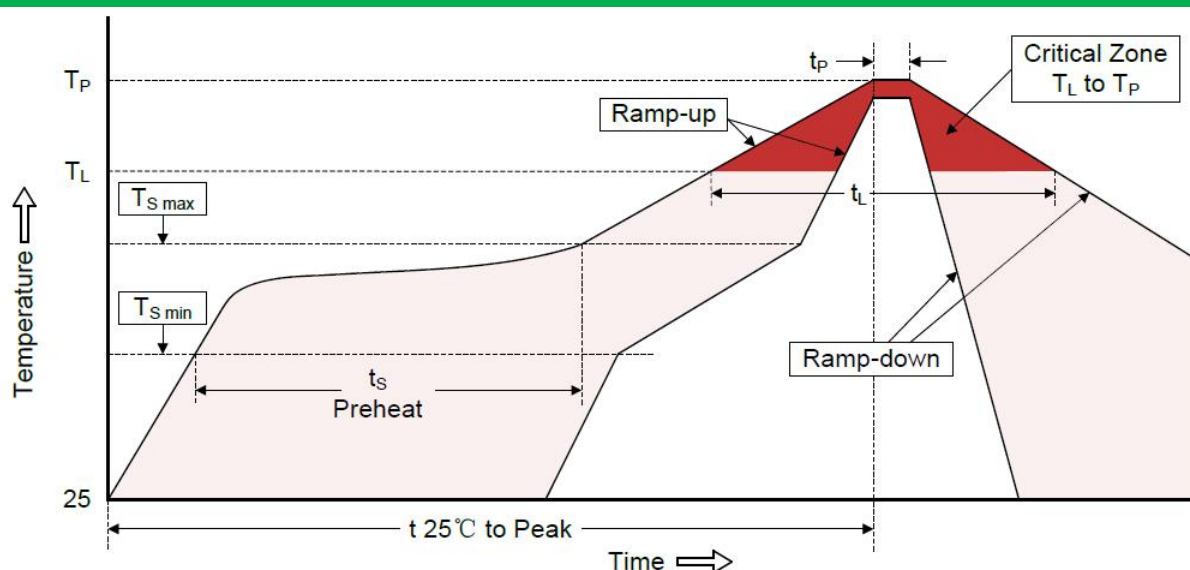
Environmental Specifications

Test	Conditions	Resistance change
Passive aging	+85°C, 1000hours	±10%
Humidity aging	+85°C/85%R.H.1000hours	±5%
Thermal shock	MIL-STD-202,Method 107G ,+85°C/-40°C,20times	-30% typical resistance change
Solvent Resistance	MIL-STD-202,Method 215	No change
Vibration	ML-STD-883C,Test Condition A	No change

Recommended Pad layout(mm)



Solder reflow conditions



Profile Feature	Pb-Free Assembly
Average ramp-up rate (TS max to TP)	3°C/second max.
Preheat	
-Temperature Min (TS min)	150°C
-Temperature Max (TS max)	200°C
-Time (min to max) (TS min to TS max)	60-180 seconds
Time maintained above:	
-Temperature (TL)	217°C
-Time (tL)	60-150 seconds
Peak Temperature (TP)	260°C
Time within 5°C of actual Peak Temperature (tp)	20-40 seconds
Ramp-down Rate	3°C/second max.
Time 25°C to Peak Temperature	8 minutes max.
Storage Condition	0°C~35°C, ≤70%RH

Solder reflow conditions

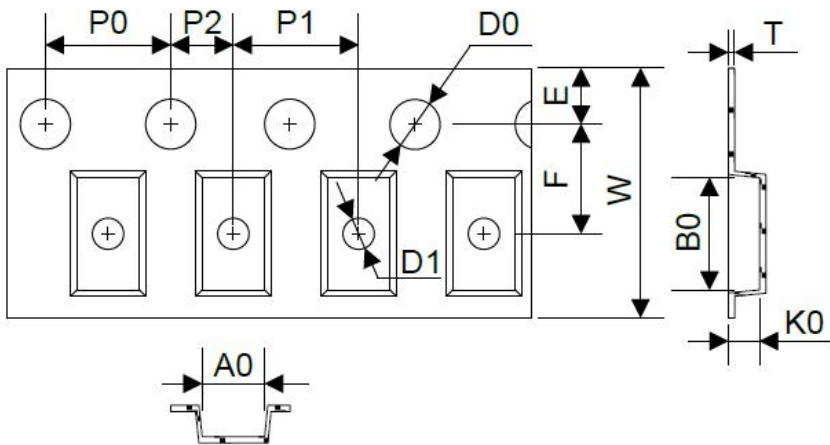


- Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free.
- Devices are not designed to be wave soldered to the bottom side of the board.
- Recommended maximum paste thickness is 0.25mm (0.010inch).
- Devices can be cleaned using standard industry methods and solvents.
- Soldering temperature profile meets RoHS leadfree process.

Notes: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements

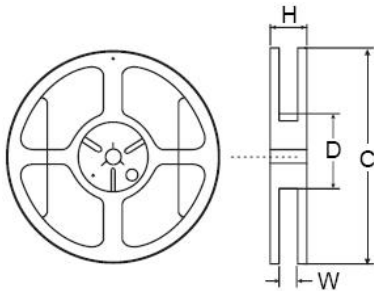
Tape Specification and Reel Dimensions

Tape



Symbol	Dimensions(mm)
W	8.00±0.30
F	3.50±0.05
E	1.75±0.10
D0	1.55±0.05
D1	1.00±0.10
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.05
A0	1.95±0.10
B0	3.65±0.10
T	0.20±0.10
K0	0.87/1.3/1.7±0.10
Leader min	390
Trailer min	160

Reel



Packaging Quantity

Part Number	Quantity	Part Number	Quantity	Part Number	Quantity
nSMD005	3500PCS	nSMD016	5000PCS	nSMD035	5000PCS
nSMD010	3500PCS	nSMD020	5000PCS	nSMD050	5000PCS
nSMD010-33	3500PCS	nSMD025	5000PCS	nSMD050-13.2	5000PCS
nSMD12	3500PCS	nSMD030	5000PCS	nSMD050-16	5000PCS

Packaging Quantity



Part Number	Quantity	Part Number	Quantity	Part Number	Quantity
nSMD050-24	3500PCS	nSMD100	5000PCS	nSMD150	3500PCS
nSMD075	5000PCS	nSMD100-13.2	3500PCS	nSMD200	3500PCS
nSMD075-13.2	5000PCS	nSMD100-16	3500PCS	nSMD050-30	3500PCS
nSMD075-16	3500PCS	nSMD110			

- 8mm tape on 7 inch reel per EIA-481(equivalent to IEC286, part 3)

Storage

The maximum ambient temperature shall not exceed 38°C. Storage temperatures higher than 38°C could result in the deformation of packaging materials. The maximum relative humidity recommended for storage is 60%. High humidity with high temperature can accelerate the oxidation of the solder plating on the termination and reduce the solderability of the components. Sealed plastic bags with desiccant shall be used to reduce the oxidation of the termination and shall only be opened prior to use. The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.

Warning

- Use PPTC beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
- PPTC are intended for protection against occasional over current or over temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
- Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal, and mechanical procedures for electronic components.
- Use PPTC with a large inductance in circuit will generate a circuit voltage ($L di/dt$) above the rated voltage of the PPTC.
- Avoid impact PPTC device its thermal expansion like placed under pressure or installed in limited space.
- Contamination of the PPTC material with certain silicon based oils or some aggressive solvents can adversely impact the performance of the devices. PPTC SMD can be cleaned by standard methods.
- Requests that customers comply with our recommended solder pad layouts and recommended reflow profile. Improper board layouts or reflow profile could negatively impact solderability performance of our devices.

Notes

The specification is intended to present application, product and technical data to assist the user in selecting PPTC circuit production devices. However, users should independently evaluate and test the suitability of each product. HUAAN makes no warranties as to the accuracy or completeness of the information and disclaims any liability resulting from its use. HUAAN's only obligations are those in the HUAAN Standard Terms and Conditions of Sale and in no case will HUAAN be liable for any incidental, indirect, or consequential damages arising from the sale, resale, or misuse of its products. HUAAN reserves the right to change or update, without notice, any information contained in this specification.