

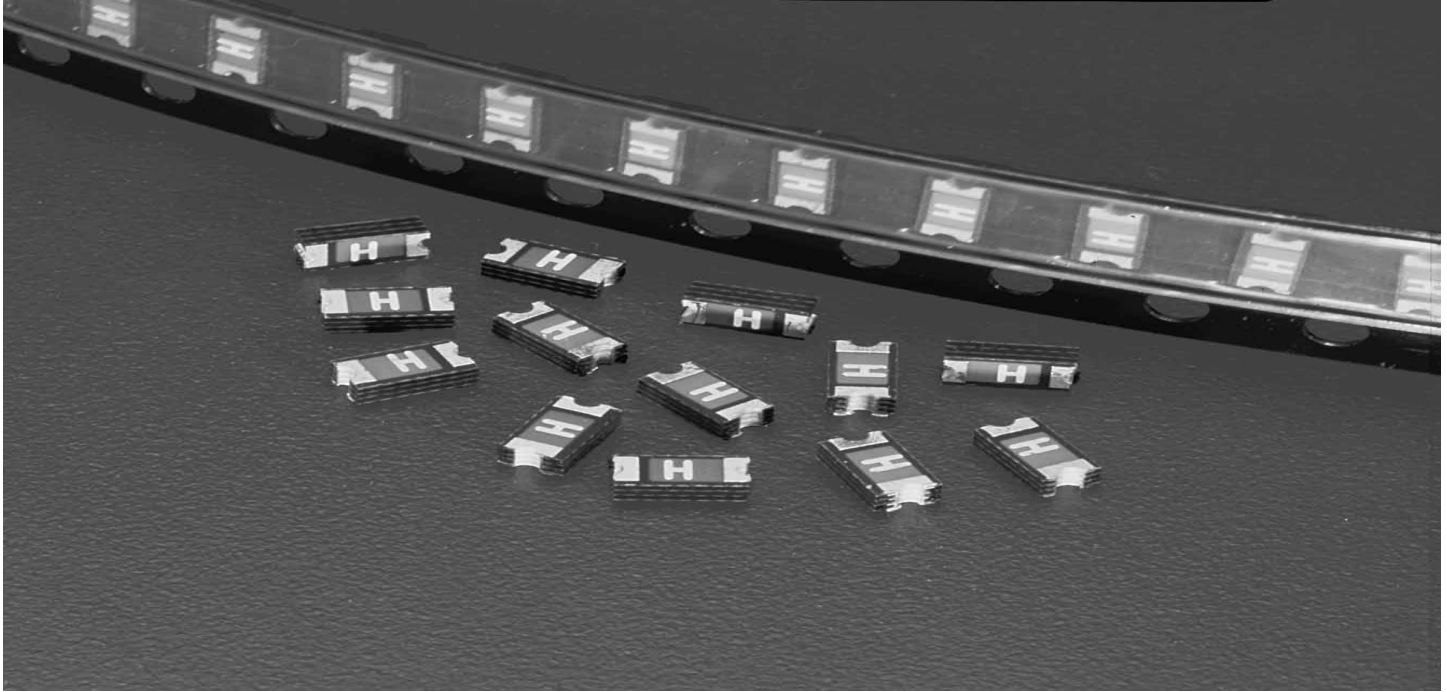
Resettable PTCs

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Resettable PTCs

Surface Mount PTC

RoHS **Pb** **1206L Series**



- RoHS compliant and Lead-Free.

PHYSICAL SPECIFICATIONS:

Terminal Material: Tin Plated Copper

Device Labeling: Device is marked with amperage rating code.

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and the Acceptance program of CSA. TUV approved.

AGENCY FILE NUMBERS: UL E183209, CSA LR108832.

ENVIRONMENTAL SPECIFICATIONS:

Passive Aging: 85°C, 1000 Hours.

Humidity Aging: 85°C, 85% R.H., 100 hours.

Thermal Shock: 85°C / -40°C, 20 times.

Vibration: MIL-STD 202, Method 201, MIL-STD-883, Method 2007.

Mechanical Shock: MIL-STD-202, Method 213 test condition I (100 g's, 6 sec.).

Solvent Resistance: MIL-STD-202, Method 215.

Operating/Storage Temperature: -40°C to 85°C

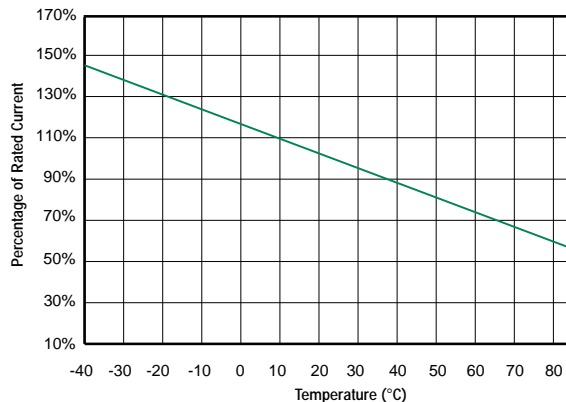
Device should remain in sealed bags prior to use.

Packaging: 8mm tape and reel carrier per EIA 481 Standard.

Standard reel quantities: 0.20-0.35A: 4,000 devices on 7" reel (YRT Suffix).

0.50-1.60A: 3,000 devices on 7" reel (WRT Suffix).

Temperature Derating Curve:



Temperature Derating:

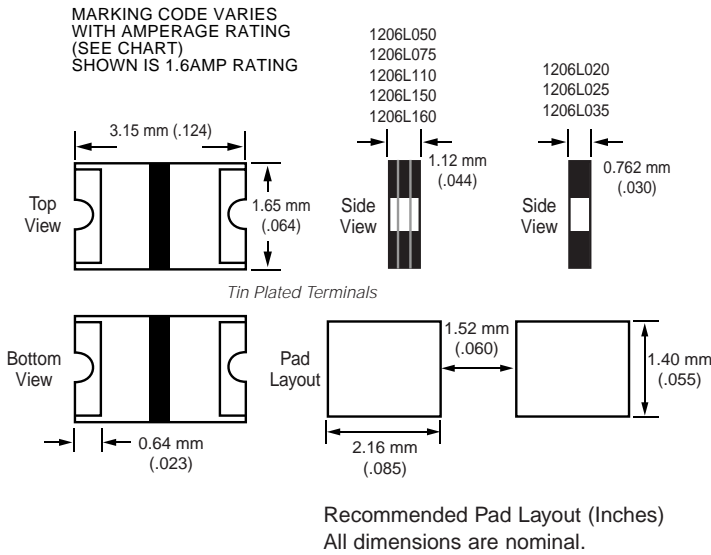
Part Number	Ambient Temperature									
	-40°C	-20°C	0°C	20°C	40°C	50°C	60°C	70°C	80°C	85°C
	Hold Current (A)									
1206L020	0.29	0.26	0.23	0.20	0.17	0.16	0.14	0.13	0.11	0.10
1206L025	0.36	0.33	0.29	0.25	0.21	0.20	0.18	0.16	0.14	0.13
1206L035	0.51	0.46	0.40	0.35	0.30	0.27	0.25	0.22	0.20	0.18
1206L050	0.74	0.67	0.59	0.50	0.44	0.40	0.36	0.32	0.28	0.26
1206L075	1.11	1.00	0.89	0.75	0.65	0.59	0.54	0.48	0.42	0.39
1206L110	1.63	1.46	1.30	1.10	0.96	0.87	0.79	0.70	0.62	0.57
1206L150	2.22	2.00	1.77	1.50	1.31	1.19	1.08	0.96	0.84	0.78
1206L160	2.37	2.13	1.89	1.60	1.40	1.27	1.15	1.02	0.90	0.83

Resettable PTCs

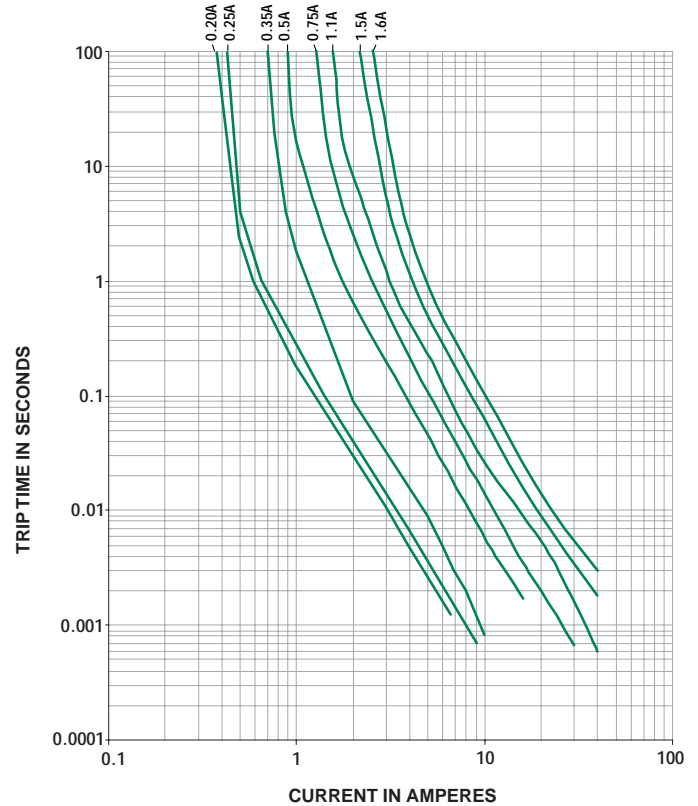
Surface Mount PTC

RoHS 1206L Series

Dimensions (Inches)



Average Time Current Curves



Solderability: Meets EIA specification RS186-9E and IPC/EIA J-STD-002, and IPC/EIA J-STD-001.

Soldering Parameters:

Reflow Solder — 245°C, 20 seconds maximum
Wave Solder — 245°C, 10 seconds maximum

Electrical Characteristics:

Part Number	Marking Code	I_{Hold} (A)	I_{Trip} (A)	V_{Max} (V _{dc})	I_{Max} (A)	P_d max. (W)	Maximum Time To Trip		R_{IL} (Ω)	R_{AT} (Ω)
							Current (A)	Time (Sec)		
1206L020	C	0.20	0.40	15.0	40	0.8	8.0	0.05	0.600	2.500
1206L025	D	0.25	0.50	15.0	40	0.8	8.0	0.08	0.550	2.300
1206L035	E	0.35	0.70	6.0	40	0.8	8.0	0.10	0.300	1.300
1206L050	F	0.50	1.00	6.0	40	0.8	8.0	0.10	0.090	0.600
1206L075	G	0.75	1.50	6.0	40	0.8	8.0	0.20	0.070	0.300
1206L110	H	1.10	2.20	6.0	40	0.8	8.0	0.30	0.040	0.180
1206L150	K	1.50	3.00	6.0	40	0.8	8.0	0.30	0.030	0.120
1206L160		1.60	3.20	6.0	40	0.8	8.0	0.40	0.025	0.115

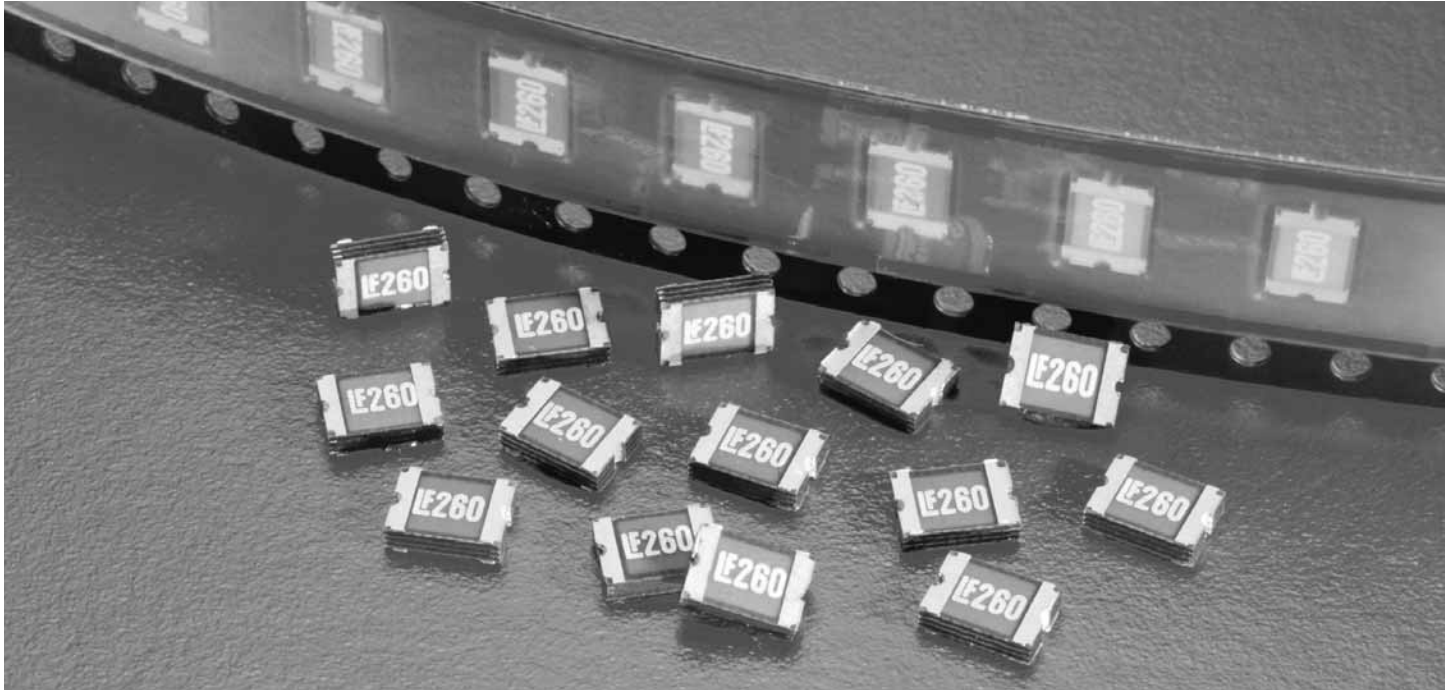
- I_{hold} = Hold Current: maximum current device will sustain for 4 hours without tripping in 20°C still air.
- I_{trip} = Trip Current: minimum current at which the device will trip in 20°C still air.
- V_{max} = Maximum voltage device can withstand without damage at rated current (I_{max})
- I_{max} = 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_{IL} = Minimum resistance of device in initial (un-soldered) state.
- R_{AT} = Maximum measured resistance in the non-tripped state 1 hour after reflow with reflow conditions of 245°C for 20 sec.

CAUTION: Operation beyond the specified ratings may result in damage and possible arcing and flame.

Resettable PTCs

Surface Mount PTC

RoHS 1812L Series



- RoHS compliant and Lead-Free.

PHYSICAL SPECIFICATIONS:

Terminal Material: Tin Plated Copper

Device Labeling: Device is marked with LF and amperage rating.

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and the Acceptance program of CSA. TUV approved.

AGENCY FILE NUMBERS: UL E183209, CSA LR108832.

ENVIRONMENTAL SPECIFICATIONS:

Passive Aging: 85°C, 1000 Hours.

Humidity Aging: 85°C, 85% R.H., 100 hours.

Thermal Shock: 85°C / -40°C, 20 times.

Vibration: MIL-STD 202, Method 201, MIL-STD-883, Method 2007.

Mechanical Shock: MIL-STD-202, Method 213 test condition I (100 g's, 6 sec.).

Solvent Resistance: MIL-STD-202, Method 215.

Operating/Storage Temperature: -40°C to 85°C
Device should remain in sealed bags prior to use.

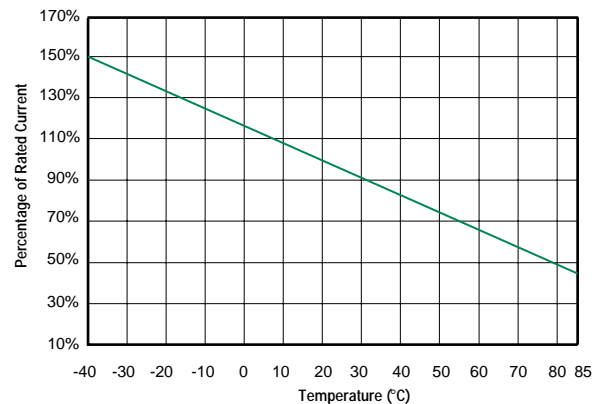
Packaging: 12mm tape and reel carrier per EIA 481 Standard.

Standard reel quantity: 0.50-1.60A: 2,000 devices on 7" reel (PRT Suffix).

2.00-2.60A: 1,000 devices on 7" reel (MR Suffix).

Optional reel quantity: 0.50-1.60A: 8,000 devices on 13" reel (ZRT Suffix).

Temperature Derating Curve:



Temperature Derating:

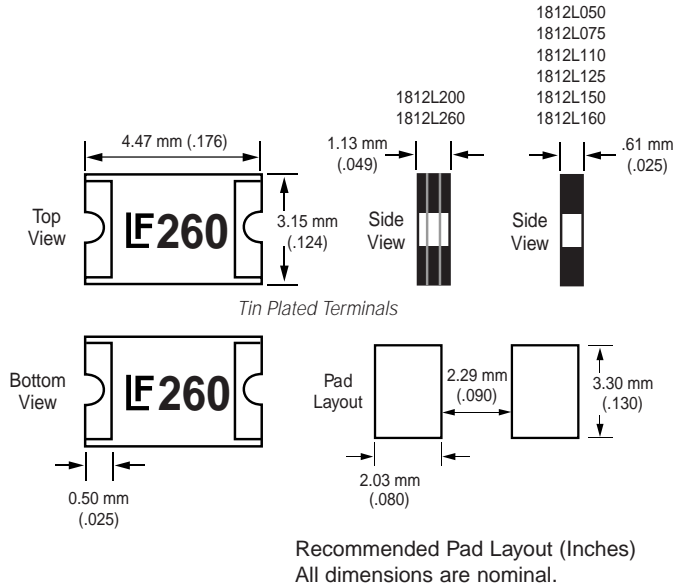
Part Number	Ambient Temperature									
	-40°C	-20°C	0°C	20°C	40°C	50°C	60°C	70°C	80°C	85°C
	Hold Current (A)									
1812L050	0.75	0.67	0.58	0.50	0.41	0.37	0.33	0.29	0.25	0.23
1812L075	1.13	1.00	0.87	0.75	0.62	0.56	0.50	0.43	0.37	0.34
1812L110	1.65	1.47	1.28	1.10	0.91	0.82	0.73	0.64	0.54	0.50
1812L125	1.88	1.67	1.46	1.25	1.04	0.93	0.83	0.72	0.62	0.56
1812L150	2.25	2.00	1.75	1.50	1.24	1.12	0.99	0.87	0.74	0.68
1812L160	2.40	2.13	1.86	1.60	1.33	1.19	1.06	0.92	0.79	0.72
1812L200	3.00	2.67	2.33	2.00	1.66	1.49	1.32	1.15	0.99	0.90
1812L260	3.90	3.47	3.03	2.60	2.16	1.94	1.72	1.50	1.28	1.17

Resettable PTCs

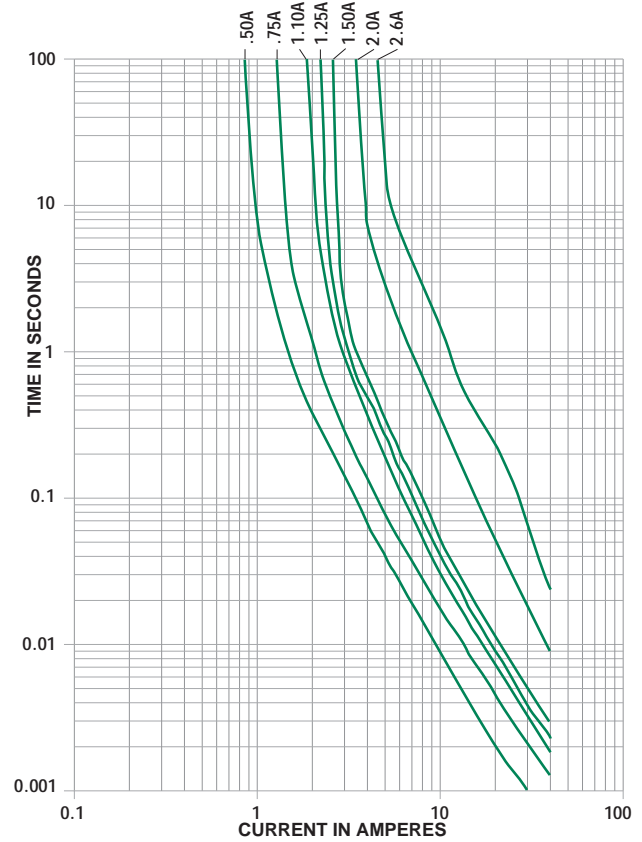
Surface Mount PTC

RoHS 1812L Series

Dimensions (Inches)



Average Time Current Curves



Solderability: Meets EIA specification RS186-9E and IPC/EIA J-STD-002, and IPC/EIA J-STD-001.

Soldering Parameters:

- Reflow Solder — 245°C, 20 seconds maximum
- Wave Solder — 245°C, 10 seconds maximum

RESETTABLE PTCs

Electrical Characteristics:

Part Number	I_{hold} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d max. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	R_{IL} (Ω)	R_{AT} (Ω)
1812L050	0.50	1.00	15.0	40	0.8	8.0	0.15	0.100	1.000
1812L075	0.75	1.50	13.2	40	0.8	8.0	0.30	0.060	0.420
1812L110	1.10	2.20	6.0	40	0.8	8.0	0.30	0.050	0.226
1812L125	1.25	2.50	6.0	40	0.8	8.0	0.30	0.040	0.184
1812L150	1.50	3.00	6.0	40	0.8	8.0	0.30	0.032	0.137
1812L160	1.60	3.20	6.0	40	0.8	8.0	0.30	0.032	0.099
1812L200	2.00	4.00	6.0	40	0.8	8.0	2.50	0.018	0.070
1812L260	2.60	5.20	6.0	40	0.8	8.0	2.50	0.010	0.050

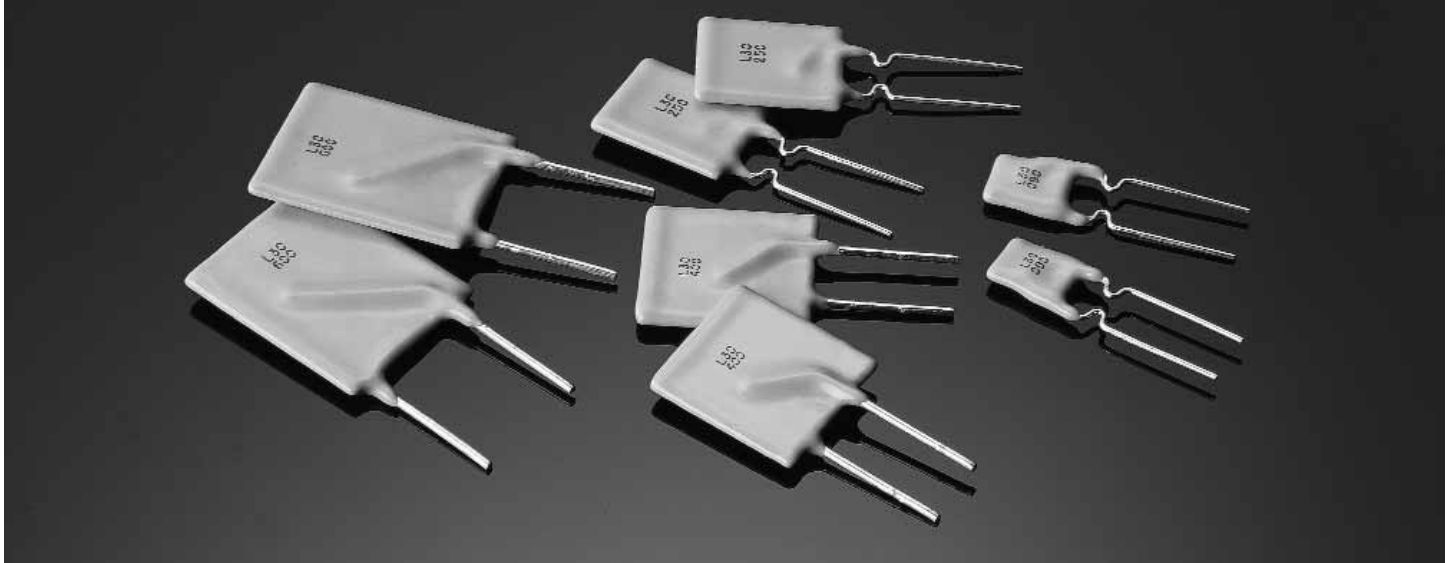
- I_{hold} = Hold Current: maximum current device will sustain for 4 hours without tripping in 20°C still air.
- I_{trip} = Trip Current: minimum current at which the device will trip in 20°C still air.
- V_{max} = Maximum voltage device can withstand without damage at rated current (I_{max})
- I_{max} = 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_{IL} = Minimum resistance of device in initial (un-soldered) state.
- R_{AT} = Maximum measured resistance in the non-tripped state 1 hour after reflow with reflow conditions of 245°C for 20 sec.

CAUTION: Operation beyond the specified ratings may result in damage and possible arcing and flame.

Resettable PTCs

Radial Leaded PTC

30R Series



- The 30R Series Resettable devices utilize a unique polymer-based, Positive Temperature Coefficient (PTC) material to protect electrical circuits against overcurrent conditions.
- In normal operation, the 30R Series PTC has many conductive paths and a very low resistance. In an overcurrent condition, the temperature of the polymer material rises. This dramatically reduces the conductive paths resulting in an immediate rise in resistance. In this condition, the device provides circuit protection by significantly limiting the flow of current. However, once the cause of the initial overcurrent condition is eliminated, the 30R Series PTC cools down and resets to a low resistance value permitting the normal current flow to resume.
- The 30R Series is a 30V Radial Leaded Device with a 40A Short Circuit Rating.

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratory and the Component Acceptance Program of CSA. TUV approved.

AGENCY FILE NUMBERS: UL E183209, CSA LR 108832

PHYSICAL SPECIFICATIONS:

Materials: Leads

30R090-250: Tin plated copper-clad steel, 24 AWG (0.020" Dia.)

30R300-900: Tin plated copper, 20 AWG (0.032" Dia.)

Lead Solderability: MIL-STD-202, Method 208E

Coating: Thermoset Coating

Device Labeling: Device is marked with the letter 'L', amperage rating, voltage rating & date code.

Packaging: Standard bulk packaging is 500 pieces per container. Optional tape and reel packaging per EIA 468-B is also available.

Standard reel quantities:

Part Number	Reel Quantity	Part Number	Reel Quantity
R30R090 R30R110 R30R135 R30R160 R30R185 R30R250	3000	R30R300 R30R400	1500
		30R500 30R600 30R700 30R800 30R900	Bulk Only 500 Per Container

ENVIRONMENTAL SPECIFICATIONS:

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: 85°C / -40°C, 20 times. ±10% typical resistance change.

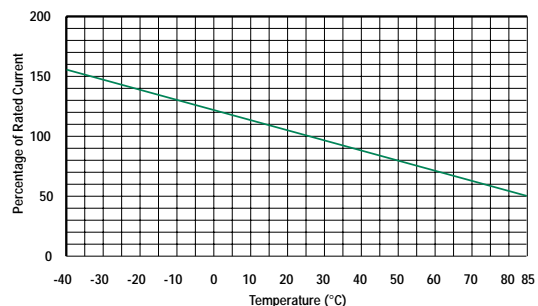
Vibration: MIL-STD 202, Method 201. No resistance change.

Mechanical Shock: MIL-STD-202, Method 213 test condition I (100 g's, 6 sec.). No resistance change.

Max. Surface Temperature: 125°C

Operating/Storage Temperature: -40°C to 85°C

Rerating Curve for 30R Series

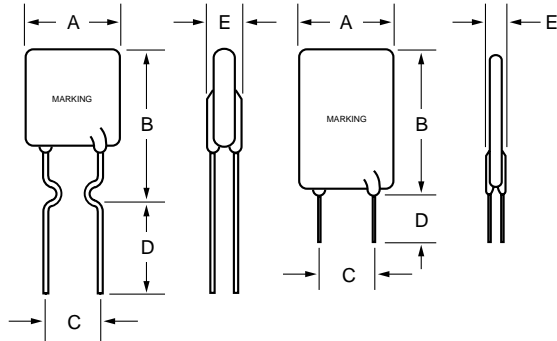


Resettable PTCs

Radial Leaded PTC

30R Series

Dimensions (Inches)

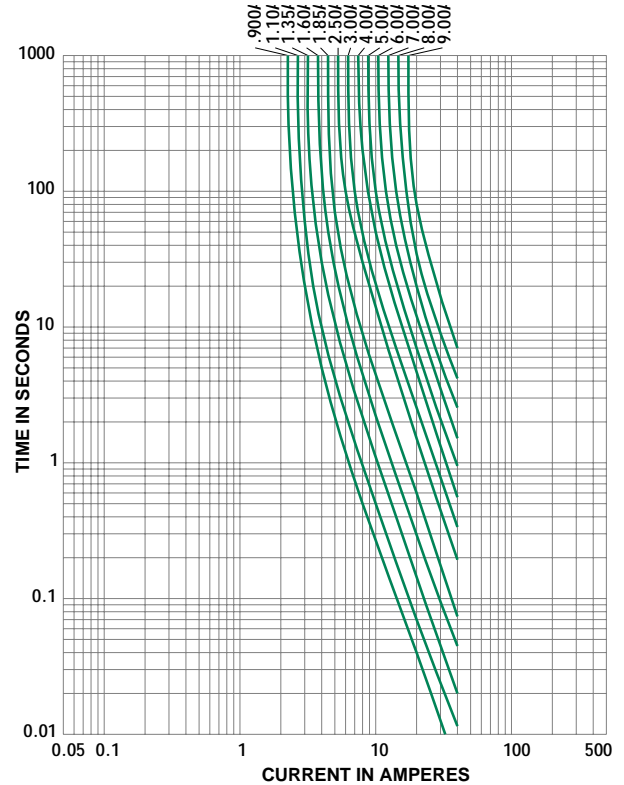


Note: Stand-offs only used for 30R090-30R250

Part Number	'A' (Max.)	'B' (Max.)	'C' (Typ.)
30R090	6.60 (0.26)	12.19 (0.48)	5.08 (0.20)
30R110	6.60 (0.26)	14.22 (0.56)	5.08 (0.20)
30R135	8.89 (0.35)	13.46 (0.53)	5.08 (0.20)
30R160	8.89 (0.35)	15.42 (0.60)	5.08 (0.20)
30R185	10.16 (0.40)	15.75 (0.62)	5.08 (0.20)
30R250	11.43 (0.45)	18.29 (0.72)	5.08 (0.20)
30R300	11.43 (0.45)	17.27 (0.68)	5.08 (0.20)
30R400	13.97 (0.55)	20.07 (0.79)	5.08 (0.20)
30R500	13.97 (0.55)	24.89 (0.98)	10.16 (0.40)
30R600	16.51 (0.65)	24.89 (0.98)	10.16 (0.40)
30R700	19.05 (0.75)	26.67 (1.05)	10.16 (0.40)
30R800	21.59 (0.85)	29.21 (1.15)	10.16 (0.40)
30R900	24.13 (0.95)	29.72 (1.17)	10.16 (0.40)

Dimension 'D' is 7.62 (0.30") Minimum
Dimension 'E' is 3.05 (0.12") Maximum

Average Time Current Curves



ORDERING INFORMATION:

Part Number	I _{hold} (A)	I _{trip} (A)	V _{max} (Vdc)	I _{max} (A)	P _d max. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	R _{IL} (Ω)	R _{AT} (Ω)
30R090	0.90	1.80	30	40	0.6	4.50	5.9	0.070	0.22
30R110	1.10	2.20	30	40	0.7	5.50	6.6	0.050	0.17
30R135	1.35	2.70	30	40	0.8	6.75	7.3	0.040	0.13
30R160	1.60	3.20	30	40	0.9	8.00	8.0	0.030	0.11
30R185	1.85	3.70	30	40	1.0	9.25	8.7	0.030	0.09
30R250	2.50	5.00	30	40	1.2	12.5	10.3	0.020	0.07
30R300	3.00	6.00	30	40	2.0	15.0	10.8	0.020	0.08
30R400	4.00	8.00	30	40	2.5	20.0	12.7	0.010	0.05
30R500	5.00	10.00	30	40	3.0	25.0	14.5	0.010	0.05
30R600	6.00	12.00	30	40	3.5	30.0	16.0	0.005	0.04
30R700	7.00	14.00	30	40	3.8	35.0	17.5	0.005	0.03
30R800	8.00	16.00	30	40	4.0	40.0	18.8	0.005	0.02
30R900	9.00	18.00	30	40	4.2	40.0	20.0	0.005	0.02

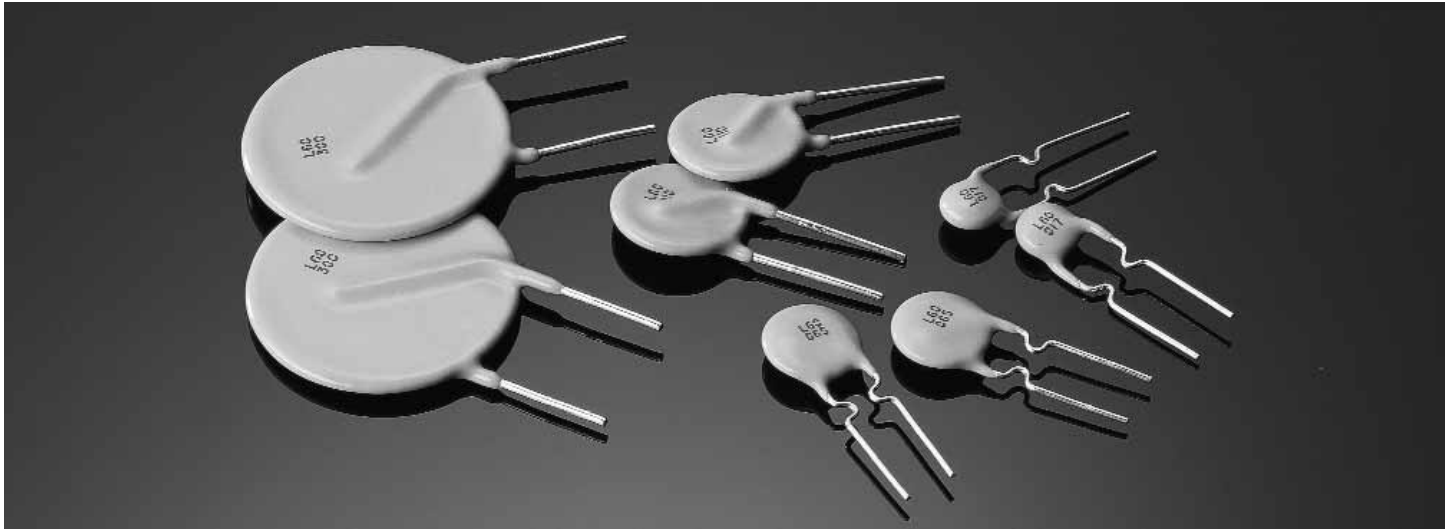
- I_{hold} = Hold Current: maximum current device will sustain for 4 hours without tripping in 20°C still air.
- I_{trip} = Trip Current: minimum current at which the device will trip in 20°C still air.
- V_{max} = Maximum voltage device can withstand without damage at rated current (I_{max})
- I_{max} = 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_{IL} = Minimum resistance of device in initial (un-soldered) state.
- R_{AT} = Maximum resistance of device at 20°C measured one hour after tripping.

CAUTION: Operation beyond the specified ratings may result in damage and possible arcing and flame.

Resettable PTCs

Radial Leaded PTC

60R Series



- The 60R Series Resettable devices utilize a unique polymer-based, Positive Temperature Coefficient (PTC) material to protect electrical circuits against overcurrent conditions.
- In normal operation, the 60R Series PTC has many conductive paths and a very low resistance. In an overcurrent condition, the temperature of the polymer material rises. This dramatically reduces the conductive paths resulting in an immediate rise in resistance. In this condition, the device provides circuit protection by significantly limiting the flow of current. However, once the cause of the initial overcurrent condition is eliminated, the 60R Series PTC cools down and resets to a low resistance value permitting the normal current flow to resume.
- The 60R Series is a 60V Radial Leaded Device with a 40A Short Circuit Rating.

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratory and the Component Acceptance Program of CSA. TUV approved.

AGENCY FILE NUMBERS: UL E183209, CSA LR 108832

PHYSICAL SPECIFICATIONS:

Materials: Leads

- 60R010: Tin coated constantan, 24 AWG (0.020" Dia.)
- 60R017-040: Tin plated copper-clad steel, 24 AWG (0.020" Dia.)
- 60R050-090: Tin plated copper, 24 AWG (0.020" Dia.)
- 60R110-375: Tin plated copper, 20 AWG (0.032" Dia.)

Lead Solderability: MIL-STD-202, Method 208E

Coating: Thermoset Coating

Device Labeling: Device is marked with the letter 'L', amperage rating, voltage rating & date code.

Packaging: Standard bulk packaging is 500 pieces per container. Optional tape and reel packaging per EIA 468-B is also available.

Standard reel quantities:

Part Number	Reel Quantity	Part Number	Reel Quantity
R60R010	3000	R60R017	2500
R60R020		R60R110	1500
R60R025		R60R135	
R60R030		R60R160	
R60R040		R60R185	
R60R050		60R250	Bulk Only 500 Per Container
R60R065		60R300	
R60R075		60R375	
R60R090			

ENVIRONMENTAL SPECIFICATIONS:

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: 85°C / -40°C, 20 times. ±10% typical resistance change.

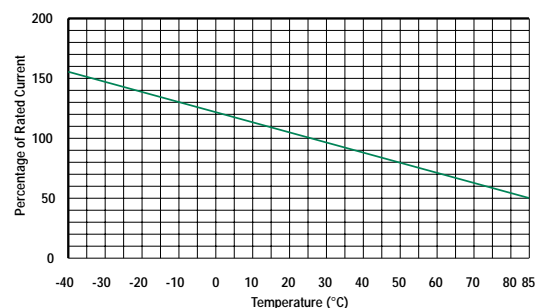
Vibration: MIL-STD 202, Method 201. No resistance change.

Mechanical Shock: MIL-STD-202, Method 213 test condition I (100 g's, 6 sec.). No resistance change.

Max. Surface Temperature: 125°C

Operating/Storage Temperature: -40°C to 85°C

Derating Curve for 60R Series

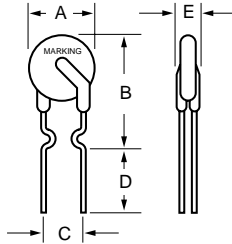


Resettable PTCs

Radial Leaded PTC

60R Series

Dimensions (Inches)

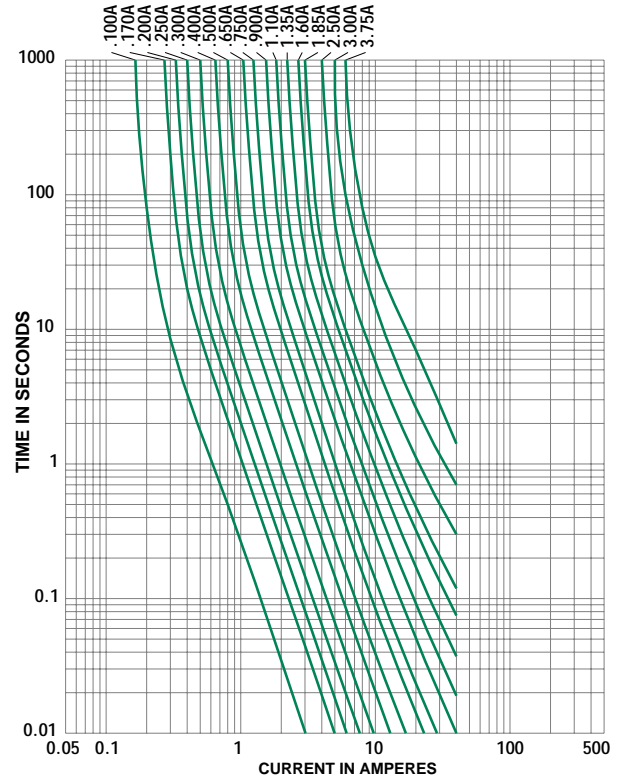


Note: Stand-offs only used for 60R010-60R090

Part Number	'A' (Max.)	'B' (Max.)	'C' (Typ.)
60R010	7.37 (0.29)	12.7 (0.50)	5.08 (0.20)
60R017	7.37 (0.29)	12.7 (0.50)	5.08 (0.20)
60R020	7.37 (0.29)	12.19 (0.48)	5.08 (0.20)
60R025	7.37 (0.29)	12.7 (0.50)	5.08 (0.20)
60R030	7.37 (0.29)	12.95 (0.51)	5.08 (0.20)
60R040	7.62 (0.30)	13.46 (0.53)	5.08 (0.20)
60R050	7.62 (0.30)	13.72 (0.54)	5.08 (0.20)
60R065	9.65 (0.38)	14.48 (0.57)	5.08 (0.20)
60R075	10.41 (0.41)	15.24 (0.60)	5.08 (0.20)
60R090	11.68 (0.46)	15.75 (0.62)	5.08 (0.20)
60R110	12.95 (0.51)	18.0 (0.71)	5.08 (0.20)
60R135	14.48 (0.57)	19.56 (0.77)	5.08 (0.20)
60R160	16.26 (0.64)	21.34 (0.84)	5.08 (0.20)
60R185	17.78 (0.70)	22.86 (0.90)	5.08 (0.20)
60R250	21.34 (0.84)	26.42 (1.04)	10.16 (0.40)
60R300	24.89 (0.98)	29.97 (1.18)	10.16 (0.40)
60R375	28.45 (1.12)	33.53 (1.32)	10.16 (0.40)

Dimension 'D' is 0.30" Minimum
Dimension 'E' is 0.12" Maximum

Average Time Current Curves



RESETTABLE PTCs

ORDERING INFORMATION:

Part Number	I _{hold} (A)	I _{trip} (A)	V _{max} (Vdc)	I _{max} (A)	P _d max. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	R _{IL} (Ω)	R _{AT} (Ω)
60R010	0.10	0.20	60	40	0.38	0.50	4.0	2.50	7.50
60R017	0.17	0.34	60	40	0.48	0.85	3.0	3.30	8.00
60R020	0.20	0.40	60	40	0.41	1.00	2.2	1.83	4.40
60R025	0.25	0.50	60	40	0.45	1.25	2.5	1.25	3.00
60R030	0.30	0.60	60	40	0.49	1.50	3.0	0.88	2.10
60R040	0.40	0.80	60	40	0.56	2.00	3.8	0.55	1.29
60R050	0.50	1.00	60	40	0.77	2.50	4.0	0.50	1.17
60R065	0.65	1.30	60	40	0.88	3.25	5.3	0.31	0.72
60R075	0.75	1.50	60	40	0.92	3.75	6.3	0.25	0.60
60R090	0.90	1.80	60	40	0.99	4.50	7.2	0.20	0.47
60R110	1.10	2.20	60	40	1.50	5.50	8.2	0.15	0.38
60R135	1.35	2.70	60	40	1.70	6.75	9.6	0.12	0.30
60R160	1.60	3.20	60	40	1.90	8.00	11.4	0.09	0.22
60R185	1.85	3.70	60	40	2.10	9.25	12.6	0.08	0.19
60R250	2.50	5.00	60	40	2.50	12.50	15.6	0.05	0.13
60R300	3.00	6.00	60	40	2.80	15.00	19.8	0.04	0.10
60R375	3.75	7.50	60	40	3.20	18.75	24.0	0.03	0.08

- I_{hold} = Hold Current: maximum current device will sustain for 4 hours 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_{IL} = Minimum resistance of device in initial (un-soldered) state.
- R_{AT} = Maximum resistance of device at 20°C measured one hour after tripping.

CAUTION: Operation beyond the specified ratings may result in damage and possible arcing and flame.

Notes and Drawings

