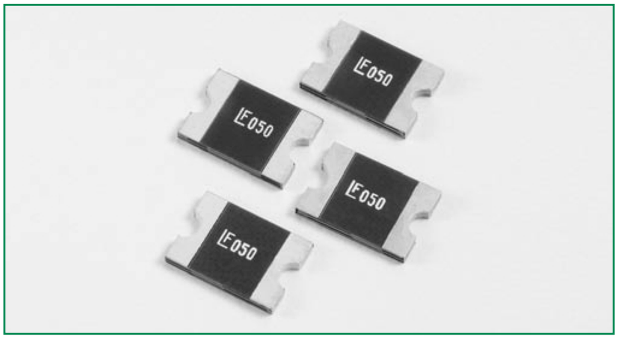
Pb 2920L Series

cULus TÜV



Description

The 2920L series device provides surface mount overcurrent protection for medium voltage (≤60V) applications where resettable protection is desired.

Features

- RoHS compliant and lead-free
- Fast response to fault currents
- High voltage
- Low-profile

Agency Approvals

AGENCY	AGENCY FILE NUMBER
cULus	E183209
TÜV	R50082521

Applications

- IEE1394 port protection
- Powered ethernet port protection (IEEE 802.3 af)
- Automotive electronic control module protection
- Low voltage telecom equipment protection

Electrical Characteristics

Part Number	Marking	I_{hold} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d max. (W)	Maximum Time To Trip		Resistance			Agency Approvals	
							Current (A)	Time (Sec.)	R_{min} (Ω)	R_{typ} (Ω)	R_{1max} (Ω)	cULus	TÜV
2920L030	LF030	0.30	0.60	60	10	1.50	1.50	3.00	1.200	3.000	4.800	X	X
2920L050	LF050	0.50	1.00	60	10	1.50	2.50	4.00	0.350	0.870	1.400	X	X
2920L075	LF075	0.75	1.50	30	40	1.50	8.00	0.30	0.350	0.670	1.000	X	X
2920L100	LF100	1.10	2.20	33	40	1.50	8.00	0.50	0.120	0.270	0.410	X	X
2920L125	LF125	1.25	2.50	15	40	1.50	8.00	2.00	0.070	0.160	0.250	X	X
2920L150	LF150	1.50	3.00	33	40	1.50	8.00	2.00	0.080	0.150	0.230	X	X
2920L185	LF185	1.85	3.70	33	40	1.50	8.00	2.50	0.065	0.110	0.150	X	X
2920L200	LF200	2.00	4.00	15	40	1.50	8.00	5.00	0.050	0.090	0.125	X	X
2920L200/24	LF200-24	2.00	4.00	24	40	1.50	8.00	5.00	0.050	0.090	0.125	X	X
2920L250	LF250	2.50	5.00	15	40	1.50	8.00	10.00	0.035	0.060	0.085	X	X
2920L260	LF260	2.60	5.00	6	40	1.50	8.00	10.00	0.025	0.050	0.075	X	X
2920L300	LF300	3.00	5.00	6	40	1.50	8.00	20.00	0.015	0.033	0.048	X	X
2920L300/15	LF300-15	3.00	5.00	15	40	1.50	8.00	20.00	0.015	0.033	0.048	X	X

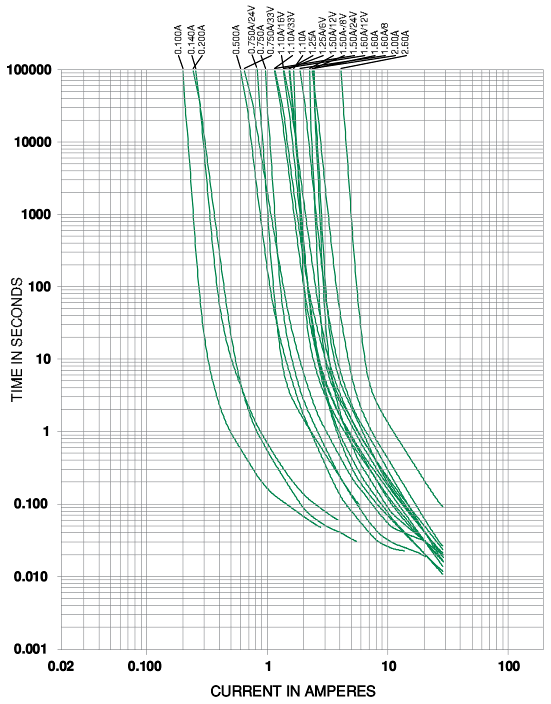
I_{hold} = Hold current: maximum current device will pass without tripping in 20°C still air.
I_{trip} = Trip current: minimum current at which the device will trip in 20°C still air.
V_{max} = Maximum voltage device can withstand without damage at rated current (I max)
I_{max} = Maximum fault current 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 Rerating

	Ambient Operation Temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
Part Number	Hold Current (A)								
2920L030	0.45	0.40	0.35	0.30	0.25	0.23	0.20	0.17	0.14
2920L050	0.76	0.67	0.59	0.50	0.42	0.38	0.33	0.29	0.23
2920L075	1.13	1.01	0.88	0.75	0.62	0.56	0.50	0.44	0.34
2920L100	1.66	1.47	1.29	1.10	0.91	0.83	0.73	0.64	0.50
2920L125	1.89	1.68	1.46	1.25	1.04	0.94	0.83	0.73	0.56
2920L150	2.27	2.01	1.76	1.50	1.25	1.13	1.00	0.87	0.74
2920L185	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
2920L200	3.02	2.68	2.34	2.00	1.66	1.50	1.32	1.16	0.90
2920L200/24	3.14	2.77	2.42	2.00	1.73	1.56	1.38	1.20	0.98
2920L250	3.78	3.35	2.93	2.50	2.08	1.88	1.65	1.45	1.13
2920L260	3.64	3.25	2.91	2.60	2.26	2.08	1.95	1.74	1.48
2920L300	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.75	1.34
2920L300/15	4.20	3.85	3.44	3.00	2.69	2.50	2.31	2.12	1.83

Average Time Current Curves

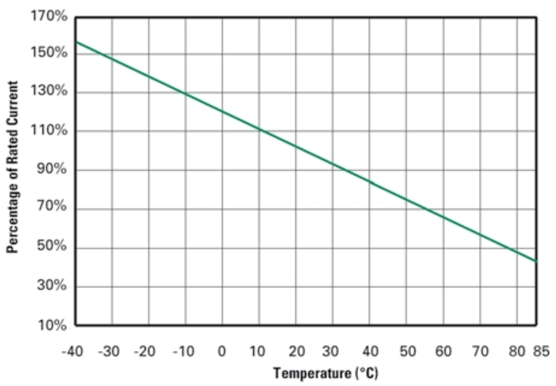


Specifications are subject to change without notice.

Note: 1.00 means the number one with two decimal places.

AKL V3.9 06.05.10

Temperature Rerating Curve

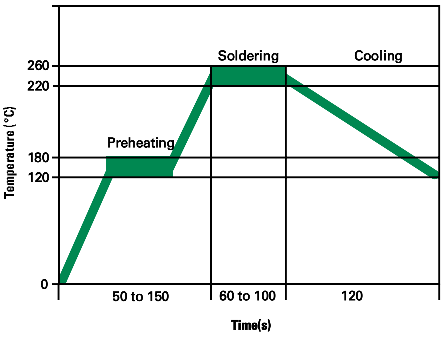


Soldering Parameters

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_2 environment for lead-free
- Devices are not designed to be wave soldered to the bottom side of the board.
- 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

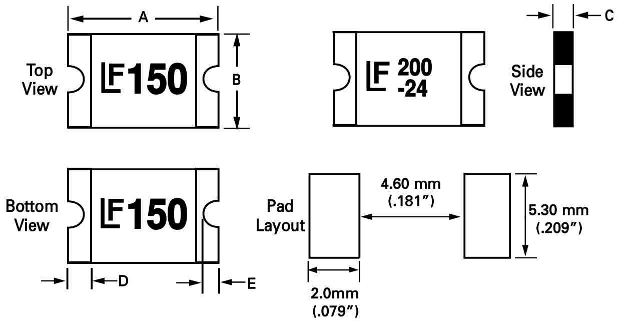
Terminal Material	Solder-Plated Copper (Solder Material: Matte Tin(Sn))
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/ J-STD-002 Category 3.

Environmental Specifications

Operating/Storage 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 107G +85°C/-40°C 20 times -30% typical resistance change
Solvent Resistance	MIL-STD-202, Method 215
Vibration	MIL-STD-883C, Method 2007.1, Condition A

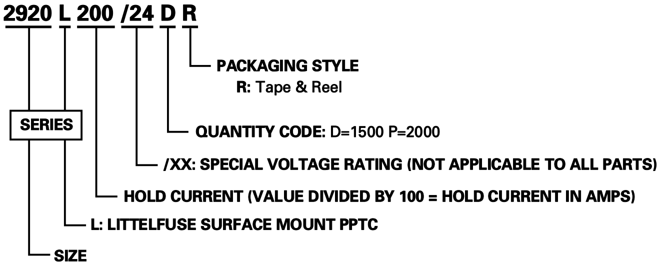
Dimensions (mm)

MARKING CODE VARIES
WITH AMPERAGE AND VOLTAGE RATING
(SEE CHART)
SHOWN ARE:
- 1.5A/33V RATING (LEFT)
- 2.0A/24V 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.	Min.	Min	Max.	Min.	Max.
2920L030	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	2
2920L050	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	2
2920L075	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	2
2920L100	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.02	0.04	0.55	1	0.01	0.3	0.001	0.01	0.25	2
2920L125	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.02	0.04	0.55	1	0.01	0.3	0.001	0.01	0.25	2
2920L150	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	2
2920L185	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	2
2920L200	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	2
2920L200/24	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	2
2920L250	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	2
2920L260	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.02	0.04	0.55	1	0.01	0.3	0.001	0.01	0.25	2
2920L300	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	2
2920L300/15	0.26	0.31	6.73	7.98	0.19	0.21	4.8	5.44	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	2

Part Numbering System


2920 L 200 /24 D R

PACKAGING STYLE
R: Tape & Reel

QUANTITY CODE: D=1500 P=2000

/XX: SPECIAL VOLTAGE RATING (NOT APPLICABLE TO ALL PARTS)

HOLD CURRENT (VALUE DIVIDED BY 100 = HOLD CURRENT IN AMPS)

L: LITTELFUSE SURFACE MOUNT PPTC

SIZE

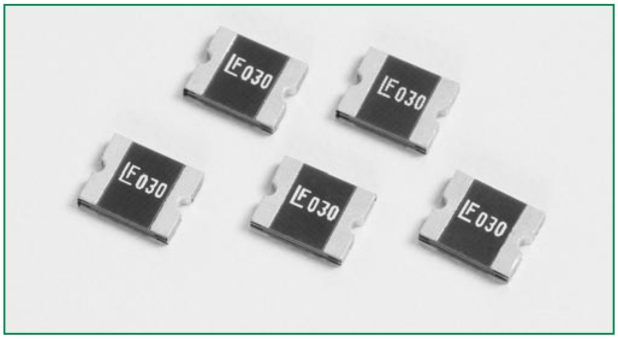
SERIES

Packaging

I_{hold} (A)	Amp Code	Voltage Option	Packaging Option	Quantity	Quantity & Packaging Codes
0.3	030		Tape and Reel	1500	DR
0.5	050		Tape and Reel	1500	DR
0.75	075		Tape and Reel	1500	DR
1	100		Tape and Reel	2000	PR
1.25	125		Tape and Reel	2000	PR
1.5	150		Tape and Reel	1500	DR
1.85	185		Tape and Reel	1500	DR
2	200		Tape and Reel	1500	DR
		/24	Tape and Reel	1500	DR
2.5	250		Tape and Reel	1500	DR
2.6	260		Tape and Reel	2000	PR
3	300		Tape and Reel	1500	DR
		/15	Tape and Reel	1500	DR

2016L Series

cULus TÜV



Description

The 2016L series device provides surface mount overcurrent protection for low voltage (≤60V) applications where resettable protection is desired.

Features

- RoHS compliant and lead-free
- Fast response to fault currents
- High voltage
- Low-profile

Agency Approvals

AGENCY	AGENCY FILE NUMBER
cULus	E183209
TÜV	R50082521

Applications

- IEE1394 port protection
- Powered ethernet port protection (IEEE 802.3 af)
- Automotive electronic control module protection
- Low voltage telecom equipment protection

Electrical Characteristics

Part Number	Marking	I_{hold} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d max. (W)	Maximum Time To Trip		Resistance			Agency Approvals	
							Current (A)	Time (Sec.)	R_{min} (Ω)	R_{typ} (Ω)	R_{1max} (Ω)	cULus	TÜV
2016L030	LF030	0.30	0.60	60	20	1.40	1.50	3.00	0.500	1.400	2.300	X	X
2016L050	LF050	0.55	1.10	60	20	1.40	2.50	5.00	0.200	0.700	1.000	X	X
2016L100	LF100	1.10	2.20	15	40	1.40	8.00	0.50	0.100	0.250	0.400	X	X
2016L100/33	LF100-33	1.10	2.20	33	40	1.40	8.00	0.50	0.100	0.250	0.400	X	X
2016L150	LF150	1.50	3.00	15	40	1.40	8.00	1.00	0.070	0.130	0.180	X	X
2016L200	LF200	2.00	4.20	6	40	1.40	8.00	3.00	0.048	0.070	0.100	X	X

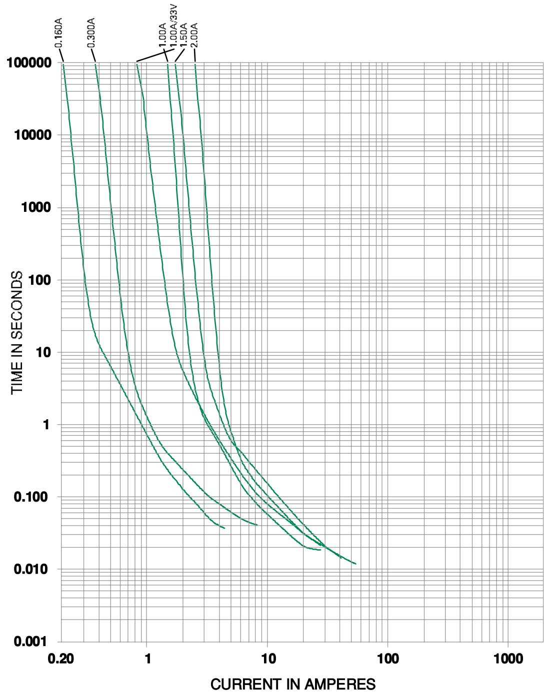
I_{hold} = Hold current: maximum current device will pass without tripping in 20°C still air.
I_{trip} = Trip current: minimum current at which the device will trip in 20°C still air.
V_{max} = Maximum voltage device can withstand without damage at rated current (I max)
I_{max} = Maximum fault current 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 Rerating

	Ambient Operation Temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
Part Number	Hold Current (A)								
2016L030	0.45	0.40	0.35	0.30	0.25	0.23	0.20	0.18	0.14
2016L050	0.93	0.80	0.65	0.50	0.38	0.32	0.25	0.19	0.09
2016L100	1.66	1.47	1.29	1.10	0.91	0.83	0.73	0.64	0.50
2016L100/33	1.66	1.47	1.29	1.10	0.91	0.83	0.73	0.64	0.50
2016L150	2.26	2.00	1.76	1.50	1.24	1.13	1.00	0.87	0.68
2016L200	2.80	2.50	2.19	2.00	1.84	1.74	1.50	1.34	1.14

Average Time Current Curves



Specifications are subject to change without notice.

Note: 1.00 means the number one with two decimal places.

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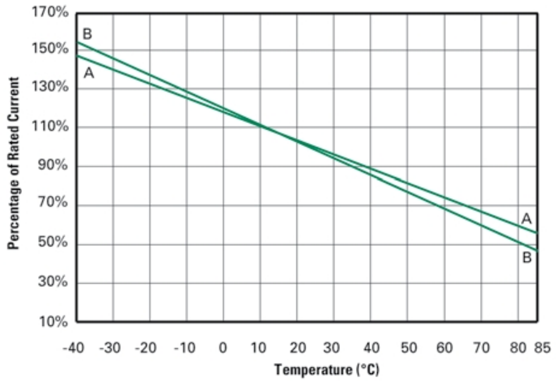
Temperature Rerating Curve

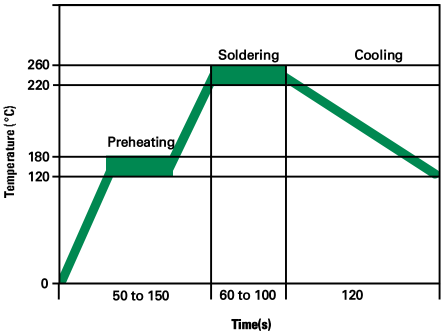


A: 2016L050
2016L100
2016L200

B: 2016L030
2016L100/33
2016L150

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_2 environment for lead-free
- Devices are not designed to be wave soldered to the bottom side of the board.
- 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.

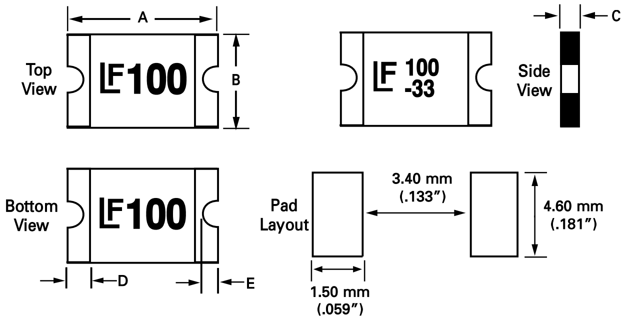
Physical Specifications

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/Storage 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 107G +85°C/-40°C 20 times -30% typical resistance change
Solvent Resistance	MIL-STD-202, Method 215 No change
Vibration	MIL-STD-883C, Method 2007.1, Condition A No change

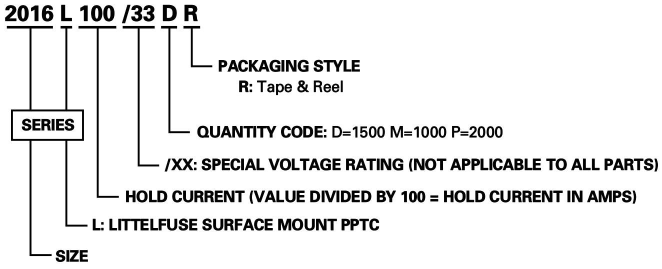
Dimensions (mm)



MARKING CODE VARIES
WITH AMPERAGE AND VOLTAGE RATING
(SEE CHART)
SHOWN ARE:
- 1.0A/15V RATING (LEFT)
- 1.0A/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.	Min.	Min	Max.	Min.	Max.
2016L030	0.19	0.21	4.72	5.44	0.15	0.17	3.7	4.43	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	0.65
2016L050	0.19	0.21	4.72	5.44	0.15	0.17	3.7	4.43	0.05	0.08	1.2	2	0.01	0.3	0.001	0.01	0.25	0.65
2016L100	0.19	0.21	4.72	5.44	0.15	0.17	3.7	4.43	0.02	0.03	0.5	0.75	0.01	0.3	0.001	0.01	0.25	0.65
2016L100/33	0.19	0.21	4.72	5.44	0.15	0.17	3.7	4.43	0.03	0.05	0.75	1.25	0.01	0.3	0.001	0.01	0.25	0.65
2016L150	0.19	0.21	4.72	5.44	0.15	0.17	3.7	4.43	0.03	0.06	0.75	1.55	0.01	0.3	0.001	0.01	0.25	0.65
2016L200	0.19	0.21	4.72	5.44	0.15	0.17	3.7	4.43	0.02	0.03	0.5	0.75	0.01	0.3	0.001	0.01	0.25	0.65

Part Numbering System



2016 L 100 /33 D R

PACKAGING STYLE
R: Tape & Reel

QUANTITY CODE: D=1500 M=1000 P=2000

/XX: SPECIAL VOLTAGE RATING (NOT APPLICABLE TO ALL PARTS)

HOLD CURRENT (VALUE DIVIDED BY 100 = HOLD CURRENT IN AMPS)

L: LITTELFUSE SURFACE MOUNT PPTC

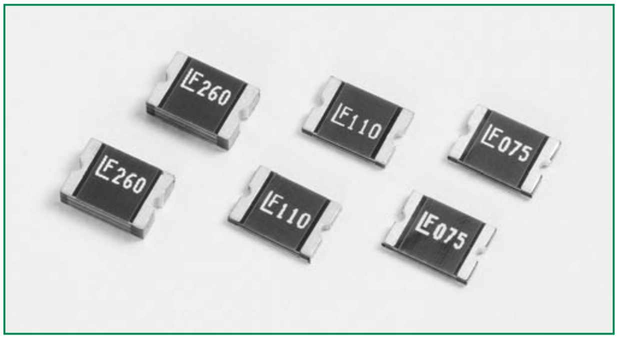
SERIES

SIZE

Packaging

I_{hold} (A)	Amp Code	Voltage Option	Packaging Option	Quantity	Quantity & Packaging Codes
0.3	030		Tape and Reel	1500	DR
0.5	050		Tape and Reel	1000	MR
1.1	100		Tape and Reel	2000	PR
		/33	Tape and Reel	1500	DR
1.5	150		Tape and Reel	1500	DR
2	200		Tape and Reel	2000	PR

1812L Series



Agency Approvals

AGENCY	AGENCY FILE NUMBER
c UL US	E183209
TÜV	R50082521

Description

The 1812L series device provides surface mount overcurrent protection for applications where resettable protection is desired.

Features

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

Applications

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

Electrical Characteristics

Part Number	Marking	I_{hold} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d max. (W)	Maximum Time To Trip		Resistance			Agency Approvals	
							Current (A)	Time (Sec.)	R_{min} (Ω)	R_{typ} (Ω)	R_{1max} (Ω)	c UL US	TÜV
1812L010	LF010	0.10	0.30	30	100	0.8	0.50	1.50	1.600	7.000	15.000	X	X
1812L014	LF014	0.14	0.34	60	10	0.8	1.50	0.15	1.500	4.000	6.000	X	X
1812L020	LF020	0.20	0.40	30	100	0.8	8.00	0.02	0.800	2.900	5.000	X	X
1812L050-C	LF050	0.50	1.00	15	100	0.8	8.00	0.15	0.150	0.600	1.000	X	X
1812L075-C	LF075	0.75	1.50	13.2	100	0.8	8.00	0.20	0.100	0.260	0.450	X	X
1812L075/24	LF075-24	0.75	1.50	24	100	0.8	8.00	0.20	0.110	0.200	0.290	X	X
1812L075/33	LF075-33	0.75	1.50	33	20	0.8	8.00	0.20	0.110	0.260	0.400	X	X
1812L110-C	LF110	1.10	2.20	6	100	0.8	8.00	0.30	0.040	0.120	0.210	X	X
1812L110/16	LF110-16	1.10	1.95	16	100	0.8	8.00	0.50	0.060	0.120	0.180	X	X
1812L110/33	LF110-33	1.10	1.95	33	20	0.8	8.00	0.50	0.060	0.120	0.200	X	X
1812L125-C	LF125	1.25	2.50	15	100	0.8	8.00	0.40	0.050	0.160	0.250	X	X
1812L125/6	LF125-6	1.25	2.50	6	100	0.8	8.00	0.40	0.050	0.090	0.140	X	X
1812L150	LF150	1.50	3.00	6	100	0.8	8.00	0.50	0.040	0.070	0.110	X	X
1812L150/8	LF150-8	1.50	3.00	8	100	0.8	8.00	0.30	0.040	0.070	0.110	X	X
1812L150/12	LF150-12	1.50	3.00	12	100	0.8	8.00	0.50	0.040	0.070	0.110	X	X
1812L150/24	LF150-24	1.50	3.00	24	20	0.8	8.00	1.50	0.040	0.070	0.120	X	X
1812L160-C	LF160	1.60	2.80	6	100	0.8	8.00	1.00	0.030	0.066	0.100	X	X
1812L160/8	LF160-8	1.60	2.80	8	100	0.8	8.00	1.00	0.030	0.066	0.100	X	X

Electrical Characteristics (continued)

Part Number	Marking	I_{hold} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d max. (W)	Maximum Time To Trip		Resistance			Agency Approvals	
							Current (A)	Time (Sec.)	R_{min} (Ω)	R_{typ} (Ω)	R_{1max} (Ω)	cURus	TÜV
1812L160/12	LF160-12	1.60	2.80	12	100	0.8	8.00	1.00	0.030	0.066	0.100	X	X
1812L200-C	LF200	2.00	3.50	8	100	0.8	8.00	2.00	0.020	0.040	0.060	X	X
1812L260-C	LF260	2.60	5.00	6	100	0.8	8.00	2.50	0.015	0.030	0.047	X	X

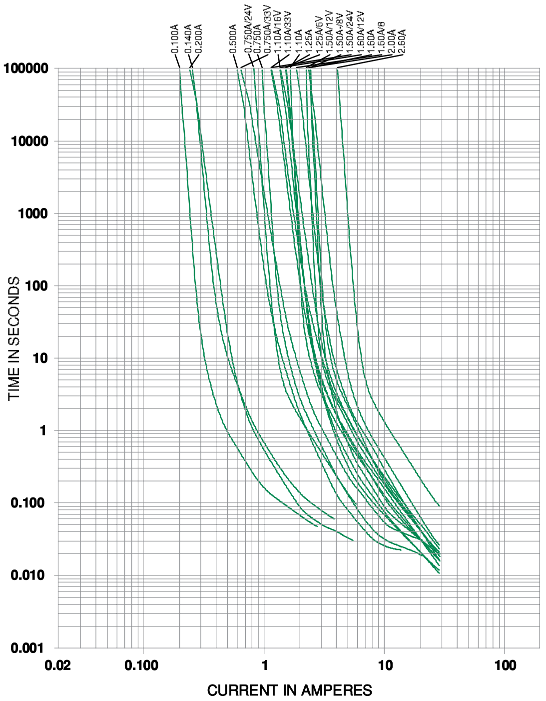
I_{hold} = Hold current: maximum current device will pass without tripping in 20°C still air.
I_{trip} = Trip current: minimum current at which the device will trip in 20°C still air.
V_{max} = Maximum voltage device can withstand without damage at rated current (I max)
I_{max} = Maximum fault current 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 Rerating

	Ambient Operation Temperature								
	-40°C	-20°C	0°C	23°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
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
1812L050-C	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.29
1812L075-C	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-C	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
1812L110/33	1.55	1.40	1.25	1.10	0.93	0.83	.073	.063	.050
1812L125-C	2.00	1.75	1.52	1.25	1.00	0.95	0.90	0.75	0.53
1812L125/6	2.00	1.75	1.52	1.25	1.00	0.95	0.90	0.75	0.53
1812L150	2.30	2.03	1.76	1.50	1.25	1.10	1.00	0.80	0.60
1812L150/8	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
1812L150/24	2.05	1.87	1.67	1.50	1.25	1.08	0.95	0.77	0.60
1812L160-C	2.27	2.05	1.83	1.60	1.35	1.25	1.15	1.00	0.85
1812L160/8	2.20	2.06	1.91	1.60	1.36	1.17	1.09	0.85	0.72
1812L160/12	2.18	2.01	1.79	1.60	1.34	1.16	1.07	0.83	0.60
1812L200-C	3.08	2.71	2.35	2.00	1.80	1.60	1.50	1.07	0.80
1812L260-C	4.00	3.52	3.06	2.60	2.34	2.08	1.95	1.39	1.04

Average Time Current Curves

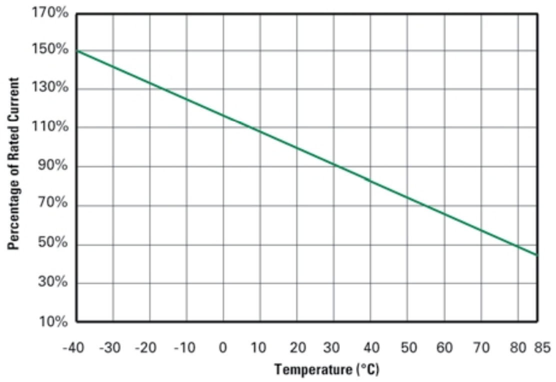


Specifications are subject to change without notice.

Note: 1.00 means the number one with two decimal places.

AKL V3.9 06.05.10

Temperature Rerating Curve

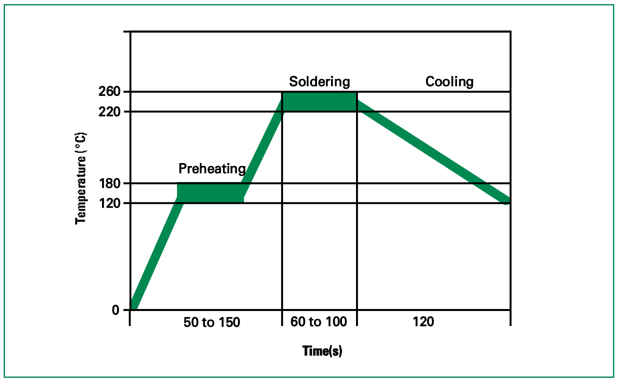


Soldering Parameters

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_2 environment for lead-free
- Devices are not designed to be wave soldered to the bottom side of the board.
- 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

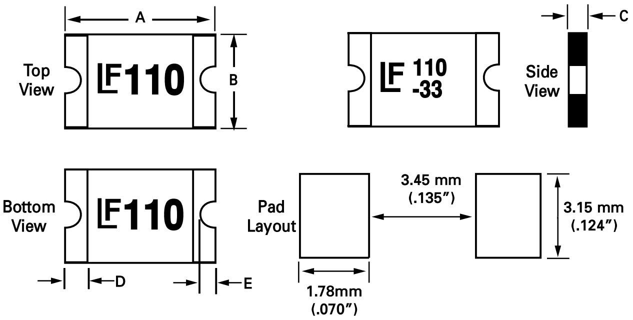
Terminal Material	Gold-Plated Copper or Solder-Plated Copper (Solder Material: Matte Tin (Sn))
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/ J-STD-002 Category 3.

Environmental Specifications

Operating/Storage 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 107G +85°C/-40°C 20 times -30% typical resistance change
Solvent Resistance	MIL-STD-202, Method 215 No change
Vibration	MIL-STD-883C, Method 2007.1, Condition A No change

Dimensions

MARKING CODE VARIES
WITH AMPERAGE AND VOLTAGE RATING
(SEE CHART)
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.	Min.	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	0.13	3.41	0.005	0.13	0.25	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	0.13	3.41	0.005	0.13	0.25	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	0.13	3.41	0.005	0.13	0.25	0.65
1812L050-C	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.02	0.03	0.5	0.75	0.13	3.41	0.005	0.13	0.25	0.5
1812L075-C	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.02	0.03	0.5	0.75	0.13	3.41	0.005	0.13	0.25	0.5
1812L075/24	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.03	0.06	0.75	1.55	0.13	3.41	0.005	0.13	0.25	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	0.13	3.41	0.005	0.13	0.25	0.65
1812L110-C	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.02	0.03	0.5	0.71	0.13	3.41	0.005	0.13	0.25	0.5
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	0.13	3.41	0.005	0.13	0.25	0.65
1812L110/33	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.05	0.08	1.2	2	0.13	3.41	0.005	0.13	0.25	0.65
1812L125-C	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.03	0.05	0.75	1.25	0.13	3.41	0.005	0.13	0.25	0.5
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	0.13	3.41	0.005	0.13	0.25	0.65
1812L150	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.03	0.05	0.75	1.25	0.13	3.41	0.005	0.13	0.25	0.5
1812L150/8	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.02	0.03	0.4	0.71	0.13	3.41	0.005	0.13	0.25	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	0.13	3.41	0.005	0.13	0.25	0.65
1812P150/24	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.03	0.07	0.8	1.8	0.13	3.41	0.005	0.13	0.25	0.65
1812L160-C	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.03	0.05	0.75	1.25	0.13	3.41	0.005	0.13	0.25	0.65
1812L160/8	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.02	0.03	0.4	0.75	0.13	3.41	0.005	0.13	0.25	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	0.13	3.41	0.005	0.13	0.25	0.65
1812L200-C	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.03	0.05	0.81	1.2	0.13	3.41	0.005	0.13	0.25	0.5
1812L260-C	0.17	0.19	4.37	4.73	0.12	0.13	3.07	3.41	0.03	0.05	0.8	1.34	0.13	3.41	0.005	0.13	0.25	0.5

Part Numbering System

1812 L 075 /33 D R

PACKAGING STYLE
R: Tape & Reel

SERIES

QUANTITY CODE: D=1500 M=1000 P=2000

/XX: SPECIAL VOLTAGE RATING (NOT APPLICABLE TO ALL PARTS

HOLD CURRENT (VALUE DIVIDED BY 100 = HOLD CURRENT IN AMPS)

L: LITTELFUSE SURFACE MOUNT PPTC

SIZE

Packaging

I_{hold} (A)	Amp Code	Voltage Option	Packaging Option	Quantity	Quantity & Packaging Codes
0.1	010		Tape and Reel	1500	DR
0.14	014		Tape and Reel	1500	DR
0.2	020		Tape and Reel	2000	PR
0.5	050		Tape and Reel	2000	PR
0.75	075		Tape and Reel	2000	PR
		/24	Tape and Reel	1500	DR
		/33	Tape and Reel	1500	DR
1.1	110		Tape and Reel	2000	PR
		/16	Tape and Reel	1500	DR
		/33	Tape and Reel	1000	MR
1.25	125		Tape and Reel	1500	DR
		/6	Tape and Reel	2000	PR
1.5	150		Tape and Reel	1500	DR
		/8	Tape and Reel	2000	PR
		/12	Tape and Reel	1500	DR
		/24	Tape and Reel	1000	MR
1.6	160		Tape and Reel	1500	DR
		/8	Tape and Reel	2000	PR
		/12	Tape and Reel	1500	DR
2	200		Tape and Reel	1500	DR
2.6	260		Tape and Reel	1000	ZR

1210L Series

cULus TÜV

Description

The 1206L series device provides surface mount overcurrent protection for applications where space is at a premium and resettable protection is desired.

Features

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

Agency Approvals

AGENCY	AGENCY FILE NUMBER
cULus	E183209
TÜV	R50082521

Applications

- USB peripherals
- Disk drives
- CD-ROMs
- PC motherboards - plug and play protection
- Mobile phones - battery and port protection
- PDAs / digital cameras
- Game console port protection

Electrical Characteristics

Part Number	Marking	I_{hold} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d max. (W)	Maximum Time To Trip		Resistance			Agency Approvals	
							Current (A)	Time (Sec.)	R_{min} (Ω)	R_{typ} (Ω)	R_{1max} (Ω)	cULus	TÜV
1210L005	A	0.05	0.15	30	10	0.60	0.25	1.50	3.600	25.00	50.00	X	X
1210L010	B	0.10	0.30	30	10	0.60	0.50	1.50	1.600	7.000	15.00	X	X
1210L020	C	0.20	0.40	30	10	0.60	8.00	0.02	0.800	2.900	5.000	X	X
1210L035	E	0.35	0.70	6	100	0.60	8.00	0.20	0.320	0.810	1.300	X	X
1210L050	F	0.50	1.00	13.2	100	0.60	8.00	0.10	0.250	0.550	0.900	X	X
1210L075	G	0.75	1.50	6	100	0.60	8.00	0.10	0.130	0.290	0.400	X	X
1210L110	H	1.10	2.20	6	100	0.60	8.00	0.30	0.060	0.140	0.210	X	X
1210L150	K	1.50	3.00	6	100	0.80	8.00	0.50	0.040	0.070	0.110	X	X

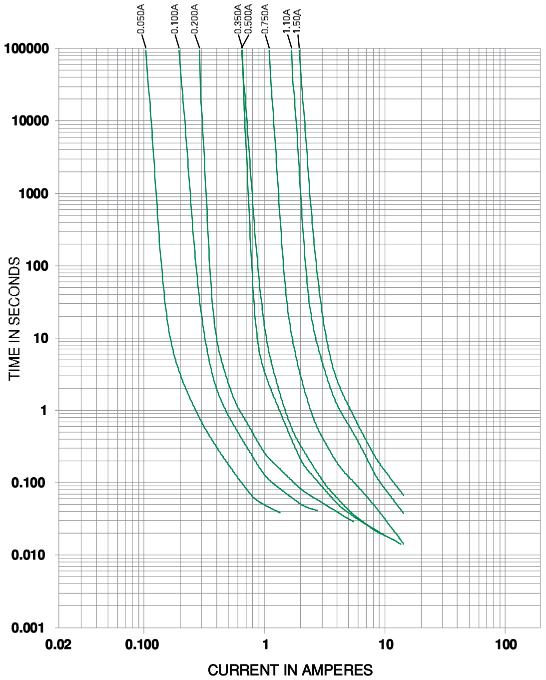
I_{hold} = Hold current: maximum current device will pass without tripping in 20°C still air.
I_{trip} = Trip current: minimum current at which the device will trip in 20°C still air.
V_{max} = Maximum voltage device can withstand without damage at rated current (I max)
I_{max} = Maximum fault current 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 Rerating

	Ambient Operation Temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
Part Number	Hold Current (A)								
1210L005	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
1210L010	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
1210L020	0.29	0.26	0.22	0.20	0.16	0.14	0.13	0.11	0.08
1210L035	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
1210L050	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
1210L075	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
1210L110	1.69	1.48	1.29	1.10	0.88	0.76	0.65	0.57	0.43
1210L150	2.13	1.92	1.71	1.50	1.26	1.14	1.01	0.89	0.71

Average Time Current Curves

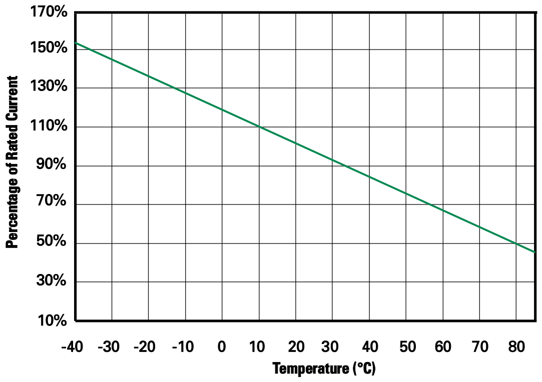


Specifications are subject to change without notice.

Note: 1.00 means the number one with two decimal places.

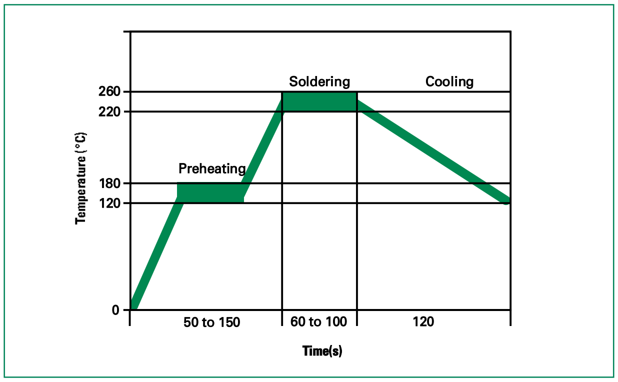
AKL V3.9 06.05.10

Temperature Rerating 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_2 environment for lead-free
- Devices are not designed to be wave soldered to the bottom side of the board.
- 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

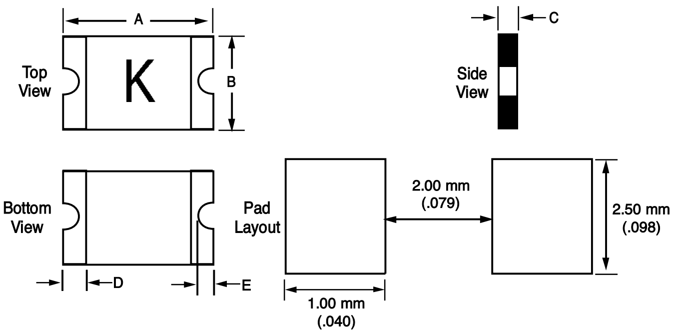
Terminal Material	Solder-Plated Copper (Solder Material: Matte Tin (Sn))
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/ J-STD-002 Category 3.

Environmental Specifications

Operating/Storage 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 107G +85°C/-40°C 20 times -30% typical resistance change
Solvent Resistance	MIL-STD-202, Method 215 No change
Vibration	MIL-STD-883C, Method 2007.1, Condition A No change

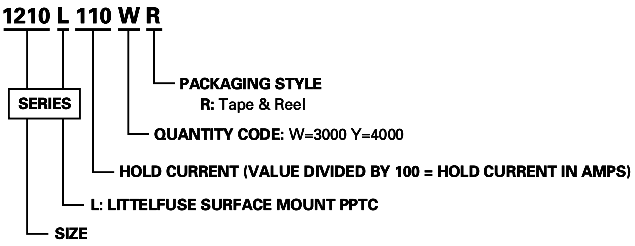
Dimensions

MARKING CODE VARIES
WITH AMPERAGE RATING
(SEE CHART)
SHOWN IS 1.5AMP RATING



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.	Min.	Min	Max.	Min.	Max.
1210L005	0.12	0.14	3.00	3.43	0.09	0.11	2.35	2.80	0.03	0.05	0.75	1.25	0.00	0.25	0.000	0.00	0.20	0.50
1210L010	0.12	0.14	3.00	3.43	0.09	0.11	2.35	2.80	0.03	0.05	0.75	1.25	0.00	0.25	0.000	0.00	0.20	0.50
1210L020	0.12	0.14	3.00	3.43	0.09	0.11	2.35	2.80	0.02	0.04	0.60	1.00	0.00	0.25	0.000	0.00	0.20	0.50
1210L035	0.12	0.14	3.00	3.43	0.09	0.11	2.35	2.80	0.02	0.03	0.50	0.85	0.00	0.25	0.000	0.00	0.20	0.50
1210L050	0.12	0.14	3.00	3.43	0.09	0.11	2.35	2.80	0.02	0.03	0.50	0.85	0.00	0.25	0.000	0.00	0.20	0.50
1210L075	0.12	0.14	3.00	3.43	0.09	0.11	2.35	2.80	0.02	0.03	0.50	0.85	0.00	0.25	0.000	0.00	0.20	0.50
1210L110	0.12	0.14	3.00	3.43	0.09	0.11	2.35	2.80	0.04	0.05	0.90	1.30	0.00	0.25	0.000	0.00	0.20	0.50
1210L150	0.12	0.14	3.00	3.43	0.09	0.11	2.35	2.80	0.03	0.07	0.80	1.80	0.00	0.25	0.000	0.00	0.20	0.50

Part Numbering System



Packaging

I_{hold} (A)	Amp Code	Packaging Option	Quantity	Quantity & Packaging Codes
0.05	005	Tape and Reel	3000	WR
0.1	010	Tape and Reel	3000	WR
0.2	020	Tape and Reel	3000	WR
0.35	035	Tape and Reel	4000	YR
0.5	050	Tape and Reel	4000	YR
0.75	075	Tape and Reel	4000	YR
1.1	110	Tape and Reel	3000	WR
1.5	150	Tape and Reel	2000	PR

1206L Series

Description

The 1206L series device provides surface mount overcurrent protection for applications where space is at a premium and resettable protection is desired.

Features

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

Agency Approvals

AGENCY	AGENCY FILE NUMBER
cULus	E183209
TÜV	R50082521

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} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d max. (W)	Maximum Time To Trip		Resistance			Agency Approvals	
							Current (A)	Time (Sec.)	R_{min} (Ω)	R_{typ} (Ω)	R_{1max} (Ω)	cULus	TÜV
1206L012	A	0.125	0.29	30	100	0.6	1.00	0.20	1.500	3.600	6.000	X	X
1206L016	B	0.16	0.37	30	100	0.6	1.00	0.30	1.200	2.800	4.500	X	X
1206L020-C	C	0.20	0.40	16	100	0.6	8.00	0.05	0.600	1.550	2.500	X	X
1206L025-C	D	0.25	0.50	16	100	0.6	8.00	0.08	0.550	1.400	2.300	X	X
1206L035-C	E	0.35	0.75	6	100	0.6	8.00	0.10	0.300	0.750	1.200	X	X
1206L035/15	J	0.35	0.75	15	100	0.6	8.00	0.10	0.300	0.750	1.200	X	X
1206L050-C	F	0.50	1.00	6	100	0.6	8.00	0.10	0.150	0.400	0.700	X	X
1206L050/15	M	0.50	1.00	15	100	0.6	8.00	0.10	0.150	0.400	0.750	X	X
1206L075-C	G	0.75	1.50	6	100	0.6	8.00	0.20	0.090	0.200	0.290	X	X
1206L100	N	1.00	1.80	6	100	0.8	8.00	0.30	0.055	0.110	0.210	X	X
1206L110-C	H	1.10	2.20	6	100	0.8	8.00	0.30	0.040	0.110	0.180	X	X
1206L150-C	K	1.50	3.00	6	100	0.8	8.00	1.00	0.040	0.080	0.120	X	X

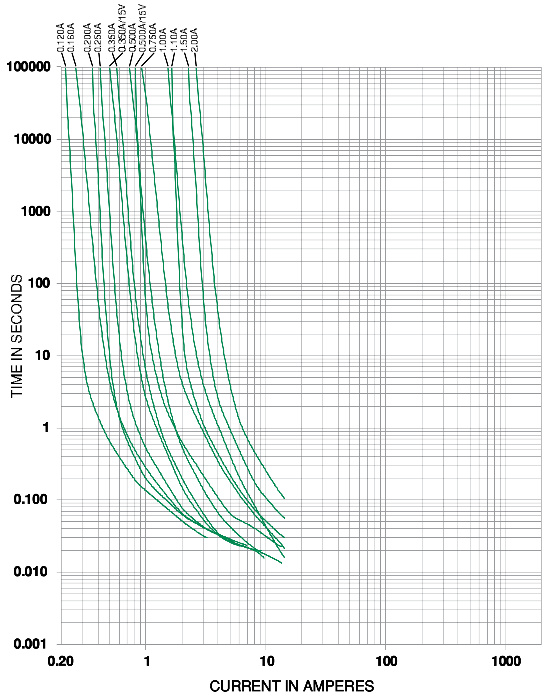
I_{hold} = Hold current: maximum current device will pass without tripping in 20°C still air.
I_{trip} = Trip current: minimum current at which the device will trip in 20°C still air.
V_{max} = Maximum voltage device can withstand without damage at rated current (I max)
I_{max} = Maximum fault current 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 Rerating

	Ambient Operation Temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
Part Number	**Hold Current (A)**								
1206L012	0.18	0.16	0.14	0.125	0.10	0.09	0.08	0.07	0.05
1206L016	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.09	0.08
1206L020-C	0.28	0.25	0.23	0.20	0.17	0.15	0.14	0.12	0.09
1206L025-C	0.37	0.33	0.29	0.25	0.22	0.20	0.17	0.15	0.12
1206L035-C	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
1206L035/15	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
1206L050-C	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
1206L050/15	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
1206L075-C	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
1206L100	1.45	1.31	1.15	1.00	0.84	0.77	0.69	0.61	0.48
1206L110-C	1.52	1.37	1.25	1.1	0.92	0.82	0.75	0.64	0.52
1206L150-C	2.18	1.94	1.72	1.50	1.28	1.17	1.06	0.96	0.77

Average Time Current Curves



Specifications are subject to change without notice.

Note: 1.00 means the number one with two decimal places.

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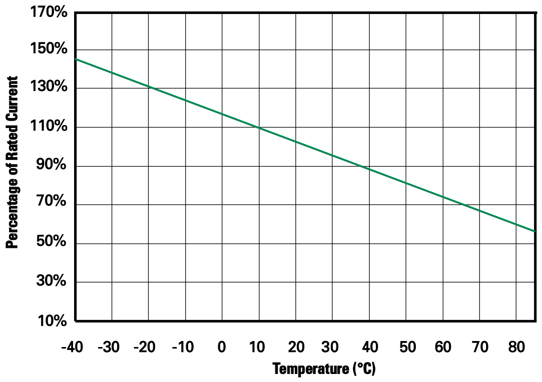
Temperature Rerating Curve

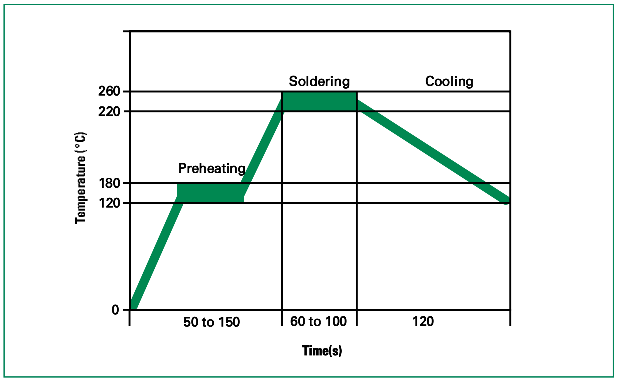


Soldering Parameters

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, N2 environment for lead-free
- Devices are not designed to be wave soldered to the bottom side of the board.
- 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

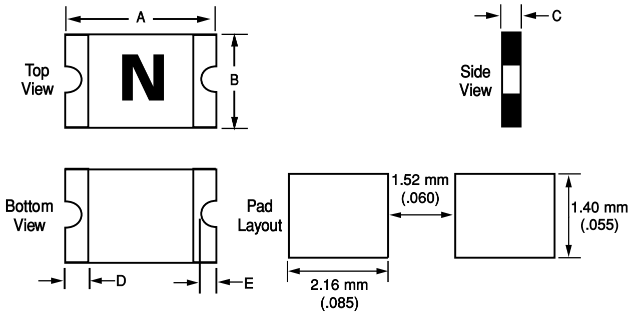
Terminal Material	Gold-Plated Copper or Solder-Plated Copper (Solder Material: Matte Tin (Sn))
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/ J-STD-002 Category 3.

Environmental Specifications

Operating/Storage 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 107G +85°C/-40°C 20 times -30% typical resistance change
Solvent Resistance	MIL-STD-202, Method 215 No change
Vibration	MIL-STD-883C, Method 2007.1, Condition A No change

Dimensions

MARKING CODE VARIES
WITH AMPERAGE RATING
(SEE CHART)
SHOWN IS 1.6AMP RATING



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.	Min.	Min	Max.	Min.	Max.
1206L012	0.12	0.14	3	3.5	0.06	0.07	1.5	1.8	0.03	0.06	0.65	1.45	0.01	0.2	0.000	0.01	0.1	0.45
1206L016	0.12	0.14	3	3.5	0.06	0.07	1.5	1.8	0.03	0.06	0.65	1.45	0.01	0.2	0.000	0.01	0.1	0.45
1206L020	0.12	0.14	3	3.5	0.06	0.07	1.5	1.8	0.02	0.04	0.5	1	0.01	0.2	0.000	0.01	0.1	0.45
1206L025	0.12	0.14	3	3.5	0.06	0.07	1.5	1.8	0.02	0.04	0.5	1	0.01	0.2	0.000	0.01	0.1	0.45
1206L035	0.12	0.14	3	3.5	0.06	0.07	1.5	1.8	0.02	0.03	0.45	0.75	0.01	0.2	0.000	0.01	0.1	0.45
1206L035/15	0.12	0.14	3	3.5	0.06	0.07	1.5	1.8	0.02	0.03	0.45	0.75	0.01	0.2	0.000	0.01	0.1	0.45
1206L050	0.12	0.14	3	3.5	0.06	0.07	1.5	1.8	0.02	0.03	0.45	0.75	0.01	0.2	0.000	0.01	0.1	0.45
1206L050/15	0.12	0.14	3	3.5	0.06	0.07	1.5	1.8	0.02	0.03	0.45	0.75	0.01	0.2	0.000	0.01	0.1	0.45
1206L075	0.12	0.14	3	3.5	0.06	0.07	1.5	1.8	0.02	0.05	0.45	1.25	0.01	0.2	0.000	0.01	0.1	0.45
1206L100	0.12	0.13	3	3.4	0.06	0.07	1.5	1.8	0.03	0.04	0.75	1	0.01	0.2	0.000	0.01	0.1	0.45
1206L110	0.12	0.13	3	3.4	0.06	0.07	1.5	1.8	0.03	0.04	0.75	1	0.01	0.2	0.000	0.01	0.1	0.45
1206L150	0.12	0.13	3	3.4	0.06	0.07	1.5	1.8	0.03	0.06	0.85	1.4	0.01	0.2	0.000	0.01	0.1	0.45

Part Numbering System

1206 L 035 /15 W R

PACKAGING STYLE
R: Tape & Reel

SERIES

QUANTITY CODE: W=3000 Y=4000

/XX: SPECIAL VOLTAGE RATING (NOT APPLICABLE TO ALL PARTS)

HOLD CURRENT (VALUE DIVIDED BY 100 = HOLD CURRENT IN AMPS)

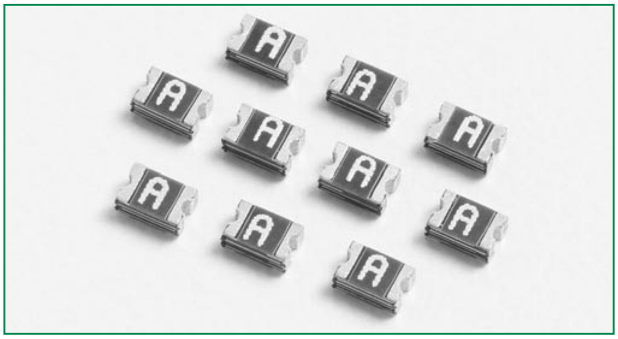
L: LITTELFUSE SURFACE MOUNT PPTC

SIZE

Packaging

I_{hold} (A)	Amp Code	Packaging Option	Quantity	Quantity & Packaging Codes
0.12	012	Tape and Reel	3000	WR
0.16	016	Tape and Reel	3000	WR
0.2	020	Tape and Reel	4000	YR
0.25	025	Tape and Reel	4000	YR
0.35	035	Tape and Reel	4000	YR
0.5	050	Tape and Reel	4000	YR
0.75	075	Tape and Reel	3000	WR
1	100	Tape and Reel	3000	WR
1.1	110	Tape and Reel	3000	WR
1.5	150	Tape and Reel	2000	PR

0805L Series



Agency Approvals

AGENCY	AGENCY FILE NUMBER
cULus	E183209
TÜV	R50082521

Description

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

Features

- RoHS compliant and lead-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} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d max. (W)	Maximum Time To Trip		Resistance			Agency Approvals	
							Current (A)	Time (Sec.)	R_{min} (Ω)	R_{typ} (Ω)	R_{1max} (Ω)	cULus	TÜV
0805L010	A	0.10	0.30	15	100	0.5	0.50	1.50	1.000	3.500	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

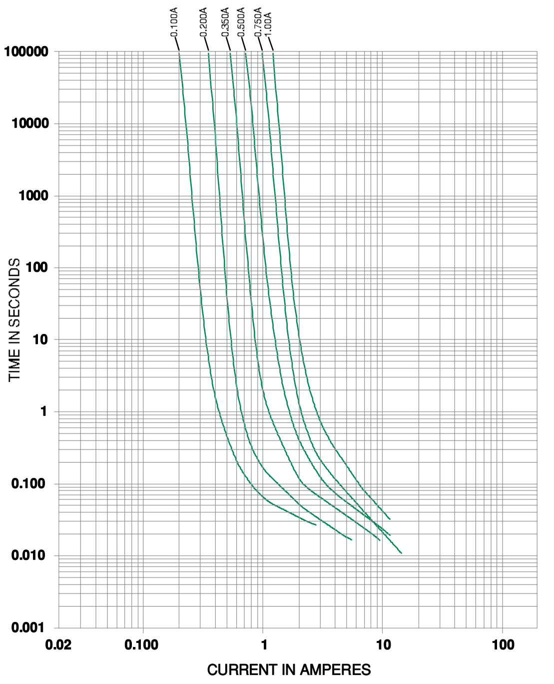
I_{hold} = Hold current: maximum current device will pass without tripping in 20°C still air.
I_{trip} = Trip current: minimum current at which the device will trip in 20°C still air.
V_{max} = Maximum voltage device can withstand without damage at rated current (I max)
I_{max} = Maximum fault current 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 Rerating

	Ambient Operation Temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
Part Number	Hold Current (A)								
0805L010	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
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

Average Time Current Curves

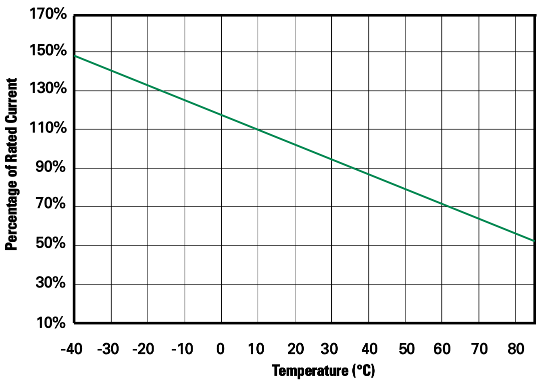


Specifications are subject to change without notice.

Note: 1.00 means the number one with two decimal places.

AKL V3.9 06.05.10

Temperature Rerating Curve

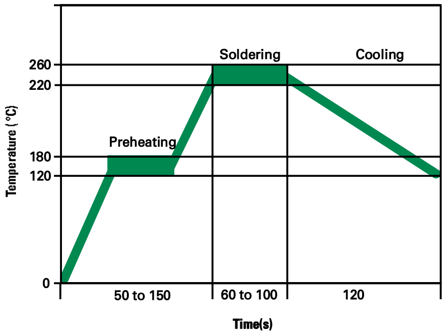


Soldering Parameters

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_2 environment for lead-free
- Devices are not designed to be wave soldered to the bottom side of the board.
- 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

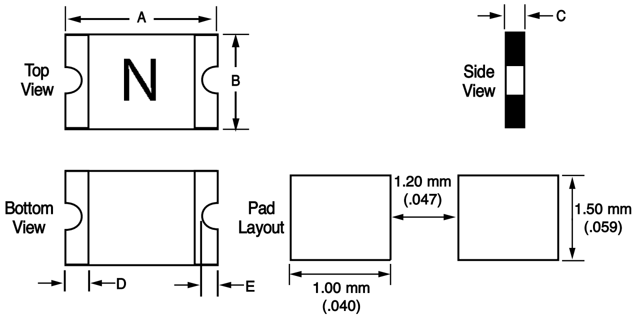
Terminal Material	Gold-Plated Copper or Solder-Plated Copper (Solder Material: Matte Tin (Sn))
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/ J-STD-002 Category 3.

Environmental Specifications

Operating/Storage 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 107G +85°C/-40°C 20 times -30% typical resistance change
Solvent Resistance	MIL-STD-202, Method 215 No change
Vibration	MIL-STD-883C, Method 2007.1, Condition A No change

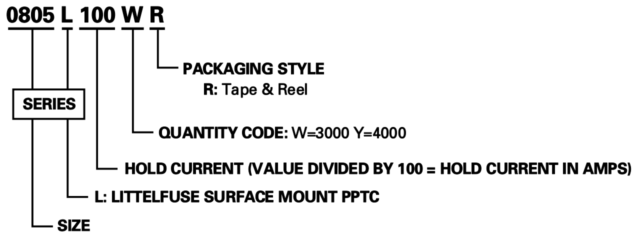
Dimensions

MARKING CODE VARIES
WITH AMPERAGE RATING
(SEE CHART)
SHOWN IS 1.0AMP RATING



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.
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	0.20	0.000	0.01	0.10	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	0.20	0.000	0.01	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	0.20	0.000	0.01	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	0.20	0.000	0.01	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	0.20	0.000	0.01	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	0.20	0.000	0.01	0.15	0.45

Part Numbering System



Packaging

I_{hold} (A)	Amp Code	Packaging Option	Quantity	Quantity & Packaging Codes
0.1	010	Tape and Reel	4000	YR
0.2	020	Tape and Reel	4000	YR
0.35	035	Tape and Reel	4000	YR
0.5	050	Tape and Reel	3000	WR
0.75	075	Tape and Reel	3000	WR
1	100	Tape and Reel	3000	WR