

Resettable Fuse PTC SMD0603 Series

Features

RoHS Compliant & Halogen Free

faster tripping, 0603 Dimension, Surface mountable, Solid state

Operation Current: 0.03A~0.5A

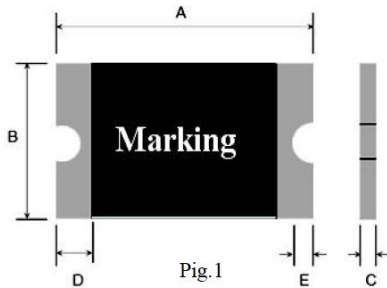
Maximum Voltage: 6V~30Vdc

Operating Temperature: -40°C to +85°C

Agency recognition:



Dimensions(1608mm / 0603 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	TUV Certificate	Delivery Time	
		Min	max	Min	Max	Min	Max	Min	Max	Max		in stock	Produce
SMD0603-003	-	1.45	1.85	0.65	1.05	0.4	0.75	0.15	0.5	0.4	-	3days	18days
SMD0603-004	-	1.45	1.85	0.65	1.05	0.4	0.75	0.15	0.5	0.4	-	3days	18days
SMD0603-005	1	1.45	1.85	0.65	1.05	0.4	0.75	0.15	0.5	0.4	-	3days	18days
SMD0603-010	1	1.45	1.85	0.65	1.05	0.4	0.75	0.15	0.5	0.4	-	3days	18days
SMD0603-020	2	1.45	1.85	0.65	1.05	0.4	0.75	0.15	0.5	0.4	-	3days	18days
SMD0603-025	2	1.45	1.85	0.65	1.05	0.4	1.00	0.15	0.5	0.4	-	3days	18days
SMD0603-030	3	1.45	1.85	0.65	1.05	0.4	1.00	0.15	0.5	0.4	-	3days	18days
SMD0603-035	3	1.45	1.85	0.65	1.05	0.4	1.00	0.15	0.5	0.4	-	3days	18days
SMD0603-040	5	1.45	1.85	0.65	1.05	0.5	1.20	0.15	0.5	0.4	-	3days	18days
SMD0603-050	5	1.45	1.85	0.65	1.05	0.5	1.20	0.15	0.5	0.4	-	3days	18days

Thermal Derating Chart-IH(A)

Maximum ambient operating temperatures °C									
Part Number	-40 °C	-20 °C	0 °C	25 °C	40 °C	50 °C	60 °C	70 °C	85 °C
SMD0603-003	0.042	0.038	0.035	0.03	0.026	0.021	0.018	0.015	0.011
SMD0603-003	0.056	0.05	0.046	0.04	0.034	0.028	0.024	0.02	0.014
SMD0603-005	0.07	0.06	0.055	0.05	0.04	0.035	0.03	0.025	0.015
SMD0603-010	0.14	0.12	0.11	0.10	0.08	0.07	0.06	0.05	0.03
SMD0603-020	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
SMD0603-025	0.35	0.31	0.29	0.25	0.21	0.18	0.15	0.13	0.09
SMD0603-030	0.42	0.38	0.35	0.30	0.26	0.21	0.18	0.15	0.11
SMD0603-035	0.47	0.44	0.39	0.35	0.30	0.27	0.24	0.20	0.14
SMD0603-040	0.54	0.50	0.45	0.40	0.34	0.31	0.27	0.23	0.16
SMD0603-050	0.67	0.63	0.56	0.50	0.43	0.39	0.34	0.29	0.20

Electrical characteristics(25°C)

Part Number	I Hold	I Trip	V max	I max	Pd Max	Maximum Time to Trip		Resistance (Ω)		Delivery Time		Certification
	A	A	DC	A	W	Current (A)	Time S	Ri min	R1 max	in stock	Produce	TUV
SMD0603-003	0.03	0.09	30V	20	0.50	0.15	1	6.0	65.0	3days	18days	Under Review
SMD0603-004	0.04	0.12	24V	20	0.50	0.2	1	4.0	45.0	3days	18days	Under Review
SMD0603-005	0.05	0.15	24V	20	0.50	0.2	1	3.0	35.0	3days	18days	Under Review
SMD0603-010	0.10	0.30	15V	40	0.50	0.5	1	0.9	8.0	3days	18days	Under Review
SMD0603-020	0.20	0.40	9V	40	0.50	1.0	0.6	0.55	3.5	3days	18days	Under Review
SMD0603-025	0.25	0.55	9V	40	0.50	8	0.08	0.50	3.0	3days	18days	Under Review
SMD0603-030	0.30	0.70	6V	40	0.50	8	0.1	0.30	2.0	3days	18days	Under Review
SMD0603-035	0.35	0.75	6V	40	0.50	8	0.1	0.20	1.40	3days	18days	Under Review
SMD0603-040	0.4	0.80	6V	40	0.50	8	0.1	0.20	0.9	3days	18days	Under Review
SMD0603-050	0.5	1.00	6V	40	0.50	8	0.1	0.1	0.8	3days	18days	Under Review

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}).

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

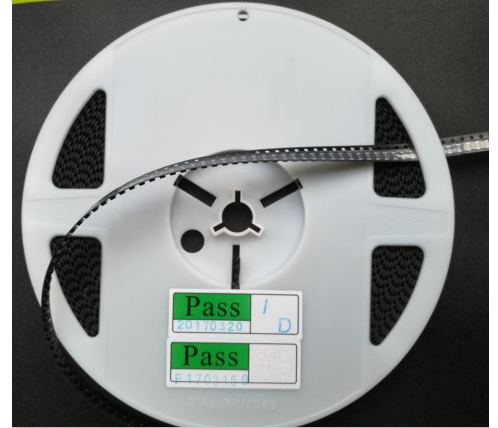
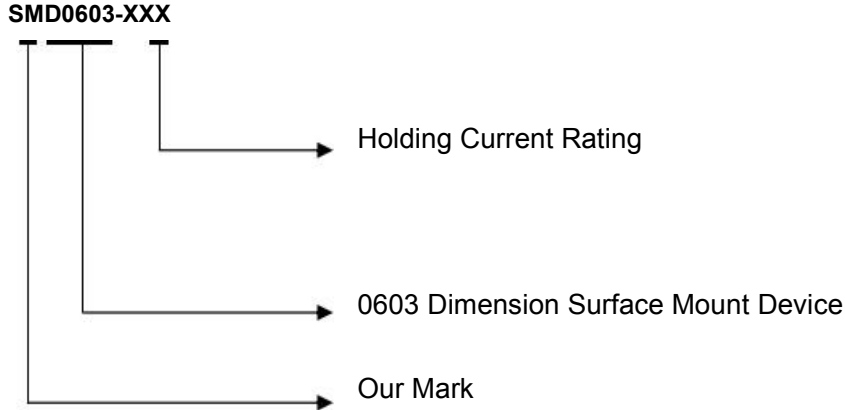
R_{i min/max} = Minimum/Maximum device resistance prior to tripping at 25°C.

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

Specifications are subject to change without notice

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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

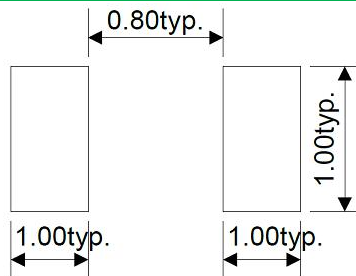
Physical Characteristics

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)



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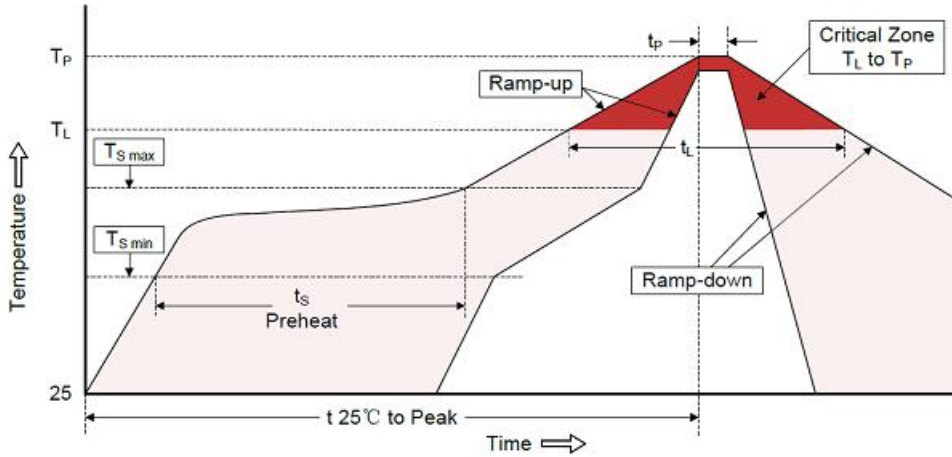
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Solder reflow conditions



Solder reflow conditions

Profile Feature	Pb-Free Assembly	
Average ramp-up rate (TS max to TP)	3°C/second max.	·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 (0.010 inch) ·Device can be cleaned using standard industry methods and solvents. Note : If reflow temperatures exceed the recommended profile, devices may not meet the performance Requirement
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	

Packaging Quantity

Part Number	Quantity	Part Number	Quantity
SMD0603-003	5000PCS	SMD0603-025	5000PCS
SMD0603-004	5000PCS	SMD0603-030	5000PCS
SMD0603-005	5000PCS	SMD0603-035	5000PCS
SMD0603-010	5000PCS	SMD0603-040	4000PCS
SMD0603-020	5000PCS	SMD0603-050	4000PCS

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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	0.50±0.10
		P0	4.00±0.10
		P1	4.00±0.10
		P2	2.00±0.05
		A0	1.10±0.10
		B0	1.92±0.10
		T	0.20±0.10
		K0	0.75/0.95±0.10
		Leader min	390
		Trailer min	160
Reel		C	Φ178±1.0
		D	Φ60.2±0.5
		H	11.0±0.5
		W	9.0±1.5

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.

Resettable Fuse PTC SMD0603 Series**Warning**

- 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.