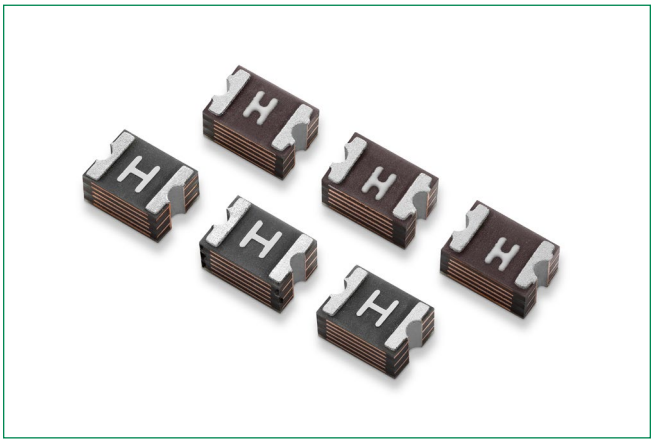
0805L Series
Surface Mount



Description

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

Features & Benefits

- 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

Web Resources

Download ECAD models, order samples, and find technical recources at www.littelfuse.com

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

Agency Approvals

Agency	Agency File Number
c UL us	E183209
	R50119118

Electrical Characteristics

Part Number	Marking	I_{hold} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d typ. (W)	Maximum Time To Trip		Resistance		Agency Approvals	
							Current (A)	Time (Sec.)	R_{min} (Ω)	R_{1max} (Ω)	c UL us	
0805L002	▲	0.02	0.06	63	40	0.5	0.10	1.50	12.000	70.000	X	X
0805L005/30	f3	0.05	0.15	30	40	0.50	0.25	1.50	3.600	20.000	X	X
0805L010	A	0.10	0.30	15	100	0.5	0.50	1.50	1.000	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	3.500	X	X
0805L020/16	C1	0.20	0.50	16	100	1.2	8.00	0.50	0.500	3.500	X	X
0805L020/24	C2	0.20	0.50	24	100	1.2	8.00	0.50	0.500	3.500	X	X
0805L035	E	0.35	0.75	6	100	0.5	8.00	0.10	0.250	1.200	X	X
0805L050[1]	F	0.50	1.00	6	100	0.5	8.00	0.10	0.150	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.

1 Typical rating was selected to represent the whole series for AEC-Q200 test.

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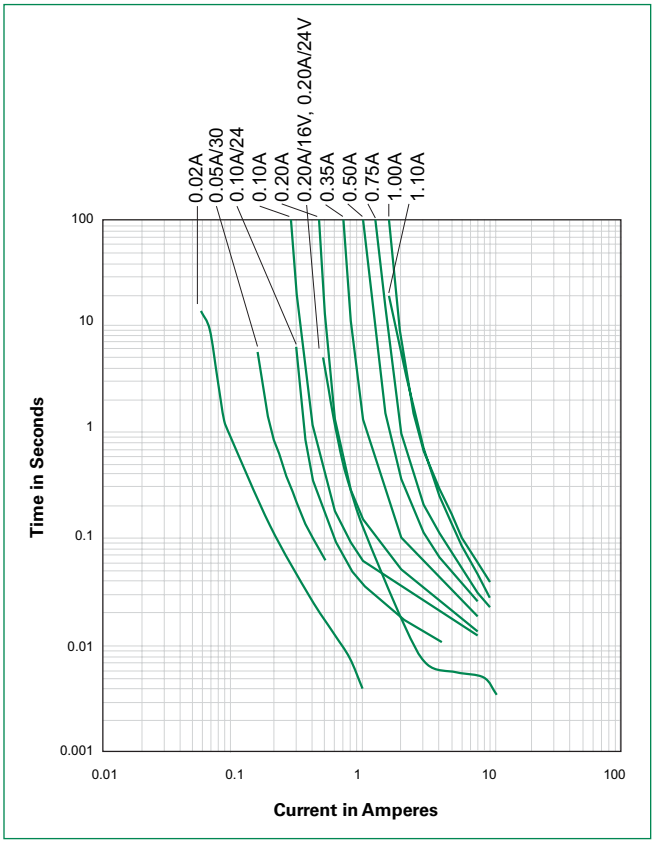
Temperature Rerating

	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)**								
0805L002	0.030	0.027	0.024	0.020	0.017	0.016	0.014	0.012	0.010
0805L005/30	0.077	0.069	0.061	0.050	0.042	0.038	0.033	0.028	0.021
0805L010	0.14	0.12	0.11	0.10	0.08	0.07	0.06	0.05	0.03
0805L010/24	0.14	0.12	0.11	0.10	0.08	0.07	0.06	0.05	0.03
0805L020	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
0805L020/16	0.30	0.27	0.24	0.20	0.17	0.16	0.14	0.13	0.10
0805L020/24	0.30	0.27	0.24	0.20	0.17	0.16	0.14	0.13	0.10
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	1.45	1.35	1.20	1.10	0.92	0.84	0.75	0.65	0.52

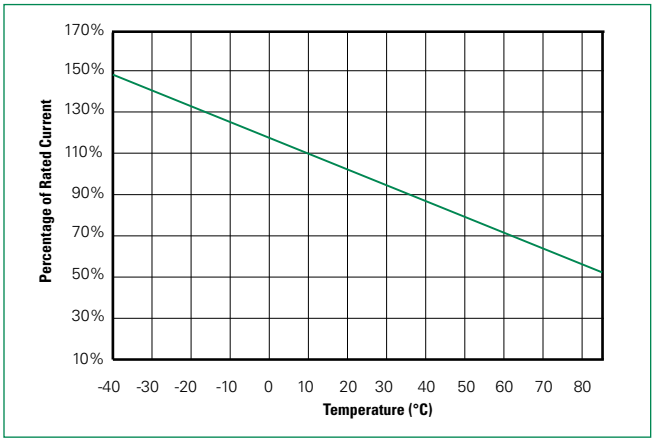
Notes: The temperature rerating data is only for reference, please contact Littelfuse technical support for detail temperature rerating information.

Average Time Current Curves



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

Temperature Rerating Curve



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

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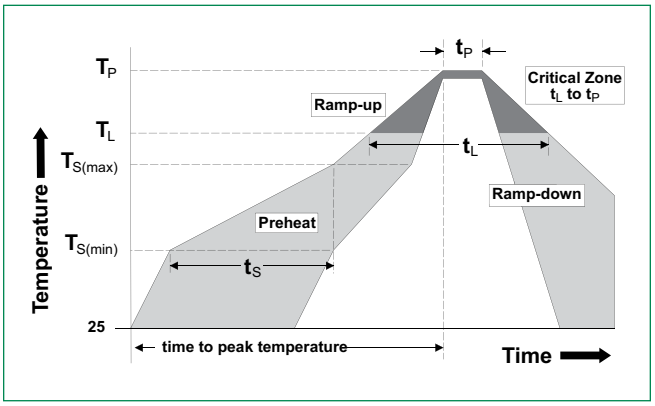
Soldering Parameters

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_s)	60 – 180 secs
Time Maintained Above:	**Temperature (T_L)**	217°C
	Temperature (t_L)	60 – 150 seconds
Peak / Classification 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.



Physical Specifications

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

Environmental Specifications

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

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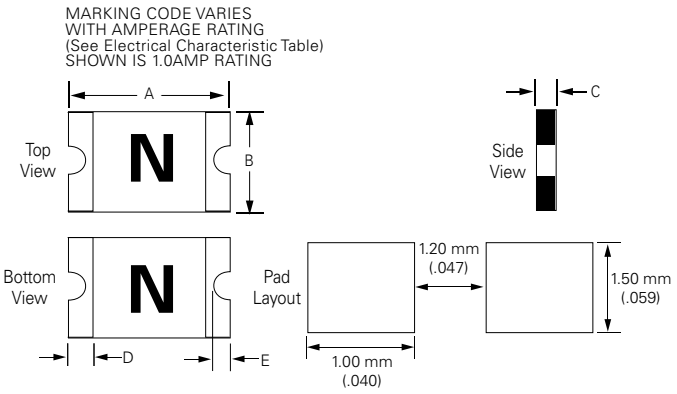
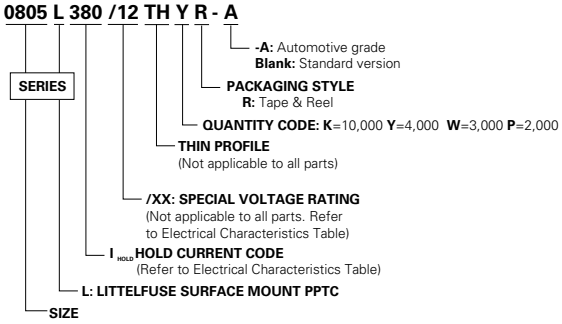
Dimensions



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
0805L002	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	0.002	0.02	0.05	0.45
0805L005/30	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	0.002	0.02	0.05	0.45
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	0.002	0.02	0.05	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	0.01	0.02	0.20	0.55	0.002	0.02	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	0.002	0.02	0.05	0.45
0805L020/16	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	0.002	0.02	0.05	0.45
0805L020/24	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	0.002	0.02	0.05	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	0.002	0.02	0.05	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	0.002	0.02	0.05	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	0.002	0.02	0.05	0.45
0805L100	0.08	0.09	2.00	2.20	0.05	0.06	1.20	1.50	0.02	0.07	0.50	1.80	0.01	0.02	0.20	0.55	0.002	0.02	0.05	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
0805L002	0805L002YR	Yes	0.02	002	Tape and Reel	4000	YR
0805L005/30	0805L005/30YR	Yes	0.05	005	Tape and Reel	4000	YR
0805L010	0805L010YR	Yes	0.10	010	Tape and Reel	4000	YR
0805L010/24	0805L010/24YR	Yes	0.10	010	Tape and Reel	4000	YR
0805L020	0805L020YR	Yes	0.20	020	Tape and Reel	4000	YR
0805L020/16	0805L020/16YR	Yes	0.20	020	Tape and Reel	4000	YR
0805L020/24	0805L020/24YR	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

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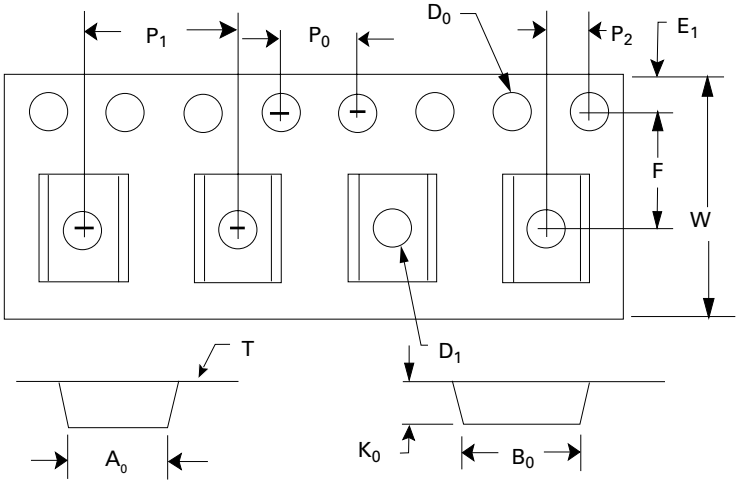
Tape and Reel Specifications

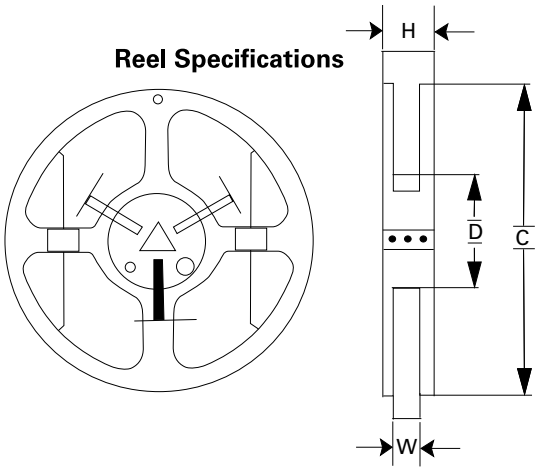
TAPE SPECIFICATIONS: EIA-481-1 (mm)			
	0805L010 0805L020 0805L035 0805L010/24 0805L020/16 0805L020/24	**0805L002 0805L050 0805L075 0805L100 0805L005/30**	**0805L110**
W	8.00+/-0.10	8.00+/-0.30	8.00+/-0.30
F	3.50+/-0.05	3.50+/-0.05	3.50+/-0.05
E_1	1.75+/-0.10	1.75+/-0.10	1.75+/-0.10
D_0	1.55+/-0.05	1.55+/-0.05	1.55+/-0.05
D_1	1.00 (min)	1.00+/-0.10	1.00+/-0.10
P_0	4.00+/-0.08	4.00+/-0.10	4.00+/-0.10
P_1	4.00+/-0.10	4.00+/-0.10	4.00+/-0.10
P_2	2.00+/-0.05	2.00+/-0.05	2.00+/-0.05
A_0	1.60+/-0.10	1.65+/-0.10	1.65+/-0.10
B_0	2.30+/-0.10	2.35+/-0.10	2.35+/-0.10
T	0.25+/-0.10	0.20+/-0.10	0.25+/-0.10
K_0	0.90+/-0.10	1.05+/-0.10	1.50+/-0.10
Leader min.	390	390	390
Trailer min.	160	160	160

REEL DIMENSIONS: EIA-481-1 (mm)	
C	Ø178+/-1.0
D	ø60.2+/-0.5
H	11.0+/-0.5
W	9.0+/-1.5

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.

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