

### 1812L Series



#### Description

The 1812L Series PTC provides surface mount overcurrent protection for applications where resettable protection is desired.

#### Features

- RoHS compliant, lead-free and halogen-free
- Fast response
- Compact design
- Low resistance
- Low-profile
- Compatible with high temperature solders

#### Agency Approvals

| AGENCY                                                                            | AGENCY FILE NUMBER |
|-----------------------------------------------------------------------------------|--------------------|
|  | E183209            |
|  | R50119118          |

#### Applications

- Plug and play protection for motherboards and peripherals
- USB peripherals
- PCI cards
- Game console port protection

#### Electrical Characteristics

| Part Number              | Marking  | $I_{hold}$<br>(A) | $I_{trip}$<br>(A) | $V_{max}$<br>(Vdc) | $I_{max}$<br>(A) | $P_d$ typ.<br>(W) | Max. Time To Trip |                | Resistance                |                            | Agency Approvals                                                                      |                                                                                       |
|--------------------------|----------|-------------------|-------------------|--------------------|------------------|-------------------|-------------------|----------------|---------------------------|----------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                          |          |                   |                   |                    |                  |                   | Current<br>(A)    | Time<br>(Sec.) | $R_{min}$<br>( $\Omega$ ) | $R_{1max}$<br>( $\Omega$ ) |  |  |
| 1812L010                 | LF010    | 0.10              | 0.30              | 30                 | 100              | 0.8               | 0.50              | 1.50           | 1.600                     | 15.000                     | X                                                                                     | X                                                                                     |
| 1812L010/60              | LF010-60 | 0.10              | 0.30              | 60                 | 10               | 0.8               | 0.50              | 1.50           | 1.600                     | 15.000                     | X                                                                                     | X                                                                                     |
| 1812L014                 | LF014    | 0.14              | 0.34              | 60                 | 10               | 0.8               | 1.50              | 0.15           | 1.500                     | 6.000                      | X                                                                                     | X                                                                                     |
| 1812L020                 | LF020    | 0.20              | 0.40              | 30                 | 100              | 0.8               | 8.00              | 0.02           | 0.800                     | 5.000                      | X                                                                                     | X                                                                                     |
| 1812L020/60              | LF020-60 | 0.20              | 0.40              | 60                 | 40               | 0.8               | 1.00              | 2.00           | 1.400                     | 4.400                      | X                                                                                     | X                                                                                     |
| 1812L035/30              | LF035-30 | 0.35              | 0.75              | 30                 | 40               | 0.8               | 8.00              | 0.15           | 0.400                     | 1.700                      | X                                                                                     | X                                                                                     |
| 1812L035/60              | LF035-60 | 0.35              | 0.70              | 60                 | 10               | 1.00              | 8.00              | 0.15           | 0.400                     | 1.700                      | X                                                                                     | X                                                                                     |
| 1812L050 <sup>1</sup>    | LF050    | 0.50              | 1.00              | 15                 | 100              | 0.8               | 8.00              | 0.15           | 0.150                     | 1.000                      | X                                                                                     | X                                                                                     |
| 1812L050/30              | LF050-30 | 0.50              | 1.00              | 30                 | 100              | 0.8               | 8.00              | 0.15           | 0.150                     | 1.000                      | X                                                                                     | X                                                                                     |
| 1812L050/60              | LF050-60 | 0.50              | 1.00              | 60                 | 10               | 1.50              | 8.00              | 0.15           | 0.150                     | 1.000                      | X                                                                                     | X                                                                                     |
| 1812L075 <sup>1</sup>    | LF075    | 0.75              | 1.50              | 13.2               | 100              | 0.8               | 8.00              | 0.20           | 0.100                     | 0.450                      | X                                                                                     | X                                                                                     |
| 1812L075/24 <sup>2</sup> | LF075-24 | 0.75              | 1.50              | 24                 | 100              | 0.8               | 8.00              | 0.20           | 0.110                     | 0.290                      | X                                                                                     | X                                                                                     |
| 1812L075/33              | LF075-33 | 0.75              | 1.50              | 33                 | 20               | 0.8               | 8.00              | 0.20           | 0.110                     | 0.400                      | X                                                                                     | X                                                                                     |
| 1812L110 <sup>1</sup>    | LF110    | 1.10              | 2.20              | 8                  | 100              | 0.8               | 8.00              | 0.30           | 0.040                     | 0.210                      | X                                                                                     | X                                                                                     |
| 1812L110/16              | LF110-16 | 1.10              | 1.95              | 16                 | 100              | 0.8               | 8.00              | 0.30           | 0.060                     | 0.180                      | X                                                                                     | X                                                                                     |
| 1812L110/24              | LF110-24 | 1.10              | 1.95              | 24                 | 20               | 0.8               | 8.00              | 0.50           | 0.060                     | 0.200                      | X                                                                                     | X                                                                                     |
| 1812L110/33              | LF110-33 | 1.10              | 1.95              | 33                 | 20               | 0.8               | 8.00              | 0.50           | 0.060                     | 0.200                      | X                                                                                     | X                                                                                     |
| 1812L125/6               | LF125-6  | 1.25              | 2.50              | 6                  | 100              | 0.8               | 8.00              | 0.40           | 0.050                     | 0.140                      | X                                                                                     | X                                                                                     |
| 1812L125/16              | LF125    | 1.25              | 2.50              | 16                 | 100              | 0.8               | 8.00              | 0.40           | 0.050                     | 0.140                      | X                                                                                     | X                                                                                     |
| 1812L150 <sup>1</sup>    | LF150    | 1.50              | 3.00              | 8                  | 100              | 0.8               | 8.00              | 0.30           | 0.040                     | 0.110                      | X                                                                                     | X                                                                                     |
| 1812L150/12              | LF150-12 | 1.50              | 3.00              | 12                 | 100              | 0.8               | 8.00              | 0.50           | 0.040                     | 0.110                      | X                                                                                     | X                                                                                     |
| 1812L150/16              | LF150-16 | 1.50              | 2.80              | 16                 | 100              | 0.8               | 8.00              | 0.50           | 0.040                     | 0.110                      | X                                                                                     | X                                                                                     |
| 1812L150/24 <sup>2</sup> | LF150-24 | 1.50              | 3.00              | 24                 | 20               | 0.8               | 8.00              | 1.50           | 0.040                     | 0.120                      | X                                                                                     | X                                                                                     |
| 1812L160 <sup>1</sup>    | LF160    | 1.60              | 2.80              | 8                  | 100              | 0.8               | 8.00              | 1.00           | 0.030                     | 0.100                      | X                                                                                     | X                                                                                     |
| 1812L160/12              | LF160-12 | 1.60              | 2.80              | 12                 | 100              | 0.8               | 8.00              | 1.00           | 0.030                     | 0.100                      | X                                                                                     | X                                                                                     |
| 1812L200TH <sup>1</sup>  | LF200    | 2.00              | 3.50              | 8                  | 100              | 0.8               | 8.00              | 2.00           | 0.020                     | 0.070                      | X                                                                                     | X                                                                                     |

continues on next page.

$I_{hold}$  = Hold current: maximum current device will pass without tripping in 20°C still air.  
 $I_{trip}$  = Trip current: minimum current at which the device will trip in 20°C still air.  
 $V_{max}$  = Maximum voltage device can withstand without damage at rated current ( $I_{max}$ )  
 $I_{max}$  = Maximum fault current device can withstand without damage at rated voltage ( $V_{max}$ )  
 $P_d$  = Power dissipated from device when in the tripped state at 20°C still air.

**Caution:** Operation beyond the specified rating may result in damage and possible arcing and flame.

<sup>1</sup> Some older references to these devices may include “-C” in the Part Number. The “-C” should be omitted when placing new orders for the device.

<sup>2</sup> Part Number with note 2 tested and complied with AEC Q200.

$R_{min}$  = Minimum resistance of device in initial (un-soldered) state.  
 $R_{typ}$  = Typical resistance of device in initial (un-soldered) state.  
 $R_{1max}$  = Maximum resistance of device at 20°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

## Electrical Characteristics

| Part Number             | Marking  | I <sub>hold</sub><br>(A) | I <sub>trip</sub><br>(A) | V <sub>max</sub><br>(Vdc) | I <sub>max</sub><br>(A) | P <sub>d</sub><br>typ.<br>(W) | Max. Time To Trip |                | Resistance              |                          | Agency Approvals                                                                    |                                                                                     |
|-------------------------|----------|--------------------------|--------------------------|---------------------------|-------------------------|-------------------------------|-------------------|----------------|-------------------------|--------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                         |          |                          |                          |                           |                         |                               | Current<br>(A)    | Time<br>(Sec.) | R <sub>min</sub><br>(Ω) | R <sub>1max</sub><br>(Ω) |  |  |
| 1812L200/12             | LF200-12 | 2.00                     | 3.50                     | 12                        | 100                     | 1.0                           | 8.00              | 2.00           | 0.020                   | 0.070                    | X                                                                                   | X                                                                                   |
| 1812L200/16             | LF200-16 | 2.00                     | 3.50                     | 16                        | 100                     | 1.0                           | 8.00              | 2.00           | 0.020                   | 0.070                    | X                                                                                   | X                                                                                   |
| 1812L260TH <sup>1</sup> | LF260    | 2.60                     | 5.20                     | 8                         | 100                     | 0.8                           | 8.00              | 2.50           | 0.015                   | 0.047                    | X                                                                                   | X                                                                                   |
| 1812L260/12             | LF260-12 | 2.60                     | 5.00                     | 12                        | 100                     | 0.8                           | 8.00              | 5.00           | 0.015                   | 0.055                    | X                                                                                   | X                                                                                   |
| 1812L260/16             | LF260-16 | 2.60                     | 5.00                     | 16                        | 100                     | 1.2                           | 8.00              | 5.00           | 0.015                   | 0.050                    | X                                                                                   | X                                                                                   |
| 1812L300                | LF300    | 3.00                     | 5.00                     | 6                         | 100                     | 0.8                           | 8.00              | 4.00           | 0.012                   | 0.040                    | X                                                                                   | X                                                                                   |

I<sub>hold</sub> = Hold current: maximum current device will pass without tripping in 20°C still air.I<sub>trip</sub> = Trip current: minimum current at which the device will trip in 20°C still air.V<sub>max</sub> = Maximum voltage device can withstand without damage at rated current (I<sub>max</sub>)I<sub>max</sub> = Maximum fault current device can withstand without damage at rated voltage (V<sub>max</sub>)P<sub>d</sub> = Power dissipated from device when in the tripped state at 20°C still air.R<sub>min</sub> = Minimum resistance of device in initial (un-soldered) state.R<sub>typ</sub> = Typical resistance of device in initial (un-soldered) state.R<sub>1max</sub> = Maximum resistance of device at 20°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.**Caution:** Operation beyond the specified rating may result in damage and possible arcing and flame.**1** Some older references to these devices may include “-C” in the Part Number. The “-C” should be omitted when placing new orders for the device.**2** Part Number with note 2 tested and complied with AEC Q200.

## Temperature Derating

| Ambient Operation Temperature |                  |       |      |      |      |      |      |      |      |
|-------------------------------|------------------|-------|------|------|------|------|------|------|------|
|                               | -40°C            | -20°C | 0°C  | 20°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| Part Number                   | Hold Current (A) |       |      |      |      |      |      |      |      |
| 1812L010                      | 0.16             | 0.14  | 0.12 | 0.10 | 0.08 | 0.07 | 0.06 | 0.05 | 0.03 |
| 1812L010/60                   | 0.16             | 0.14  | 0.12 | 0.10 | 0.08 | 0.07 | 0.06 | 0.05 | 0.03 |
| 1812L014                      | 0.23             | 0.19  | 0.17 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.06 |
| 1812L020                      | 0.29             | 0.26  | 0.23 | 0.20 | 0.17 | 0.15 | 0.14 | 0.12 | 0.10 |
| 1812L020/60                   | 0.29             | 0.26  | 0.23 | 0.20 | 0.17 | 0.15 | 0.14 | 0.12 | 0.10 |
| 1812L035/30                   | 0.50             | 0.45  | 0.40 | 0.35 | 0.30 | 0.26 | 0.24 | 0.20 | 0.16 |
| 1812L035/60                   | 0.50             | 0.46  | 0.40 | 0.35 | 0.30 | 0.26 | 0.24 | 0.20 | 0.16 |
| 1812L050                      | 0.77             | 0.68  | 0.59 | 0.50 | 0.44 | 0.40 | 0.37 | 0.33 | 0.29 |
| 1812L050/30                   | 0.77             | 0.68  | 0.59 | 0.50 | 0.44 | 0.40 | 0.37 | 0.33 | 0.29 |
| 1812L050/60                   | 0.77             | 0.68  | 0.59 | 0.50 | 0.44 | 0.40 | 0.37 | 0.33 | 0.29 |
| 1812L075                      | 1.15             | 1.01  | 0.88 | 0.75 | 0.65 | 0.60 | 0.55 | 0.49 | 0.43 |
| 1812L075/24                   | 1.06             | 0.95  | 0.84 | 0.75 | 0.60 | 0.55 | 0.50 | 0.45 | 0.37 |
| 1812L075/33                   | 1.10             | 1.00  | 0.88 | 0.75 | 0.66 | 0.60 | 0.56 | 0.47 | 0.36 |
| 1812L110                      | 1.59             | 1.43  | 1.26 | 1.10 | 0.95 | 0.87 | 0.80 | 0.71 | 0.60 |
| 1812L110/16                   | 1.58             | 1.43  | 1.27 | 1.10 | 0.95 | 0.85 | 0.77 | 0.71 | 0.58 |
| 1812L110/24                   | 1.55             | 1.40  | 1.25 | 1.10 | 0.93 | 0.83 | 0.73 | 0.63 | 0.50 |
| 1812L110/33                   | 1.55             | 1.40  | 1.25 | 1.10 | 0.93 | 0.83 | 0.73 | 0.63 | 0.50 |
| 1812L125/6                    | 2.00             | 1.75  | 1.52 | 1.25 | 1.00 | 0.95 | 0.90 | 0.75 | 0.53 |
| 1812L125/16                   | 2.00             | 1.75  | 1.52 | 1.25 | 1.00 | 0.95 | 0.90 | 0.75 | 0.53 |
| 1812L150                      | 2.06             | 1.93  | 1.79 | 1.50 | 1.28 | 1.10 | 1.02 | 0.80 | 0.68 |
| 1812L150/12                   | 2.04             | 1.88  | 1.68 | 1.50 | 1.25 | 1.10 | 1.00 | 0.80 | 0.60 |
| 1812L150/16                   | 2.04             | 1.88  | 1.68 | 1.50 | 1.25 | 1.10 | 1.00 | 0.80 | 0.60 |
| 1812L150/24                   | 2.05             | 1.87  | 1.67 | 1.50 | 1.25 | 1.08 | 0.95 | 0.77 | 0.60 |
| 1812L160                      | 2.20             | 2.06  | 1.91 | 1.60 | 1.36 | 1.17 | 1.09 | 0.85 | 0.72 |
| 1812L160/12                   | 2.20             | 2.06  | 1.91 | 1.60 | 1.36 | 1.17 | 1.09 | 0.85 | 0.72 |
| 1812L200TH                    | 2.60             | 2.44  | 2.22 | 2.00 | 1.78 | 1.67 | 1.50 | 1.45 | 1.29 |
| 1812L200/12                   | 2.60             | 2.44  | 2.22 | 2.00 | 1.78 | 1.67 | 1.50 | 1.45 | 1.29 |
| 1812L200/16                   | 2.60             | 2.44  | 2.22 | 2.00 | 1.78 | 1.67 | 1.50 | 1.45 | 1.29 |
| 1812L260TH                    | 3.40             | 3.16  | 3.00 | 2.60 | 2.30 | 2.15 | 2.00 | 1.85 | 1.63 |
| 1812L260/12                   | 3.40             | 3.16  | 3.00 | 2.60 | 2.30 | 2.15 | 2.00 | 1.85 | 1.63 |
| 1812L260/16                   | 3.40             | 3.16  | 3.30 | 2.60 | 2.30 | 2.15 | 2.00 | 1.85 | 1.63 |
| 1812L300                      | 4.13             | 3.75  | 3.30 | 3.00 | 2.62 | 2.43 | 2.25 | 2.00 | 1.78 |

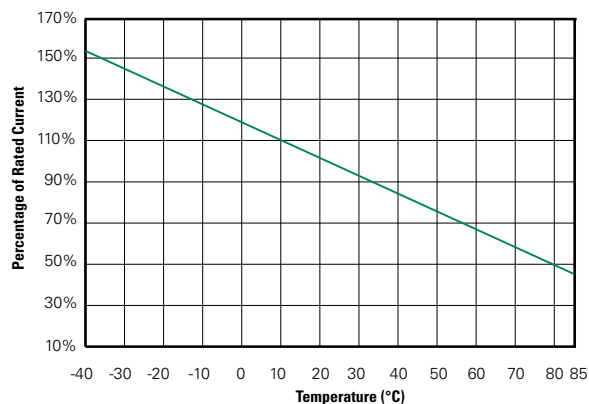
Notes: The temperature derating data is only for reference, please contact Littelfuse technical support for detail temperature derating information.

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Specifications are subject to change without notice.

Revised: 02/25/19

### Temperature Derating Curve



Note:  
Typical Temperature derating curve, refer to table for derating data

### Physical Specifications

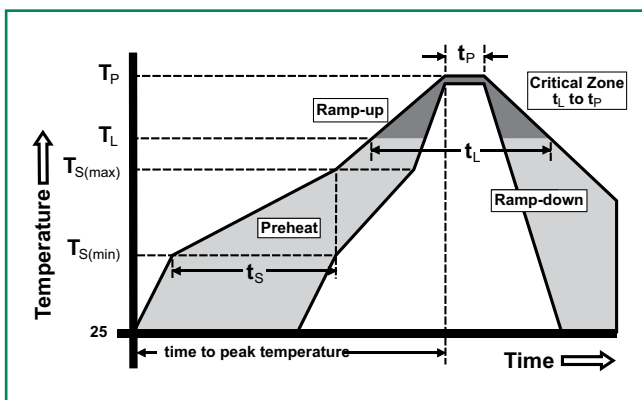
|                           |                                                              |
|---------------------------|--------------------------------------------------------------|
| <b>Terminal Material</b>  | Solder-Plated Copper (Solder Material: Matte Tin (Sn))       |
| <b>Lead Solderability</b> | Meets EIA Specification RS186-9E, ANSI/J-STD-002 Category 3. |

### Environmental Specifications

|                                                   |                                                                                   |
|---------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Operating/Storage Temp.</b>                    | -40°C to +85°C                                                                    |
| <b>Max. Device Surface Temp. in Tripped State</b> | 125°C                                                                             |
| <b>Passive Aging</b>                              | +85°C, 1000 hours<br>-/+5% typical resistance change                              |
| <b>Humidity Aging</b>                             | +85°C, 85% R.H., 1000 hours<br>-/+5% typical resistance change                    |
| <b>Thermal Shock</b>                              | MIL-STD-202, Method 107<br>+85°C/-40°C 20 times<br>-30% typical resistance change |
| <b>Solvent Resistance</b>                         | MIL-STD-202, Method 215,<br>No change                                             |
| <b>Vibration</b>                                  | MIL-STD-883, Method 2007,<br>Condition A, No change                               |
| <b>Moisture Level Sensitivity</b>                 | Level 1, J-STD-020                                                                |

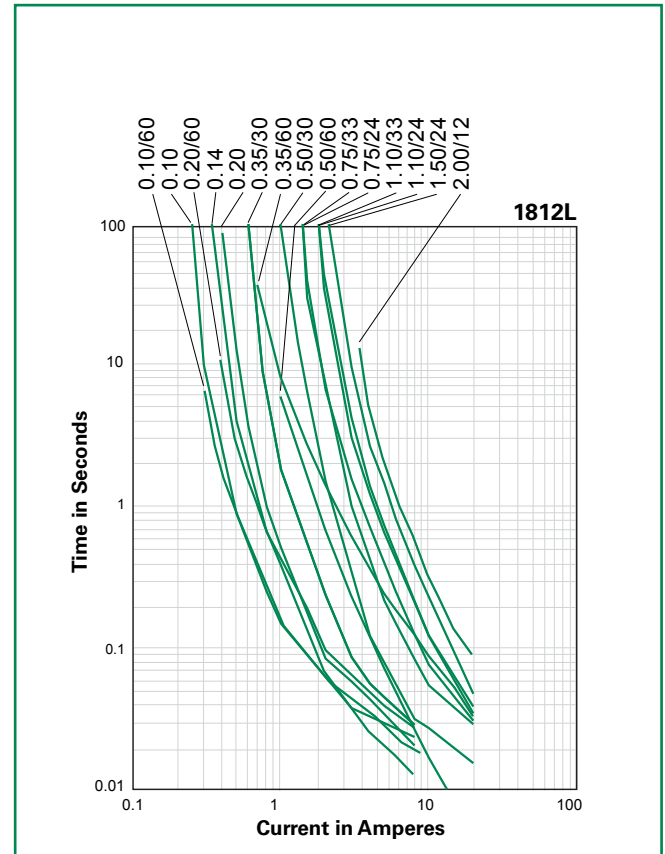
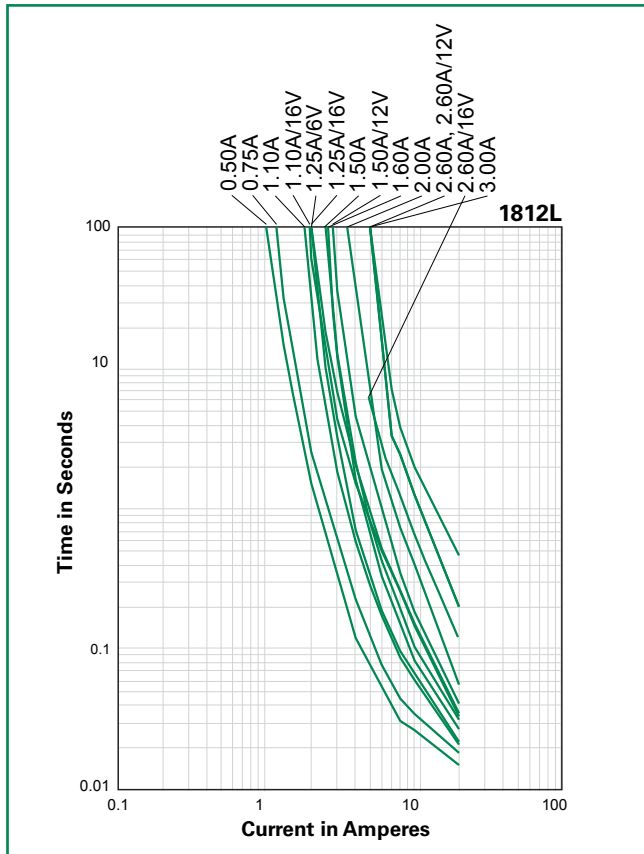
### Soldering Parameters

|                                                      |                                  |                         |
|------------------------------------------------------|----------------------------------|-------------------------|
| Profile Feature                                      |                                  | Pb-Free Assembly        |
| Average Ramp-Up Rate ( $T_{S(max)}$ to $T_P$ )       |                                  | 3°C/second max          |
| Pre Heat:                                            | Temperature Min ( $T_{S(min)}$ ) | 150°C                   |
|                                                      | Temperature Max ( $T_{S(max)}$ ) | 200°C                   |
|                                                      | Time (Min to Max) ( $t_p$ )      | 60 – 180 secs           |
| Time Maintained Above:                               | Temperature ( $T_L$ )            | 217°C                   |
|                                                      | Temperature ( $t_L$ )            | 60 – 150 seconds        |
| Peak / Classification Temperature ( $T_P$ )          |                                  | 260 <sup>+0/-5</sup> °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.          |



- All temperature refer to topside of the package, measured on the package body surface
- If reflow temperature exceeds the recommended profile, devices may not meet the performance requirements
- Recommended reflow methods: IR, vapor phase oven, hot air oven, N<sub>2</sub> environment for lead
- Recommended maximum paste thickness is 0.25mm (0.010inch)
- Devices can be cleaned using standard industry methods and solvents
- Devices can be reworked using the standard industry practices

### Average Time Current Curves



The average time current curves and Temperature Derating curve performance is affected by a number of variables, and these curves provided as guidance only. Customer must verify the performance in their application.

### Additional Information



**Datasheet**



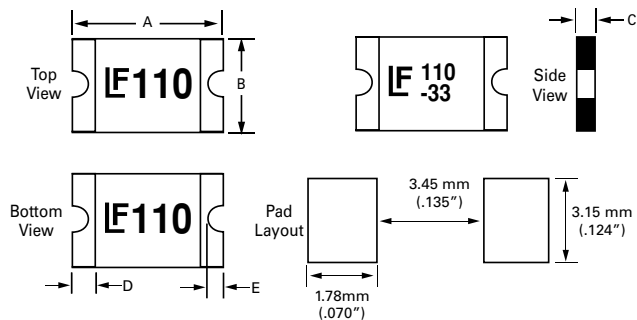
**Resources**



**Samples**

## Dimensions

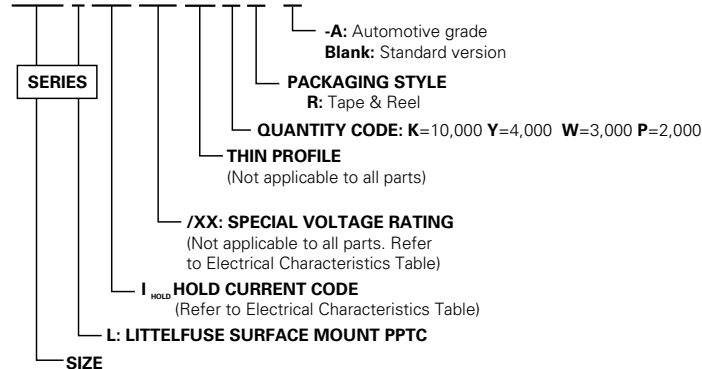
MARKING CODE VARIES  
WITH AMPERAGE AND VOLTAGE RATING  
(See Electrical Characteristics Table)  
SHOWN ARE:  
- 1.1A/6V RATING (LEFT)  
- 1.1A/33V RATING (RIGHT)



| Part Number | A      |      |      |      | B      |      |      |      | C      |       |      |      | D      |       |     |      | E      |       |      |      |
|-------------|--------|------|------|------|--------|------|------|------|--------|-------|------|------|--------|-------|-----|------|--------|-------|------|------|
|             | Inches |      | mm   |      | Inches |      | mm   |      | Inches |       | mm   |      | Inches |       | mm  |      | Inches |       | mm   |      |
|             | Min    | Max  | Min  | Max  | Min    | Max  | Min  | Max  | Min    | Max   | Min  | Max  | Min    | Max   | Min | Max  | Min    | Max   | Min  | Max  |
| 1812L010    | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.75 | 1.25 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L010/60 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.75 | 1.25 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L014    | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.08  | 0.75 | 1.95 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L020    | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.04  | 0.55 | 1.00 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L020/60 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.75 | 1.25 | 0.01   | 0.05  | 0.3 | 1.20 | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L035/30 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.04  | 0.6  | 1.25 | 0.01   | 0.05  | 0.3 | 1.20 | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L035/60 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.05   | 0.07  | 1.2  | 1.8  | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L050    | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.03  | 0.5  | 0.75 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.02  | 0.15 | 0.50 |
| 1812L050/30 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.04  | 0.5  | 1.00 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L050/60 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.05   | 0.07  | 1.2  | 1.8  | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L075    | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.03  | 0.5  | 0.75 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.02  | 0.15 | 0.50 |
| 1812L075/24 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.75 | 1.20 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L075/33 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.06  | 0.75 | 1.55 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L110    | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.03  | 0.50 | 0.71 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.02  | 0.15 | 0.65 |
| 1812L110/24 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.04  | 0.50 | 1.07 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L110/16 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.75 | 1.25 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L110/33 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.05   | 0.08  | 1.20 | 2.00 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L125/6  | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.03  | 0.45 | 0.75 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L125/16 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.75 | 1.25 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.02  | 0.15 | 0.65 |
| 1812L150    | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.03  | 0.30 | 0.71 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L150/12 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.75 | 1.25 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L150/16 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.75 | 1.25 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L150/24 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.07  | 0.80 | 1.8  | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L160    | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.03  | 0.40 | 0.75 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L160/12 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.75 | 1.25 | 0.01   | 0.05  | 0.3 | 1.2  | 1.2    | 0.01  | 0.15 | 0.65 |
| 1812L200TH  | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.008  | 0.024 | 0.20 | 0.6  | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.02  | 0.15 | 0.65 |
| 1812L200/12 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.80 | 1.20 | 0.012  | 0.047 | 0.3 | 1.2  | 0.01   | 0.026 | 0.15 | 0.65 |
| 1812L200/16 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.80 | 1.20 | 0.012  | 0.047 | 0.3 | 1.2  | 0.01   | 0.026 | 0.15 | 0.65 |
| 1812L260TH  | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.04  | 0.50 | 1.00 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.02  | 0.15 | 0.65 |
| 1812L260/12 | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.03   | 0.05  | 0.80 | 1.34 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |
| 1812L260/16 | 0.18   | 0.19 | 4.54 | 4.90 | 0.12   | 0.14 | 3.16 | 3.50 | 0.05   | 0.08  | 1.20 | 2.00 | 0.012  | 0.047 | 0.3 | 1.2  | 0.006  | 0.03  | 0.15 | 0.65 |
| 1812L300    | 0.17   | 0.19 | 4.37 | 4.73 | 0.12   | 0.13 | 3.07 | 3.41 | 0.02   | 0.06  | 0.50 | 1.50 | 0.01   | 0.05  | 0.3 | 1.2  | 0.01   | 0.03  | 0.15 | 0.65 |

## Part Ordering Number System

## 1812 L 380 /12 TH Y R - A



## Packaging

| Part Number | Ordering Number | Halogen Free | $I_{hold}$ (A) | $I_{hold}$ Code | Voltage Option | Packaging Option | Quantity | Quantity & Packaging Code |
|-------------|-----------------|--------------|----------------|-----------------|----------------|------------------|----------|---------------------------|
| 1812L010    | 1812L010DR      | Yes          | 0.10           | 010             |                | Tape and Reel    | 1500     | DR                        |
| 1812L010/60 | 1812L010/60DR   | Yes          | 0.10           | 010             | /60            |                  | 1500     | DR                        |
| 1812L014    | 1812L014DR      | Yes          | 0.14           | 014             |                |                  | 1500     | DR                        |
| 1812L020    | 1812L020PR      | Yes          | 0.20           | 020             |                |                  | 2000     | PR                        |
| 1812L020/60 | 1812L020/60DR   | Yes          | 0.20           | 020             | /60            |                  | 1500     | DR                        |
| 1812L035/30 | 1812L035/30DR   | Yes          | 0.35           | 035             | /30            |                  | 1500     | DR                        |
| 1812L035/60 | 1812L035/60     | Yes          | 0.35           | 035             | /60            |                  | 1000     | MR                        |
| 1812L050    | 1812L050PR      | Yes          | 0.50           | 050             |                |                  | 2000     | PR                        |
| 1812L050/30 | 1812L050/30PR   | Yes          | 0.50           | 050             | /30            |                  | 2000     | PR                        |
| 1812L050/60 | 1812L050/60     | Yes          | 0.50           | 050             | /60            |                  | 1000     | MR                        |
| 1812L075    | 1812L075PR      | Yes          | 0.75           | 075             |                |                  | 2000     | PR                        |
| 1812L75/24  | 1812L075/24DR   | Yes          | 0.75           | 075             | /24            |                  | 1500     | DR                        |
| 1812L75/33  | 1812L075/33DR   | Yes          | 0.75           | 075             | /33            |                  | 1500     | DR                        |
| 1812L110    | 1812L110PR      | Yes          | 1.10           | 110             |                |                  | 2000     | PR                        |
| 1812L110/16 | 1812L110/16DR   | Yes          | 1.10           | 110             | /16            |                  | 1500     | DR                        |
| 1812L110/24 | 1812L110/24DR   | Yes          | 1.10           | 110             | /24            |                  | 1500     | DR                        |
| 1812L110/33 | 1812L110/33MR   | Yes          | 1.10           | 110             | /33            |                  | 1000     | MR                        |
| 1812L125/6  | 1812L125/6PR    | Yes          | 1.25           | 125             | /6             |                  | 2000     | PR                        |
| 1812L125/16 | 1812L125/16DR   | Yes          | 1.25           | 125             | /16            |                  | 1500     | DR                        |
| 1812L150    | 1812L150ZR      | Yes          | 1.50           | 150             |                |                  | 2000     | ZR                        |
| 1812L150/12 | 1812L150/12DR   | Yes          | 1.50           | 150             | /12            |                  | 1500     | DR                        |
| 1812L150/16 | 1812L150/16DR   | Yes          | 1.50           | 150             | /16            |                  | 1500     | DR                        |
| 1812L150/24 | 1812L150/24MR   | Yes          | 1.50           | 150             | /24            |                  | 1000     | MR                        |
| 1812L160    | 1812L160PR      | Yes          | 1.60           | 160             |                |                  | 2000     | PR                        |
| 1812L160/12 | 1812L160/12DR   | Yes          | 1.60           | 160             | /12            |                  | 1500     | DR                        |
| 1812L200TH  | 1812L200THPR    | Yes          | 2.00           | 200             |                |                  | 2000     | PR                        |
| 1812L200/12 | 1812L200/12DR   | Yes          | 2.00           | 200             | /12            |                  | 1500     | DR                        |
| 1812L200/16 | 1812L200/16DR   | Yes          | 2.00           | 200             |                |                  | 1500     | DR                        |
| 1812L260TH  | 1812L260THDR    | Yes          | 2.60           | 260             |                |                  | 1500     | DR                        |
| 1812L260/12 | 1812L260/12MR   | Yes          | 2.60           | 260             | /12            |                  | 1000     | MR                        |
| 1812L260/16 | 1812L260/16MR   | Yes          | 2.60           | 260             |                |                  | 1000     | MR                        |
| 1812L300    | 1812L300MR      | Yes          | 3.00           | 300             |                |                  | 1000     | MR                        |

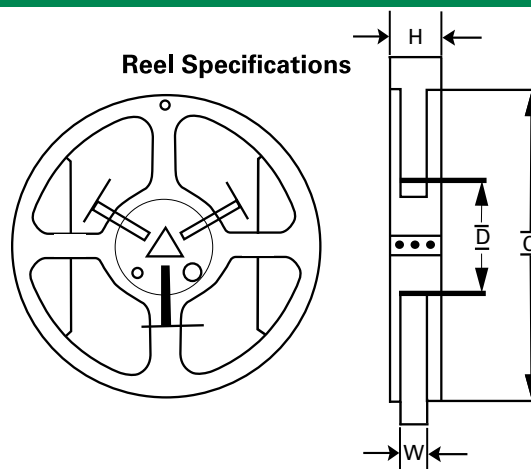
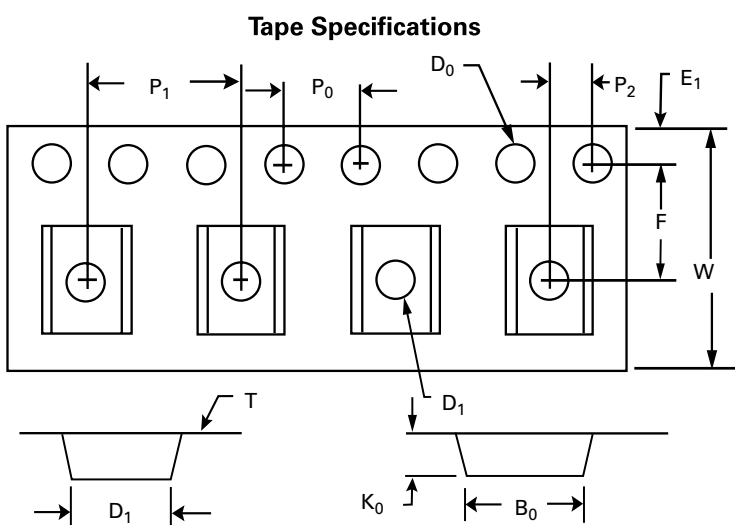
## WARNING

- Users shall independently assess the suitability of these devices for each of their applications
- Operation of these devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire
- These devices are intended to protect against the effects of temporary over-current or over-temperature conditions and are not intended to perform as protective devices where such conditions are expected to be repetitive or prolonged in duration
- Exposure to silicon-based oils, solvents, electrolytes, acids, and similar materials can adversely affect the performance of these PPTC devices
- These devices undergo thermal expansion under fault conditions, and thus shall be provided with adequate space and be protected against mechanical stresses
- Circuits with inductance may generate a voltage ( $L di/dt$ ) above the rated voltage of the PPTC device.

## Tape and Reel Specifications

| TAPE SPECIFICATIONS: EIA-481-1 (mm) |                                                                                                               |                                                                                                                                                                                                                                     |                                                                                                    | REEL DIMENSIONS:<br>EIA-481-1 (mm) |             |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------|-------------|
|                                     | 1812L020<br>1812L050/30<br>1812L050<br>1812L075<br>1812L110<br>1812L125/6<br>1812L150<br>1812L160<br>1812L200 | 1812L010<br>1812L010/60<br>1812L014<br>1812L020/60<br>1812L035/30<br>1812L075/24<br>1812L075/33<br>1812L110/16<br>1812L110/24<br>1812L125/16<br>1812L150/12<br>1812L150/16<br>1812L160/12<br>1812L200/12<br>1812L200/16<br>1812L260 | 1812L035/60<br>1812L050/60<br>1812L110/33<br>1812L150/24<br>1812L260/12<br>1812L260/16<br>1812L300 |                                    |             |
| <b>W</b>                            | 12.00 ± 0.30                                                                                                  | 12.00 ± 0.30                                                                                                                                                                                                                        | 12.00 ± 0.30                                                                                       | <b>C</b>                           | Ø178 ± 1.0  |
| <b>F</b>                            | 5.50 ± 0.05                                                                                                   | 5.50 ± 0.05                                                                                                                                                                                                                         | 5.50 ± 0.05                                                                                        | <b>D</b>                           | Ø60.2 ± 0.5 |
| <b>E<sub>1</sub></b>                | 1.75 ± 0.10                                                                                                   | 1.75 ± 0.10                                                                                                                                                                                                                         | 1.75 ± 0.10                                                                                        | <b>H</b>                           | 16.0 ± 0.5  |
| <b>D<sub>0</sub></b>                | 1.55 ± 0.10                                                                                                   | 1.55 ± 0.05                                                                                                                                                                                                                         | 1.55 ± 0.05                                                                                        | <b>W</b>                           | 13.2 ± 1.5  |
| <b>D<sub>1</sub></b>                | 1.55 (min)                                                                                                    | 1.50 ± 0.10                                                                                                                                                                                                                         | 1.50 (MIN)                                                                                         |                                    |             |
| <b>P<sub>0</sub></b>                | 4.00 ± 0.10                                                                                                   | 4.00 ± 0.10                                                                                                                                                                                                                         | 4.00 ± 0.08                                                                                        |                                    |             |
| <b>P<sub>1</sub></b>                | 8.00 ± 0.10                                                                                                   | 8.00 ± 0.10                                                                                                                                                                                                                         | 8.00 ± 0.10                                                                                        |                                    |             |
| <b>P<sub>2</sub></b>                | 2.00 ± 0.05                                                                                                   | 2.00 ± 0.05                                                                                                                                                                                                                         | 2.00 ± 0.05                                                                                        |                                    |             |
| <b>A<sub>0</sub></b>                | 3.58 ± 0.10                                                                                                   | 3.50 ± 0.10                                                                                                                                                                                                                         | 3.58 ± 0.10                                                                                        |                                    |             |
| <b>B<sub>0</sub></b>                | 4.93 ± 0.10                                                                                                   | 4.85 ± 0.10                                                                                                                                                                                                                         | 4.93 ± 0.10                                                                                        |                                    |             |
| <b>T</b>                            | 0.25 ± 0.10                                                                                                   | 0.25 ± 0.10                                                                                                                                                                                                                         | 0.25 ± 0.10                                                                                        |                                    |             |
| <b>K<sub>0</sub></b>                | 0.87 ± 0.06                                                                                                   | 1.25 ± 0.10                                                                                                                                                                                                                         | 2.10 ± 0.10                                                                                        |                                    |             |
| <b>Leader min.</b>                  | 390                                                                                                           | 390                                                                                                                                                                                                                                 | 390                                                                                                |                                    |             |
| <b>Trailer min.</b>                 | 160                                                                                                           | 160                                                                                                                                                                                                                                 | 160                                                                                                |                                    |             |

## Tape and Reel Diagram



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