

Resettable Fuse PTC SMD1812 Series

Features

RoHS Compliant & Halogen Free

faster tripping, 1812 Dimension, Surface mountable, Solid state

Operation Current: 0.10A~3.50A

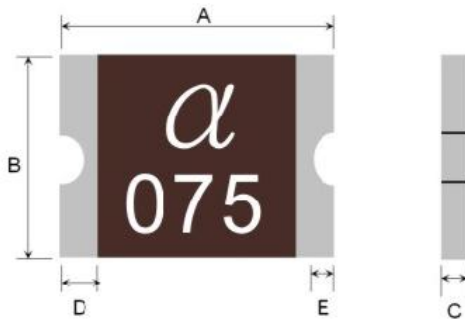
Maximum Voltage: 6V~60Vdc

Operating Temperature: -40℃ to +85℃

Agency recognition:



Dimensions(4532mm/ 1812 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
mSMD010	JK010	4.37	4.73	3.07	3.41	0.5	1.0	0.3	0.15	√	√	3days	18days
mSMD010-60	JK010	4.37	4.73	3.07	3.41	0.5	1.0	0.3	0.15	√	√	3days	18days
mSMD014-33	JK014	4.37	4.73	3.07	3.41	0.5	1.0	0.3	0.15	√	√	3days	18days
mSMD014	JK014	4.37	4.73	3.07	3.41	0.5	1.0	0.3	0.15	√	√	3days	18days
mSMD020	JK020	4.37	4.73	3.07	3.41	0.5	1.1	0.3	0.15	√	√	3days	18days
mSMD030	JK030	4.37	4.73	3.07	3.41	0.5	1.0	0.3	0.15	√	√	3days	18days
mSMD050	JK050	4.37	4.73	3.07	3.41	0.4	0.9	0.3	0.15	√	√	3days	18days
mSMD050-24	JK050	4.37	4.73	3.07	3.41	0.4	0.9	0.3	0.15	√	√	3days	18days
mSMD050-30	JK050	4.37	4.73	3.07	3.41	0.4	1.0	0.3	0.15	√	√	3days	18days
mSMD075	JK075	4.37	4.73	3.07	3.41	0.4	0.9	0.3	0.15	√	√	3days	18days
mSMD075-24	JK075	4.37	4.73	3.07	3.41	0.5	1.2	0.3	0.15	√	√	3days	18days
mSMD075-33	JK075	4.37	4.73	3.07	3.41	0.6	1.2	0.3	0.15	√	√	3days	18days
mSMD110	JK110	4.37	4.73	3.07	3.41	0.4	0.9	0.3	0.15	√	√	3days	18days
mSMD110-16	JK110	4.37	4.73	3.07	3.41	0.4	0.9	0.3	0.15	√	√	3days	18days

Dimensions(4532mm/ 1812 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
mSMD110-24	JK110	4.37	4.73	3.07	3.41	0.6	1.30	0.30	0.15	√	√	3days	18days
mSMD110-33	JK110	4.37	4.73	3.07	3.41	0.7	1.70	0.30	0.15	√	√	3days	18days
mSMD125	JK125	4.37	4.73	3.07	3.41	0.5	0.12	0.30	0.15	√	√	3days	18days
mSMD125-8	JK125	4.37	4.73	3.07	3.41	0.3	0.90	0.30	0.15	-	√	3days	18days
mSMD150	JK150	4.37	4.73	3.07	3.41	0.3	0.90	0.30	0.15	√	√	3days	18days
mSMD150-16	JK150	4.37	4.73	3.07	3.41	0.5	1.20	0.30	0.15	√	√	3days	18days
mSMD150-24	JK150	4.37	4.73	3.07	3.41	0.8	1.7	0.30	0.15	-	√	3days	18days
mSMD160	JK160	4.37	4.73	3.07	3.41	0.3	0.80	0.30	0.15	√	√	3days	18days
mSMD200	JK200	4.37	4.73	3.07	3.41	0.4	1.20	0.30	0.15	√	√	3days	18days
mSMD200-12	JK200	4.37	4.73	3.07	3.41	0.4	1.20	0.30	0.15	-	√	3days	18days
mSMD200-16	JK200	4.37	4.73	3.07	3.41	0.4	1.20	0.30	0.15	-	√	3days	18days
mSMD260	JK260	4.37	4.73	3.07	3.41	0.5	1.50	0.30	0.15	√	√	3days	18days
mSMD260-12	JK260	4.37	4.73	3.07	3.41	0.6	1.50	0.30	0.15	-	√	3days	18days
mSMD260-16	JK260	4.37	4.73	3.07	3.41	0.8	1.70	0.30	0.15	-	√	3days	18days
mSMD300	JK300	4.37	4.73	3.07	3.41	0.5	1.50	0.30	0.15	√	√	3days	18days
mSMD350	JK350	4.37	4.73	3.07	3.41	0.5	1.50	0.30	0.15	-	√	3days	18days

thermal Derating Chart-IH(A)

Maximum ambient operating temperatures °C

Part Number	-40℃	-20℃	0℃	25℃	40℃	50℃	60℃	70℃	85℃
mSMD010	0.16	0.14	0.12	0.10A	0.08	0.07	0.06	0.05	0.03
mSMD014	0.23	0.19	0.17	0.14A	0.12	0.10	0.09	0.08	0.06
mSMD020	0.29	0.26	0.23	0.20A	0.17	0.15	0.14	0.12	0.10
mSMD030	0.44	0.39	0.35	0.30A	0.26	0.23	0.21	0.18	0.15
mSMD050	0.59	0.57	0.55	0.50A	0.45	0.43	0.35	0.30	0.23
mSMD075	1.10	0.99	0.87	0.75A	0.63	0.57	0.49	0.45	0.35
mSMD110	1.60	1.45	1.28	1.10A	0.92	0.83	0.71	0.66	0.52
mSMD110-8	1.60	1.45	1.28	1.10A	0.92	0.83	0.71	0.66	0.52
mSMD110-24	1.60	1.45	1.28	1.10A	0.92	0.83	0.71	0.66	0.52
mSMD110-33	1.60	1.45	1.28	1.10A	0.92	0.83	0.71	0.66	0.52

Maximum ambient operating temperatures °C									
Part Number	-40℃	-20℃	0℃	25℃	40℃	50℃	60℃	70℃	85℃
mSMD125	2.00	1.75	1.52	1.25A	1.00	0.95	0.90	0.75	0.53
mSMD125-8	2.00	1.75	1.52	1.25A	1.00	0.95	0.90	0.75	0.53
mSMD150	2.30	2.05	1.77	1.50A	1.23	1.09	0.95	0.82	0.61
mSMD150-16	2.30	2.05	1.77	1.50A	1.23	1.09	0.95	0.82	0.61
mSMD150-24	2.30	2.05	1.77	1.50A	1.23	1.09	0.95	0.82	0.61
mSMD160	2.45	2.15	1.89	1.60A	1.34	1.25	1.15	0.96	0.79
mSMD200	2.89	2.61	2.30	2.00A	1.75	1.66	1.45	1.39	1.19
mSMD200-12	2.89	2.61	2.30	2.00A	1.75	1.66	1.45	1.39	1.19
mSMD200-16	2.89	2.61	2.30	2.00A	1.75	1.66	1.45	1.39	1.19
mSMD260	3.76	3.39	2.99	2.60A	2.28	2.16	1.89	1.81	1.55
mSMD260-12	3.38	3.05	2.69	2.60A	2.05	1.94	1.70	1.63	1.39
mSMD260-16	3.38	3.05	2.69	2.60A	2.05	1.94	1.70	1.63	1.39
mSMD300	4.34	3.92	3.45	3.00A	2.63	2.49	2.18	2.09	1.79
mSMD350	5.06	4.57	4.03	3.50A	3.06	2.91	2.54	2.43	2.08

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
mSMD010	0.10	0.30	30V	100	0.8	0.5	1.50	0.750	15.0	√	√	3days	18days
mSMD010-60	0.10	0.30	60V	100	0.8	0.5	1.50	0.750	15.0	√	√	3days	18days
mSMD014-33	0.14	0.34	33V	100	0.8	1.5	0.15	0.650	6.00	√	√	3days	18days
mSMD014	0.14	0.34	60V	100	0.8	1.5	0.15	0.650	6.00	√	√	3days	18days
mSMD020	0.20	0.40	30V	100	0.8	8.0	0.02	0.350	5.00	√	√	3days	18days
mSMD030	0.30	0.60	30V	100	0.8	8.0	0.10	0.250	3.00	√	√	3days	18days
mSMD050	0.50	1.00	15V	100	0.8	8.0	0.15	0.150	1.00	√	√	3days	18days
mSMD050-24	0.50	1.00	24V	100	0.8	8.0	0.15	0.150	1.00	√	√	3days	18days
mSMD050-30	0.50	1.00	30V	100	0.8	8.0	0.15	0.150	1.00	√	√	3days	18days
mSMD075	0.75	1.50	13.2V	100	0.8	8.0	0.20	0.090	0.45	√	√	3days	18days
mSMD075-24	0.75	1.50	24V	100	0.8	8.0	0.20	0.090	0.45	√	√	3days	18days
mSMD075-33	0.75	1.50	33V	100	0.8	8.0	0.20	0.090	0.45	√	√	3days	18days

Electrical characteristics(25°C)



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
mSMD110	1.10	2.20	8V	100	0.8	8.0	0.30	0.050	0.25	√	√	3days	18days
mSMD110-16	1.10	2.20	16V	100	0.8	8.0	0.30	0.050	0.25	√	√	3days	18days
mSMD110-24	1.10	2.20	24V	100	0.8	8.0	0.30	0.050	0.25	√	√	3days	18days
mSMD110-33	1.10	2.20	33V	100	0.8	8.0	0.30	0.050	0.25	√	√	3days	18days
mSMD125-8	1.25	2.50	8V	100	0.8	8.0	0.40	0.050	0.20	√	√	3days	18days
mSMD125	1.25	2.50	16V	100	0.8	8.0	0.40	0.050	0.20	-	√	3days	18days
mSMD150	1.50	3.00	8V	100	0.8	8.0	0.50	0.040	0.16	√	√	3days	18days
mSMD150-16	1.50	3.00	16V	100	0.8	8.0	0.50	0.040	0.16	√	√	3days	18days
mSMD150-24	1.50	3.00	24V	100	0.8	8.0	0.50	0.040	0.16	-	√	3days	18days
mSMD160	1.60	2.80	8V	100	0.8	8.0	1.00	0.030	0.13	√	√	3days	18days
mSMD200	2.00	4.00	8V	100	0.8	8.0	2.00	0.020	0.10	√	√	3days	18days
mSMD200-12	2.00	4.00	12V	100	0.8	8.0	2.00	0.020	0.10	-	√	3days	18days
mSMD200-16	2.00	4.00	16V	100	0.8	8.0	2.00	0.020	0.10	-	√	3days	18days
mSMD260	2.60	5.00	8V	100	0.8	8.0	2.50	0.015	0.05	√	√	3days	18days
mSMD260-12	2.60	5.00	12V	100	0.8	8.0	2.50	0.015	0.06	-	√	3days	18days
mSMD260-16	2.60	5.00	16V	100	0.8	8.0	2.50	0.015	0.06	-	√	3days	18days
mSMD300	3.00	5.00	6V	100	0.8	8.0	4.00	0.012	0.04	√	√	3days	18days
mSMD350	3.50	6.00	6V	35	2.0	8.0	4.00	0.008	0.03	-	√	3days	18days

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}).

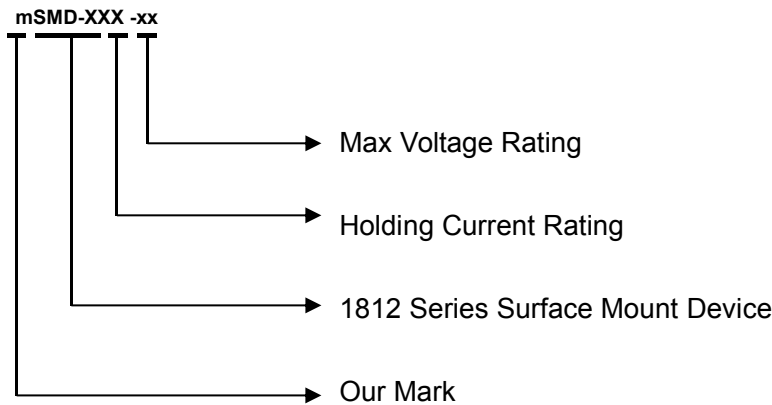
P_d=Maximum power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

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

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

Resettable Fuse PTC SMD1812 Series

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

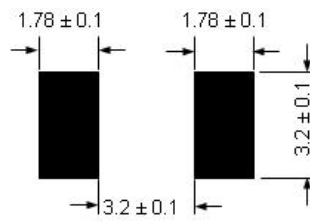
Physical Characteristics

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)



Specifications are subject to change without notice

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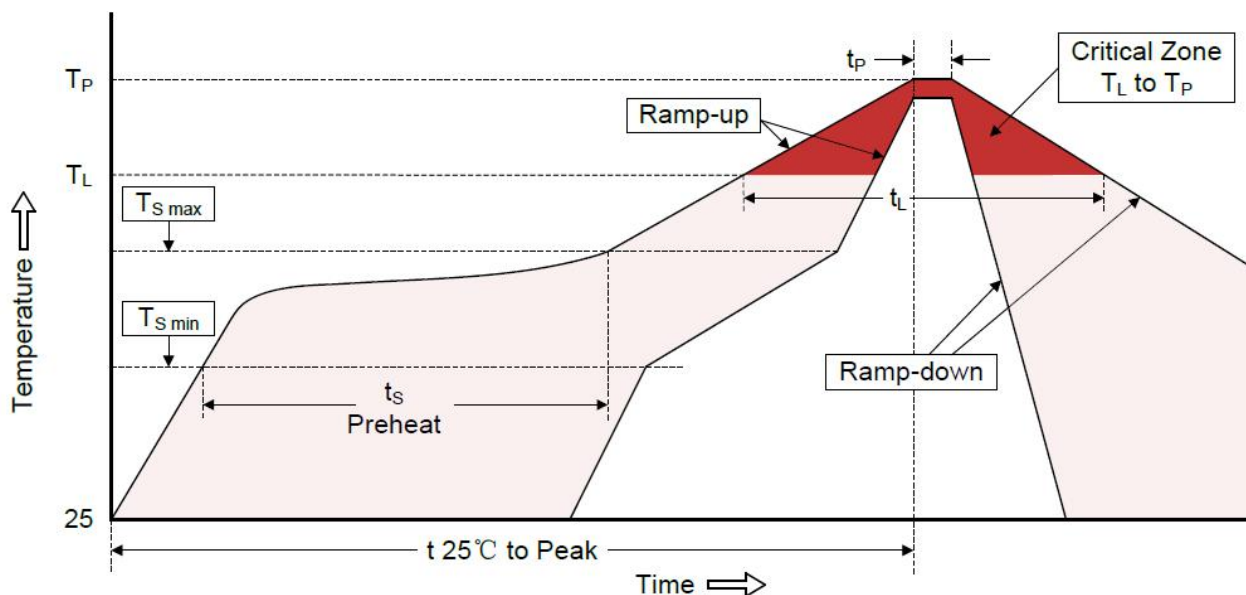
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Solder reflow conditions



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

- Recommended reflow methods: IR, vapor phase oven, hot air oven, N₂ environment for lead-free
- Recommended maximum paste thickness is 0.25mm (0.010 inch)
- Device can be cleaned using standard industry methods and solvents.

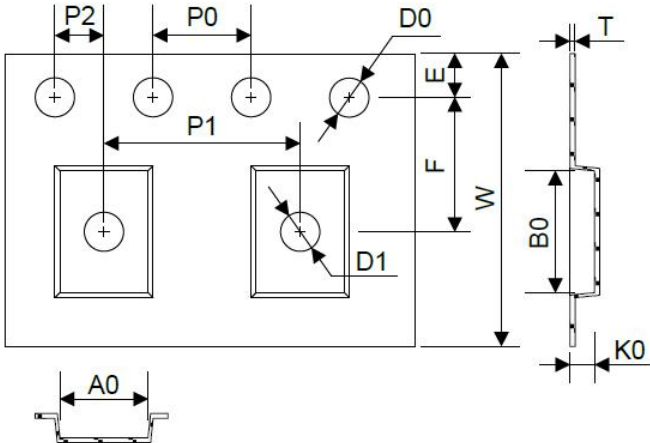
Note 1: All temperature refer to topside of the package, measured on the package body surface.

Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance Requirements

Tape Specification and Reel Dimensions



Tape

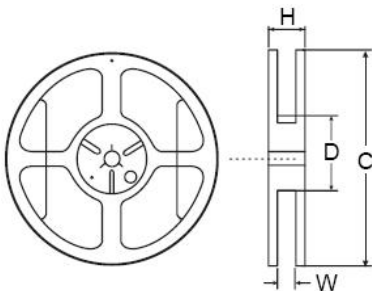


Symbol

Dimensions(mm)

W	12.00±0.30
F	5.50±0.05
E	1.75±0.10
D0	1.55±0.05
D1	1.55(MIN)
P0	4.00±0.10
P1	8.00±0.10
P2	2.00±0.05
A0	3.58±0.10
B0	4.93±0.10
T	0.25±0.10
K0	0.87/1.25/2.10±0.10
Leader min	390
Trailer min	160

Reel



C	Φ178.0±1.0
D	Φ60.2±0.5
H	16.0±0.5
W	13.2±1.5

Packaging Quantity

Part Number	Quantity	Part Number	Quantity	Part Number	Quantity
mSMD010	1500PCS	mSMD075-24	2000PCS	mSMD150-24	1500PCS
mSMD010-60	1500PCS	mSMD075-33	1500PCS	mSMD160	2000PCS
mSMD014-33	1500PCS	mSMD110	2000PCS	mSMD200	2000PCS
mSMD014	1500PCS	mSMD110-8	2000PCS	mSMD200-12	1500PCS
mSMD020	1500PCS	mSMD110-24	1500PCS	mSMD200-16	1500PCS
mSMD030	1500PCS	mSMD110-33	1500PCS	mSMD260	1500PCS
mSMD050	2000PCS	mSMD125-8	2000PCS	mSMD260-12	1500PCS
mSMD050-24	2000PCS	mSMD125	1500PCS	mSMD260-16	1500PCS
mSMD050-30	2000PCS	mSMD150	2000PCS	mSMD300	1500PCS
mSMD075	2000PCS	mSMD150-16	1500PCS	mSMD350	1500PCS

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

Specifications are subject to change without notice

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Resettable Fuse PTC SMD1812 Series



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.