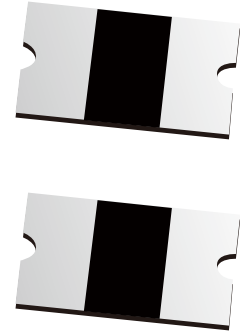


## FEATURES

- | I(hold): 0.1~3.0A
- | Very high voltage surge capabilities
- | Available in lead-free version
- | Fast response to fault current
- | RoHS compliant, Lead- Free and Halogen-Free
- | Low resistance
- | Compact design saves board space
- | Compatible with high temperature solders



## APPLICATIONS

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>  USB peripherals</li> <li>  Disk drives</li> <li>  CD-ROMs</li> <li>  General electronics</li> <li>  Set-top-box and HDMI</li> </ul> | <ul style="list-style-type: none"> <li>  Mobile Internet Device (MID)</li> <li>  PDAs / digital cameras</li> <li>  Game console port protection</li> <li>  Plug and play protection for peripherals</li> <li>  Mobile phones - battery and port protection</li> </ul> |
|--|---|

## 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<br>+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                      |
| Ambient operating conditions : - 40°C to +85°C                           |  |                                |
| Maximum surface temperature of the device in the tripped state is 125 °C |  |                                |

# PERFORMANCE SPECIFICATION

| Type Number    | $I_{hold}$ | $I_{trip}$ | $V_{max}$ | Max. Time to Trip |             | $I_{max}$ | $Ri_{min}$ | $R1_{max}$ |
|----------------|------------|------------|-----------|-------------------|-------------|-----------|------------|------------|
|                | A          | A          | $V_{DC}$  | Current A         | $T_{max}$ S | A         | $\Omega$   | $\Omega$   |
| SMD1812-010    | 0.10       | 0.30       | 30.0      | 0.5               | 1.50        | 100       | 0.750      | 15.000     |
| SMD1812-010-60 | 0.10       | 0.30       | 60.0      | 0.5               | 1.50        | 100       | 0.750      | 15.000     |
| SMD1812-014-33 | 0.14       | 0.34       | 33.0      | 1.5               | 0.15        | 100       | 0.650      | 6.000      |
| SMD1812-014    | 0.14       | 0.34       | 60.0      | 1.5               | 0.15        | 100       | 0.650      | 6.000      |
| SMD1812-020    | 0.20       | 0.40       | 30.0      | 8                 | 0.02        | 100       | 0.350      | 5.000      |
| SMD1812-030    | 0.30       | 0.60       | 30.0      | 8                 | 0.10        | 100       | 0.250      | 3.000      |
| SMD1812-050    | 0.50       | 1.00       | 15.0      | 8                 | 0.15        | 100       | 0.150      | 1.000      |
| SMD1812-050-24 | 0.50       | 1.00       | 24.0      | 8                 | 0.15        | 100       | 0.150      | 1.000      |
| SMD1812-050-30 | 0.50       | 1.00       | 30.0      | 8                 | 0.15        | 100       | 0.150      | 1.000      |
| SMD1812-075    | 0.75       | 1.50       | 13.2      | 8                 | 0.20        | 100       | 0.090      | 0.450      |
| SMD1812-075-24 | 0.75       | 1.50       | 24        | 8                 | 0.20        | 100       | 0.090      | 0.450      |
| SMD1812-075-33 | 0.75       | 1.50       | 33        | 8                 | 0.20        | 100       | 0.090      | 0.450      |
| SMD1812-110    | 1.10       | 2.20       | 16.0      | 8                 | 0.30        | 100       | 0.050      | 0.250      |
| SMD1812-110-8  | 1.10       | 2.20       | 8.0       | 8                 | 0.30        | 100       | 0.050      | 0.250      |
| SMD1812-110-24 | 1.10       | 2.20       | 24.0      | 8                 | 0.30        | 100       | 0.050      | 0.250      |
| SMD1812-110-33 | 1.10       | 2.20       | 33.0      | 8                 | 0.30        | 100       | 0.050      | 0.250      |
| SMD1812-125-8  | 1.25       | 2.50       | 8.0       | 8                 | 0.40        | 100       | 0.050      | 0.200      |
| SMD1812-125    | 1.25       | 2.50       | 16.0      | 8                 | 0.40        | 100       | 0.050      | 0.200      |
| SMD1812-150    | 1.50       | 3.00       | 8.0       | 8                 | 0.50        | 100       | 0.040      | 0.160      |
| SMD1812-150-16 | 1.50       | 3.00       | 16.0      | 8                 | 0.50        | 100       | 0.040      | 0.160      |
| SMD1812-150-24 | 1.50       | 3.00       | 24.0      | 8                 | 0.50        | 100       | 0.040      | 0.160      |
| SMD1812-160    | 1.60       | 2.80       | 8.0       | 8                 | 1.00        | 100       | 0.030      | 0.130      |
| SMD1812-200    | 2.00       | 4.00       | 8.0       | 8                 | 2.00        | 100       | 0.020      | 0.100      |
| SMD1812-200-12 | 2.00       | 4.00       | 12.0      | 8                 | 2.00        | 100       | 0.020      | 0.100      |
| SMD1812-200-16 | 2.00       | 4.00       | 16.0      | 8                 | 2.00        | 100       | 0.020      | 0.100      |
| SMD1812-260    | 2.60       | 5.00       | 8.0       | 8                 | 2.50        | 100       | 0.015      | 0.050      |
| SMD1812-260-12 | 2.60       | 5.00       | 12.0      | 8                 | 2.50        | 100       | 0.015      | 0.060      |
| SMD1812-260-16 | 2.60       | 5.00       | 16.0      | 8                 | 2.50        | 100       | 0.015      | 0.060      |
| SMD1812-300    | 3.00       | 5.00       | 6.0       | 8                 | 4.00        | 100       | 0.012      | 0.040      |

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

$I_{hold}$  = 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.

$P_{td}$  = Power dissipation when device is in the tripped 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-IH(A)

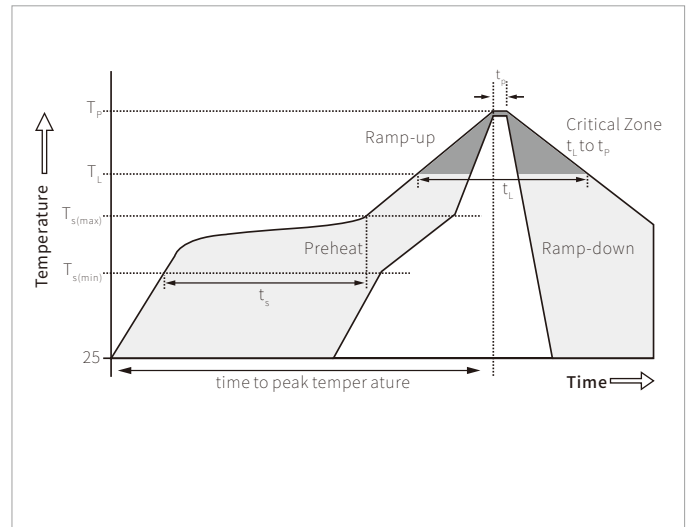
| Part Number    | Ambient Operation Temperature |        |      |       |       |       |       |       |       |
|----------------|-------------------------------|--------|------|-------|-------|-------|-------|-------|-------|
|                | -40 °C                        | -20 °C | 0 °C | 25 °C | 40 °C | 50 °C | 60 °C | 70 °C | 85 °C |
| SMD1812-010    | 0.16                          | 0.14   | 0.12 | 0.10  | 0.08  | 0.07  | 0.06  | 0.05  | 0.03  |
| SMD1812-010-60 | 0.16                          | 0.14   | 0.12 | 0.10  | 0.08  | 0.07  | 0.06  | 0.05  | 0.03  |
| SMD1812-014-33 | 0.23                          | 0.19   | 0.17 | 0.14  | 0.12  | 0.10  | 0.09  | 0.08  | 0.06  |
| SMD1812-014    | 0.23                          | 0.19   | 0.17 | 0.14  | 0.12  | 0.10  | 0.09  | 0.08  | 0.06  |
| SMD1812-020    | 0.29                          | 0.26   | 0.23 | 0.20  | 0.17  | 0.15  | 0.14  | 0.12  | 0.10  |
| SMD1812-030    | 0.44                          | 0.39   | 0.35 | 0.30  | 0.26  | 0.23  | 0.21  | 0.18  | 0.15  |
| SMD1812-050    | 0.59                          | 0.57   | 0.55 | 0.50  | 0.45  | 0.43  | 0.35  | 0.30  | 0.23  |
| SMD1812-050-24 | 0.59                          | 0.57   | 0.55 | 0.50  | 0.45  | 0.43  | 0.35  | 0.30  | 0.23  |
| SMD1812-050-30 | 0.59                          | 0.57   | 0.55 | 0.50  | 0.45  | 0.43  | 0.35  | 0.30  | 0.23  |
| SMD1812-075    | 1.10                          | 0.99   | 0.87 | 0.75  | 0.63  | 0.57  | 0.49  | 0.45  | 0.35  |
| SMD1812-075-24 | 1.10                          | 0.99   | 0.87 | 0.75  | 0.63  | 0.57  | 0.49  | 0.45  | 0.35  |
| SMD1812-075-33 | 1.10                          | 0.99   | 0.87 | 0.75  | 0.63  | 0.57  | 0.49  | 0.45  | 0.35  |
| SMD1812-110    | 1.60                          | 1.45   | 1.28 | 1.10  | 0.92  | 0.83  | 0.71  | 0.66  | 0.52  |
| SMD1812-110-8  | 1.60                          | 1.45   | 1.28 | 1.10  | 0.92  | 0.83  | 0.71  | 0.66  | 0.52  |
| SMD1812-110-24 | 1.60                          | 1.45   | 1.28 | 1.10  | 0.92  | 0.83  | 0.71  | 0.66  | 0.52  |
| SMD1812-110-33 | 1.60                          | 1.45   | 1.28 | 1.10  | 0.92  | 0.83  | 0.71  | 0.66  | 0.52  |
| SMD1812-125-8  | 2.00                          | 1.75   | 1.52 | 1.25  | 1.00  | 0.95  | 0.90  | 0.75  | 0.53  |
| SMD1812-125    | 2.00                          | 1.75   | 1.52 | 1.25  | 1.00  | 0.95  | 0.90  | 0.75  | 0.53  |
| SMD1812-150    | 2.30                          | 2.05   | 1.77 | 1.50  | 1.23  | 1.09  | 0.95  | 0.82  | 0.61  |
| SMD1812-150-16 | 2.30                          | 2.05   | 1.77 | 1.50  | 1.23  | 1.09  | 0.95  | 0.82  | 0.61  |
| SMD1812-150-24 | 2.30                          | 2.05   | 1.77 | 1.50  | 1.23  | 1.09  | 0.95  | 0.82  | 0.61  |
| SMD1812-160    | 2.45                          | 2.15   | 1.89 | 1.60  | 1.34  | 1.25  | 1.15  | 0.96  | 0.79  |
| SMD1812-200    | 2.89                          | 2.61   | 2.30 | 2.00  | 1.75  | 1.66  | 1.45  | 1.39  | 1.19  |
| SMD1812-200-12 | 2.89                          | 2.61   | 2.30 | 2.00  | 1.75  | 1.66  | 1.45  | 1.39  | 1.19  |
| SMD1812-200-16 | 2.89                          | 2.61   | 2.30 | 2.00  | 1.75  | 1.66  | 1.45  | 1.39  | 1.19  |
| SMD1812-260    | 3.76                          | 3.39   | 2.99 | 2.60  | 2.28  | 2.16  | 1.89  | 1.81  | 1.55  |
| SMD1812-260-12 | 3.38                          | 3.05   | 2.69 | 2.60  | 2.05  | 1.94  | 1.70  | 1.63  | 1.39  |
| SMD1812-260-16 | 3.38                          | 3.05   | 2.69 | 2.60  | 2.05  | 1.94  | 1.70  | 1.63  | 1.39  |
| SMD1812-300    | 4.34                          | 3.92   | 3.45 | 3.00  | 2.63  | 2.49  | 2.18  | 2.09  | 1.79  |

## DIMENSIONS

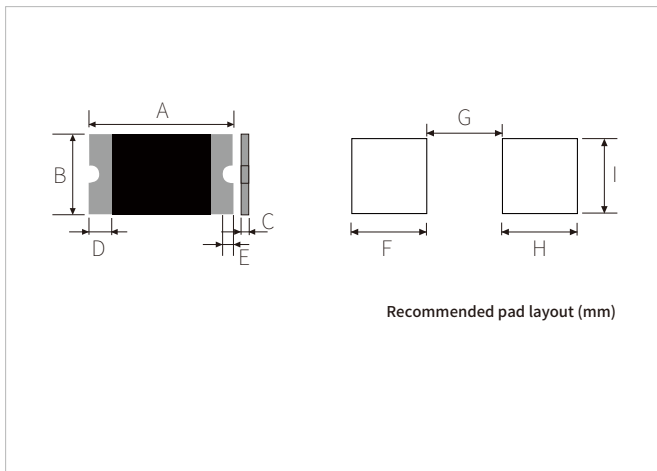
| Part Number    | A    |      | B    |      | C    |      | D    | E    |
|----------------|------|------|------|------|------|------|------|------|
|                | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Min  |
| SMD1812-010    | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.00 | 0.30 | 0.15 |
| SMD1812-010-60 | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.00 | 0.30 | 0.15 |
| SMD1812-014-33 | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.00 | 0.30 | 0.15 |
| SMD1812-014    | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.00 | 0.30 | 0.15 |
| SMD1812-020    | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.00 | 0.30 | 0.15 |
| SMD1812-030    | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.00 | 0.30 | 0.15 |
| SMD1812-050    | 4.37 | 4.73 | 3.07 | 3.41 | 0.40 | 0.90 | 0.30 | 0.15 |
| SMD1812-050-24 | 4.37 | 4.73 | 3.07 | 3.41 | 0.40 | 0.90 | 0.30 | 0.15 |
| SMD1812-050-30 | 4.37 | 4.73 | 3.07 | 3.41 | 0.40 | 1.00 | 0.30 | 0.15 |
| SMD1812-075    | 4.37 | 4.73 | 3.07 | 3.41 | 0.40 | 0.90 | 0.30 | 0.15 |
| SMD1812-075-24 | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.20 | 0.30 | 0.15 |
| SMD1812-075-33 | 4.37 | 4.73 | 3.07 | 3.41 | 0.60 | 1.20 | 0.30 | 0.15 |
| SMD1812-110    | 4.37 | 4.73 | 3.07 | 3.41 | 0.40 | 0.90 | 0.30 | 0.15 |
| SMD1812-110-8  | 4.37 | 4.73 | 3.07 | 3.41 | 0.40 | 0.90 | 0.30 | 0.15 |
| SMD1812-110-24 | 4.37 | 4.73 | 3.07 | 3.41 | 0.60 | 1.30 | 0.30 | 0.15 |
| SMD1812-110-33 | 4.37 | 4.73 | 3.07 | 3.41 | 0.70 | 1.70 | 0.30 | 0.15 |
| SMD1812-125-8  | 4.37 | 4.73 | 3.07 | 3.41 | 0.30 | 0.90 | 0.30 | 0.15 |
| SMD1812-125    | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.20 | 0.30 | 0.15 |
| SMD1812-150    | 4.37 | 4.73 | 3.07 | 3.41 | 0.30 | 0.90 | 0.30 | 0.15 |
| SMD1812-150-16 | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.20 | 0.30 | 0.15 |
| SMD1812-150-24 | 4.37 | 4.73 | 3.07 | 3.41 | 0.80 | 1.70 | 0.30 | 0.15 |
| SMD1812-160    | 4.37 | 4.73 | 3.07 | 3.41 | 0.30 | 0.80 | 0.30 | 0.15 |
| SMD1812-200    | 4.37 | 4.73 | 3.07 | 3.41 | 0.40 | 1.20 | 0.30 | 0.15 |
| SMD1812-200-12 | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.20 | 0.30 | 0.15 |
| SMD1812-200-16 | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.20 | 0.30 | 0.15 |
| SMD1812-260    | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.20 | 0.30 | 0.15 |
| SMD1812-260-12 | 4.37 | 4.73 | 3.07 | 3.41 | 0.60 | 1.50 | 0.30 | 0.15 |
| SMD1812-260-16 | 4.37 | 4.73 | 3.07 | 3.41 | 0.80 | 1.70 | 0.30 | 0.15 |
| SMD1812-300    | 4.37 | 4.73 | 3.07 | 3.41 | 0.50 | 1.50 | 0.30 | 0.15 |

## REFLOW PROFILE

| Reflow Condition  |                                  | Pb-Free assembly |
|---|----------------------------------|------------------|
| Pre Heat  | Temperature Min                  | 150°C            |
|   | Temperature Max                  | 200°C            |
|   | Time(min to max)                 | 60-180 secs      |
| Average ramp up rate (Liquidus)Temp ( $T_L$ ) to peak $T_s(\text{max})$ to $T_L$ - Ramp-up Rate |                                  | 3°C/second max   |
| Reflow  | Temperature ( $T_L$ ) (Liquidus) | 217°C            |
|   | Temperature ( $T_L$ )            | 60-150 seconds   |
| Peak Temperature ( $T_p$ )  |                                  | 260+0/-5 °C      |
| Time within 5°C of actual peak Temperature ( $t_p$ )  |                                  | 20~40 seconds    |
| Ramp-down Rate  |                                  | 6°C/second max   |
| Time 25°C to peak Temperature ( $T_p$ )   |                                  | 8 minutes max.   |
| Do not exceed   |                                  | 260°C            |

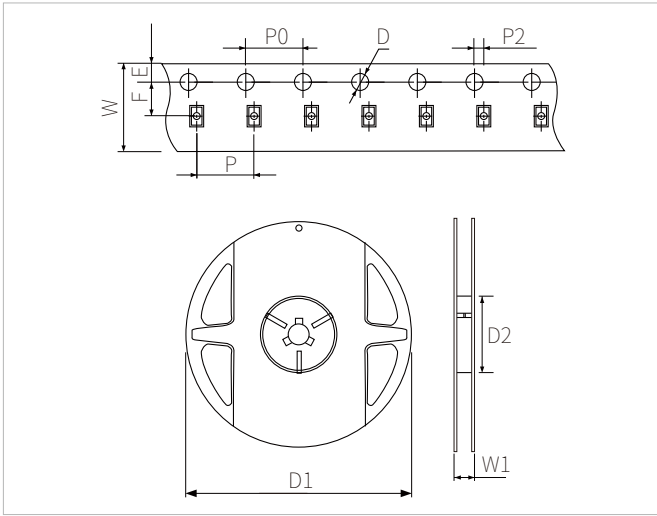


## PACKAGE MECHANICAL DATA



| Ref. | Dimensions           |
|------|----------------------|
|      | Millimeters          |
| A    | See Dimensions Table |
| B    |                      |
| C    |                      |
| D    |                      |
| E    |                      |
| F    | 1.5                  |
| G    | 3.0                  |
| H    | 1.5                  |
| I    | 3.5                  |

## TAPING AND REEL SPECIFICATIONS



| Symbol  | Dimensions  |             |
|---------|-------------|-------------|
|         | Millimeters | Inches      |
| W       | 12.0±0.3    | 0.472±0.012 |
| P       | 8.0±0.1     | 0.315±0.004 |
| P0      | 4.0±0.1     | 0.157±0.004 |
| P2      | 2.0±0.05    | 0.079±0.002 |
| F       | 5.5±0.05    | 0.217±0.002 |
| E       | 1.75±0.1    | 0.061±0.002 |
| D       | 1.55±0.05   | 0.061±0.002 |
| D1(max) | 178         | 7.007       |
| D2(min) | 60          | 2.362       |
| W1      | 12.0±1      | 0.472±0.039 |

## ORDERING INFORMATION

| Part Number  | QTY/Reel | Reel Size |
|--|----------|-----------|
| SMD1812-010/010-60/014-33/014/020/030/075-33/110-24/110-33/<br>125/150-16/150-24/200-12/200-16/260/260-12/260-16/300 | 1500PCS  | 7"        |
| SMD1812-050/050-24/050-30/075/075-24/110/110-8/125-8/150/160/200   | 2000PCS  | 7"        |

**Headquarters**

No.3387 Shendu Road  
Pujiang I&E Park  
Minhang Shanghai China  
201000

**Hotline**

400-021-5756

**Web**

<https://www.semiware.com>

**Sales Center**

Tel: 86-21-3463-7458  
Email: [sales18@semiware.com](mailto:sales18@semiware.com)

**Customer Service**

Tel: 86-21-5484-1001  
Email: [sales17@semiware.com](mailto:sales17@semiware.com)

**Technical Support**

Tel: 86-21-3463-7654  
Email: [fae01@semiware.com](mailto:fae01@semiware.com)

**Complaint & Suggestions**

Tel: 86-21-3463-7172  
Ext: 8868  
Email: [cs03@semiware.com](mailto:cs03@semiware.com)

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Website



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