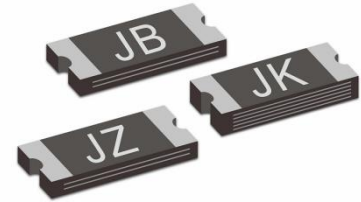




# Surface Mountable PTC Resettable Fuse: JK-nSMD Series

## Features:

- ◇ RoHS Compliant & Halogen Free
- ◇ faster tripping, 1206 Dimension, Surface mountable, Solid state
- ◇ Operation Current: 0.05A~2.00A
- ◇ Maximum Voltage: 6V~60Vdc
- ◇ Operating Temperature: -40°C TO 85°C
- ◇ Agency recognition:UL、CSA、TUV



## Product Dimensions



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

Pig.1

Unit : mm

Model	Marking	A		B		C		D	E
		Min	Max	Min	Max	Min	Max	Min	Min
JK-nSMD005	JZ	3.00	3.50	1.50	1.80	0.60	1.10	0.15	0.10
JK-nSMD010	JN	3.00	3.50	1.50	1.80	0.60	1.10	0.15	0.10
JK-nSMD010-33	JN	3.00	3.50	1.50	1.80	0.50	1.10	0.15	0.10
JK-nSMD012	JN	3.00	3.50	1.50	1.80	0.60	1.10	0.15	0.10
JK-nSMD016	JF	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
JK-nSMD020	JF	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
JK-nSMD025	JF	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
JK-nSMD030	JB	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
JK-nSMD035	JB	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
JK-nSMD050	JG	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10



Model	Marking	A		B		C		D	E
		Min	Max	Min	Max	Min	Max	Min	Min
JK-nSMD050-13.2	JG	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
JK-nSMD050-16	JG	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
JK-nSMD050-24	JG	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
JK-nSMD075	JA	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
JK-nSMD075-13.2	JA	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
JK-nSMD075-16	JA	3.00	3.50	1.50	1.80	0.60	1.30	0.15	0.10
JK-nSMD100	JH	3.00	3.50	1.50	1.80	0.40	0.80	0.15	0.10
JK-nSMD100-13.2	JH	3.00	3.50	1.50	1.80	0.40	1.30	0.15	0.10
JK-nSMD100-16	JH	3.00	3.50	1.50	1.80	0.40	1.30	0.15	0.10
JK-nSMD110	JH	3.00	3.50	1.50	1.80	0.40	0.80	0.15	0.10
JK-nSMD150	JI	3.00	3.50	1.50	1.80	0.60	1.50	0.15	0.10
JK-nSMD200	JK	3.00	3.50	1.50	1.80	0.70	1.70	0.15	0.10

**Thermal Derating Chart-IH (A)**

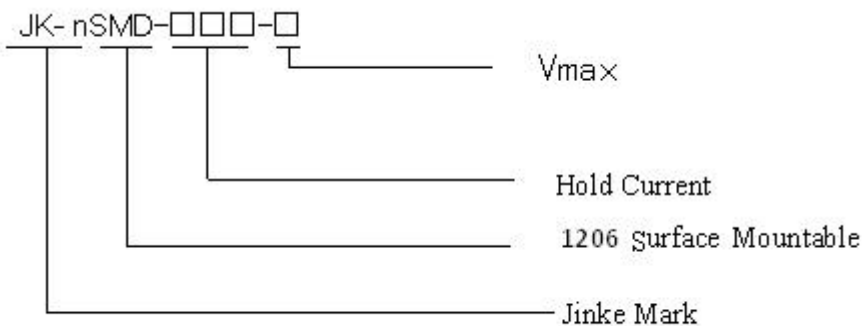
Model	Maximum ambient operating temperatures (°C)								
	-40	-20	0	25	40	50	60	70	85
JK-nSMD005	0.09	0.08	0.06	0.05	0.04	0.036	0.033	0.029	0.02
JK-nSMD010	0.18	0.16	0.12	0.1	0.08	0.072	0.066	0.058	0.04
JK-nSMD010-33	0.18	0.16	0.12	0.1	0.08	0.072	0.066	0.058	0.04
JK-nSMD012	0.216	0.192	0.144	0.12	0.096	0.086	0.079	0.070	0.048
JK-nSMD016	0.288	0.256	0.192	0.160	0.128	0.115	0.106	0.093	0.064
JK-nSMD020	0.31	0.26	0.22	0.20	0.18	0.16	0.15	0.13	0.07
JK-nSMD025	0.37	0.33	0.29	0.25	0.22	0.20	0.17	0.15	0.12
JK-nSMD030	0.444	0.396	0.348	0.30	0.264	0.24	0.204	0.18	0.144
JK-nSMD035	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
JK-nSMD050	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
JK-nSMD050-13.2	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
JK-nSMD050-16	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
JK-nSMD050-24	0.639	0.576	0.513	0.50	0.378	0.351	0.315	0.279	0.225
JK-nSMD075	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
JK-nSMD100	1.45	1.31	1.15	1.00	0.84	0.77	0.69	0.61	0.48
JK-nSMD100-13.2	1.305	1.179	1.035	1.00	0.756	0.693	0.621	0.549	0.432
JK-nSMD100-16	1.305	1.179	1.035	1.00	0.756	0.693	0.621	0.549	0.432
JK-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 Characteristic**

Model	Vmax	Imax	Ihold	Itrip	Time to trip		R25	
	(Vdc)		(A)	(A)	(A)	(A)	(Sec)	Ri <sub>min</sub>
			@25°C	@25°C			(Ω)	(Ω)
JK-nSMD005	60.0	100	0.05	0.15	0.25	1.50	3.600	50.000
JK-nSMD010	60.0	100	0.10	0.25	0.5	1.00	1.600	15.000
JK-nSMD010-33	33.0	100	0.10	0.25	0.5	1.00	1.600	15.000
JK-nSMD012	30	100	0.12	0.29	1.00	0.20	1.350	10.00
JK-nSMD016	30	100	0.16	0.37	1.00	0.30	1.000	4.50
JK-nSMD020	24.0	100	0.20	0.46	8.0	0.08	0.350	3.500
JK-nSMD025	16.0	100	0.25	0.50	8.0	0.08	0.350	2.500
JK-nSMD030	16.0	100	0.30	0.65	8.0	0.10	0.250	2.00
JK-nSMD035	16.0	100	0.35	0.75	8.0	0.10	0.250	1.300
JK-nSMD050	6.0	100	0.50	1.00	8.0	0.10	0.150	0.700
JK-nSMD050-13.2	13.2	100	0.50	1.00	8.0	0.10	0.150	0.700
JK-nSMD050-16	16	100	0.50	1.00	8.0	0.10	0.150	0.750
JK-nSMD050-24	24	100	0.50	1.00	8.0	0.10	0.150	0.750
JK-nSMD075	6.0	100	0.75	1.50	8.0	0.20	0.090	0.500
JK-nSMD075-13.2	13.2	100	0.75	1.50	8.0	0.20	0.090	0.500
JK-nSMD075-16	16	100	0.75	1.50	8.0	0.20	0.090	0.500
JK-nSMD100	6.0	100	1.00	1.80	8.0	0.30	0.055	0.270
JK-nSMD100-13.2	13.2	100	1.00	1.80	8.0	0.30	0.055	0.270
JK-nSMD100-16	16	100	1.00	1.80	8.0	0.30	0.055	0.330
JK-nSMD110	8.0	100	1.10	1.80	8.0	0.30	0.050	0.230
JK-nSMD150	6.0	100	1.50	3.00	8.0	1.00	0.040	0.130
JK-nSMD200	6.0	100	2.00	3.50	8.0	1.0	0.018	0.080

**Part Numbering 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	$V_{max}$ , 1 hours	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%RH.1000 hours	±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 chage

Electrical Specifications:

$I_{hold}$  = 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 ( $V_{max}$ ).

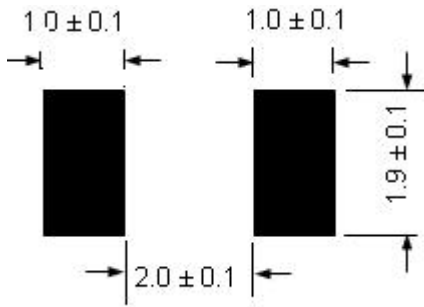
$P_d$ =Maximum power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

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

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



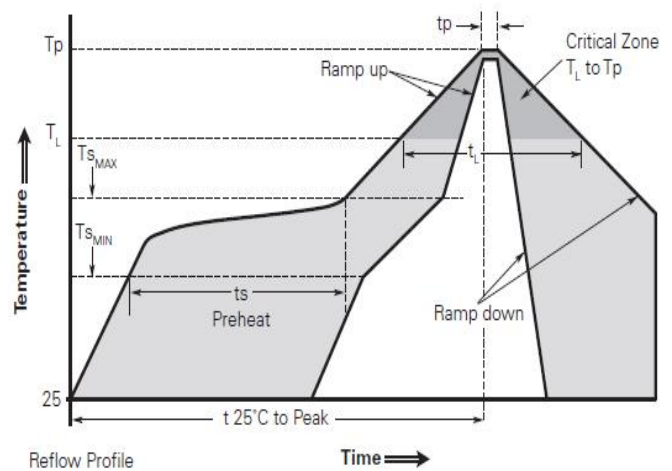
Recommended pad layout (mm)



Solder reflow conditions

Profile Feature	Pb-Free Assembly
Average ramp up rate (Ts <sub>MAX</sub> to Tp)	3°C/second max.
<b>Preheat</b>	
• Temperature min. (Ts <sub>MIN</sub> )	150°C
• Temperature max. (Ts <sub>MAX</sub> )	200°C
• Time (ts <sub>MIN</sub> to ts <sub>MAX</sub> )	60-120 seconds
<b>Time maintained above:</b>	
• Temperature (T <sub>L</sub> )	217°C
• Time (t <sub>L</sub> )	60-150 seconds
<b>Peak/Classification temperature (Tp)</b>	260°C
<b>Time within 5°C of actual peak temperature</b>	
Time (tp)	30 seconds max.
<b>Ramp down rate</b>	3°C/second max.
<b>Time 25°C to peak temperature</b>	8 minutes max.

Note: All temperatures refer to topside of the package, measured on the package body surface.



- 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.

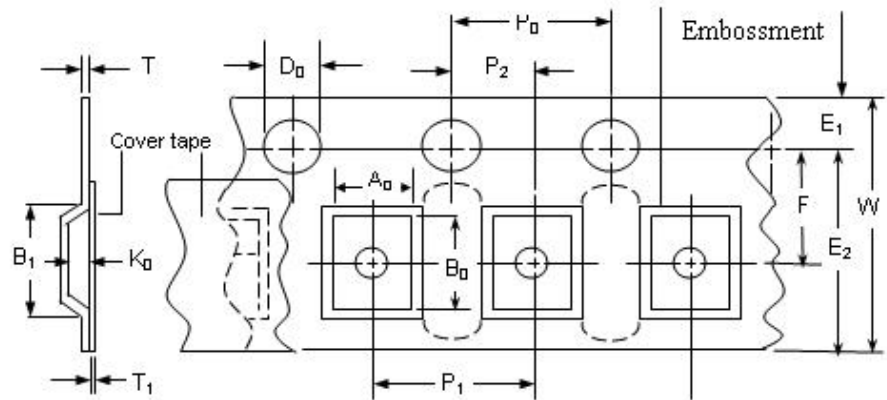
Notes: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements



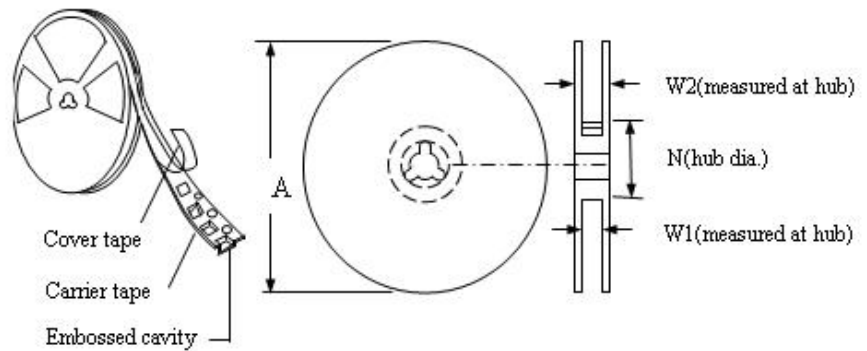
Tape Specification And Reel Dimensions

Covering Specifications EIA 481-1(Unit:mm)	
W	8.15 +0.15/-0.3
P <sub>0</sub>	4.0 ± 0.10
P <sub>1</sub>	4.0± 0.10
P <sub>2</sub>	2.0 ± 0.05
A <sub>0</sub>	1.95 ± 0.10
B <sub>0</sub>	3.65 ± 0.10
D <sub>0</sub>	1.55± 0.05
F	3.50± 0.05
E <sub>1</sub>	1.75 ± 0.10
T	0.20± 0.10
Leader min.	390
Trailer min.	160
Reel Dimensions	
A	178±1.0
N	59±1
W <sub>1</sub>	8.5+1.0/-0.2
W <sub>2</sub>	12.0±1

EIA Tape Component Dimintions



EIA Reel Dimintions



Packaging Quantity

Model	Quantity	Model	Quantity
JK-nSMD005	3500	JK-nSMD050-24	3500
JK-nSMD010	3500	JK-nSMD075	5000
JK-nSMD010-33	3500	JK-nSMD075-13.2	5000
JK-nSMD012	3500	JK-nSMD075-16	3500
JK-nSMD016	5000	JK-nSMD100	5000
JK-nSMD020	5000	JK-nSMD100-13.2	3500
JK-nSMD025	5000	JK-nSMD100-16	3500
JK-nSMD030	5000	JK-nSMD110	5000
JK-nSMD035	5000	JK-nSMD150	3500
JK-nSMD050	5000	JK-nSMD200	3500
JK-nSMD050-13.2	5000		
JK-nSMD050-16	5000		



## 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. JinRui makes no warranties as to the accuracy or completeness of the information and disclaims any liability resulting from its use. JinRui's only obligations are those in the JinRui Standard Terms and Conditions of Sale and in no case will JinRui be liable for any incidental, indirect, or consequential damages arising from the sale, resale, or misuse of its products. JinRui reserves the right to change or update, without notice, any information contained in this specification.

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