

## 0805L Series



## Agency Approvals

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

## Description

The 0805L Series PTC provides surface mount overcurrent protection for applications where space is at a premium and resettable protection is desired.

## Features

- RoHS compliant, lead-free and halogen-free
- Fast response to fault currents
- Compact design saves board space
- Low resistance
- Low-profile
- Compatible with high temperature solders

## Applications

- USB peripherals
- Disk drives
- CD-ROMs
- Plug and play protection for motherboards and peripherals
- Mobile phones - battery and port protection
- Disk drives
- PDAs / digital cameras
- 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) | $P_d$<br>typ.<br>(W) | Maximum Time To Trip |                | Resistance                |                           |                            | Agency Approvals                                                                      |                                                                                       |
|-------------|---------|-------------------|-------------------|--------------------|------------------|----------------------|----------------------|----------------|---------------------------|---------------------------|----------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|             |         |                   |                   |                    |                  |                      | Current<br>(A)       | Time<br>(Sec.) | $R_{min}$<br>( $\Omega$ ) | $R_{typ}$<br>( $\Omega$ ) | $R_{1max}$<br>( $\Omega$ ) |  |  |
| 0805L010    | A       | 0.10              | 0.30              | 15                 | 100              | 0.5                  | 0.50                 | 1.50           | 1.000                     | 3.500                     | 6.000                      | X                                                                                     | X                                                                                     |
| 0805L010/24 | J       | 0.10              | 0.30              | 24                 | 100              | 0.5                  | 0.50                 | 1.50           | 1.500                     | —                         | 6.000                      | X                                                                                     | X                                                                                     |
| 0805L020    | C       | 0.20              | 0.50              | 9                  | 100              | 0.5                  | 8.00                 | 0.02           | 0.650                     | 2.000                     | 3.500                      | X                                                                                     | X                                                                                     |
| 0805L035    | E       | 0.35              | 0.75              | 6                  | 100              | 0.5                  | 8.00                 | 0.10           | 0.250                     | 0.750                     | 1.200                      | X                                                                                     | X                                                                                     |
| 0805L050    | F       | 0.50              | 1.00              | 6                  | 100              | 0.5                  | 8.00                 | 0.10           | 0.150                     | 0.500                     | 0.850                      | X                                                                                     | X                                                                                     |
| 0805L075    | G       | 0.75              | 1.50              | 6                  | 40               | 0.6                  | 8.00                 | 0.20           | 0.090                     | —                         | 0.350                      | X                                                                                     | X                                                                                     |
| 0805L100    | N       | 1.00              | 1.95              | 6                  | 40               | 0.6                  | 8.00                 | 0.30           | 0.060                     | —                         | 0.210                      | X                                                                                     | X                                                                                     |
| 0805L110    | H       | 1.10              | 2.00              | 6                  | 100              | 0.8                  | 8.00                 | 0.10           | 0.050                     | —                         | 0.160                      | X                                                                                     | X                                                                                     |

$I_{hold}$  = 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.

$R_{min}$  = 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.

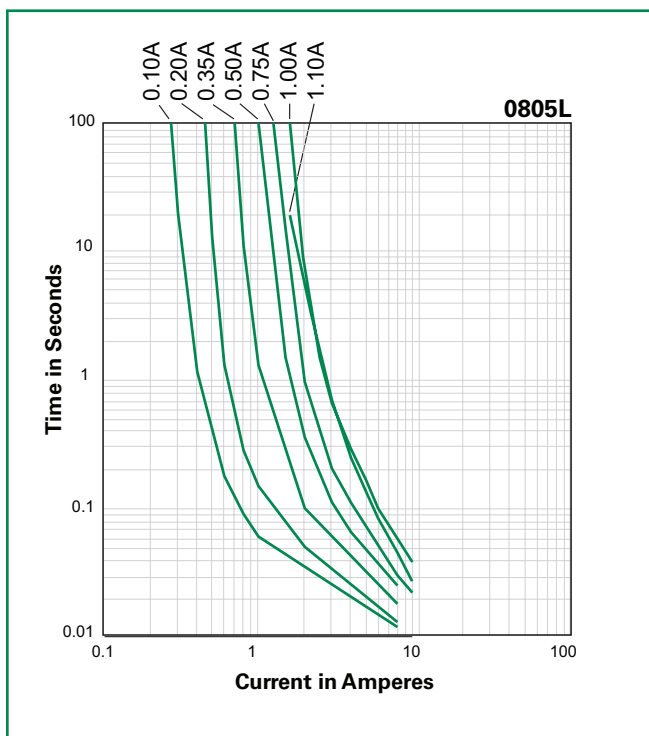
**Caution:** Operation beyond the specified rating may result in damage and possible arcing and flame.

## Temperature Derating

| Part Number      | Ambient Operation Temperature |       |      |      |      |      |      |      |      |
|------------------|-------------------------------|-------|------|------|------|------|------|------|------|
|                  | -40°C                         | -20°C | 0°C  | 20°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| Hold Current (A) |                               |       |      |      |      |      |      |      |      |
| 0805L010         | 0.14                          | 0.12  | 0.11 | 0.10 | 0.08 | 0.07 | 0.06 | 0.05 | 0.03 |
| 0805L010/24      | 0.15                          | 0.13  | 0.12 | 0.10 | 0.09 | 0.08 | 0.07 | 0.06 | 0.04 |
| 0805L020         | 0.28                          | 0.25  | 0.23 | 0.20 | 0.17 | 0.14 | 0.12 | 0.10 | 0.07 |
| 0805L035         | 0.47                          | 0.44  | 0.39 | 0.35 | 0.30 | 0.27 | 0.24 | 0.20 | 0.14 |
| 0805L050         | 0.68                          | 0.62  | 0.55 | 0.50 | 0.40 | 0.37 | 0.33 | 0.29 | 0.23 |
| 0805L075         | 1.00                          | 0.90  | 0.79 | 0.75 | 0.63 | 0.57 | 0.53 | 0.41 | 0.34 |
| 0805L100         | 1.35                          | 1.25  | 1.10 | 1.00 | 0.82 | 0.74 | 0.65 | 0.55 | 0.42 |
| 0805L110         | 1.56                          | 1.41  | 1.24 | 1.10 | 0.96 | 0.86 | 0.76 | 0.68 | 0.55 |

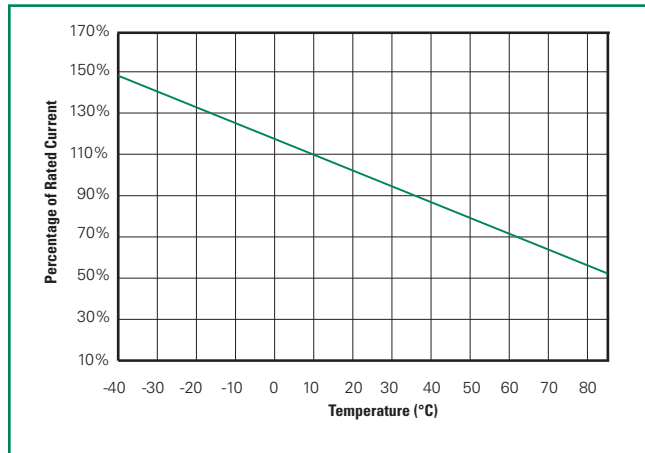
Notes: The temperature derating data is only for reference, please contact Littelfuse technical support for detail temperature derating information.

## 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.

## Temperature Derating Curve

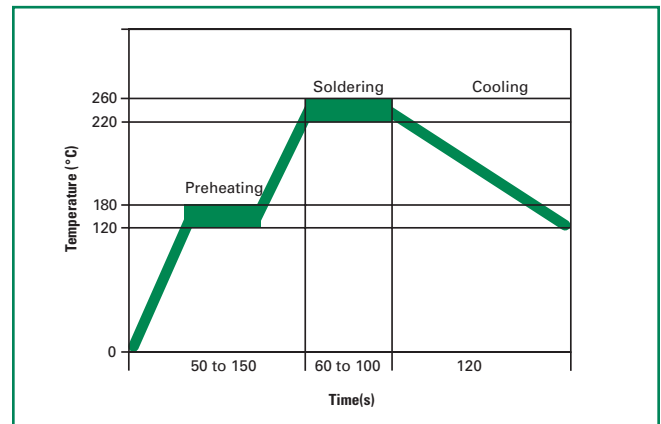


### Soldering Parameters

|                                |                  |
|--------------------------------|------------------|
| Condition                      | Reflow           |
| Peak Temp/ Duration Time       | 260°C / 10 Sec   |
| Time above liquids (TAL) 220°C | 60 Sec ~ 100 Sec |
| Preheat 120°C~ 180°C           | 50 Sec ~ 150 Sec |
| Storage Condition              | 0°C~35°C, ≤70%RH |

- Recommended reflow methods: IR, vapor phase oven, hot air oven, N<sub>2</sub> environment for lead-free
- Recommended maximum paste thickness is 0.25mm (0.010 inch)
- Devices can be cleaned using standard industry methods and solvents.

**Note:** If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.



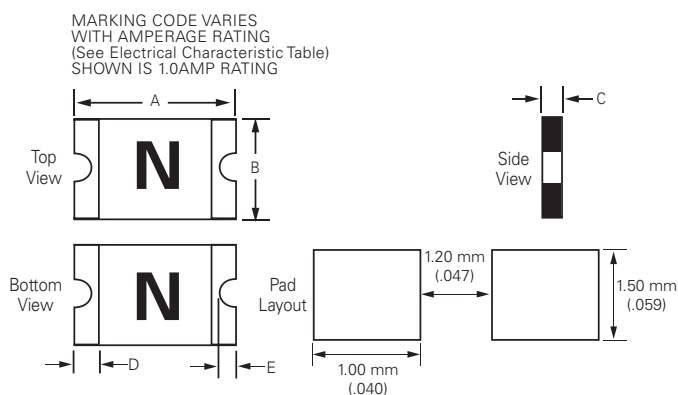
### Physical Specifications

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

### Environmental Specifications

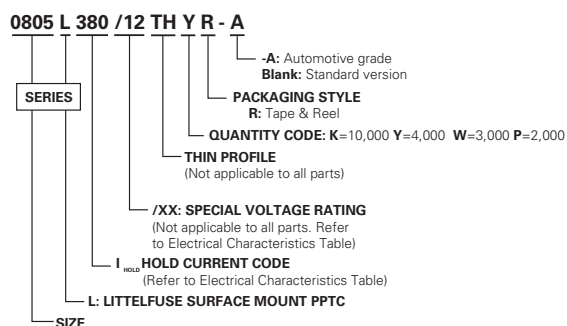
|                                                            |                                                                                    |
|------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Operating/Storage Temperature</b>                       | -40°C to +85°C                                                                     |
| <b>Maximum Device Surface Temperature 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 107G<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-883C, Method 2007.1,<br>Condition A<br>No change                           |
| <b>Moisture Sensitivity Level</b>                          | Level 1, J-STD-020C                                                                |

## Dimensions



| 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  |
| 0805L010    | 0.08   | 0.09 | 2.00 | 2.20 | 0.05   | 0.06 | 1.20 | 1.50 | 0.02   | 0.04 | 0.55 | 1.00 | 0.01   | 0.02  | 0.20 | 0.55 | 0.004  | 0.02  | 0.10 | 0.45 |
| 0805L010/24 | 0.08   | 0.09 | 2.00 | 2.20 | 0.05   | 0.06 | 1.20 | 1.50 | 0.02   | 0.04 | 0.55 | 1.00 | 0.008  | 0.014 | 0.20 | 0.35 | 0.002  | 0.018 | 0.05 | 0.45 |
| 0805L020    | 0.08   | 0.09 | 2.00 | 2.20 | 0.05   | 0.06 | 1.20 | 1.50 | 0.02   | 0.04 | 0.55 | 1.00 | 0.01   | 0.02  | 0.20 | 0.55 | 0.004  | 0.02  | 0.10 | 0.45 |
| 0805L035    | 0.08   | 0.09 | 2.00 | 2.20 | 0.05   | 0.06 | 1.20 | 1.50 | 0.02   | 0.03 | 0.45 | 0.75 | 0.01   | 0.02  | 0.20 | 0.55 | 0.004  | 0.02  | 0.10 | 0.45 |
| 0805L050    | 0.08   | 0.09 | 2.00 | 2.20 | 0.05   | 0.06 | 1.20 | 1.50 | 0.03   | 0.05 | 0.75 | 1.25 | 0.01   | 0.02  | 0.20 | 0.55 | 0.004  | 0.02  | 0.10 | 0.45 |
| 0805L075    | 0.08   | 0.09 | 2.00 | 2.20 | 0.05   | 0.06 | 1.20 | 1.50 | 0.03   | 0.05 | 0.75 | 1.25 | 0.01   | 0.02  | 0.20 | 0.55 | 0.006  | 0.02  | 0.15 | 0.45 |
| 0805L100    | 0.08   | 0.09 | 2.00 | 2.20 | 0.05   | 0.06 | 1.20 | 1.50 | 0.03   | 0.07 | 0.80 | 1.80 | 0.01   | 0.02  | 0.20 | 0.55 | 0.006  | 0.02  | 0.15 | 0.45 |
| 0805L110    | 0.08   | 0.09 | 2.00 | 2.20 | 0.05   | 0.06 | 1.20 | 1.50 | 0.03   | 0.06 | 0.80 | 1.40 | 0.01   | 0.02  | 0.20 | 0.55 | 0.002  | 0.02  | 0.05 | 0.45 |

## Part Ordering Number System



## Packaging

| Part Number | Ordering Number | Halogen Free | $I_{hold}$ (A) | $I_{hold}$ Code | Packaging Option | Quantity | Quantity & Packaging Codes |
|-------------|-----------------|--------------|----------------|-----------------|------------------|----------|----------------------------|
| 0805L010    | 0805L010YR      | Yes          | 0.10           | 010             | Tape and Reel    | 4000     | YR                         |
| 0805L010/24 | 0805L010/24YR   | Yes          | 0.10           | 010             | Tape and Reel    | 4,000    | YR                         |
| 0805L020    | 0805L020YR      | Yes          | 0.20           | 020             | Tape and Reel    | 4000     | YR                         |
| 0805L035    | 0805L035YR      | Yes          | 0.35           | 035             | Tape and Reel    | 4000     | YR                         |
| 0805L050    | 0805L050WR      | Yes          | 0.50           | 050             | Tape and Reel    | 3000     | WR                         |
| 0805L075    | 0805L075WR      | Yes          | 0.75           | 075             | Tape and Reel    | 3000     | WR                         |
| 0805L100    | 0805L100WR      | Yes          | 1.00           | 100             | Tape and Reel    | 3000     | WR                         |
| 0805L110    | 0805L110WR      | Yes          | 1.10           | 110             | Tape and Reel    | 3000     | WR                         |

### Tape and Reel Specifications

| TAPE SPECIFICATIONS: EIA-481-1 (mm) |                                                 |             |             |                      |
|-------------------------------------|-------------------------------------------------|-------------|-------------|----------------------|
|                                     | 0805L010<br>0805L020<br>0805L035<br>0805L010/24 | 0805L050    | 0805L075    | 0805L100<br>0805L110 |
| <b>W</b>                            | 8.00+/-0.10                                     | 8.00+/-0.10 | 8.00+/-0.10 | 8.00+/-0.10          |
| <b>F</b>                            | 3.50+/-0.05                                     | 3.50+/-0.05 | 3.50+/-0.05 | 3.50+/-0.05          |
| <b>E<sub>1</sub></b>                | 1.75+/-0.10                                     | 1.75+/-0.10 | 1.75+/-0.10 | 1.75+/-0.10          |
| <b>D<sub>0</sub></b>                | 1.55+/-0.05                                     | 1.55+/-0.05 | 1.55+/-0.05 | 1.55+/-0.05          |
| <b>D<sub>1</sub></b>                | 1.00 (min)                                      | 1.00 (min)  | 1.00 (min)  | 1.00 (min)           |
| <b>P<sub>0</sub></b>                | 4.00+/-0.10                                     | 4.00+/-0.10 | 4.00+/-0.08 | 4.00+/-0.10          |
| <b>P<sub>1</sub></b>                | 4.00+/-0.10                                     | 4.00+/-0.10 | 4.00+/-0.10 | 4.00+/-0.10          |
| <b>P<sub>2</sub></b>                | 2.00+/-0.05                                     | 2.00+/-0.05 | 2.00+/-0.05 | 2.00+/-0.05          |
| <b>A<sub>0</sub></b>                | 1.45+/-0.10                                     | 1.42+/-0.10 | 1.60+/-0.10 | 1.65+/-0.10          |
| <b>B<sub>0</sub></b>                | 2.30+/-0.10                                     | 2.24+/-0.10 | 2.30+/-0.10 | 2.35+/-0.10          |
| <b>T</b>                            | 0.25+/-0.10                                     | 0.20+/-0.10 | 0.25+/-0.10 | 0.25+/-0.10          |
| <b>K<sub>0</sub></b>                | 0.90+/-0.10                                     | 1.04+/-0.10 | 0.90+/-0.10 | 1.50+/-0.10          |
| Leader min.                         | 390                                             | 390         | 390         | 390                  |
| Trailer min.                        | 160                                             | 160         | 160         | 160                  |

| REEL DIMENSIONS:<br>EIA-481-1 (mm) |             |
|------------------------------------|-------------|
| <b>H</b>                           | 11.0+/-0.05 |
| <b>W</b>                           | 9.0+/-0.5   |
| <b>D</b>                           | Ø60.2+0.5   |
| <b>F</b>                           | Ø13.0+/-0.2 |
| <b>C</b>                           | Ø178+/-1.0  |
| <b>H<sub>1</sub></b>               | 11+/-0.5    |
| <b>W<sub>1</sub></b>               | 2.2+/-0.5   |
| <b>W<sub>2</sub></b>               | 3.0+0.5     |
| <b>W<sub>3</sub></b>               | 4.0+0.5     |
| <b>W<sub>4</sub></b>               | 5.5+0.5     |

