

S1812 Series Data Sheet

Features

- RoHS Compliant & Halogen Free
- Faster Tripping
- Operating temperature: -40°C ~ +85°C
- Hold Current: 0.10A~3.50A
- Maximum Voltage: 6V~60V

Applications

- Set-top-box and HDMI
- Mobile phones and PDAs
- USB peripherals
- Game console port protection

Part Number Code

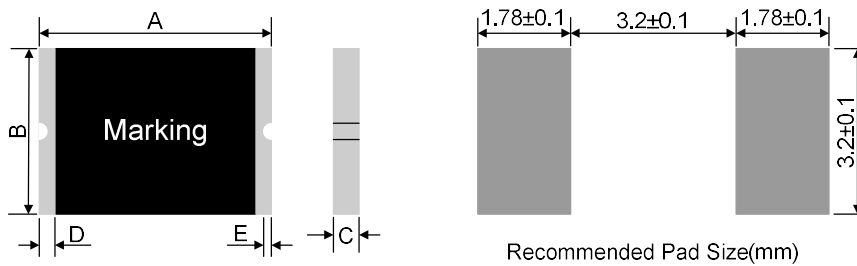
S1812 H050 - 24

S1812: 1812 Dimension Surface Mount Device

H050: $I_{Hold}=0.5A$

24: $V_{Max}=24V$

Dimensions (Unit: mm)



Model	Marking	A		B		C		D	E
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
S1812H010	010	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.15
S1812H014	014	4.37	4.73	3.07	3.41	0.50	1.10	0.30	0.15
S1812H020	020	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.15
S1812H020-60	020	4.37	4.73	3.07	3.41	0.50	1.20	0.30	0.15
S1812H030	030	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.15

Model	Marking	A		B		C		D	E
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
S1812H050	050	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.15
S1812H050-24	050	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.15
S1812H050-30	050	4.37	4.73	3.07	3.41	0.40	1.00	0.30	0.15
S1812H075	075	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.15
S1812H075-24	075	4.37	4.73	3.07	3.41	0.50	1.20	0.30	0.15
S1812H075-33	075	4.37	4.73	3.07	3.41	0.60	1.20	0.30	0.15
S1812H110	110	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.15
S1812H110-16	110	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.15
S1812H110-24	110	4.37	4.73	3.07	3.41	0.60	1.30	0.30	0.15
S1812H110-33	110	4.37	4.73	3.07	3.41	0.70	1.70	0.30	0.15
S1812H125	125	4.37	4.73	3.07	3.41	0.30	0.90	0.30	0.15
S1812H125-16	125	4.37	4.73	3.07	3.41	0.50	1.20	0.30	0.15
S1812H150	150	4.37	4.73	3.07	3.41	0.30	0.90	0.30	0.15
S1812H150-16	150	4.37	4.73	3.07	3.41	0.50	1.20	0.30	0.15
S1812H150-24	150	4.37	4.73	3.07	3.41	0.80	1.70	0.30	0.15
S1812H160	160	4.37	4.73	3.07	3.41	0.30	0.80	0.30	0.15
S1812H160-16	160	4.37	4.73	3.07	3.41	0.50	1.10	0.30	0.25
S1812H200	200	4.37	4.73	3.07	3.41	0.40	1.20	0.30	0.15
S1812H200-12	200	4.37	4.73	3.07	3.41	0.50	1.20	0.30	0.15
S1812H200-16	200	4.37	4.73	3.07	3.41	0.50	1.20	0.30	0.15
S1812H260	260	4.37	4.73	3.07	3.41	0.50	1.20	0.30	0.15
S1812H260-12	260	4.37	4.73	3.07	3.41	0.60	1.50	0.30	0.15
S1812H260-16	260	4.37	4.73	3.07	3.41	0.80	1.70	0.30	0.15
S1812H300	300	4.37	4.73	3.07	3.41	0.50	1.50	0.30	0.15
S1812H350	350	4.37	4.73	3.07	3.41	0.50	1.50	0.30	0.15

Electrical Characteristics

Model	I_{Hold}	I_{Trip}	V_{Max}	I_{Max}	$P_{d\ Typ}$	Maximum time to trip		Resistenct	
	(A)	(A)	(V _{DC})	(A)	(W)	Current(A)	Time(Sec)	Ri _{Min} (Ω)	R1 _{Max} (Ω)
S1812H010	0.10	0.30	30	100	0.8	0.5	1.50	0.750	15.000
S1812H014	0.14	0.34	60	100	0.8	1.5	0.15	0.650	6.000
S1812H020	0.20	0.40	30	100	0.8	8.0	0.02	0.350	5.000
S1812H020-60	0.20	0.40	60	40	0.8	8.0	0.02	0.350	5.000
S1812H030	0.30	0.60	30	100	0.8	8.0	0.10	0.250	3.000
S1812H050	0.50	1.00	15	100	0.8	8.0	0.15	0.150	1.000
S1812H050-24	0.50	1.00	24	100	0.8	8.0	0.15	0.150	1.000
S1812H050-30	0.50	1.00	30	100	0.8	8.0	0.15	0.150	1.000
S1812H075	0.75	1.50	13.2	100	0.8	8.0	0.20	0.090	0.450
S1812H075-24	0.75	1.50	24	100	0.8	8.0	0.20	0.090	0.450
S1812H075-33	0.75	1.50	33	100	0.8	8.0	0.20	0.090	0.450
S1812H110	1.10	2.20	8	100	0.8	8.0	0.30	0.050	0.250
S1812H110-16	1.10	2.20	16	100	0.8	8.0	0.30	0.050	0.250
S1812H110-24	1.10	2.20	24	100	0.8	8.0	0.30	0.050	0.250
S1812H110-33	1.10	2.20	33	100	0.8	8.0	0.30	0.050	0.250
S1812H125	1.25	2.50	8	100	0.8	8.0	0.40	0.050	0.200
S1812H125-16	1.25	2.50	16	100	0.8	8.0	0.40	0.050	0.200
S1812H150	1.50	3.00	8	100	0.8	8.0	0.50	0.040	0.160
S1812H150-16	1.50	3.00	16	100	0.8	8.0	0.50	0.040	0.160
S1812H150-24	1.50	3.00	24	100	0.8	8.0	0.50	0.040	0.160
S1812H160	1.60	2.80	8	100	0.8	8.0	1.00	0.030	0.130
S1812H160-16	1.60	2.80	16	40	0.8	8.0	1.00	0.030	0.130
S1812H200	2.00	4.00	8	100	0.8	8.0	2.00	0.020	0.100
S1812H200-12	2.00	4.00	12	100	0.8	8.0	2.00	0.020	0.100
S1812H200-16	2.00	4.00	16	100	0.8	8.0	2.00	0.020	0.100
S1812H260	2.60	5.00	8	100	0.8	8.0	2.50	0.015	0.050
S1812H260-12	2.60	5.00	12	100	0.8	8.0	2.50	0.015	0.050
S1812H260-16	2.60	5.00	16	100	0.8	8.0	2.50	0.015	0.050
S1812H300	3.00	5.00	6	100	0.8	8.0	4.00	0.012	0.040
S1812H350	3.50	7.00	6	100	0.8	10.0	5.00	0.027	0.035

- ◆ 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}).
- ◆ $P_{d\ Typ}$ =Typical power dissipation when device is in the trippde state in 25°C still air environment at rated voltage.
- ◆ $Ri_{Min/Max}$ =Minimum/Maximum device resistance prior to tripping at 25°C.
- ◆ $R1_{Max}$ =Maximum device resistance is measured one hour post reflow.

Thermal Derating Chart-I_H (A)

Model	Maximum ambient operating temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
S1812H010	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
S1812H014	0.23	0.19	0.17	0.14	0.12	0.10	0.09	0.08	0.06
S1812H020	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10
S1812H020-60	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10
S1812H030	0.44	0.39	0.35	0.30	0.26	0.23	0.21	0.18	0.15
S1812H050	0.59	0.57	0.55	0.50	0.45	0.43	0.35	0.30	0.23
S1812H050-24	0.59	0.57	0.55	0.50	0.45	0.43	0.35	0.30	0.23
S1812H050-30	0.59	0.57	0.55	0.50	0.45	0.43	0.35	0.30	0.23
S1812H075	1.10	0.99	0.87	0.75	0.63	0.57	0.49	0.45	0.35
S1812H075-24	1.10	0.99	0.87	0.75	0.63	0.57	0.49	0.45	0.35
S1812H075-33	1.10	0.99	0.87	0.75	0.63	0.57	0.49	0.45	0.35
S1812H110	1.60	1.45	1.28	1.10	0.92	0.83	0.71	0.66	0.52
S1812H110-16	1.60	1.45	1.28	1.10	0.92	0.83	0.71	0.66	0.52
S1812H110-24	1.60	1.45	1.28	1.10	0.92	0.83	0.71	0.66	0.52
S1812H110-33	1.60	1.45	1.28	1.10	0.92	0.83	0.71	0.66	0.52
S1812H125	2.00	1.75	1.52	1.25	1.00	0.95	0.90	0.75	0.53
S1812H125-16	2.00	1.75	1.52	1.25	1.00	0.95	0.90	0.75	0.53
S1812H150	2.30	2.05	1.77	1.50	1.23	1.09	0.95	0.82	0.61
S1812H150-16	2.30	2.05	1.77	1.50	1.23	1.09	0.95	0.82	0.61
S1812H150-24	2.30	2.05	1.77	1.50	1.23	1.09	0.95	0.82	0.61
S1812H160	2.45	2.15	1.89	1.60	1.34	1.25	1.15	0.96	0.79
S1812H160-16	2.45	2.15	1.89	1.60	1.34	1.25	1.15	0.96	0.79
S1812H200	2.89	2.61	2.30	2.00	1.75	1.66	1.45	1.39	1.19
S1812H200-12	2.89	2.61	2.30	2.00	1.75	1.66	1.45	1.39	1.19
S1812H200-16	2.89	2.61	2.30	2.00	1.75	1.66	1.45	1.39	1.19
S1812H260	3.76	3.39	2.99	2.60	2.28	2.16	1.89	1.81	1.55
S1812H260-12	3.38	3.05	2.69	2.60	2.05	1.94	1.70	1.63	1.39
S1812H260-16	3.38	3.05	2.69	2.60	2.05	1.94	1.70	1.63	1.39
S1812H300	4.34	3.92	3.45	3.00	2.63	2.49	2.18	2.09	1.79
S1812H350	5.06	4.57	4.03	3.50	3.06	2.91	2.54	2.43	2.08

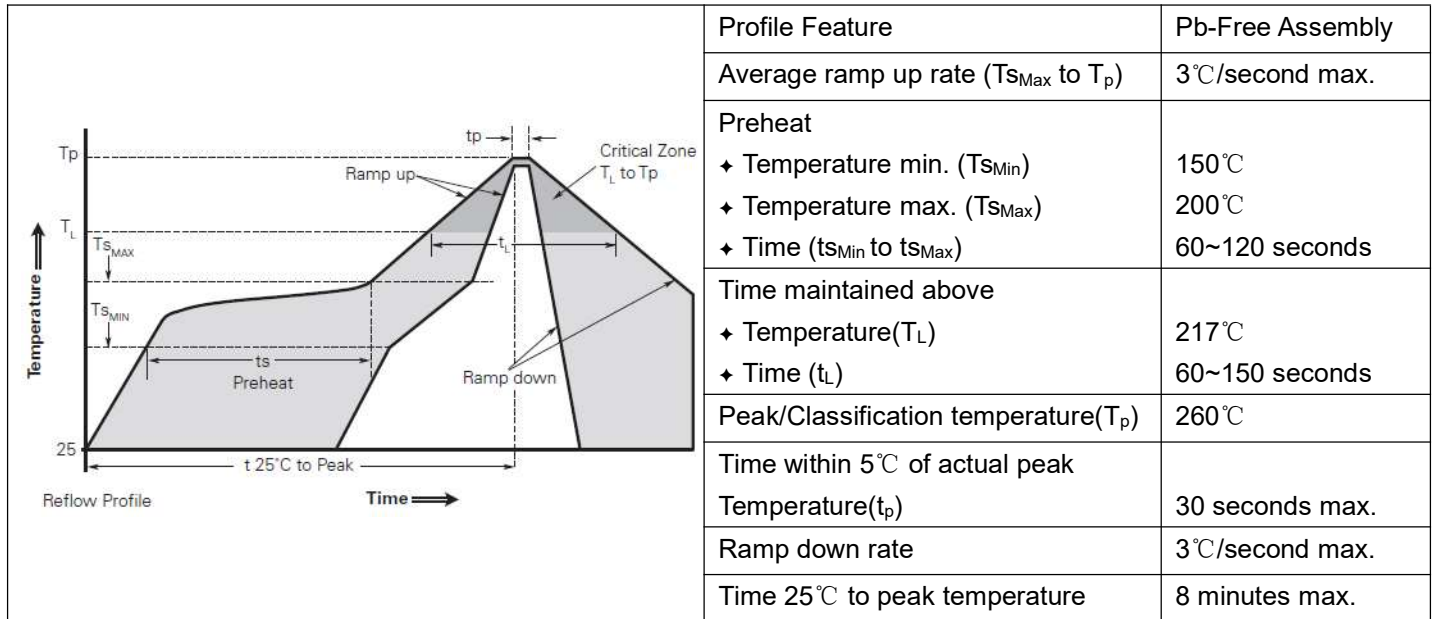
Physical Characteristics

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

Environmental Specifications

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

Reflow Soldering



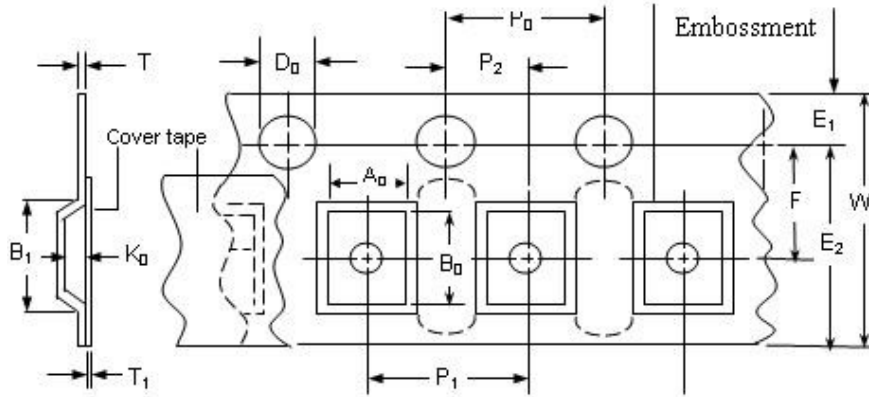
Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free.

- ◆ 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 temprature profile meets RoHs leadfree process.

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

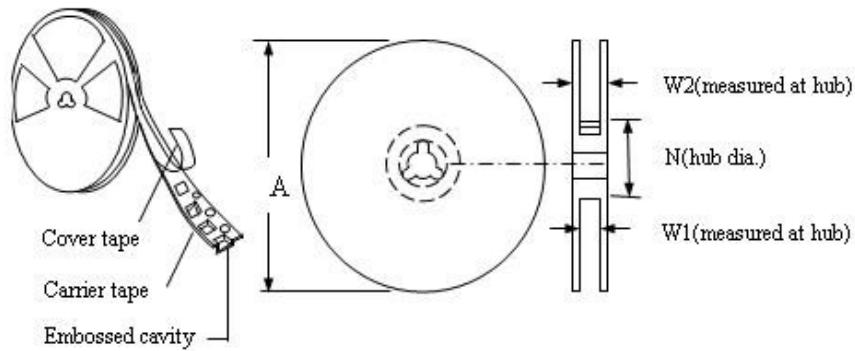
Packaging

EIA Tape Component Dimensions



Item	W	P ₀	P ₁	P ₂	A ₀	B ₀
Dimensions(mm)	12.00+0.30/-0	8.00±0.10	4.00±0.10	2.00±0.10	3.50±0.10	4.90±0.10
Item	D ₀	F	E ₁	T	Leader min.	Trailer min.
Dimensions(mm)	1.50+0.10/-0	5.50±0.05	1.75±0.10	0.30±0.10	390	160

EIA Reel Dimensions



Item	A	N	W ₁	W ₂
Dimensions(mm)	178±1.0	59±1.0	8.5+1.0/-0.2	12.0±1.0

Packaging Quantity

Model	Quantity(pcs)	Model	Quantity(pcs)
S1812H010	1500	S1812H125	2000
S1812H014	1500	S1812H125-16	1500
S1812H020	1500	S1812H150	2000
S1812H020-60	1500	S1812H150-16	1500
S1812H030	1500	S1812H150-24	1500
S1812H050	2000	S1812H160	2000
S1812H050-24	2000	S1812H160-16	2000
S1812H050-30	2000	S1812H200	2000
S1812H075	2000	S1812H200-12	1500
S1812H075-24	2000	S1812H200-16	1500
S1812H075-33	1500	S1812H260	1500
S1812H110	2000	S1812H260-12	1500
S1812H110-16	2000	S1812H260-16	1500
S1812H110-24	1500	S1812H300	1500
S1812H110-33	1500	S1812H350	1500

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.