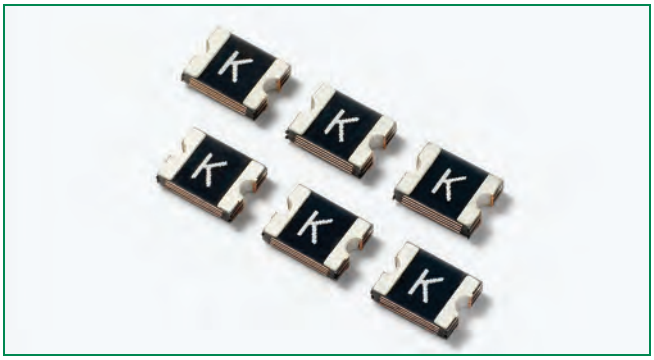
RoHS Pb HF 1210L Series



Description

The 1210L 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
- PC motherboards - plug and play protection
- Mobile phones - battery and port protection
- PDAs / digital cameras
- Game console port protection

Agency Approvals

AGENCY	AGENCY FILE NUMBER
c UL us	E183209
TÜV	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	TÜV
1210L005	A	0.05	0.15	30	10	0.60	0.25	1.50	3.600	50.00	X	X
1210L010	B	0.10	0.30	30	10	0.60	0.50	1.50	1.600	15.00	X	X
1210L020	C	0.20	0.40	30	10	0.60	8.00	0.02	0.800	5.000	X	X
1210L035	E	0.35	0.70	6	100	0.60	8.00	0.20	0.320	1.300	X	X
1210L050	F	0.50	1.00	13.2	100	0.60	8.00	0.05	0.250	0.900	X	X
1210L075	G	0.75	1.50	6	100	0.60	8.00	0.10	0.130	0.400	X	X
1210L075/24	G2	0.75	1.50	24	100	0.60	8.00	0.10	0.130	0.400	X	X
1210L110TH	H	1.10	2.20	8	100	0.60	8.00	0.10	0.060	0.210	X	X
1210L150TH	K	1.50	3.00	6	100	0.80	8.00	0.30	0.040	0.110	X	X
1210L175	V	1.75	3.50	6	100	0.80	8.00	0.60	0.020	0.080	X	X
1210L200	L	2.00	4.00	6	100	0.80	8.00	1.00	0.015	0.070	X	X

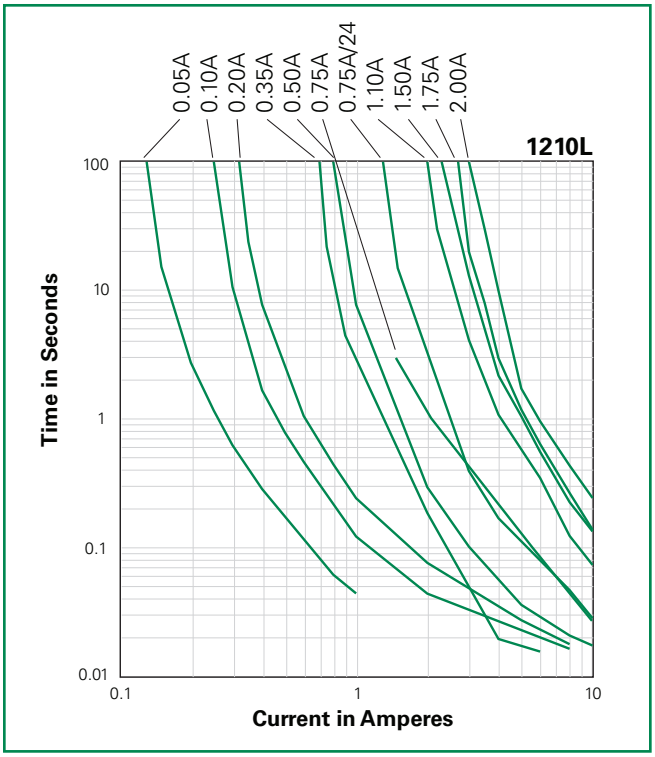
I_{hold} = Hold current: maximum current device will pass without tripping in 20°C still air.
I_{trip} = Trip current: minimum current at which the device will trip in 20°C still air.
V_{max} = Maximum voltage device can withstand without damage at rated current (I max)
I_{max} = Maximum fault current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

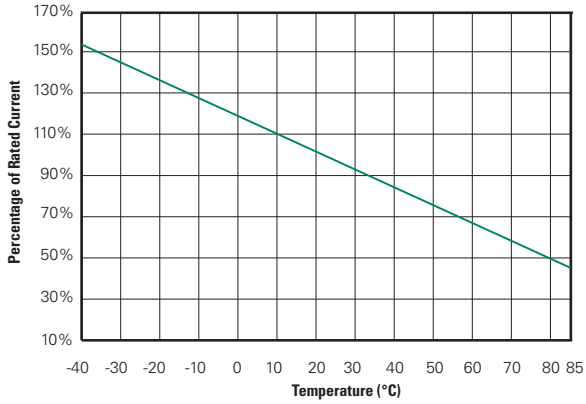
Temperature Rerating

	Ambient Operation Temperature								
	-40°C	-20°C	0°C	20°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
1210L075/24	1.13	1.00	0.88	0.75	0.61		0.47	0.41	0.35
1210L110TH	1.69	1.48	1.29	1.10	0.88	0.76	0.65	0.57	0.43
1210L150TH	2.13	1.92	1.71	1.50	1.26	1.14	1.01	0.89	0.71
1210L175	2.42	2.22	1.98	1.75	1.52	1.35	1.23	1.05	0.84
1210L200	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10

Average Time Current Curves



Temperature Rerating Curve



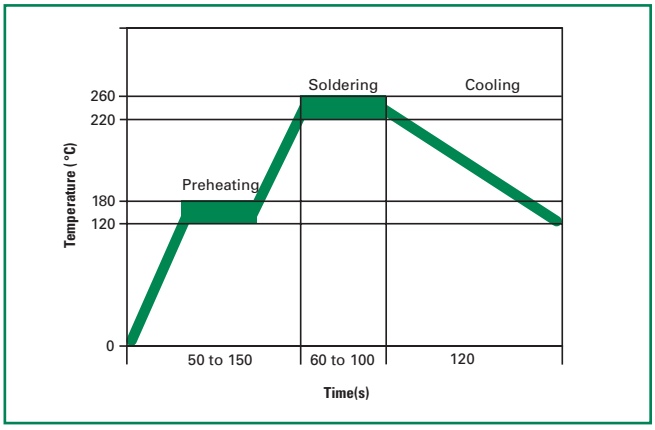
The average time current curves and Temperature Rerating curve performance is affected by a number or variables, and these curves provided as guidance only. Customer must verify the performance in their application.

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
- 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.



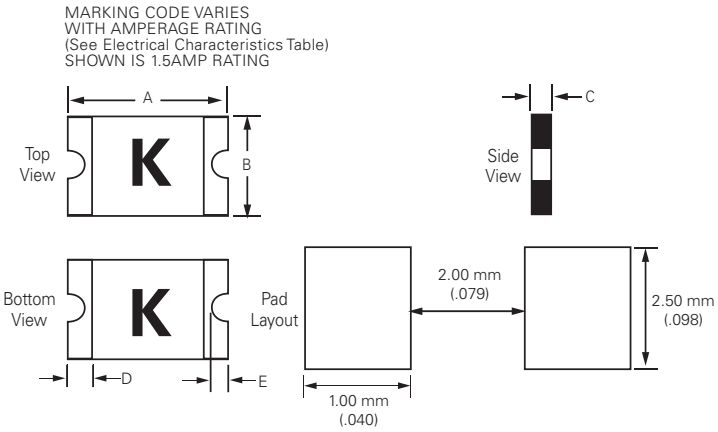
Physical Specifications

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

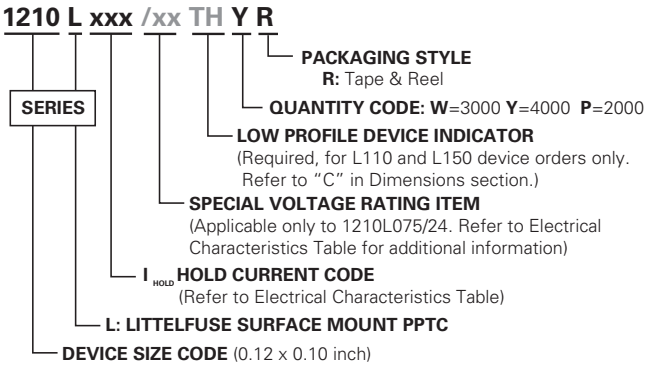
Operating/Storage Temperature	-40°C to +85°C
Maximum Device Surface Temperature in Tripped State	125°C
Passive Aging	+85°C, 1000 hours -/+5% typical resistance change
Humidity Aging	+85°C, 85, R.H.,1000 hours -/+5% typical resistance change
Thermal Shock	MIL–STD–202, Method 107G +85°C/-40°C, 20 times -30% typical resistance change
Solvent Resistance	MIL–STD–202, Method 215 No change
Vibration	MIL–STD–883C, Method 2007.1, Condition A No change
Moisture Level Sensitivity	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
1210L005	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.03	0.05	0.75	1.25	0.01	0.03	0.25	0.75	0.008	0.02	0.1	0.5
1210L010	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.03	0.05	0.75	1.25	0.01	0.03	0.25	0.75	0.008	0.02	0.1	0.5
1210L020	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.02	0.04	0.60	1.00	0.01	0.03	0.25	0.75	0.008	0.02	0.1	0.5
1210L035	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.02	0.03	0.50	0.85	0.01	0.03	0.25	0.75	0.008	0.02	0.1	0.5
1210L050	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.02	0.03	0.50	0.85	0.01	0.03	0.25	0.75	0.008	0.02	0.1	0.5
1210L075	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.02	0.03	0.50	0.85	0.01	0.03	0.25	0.75	0.008	0.02	0.1	0.5
1210L075/24	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.05	0.07	1.20	1.80	0.01	0.03	0.25	0.75	0.004	0.02	0.1	0.5
1210L110TH	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.04	0.05	0.30	0.71	0.01	0.03	0.25	0.75	0.008	0.02	0.1	0.5
1210L150TH	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.03	0.07	0.75	1.07	0.01	0.03	0.25	0.75	0.008	0.02	0.1	0.5
1210L175	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.02	0.04	0.60	1.00	0.01	0.03	0.25	0.75	0.008	0.02	0.1	0.5
1210L200	0.12	0.14	3.0	3.43	0.09	0.11	2.35	2.80	0.03	0.06	0.80	1.60	0.01	0.03	0.25	0.75	0.008	0.02	0.1	0.5

Part Ordering Number System



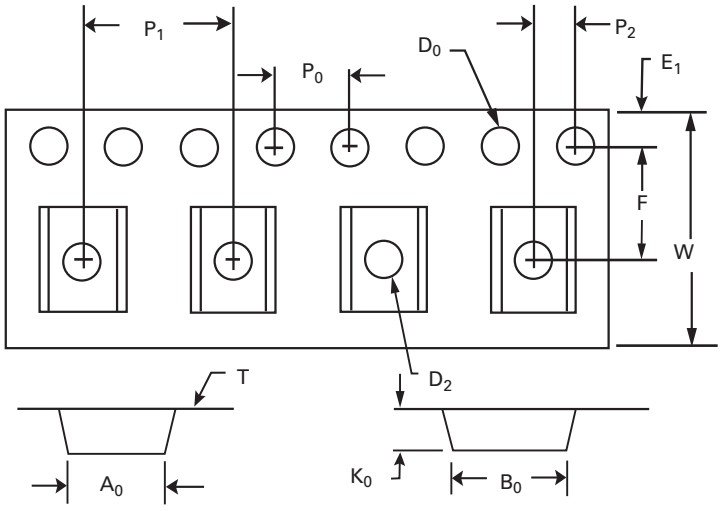
Packaging Options

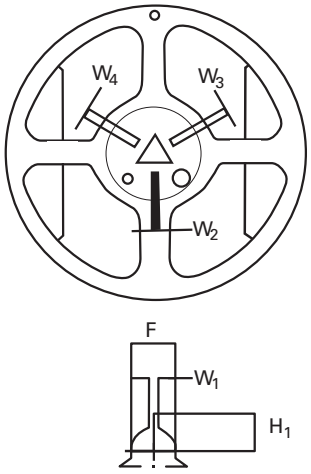
Part Number	Ordering Number	Halogen Free	I_{hold} (A)	I_{hold} Code	Packaging Option	Quantity	Quantity & Packaging Codes
1210L005	1210L005WR	Yes	0.05	005	Tape and Reel	3000	WR
1210L010	1210L010WR	Yes	0.10	010	Tape and Reel	3000	WR
1210L020	1210L020WR	Yes	0.20	020	Tape and Reel	3000	WR
1210L035	1210L035YR	Yes	0.35	035	Tape and Reel	4000	YR
1210L050	1210L050YR	Yes	0.50	050	Tape and Reel	4000	YR
1210L075	1210L075YR	Yes	0.75	075	Tape and Reel	4000	YR
1210L075/24	1210L075/24PR	Yes	0.75	075	Tape and Reel	2000	PR
1210L110TH	1210L110THYR	Yes	1.10	110	Tape and Reel	4000	YR
1210L150TH	1210L150THWR	Yes	1.50	150	Tape and Reel	3000	WR
1210L175	1210L175WR	Yes	1.75	175	Tape and Reel	3000	WR
1210L200	1210L200PR	Yes	2.00	200	Tape and Reel	2000	PR

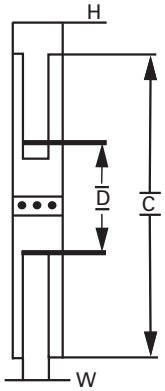
Tape and Reel Specifications

TAPE SPECIFICATIONS: EIA-481-1 (mm)			
	Packaging Code "YR": 1210L035 1210L050 1210L075 1210L110TH	**Packaging Code "WR":** 1210L005 1210L010 1210L020 1210L150TH 1210L175	**Packaging Code "PR":** 1210L075/24 1210L200
W	8.0+/-0.30	8.0+/-0.30	8.0+/-0.30
F	3.5+/-0.05	3.5+/-0.05	3.5+/-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	1.0 (min)	1.0 (min)	1.0 (min)
P_0	4.0+/-0.10	4.0+/-0.10	4.0+/-0.10
P_1	4.0+/-0.10	4.0+/-0.10	4.0+/-0.10
P_2	2.0+/-0.05	2.0+/-0.05	2.0+/-0.05
A_0	2.82+/-0.10	2.82+/-0.10	2.67+/-0.10
B_0	3.46+/-0.10	3.46+/-0.10	3.36+/-0.10
T	0.25+/-0.10	0.25+/-0.10	0.25+/-0.10
K_0	1.00+/-0.10	1.30+/-0.10	1.65+/-0.10
Leader min.	390	390	390
Trailer min.	160	160	160

REEL DIMENSIONS: EIA-481-1 (mm)	
H	12.0+/-0.05
W	9.0+/-0.5
D	Ø 60+0.5
F	Ø 13.0+/-0.2
C	Ø 178+/-1.0
H_1	11+/-0.5
W_1	2.2+/-0.5
W_2	3.0+0.5
W_3	4.0+0.5
W_4	5.5+0.5







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Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург, Промышленная ул, дом № 19, литера Н, помещение 100-Н Офис 331