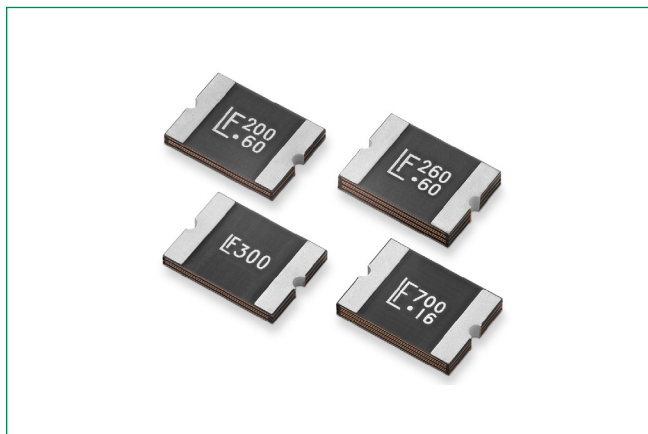


# Surface Mount PPTC

## 3425L Series



### Description

Littelfuse 3425L Series PPTC provides surface mount overcurrent protection for high voltage applications where resettable protection is desired.

### Features & Benefits

- RoHS compliant and lead-free
- Halogen-free
- High voltage
- Low profile
- Fast response to fault current
- Compatible with high-volume electronics assembly
- Higher voltage ratings allow use in new applications

### Applications

- Servers and computing equipment
- Portable electronics
- Automotive electronic control module protection
- Telecom equipment protection
- Robotic appliances

### Additional Information



Resources



Accessories



Samples

### Agency Approvals

| Agency | Agency Number |
|--------|---------------|
|        | E183209       |
|        | R50119118     |

### 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) | Maximum Time to Trip |                | Resistance                |                            | Agency Approvals |   |
|-------------|----------|-------------------|-------------------|--------------------|------------------|---------------------|----------------------|----------------|---------------------------|----------------------------|------------------|---|
|             |          |                   |                   |                    |                  |                     | Current<br>(A)       | Time<br>(Sec.) | $R_{min}$<br>( $\Omega$ ) | $R_{1max}$<br>( $\Omega$ ) |                  |   |
| 3425L200/60 | LF200-60 | 2.00              | 4.00              | 60.00              | 20.00            | 2.50                | 8.00                 | 10.00          | 0.040                     | 0.200                      | X                | X |
| 3425L260/60 | LF260-60 | 2.60              | 5.20              | 60.00              | 20.00            | 2.50                | 8.00                 | 10.00          | 0.020                     | 0.120                      | X                | X |
| 3425L300/36 | LF300    | 3.00              | 6.00              | 36.00              | 20.00            | 2.50                | 8.00                 | 20.00          | 0.010                     | 0.060                      | X                | X |

#### Notes:

$I_{hold}$  = 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.

# Surface Mount PPTC

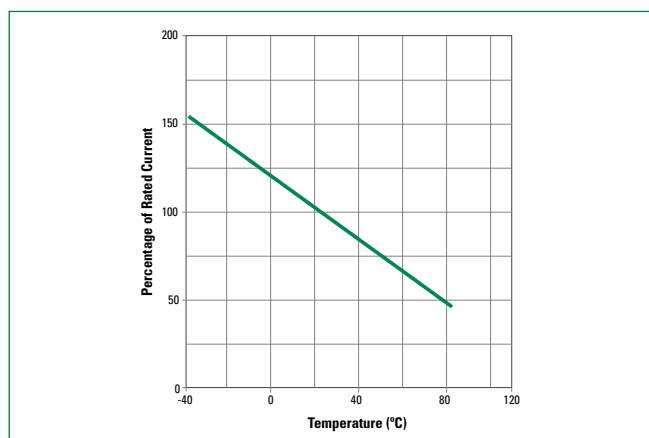
## 3425L Series

### 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)              |        |      |       |       |       |       |       |       |
| 3425L200/60 | 3.07                          | 2.73   | 2.39 | 2.00  | 1.71  | 1.54  | 1.37  | 1.20  | 0.95  |
| 3425L260/60 | 4.01                          | 3.56   | 3.12 | 2.60  | 2.22  | 2.00  | 1.77  | 1.55  | 1.21  |
| 3425L300/36 | 4.43                          | 3.98   | 3.52 | 3.00  | 2.61  | 2.39  | 2.16  | 1.93  | 1.59  |

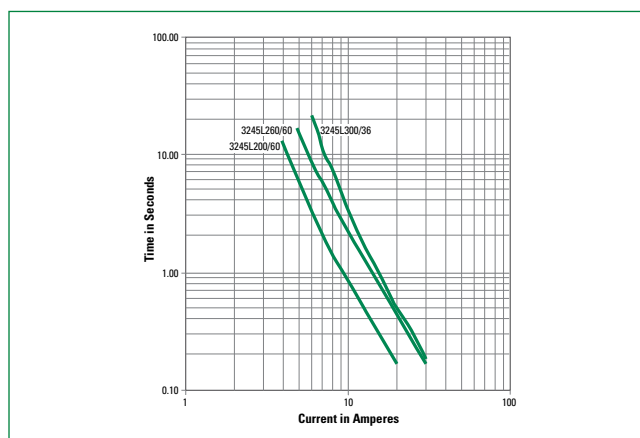
**Note:** Notes: The temperature derating data is only for reference, please contact Littelfuse technical support for detail temperature derating information.

### Temperature Derating Curve



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

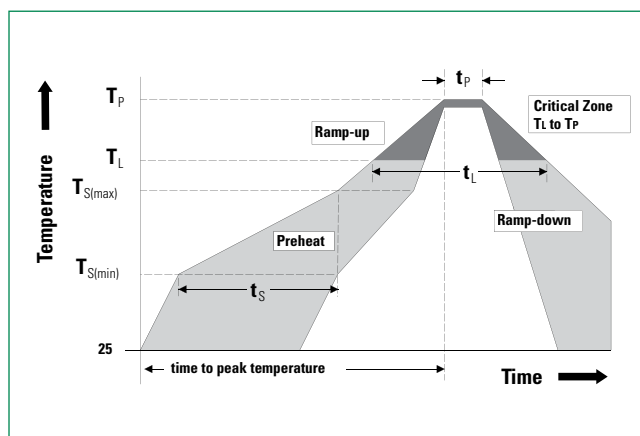
### Average Time Current Curves



**Note:** 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.

### Soldering Parameters

|                                                                           |                                                  |                  |
|---------------------------------------------------------------------------|--------------------------------------------------|------------------|
| <b>Profile Feature</b>                                                    |                                                  | Pb-Free Assembly |
| <b>Average Ramp-Up Rate (<math>T_{S(max)}</math> to <math>T_p</math>)</b> |                                                  | 3°C/second max   |
| <b>Pre Heat:</b>                                                          | <b>Temperature Min (<math>T_{S(min)}</math>)</b> | 150°C            |
|                                                                           | <b>Temperature Max (<math>T_{S(max)}</math>)</b> | 200°C            |
|                                                                           | <b>Time (Min to Max) (<math>t_s</math>)</b>      | 60 – 180 secs    |
| <b>Time Maintained Above:</b>                                             | <b>Temperature (<math>T_L</math>)</b>            | 217°C            |
|                                                                           | <b>Temperature (<math>t_L</math>)</b>            | 60 – 150 seconds |
| <b>Peak / Classification Temperature (<math>T_p</math>)</b>               |                                                  | 260 °C           |
| <b>Time within 5°C of actual peak Temperature (<math>t_p</math>)</b>      |                                                  | 20 – 40 seconds  |
| <b>Ramp-down Rate</b>                                                     |                                                  | 6°C/second max   |
| <b>Time 25°C to peak Temperature (<math>T_p</math>)</b>                   |                                                  | 8 minutes Max.   |



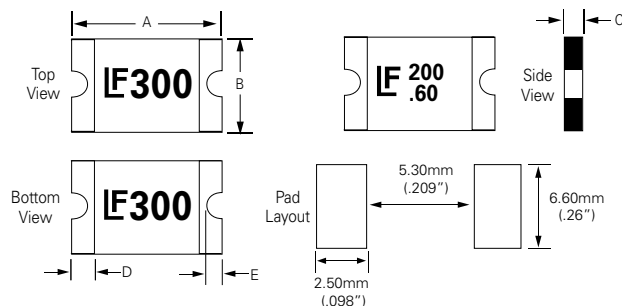
### Physical Specifications

|                           |                                                              |
|---------------------------|--------------------------------------------------------------|
| <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. |

# Surface Mount PPTC

## 3425L Series

### Dimensions (mm)



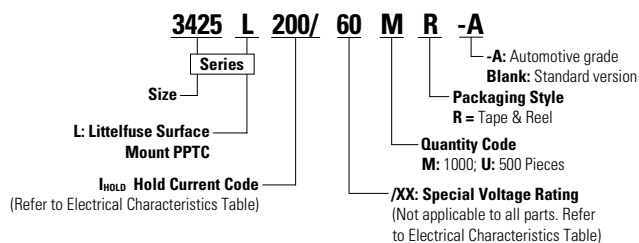
MARKING CODE VARIES  
WITH AMPERAGE AND VOLTAGE RATING  
SEE ELECTRICAL CHARACTERISTICS CHART  
SHOWN ARE:  
- 3.0 A / 36 V RATING (LEFT)  
- 2.0 A / 60 V RATING (RIGHT)

| 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  |
| 3425L200/60 | 0.33   | 0.35 | 8.30 | 9.00 | 0.24   | 0.26 | 6.00 | 6.70 | 0.04   | 0.07 | 1.00 | 1.80 | 0.01   | 0.10 | 0.30 | 2.50 | 0.01   | 0.03 | 0.25 | 0.65 |
| 3425L260/60 | 0.33   | 0.35 | 8.30 | 9.00 | 0.24   | 0.26 | 6.00 | 6.70 | 0.06   | 0.12 | 1.50 | 3.00 | 0.01   | 0.10 | 0.30 | 2.50 | 0.01   | 0.03 | 0.25 | 0.65 |
| 3425L300/36 | 0.33   | 0.35 | 8.30 | 9.00 | 0.24   | 0.26 | 6.00 | 6.70 | 0.03   | 0.06 | 0.70 | 1.40 | 0.01   | 0.10 | 0.30 | 2.50 | 0.01   | 0.03 | 0.25 | 0.65 |

### Environmental Specifications

|                                                     |                                                                                        |
|-----------------------------------------------------|----------------------------------------------------------------------------------------|
| Operating Temperature                               | -40 °C to +85 °C                                                                       |
| Maximum Device Surface Temperature in Tripped State | 125 °C                                                                                 |
| Passive Aging                                       | +85 °C, 1000 hours<br>-/+5% typical resistance change                                  |
| Humidity Aging                                      | +85 °C, 85%, R.H., 1000 hours<br>-/+5% typical resistance change                       |
| Thermal Shock                                       | MIL-STD-202, Method 107G<br>+85 °C / -40 °C 20 times<br>-30% typical resistance change |
| Solvent Resistance                                  | MIL-STD-202, Method 215<br>No change                                                   |
| Vibration                                           | MIL-STD-883C, Method 2007.1,<br>Condition A; No change                                 |
| Moisture Sensitivity Level                          | Level 1, J-STD-020C                                                                    |

### Part Numbering System



### Packaging

| Part Number | Ordering Number | Halogen Free | I <sub>hold</sub> (A) | I <sub>hold</sub> Code | Voltage Option | Packaging Option | Quantity | Quantity & Packaging Codes |
|-------------|-----------------|--------------|-----------------------|------------------------|----------------|------------------|----------|----------------------------|
| 3425L200/60 | 3425L200/60MR   | Yes          | 2.00                  | 200                    | /60            | Tape and Reel    | 1000     | MR                         |
| 3425L260/60 | 3425L260/60UR   | Yes          | 2.60                  | 260                    | /60            | Tape and Reel    | 500      | UR                         |
| 3425L300/36 | 3425L300/36MR   | Yes          | 3.00                  | 300                    | /36            | Tape and Reel    | 1000     | MR                         |

# Surface Mount PPTC

## 3425L Series

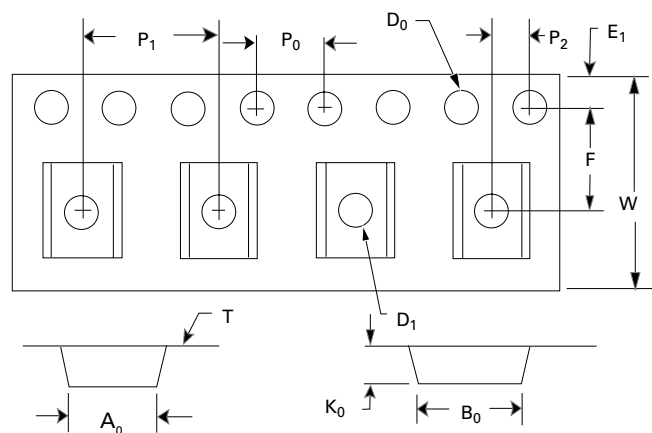
### Tape and Reel Specifications

| TAPE SPECIFICATIONS: EIA-481-1 (mm) |                            |              |
|-------------------------------------|----------------------------|--------------|
|                                     | 3425L200/60<br>3425L300/36 | 3425L260/60  |
| <b>W</b>                            | 16.0+/- 0.30               | 16.0+/- 0.30 |
| <b>F</b>                            | 7.50+/- 0.10               | 7.50+/- 0.10 |
| <b>E1</b>                           | 1.75+/- 0.10               | 1.75+/- 0.10 |
| <b>D0</b>                           | 1.50+ 0.10                 | 1.50+0.10    |
| <b>D1</b>                           | 1.50 (MIN)                 | 1.50 (MIN)   |
| <b>P0</b>                           | 4.0+/- 0.10                | 4.0+/- 0.10  |
| <b>P1</b>                           | 8.0+/- 0.10                | 8.0+/- 0.10  |
| <b>P2</b>                           | 2.0+/- 0.10                | 2.0+/- 0.10  |
| <b>A0</b>                           | 6.70+/- 0.10               | 6.70+/- 0.10 |
| <b>B0</b>                           | 9.50+/- 0.10               | 9.50+/- 0.10 |
| <b>T</b>                            | 0.30+/- 0.05               | 0.30+/- 0.05 |
| <b>K0</b>                           | 1.55+/-0.10                | 2.20+/-0.10  |
| <b>Leader Min.</b>                  | 390                        | 390          |
| <b>Trailer Min.</b>                 | 160                        | 160          |

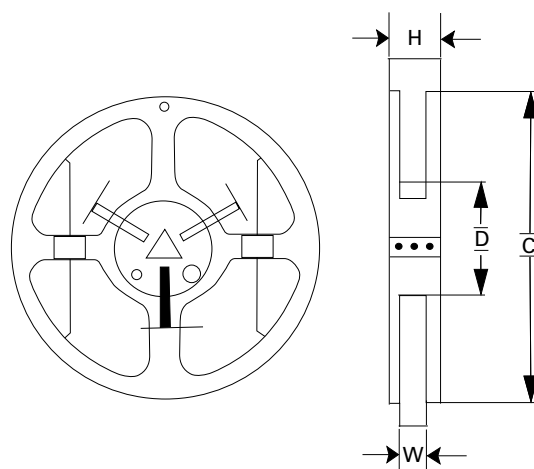
| REEL DIMENSIONS:<br>EIA-481-1 (mm) |               |
|------------------------------------|---------------|
| <b>C</b>                           | Ø180.0+/- 3.0 |
| <b>D</b>                           | Ø60+/-0.5     |
| <b>H</b>                           | 19.5+/- 1.0   |
| <b>W</b>                           | 17+/- 0.2     |

### Tape and Reel Diagram

#### Tape Specifications



#### Reel Specifications



#### Warning

- Users should independently evaluate the suitability of and test each product selected for their own application.
- Operation beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
- These devices are intended for protection against damage caused by occasional overcurrent or overtemperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
- Contamination of the PPTC material with certain silicone-based oils or some aggressive solvents can adversely impact the performance of the devices.
- Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal, and mechanical procedures for electronic components.
- PPTC devices are not recommended for installation in applications where the device is constrained such that its PTC properties are inhibited, for example in rigid potting materials or in rigid housings, which lack adequate clearance to accommodate device expansion.
- Operation in circuits with a large inductance can generate a circuit voltage ( $Ldi/dt$ ) above the rated voltage of the device.

**Disclaimer Notice** - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at <http://www.littelfuse.com/disclaimer-electronics>.