

LTD-Axial Leaded Strap Lead(Pb) Free PTC Devices

- The new LTD Axial Leaded Strap Lead(Pb) Free PTC device are designed based on a proprietary conductive polymer material, to provide both overcurrent and overtemperature protection for rechargeable battery cells.
- The LTD Axial Leaded Lead(Pb) Free Strap devices featuring a slim, low profile and low resistance design and are ideal to install directly on the latest generations of battery cells for longer battery run time.
- Similar to the Everfuse STD Axial Strap devices, LTD products provide reliable, noncycling protection against overcharging and short circuits events and increase the battery safety level.
- Agency Approval: UL/ CSA File # E201431

TÜV File Certificate # 9956421



Polytronics Technology Corp
REGISTERED TO Q89900, TL9400
ISO9001 (version 2000), and ISO 14001
CERTIFICATE NO. A8727 and A10971



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			Agency Approval
						Current (A)	Time (Sec.)	R _{min} (Ω)	R _{max} (Ω)	R _{1max} (Ω)	
LTD070F	0.7	1.5	15	100	1.0	3.50	5.00	0.100	0.200	0.340	UL TÜV CSA
LTD070SF	0.7	1.5	15	100	1.0	3.50	5.00	0.100	0.200	0.340	UL TÜV CSA
LTD100F	1.0	2.5	24	100	1.5	5.00	7.00	0.070	0.130	0.260	UL TÜV CSA
LTD100SF	1.0	2.5	24	100	1.5	5.00	7.00	0.070	0.130	0.260	UL TÜV CSA
LTD100SSF	1.0	2.5	24	100	1.5	5.00	7.00	0.070	0.130	0.260	UL TÜV CSA
LTD180F	1.8	3.8	24	100	2.0	9.00	2.90	0.040	0.068	0.120	UL TÜV CSA
LTD180SF	1.8	3.8	24	100	2.0	9.00	2.90	0.040	0.068	0.120	UL TÜV CSA
LTD180SSF	1.8	3.8	24	100	2.0	9.00	2.90	0.040	0.068	0.120	UL TÜV CSA
LTD190F	1.9	4.2	24	100	1.9	10.00	3.00	0.030	0.057	0.100	UL TÜV CSA
LTD190SF	1.9	4.2	24	100	1.9	10.00	3.00	0.030	0.057	0.100	UL TÜV CSA
LTD260F	2.6	5.2	24	100	2.3	13.0	5.0	0.025	0.042	0.076	UL TÜV CSA
LTD300F	3.0	6.3	24	100	2.0	15.0	4.0	0.015	0.031	0.055	UL TÜV CSA
LTD310F	3.1	6.0	24	100	2.5	16.0	5.0	0.018	0.030	0.055	UL TÜV CSA
LTD340F	3.4	6.8	24	100	2.7	17.0	5.0	0.016	0.027	0.050	UL TÜV CSA

Note: 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_{1max} = Maximum resistance of device at 20°C measured one hour after tripping for 20 sec.

Caution: Operation beyond the specified rating may result in damage and possible arcing and flame.

Recognitions: UL, CSA, TÜV recognized.

©Specifications are subject to change without notice.

12/6/2006



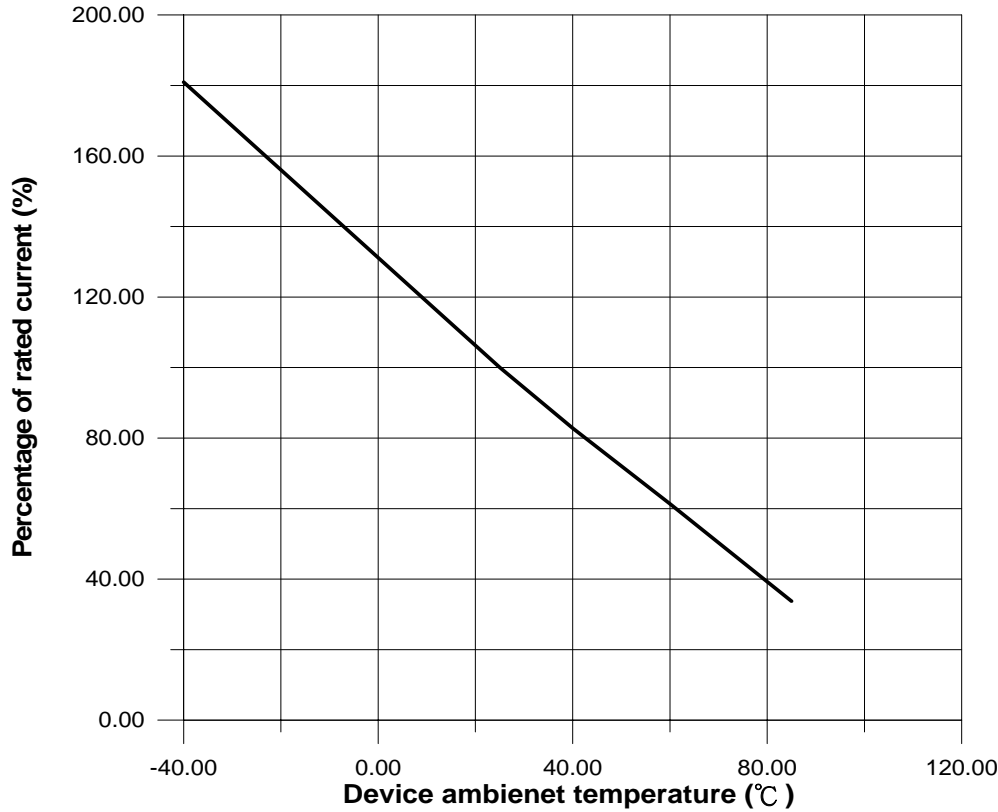
LTD-Axial Leaded Strap Lead(Pb) Free PTC Devices**How to Select a Polymer PTC fuse:**

- (1) Determine the following operating parameters for the circuits:
 - (A) Normal Operating Current (I hold)
 - (B) Maximum Circuit Voltage (V max)
 - (C) Maximum Interrupt Current (I max)
 - (D) Normal Operating Temperature (min °C / max °C)
- (2) Select the device form factor and dimension suitable for the application:
 - Surface Mount Device (SMD Series)
 - Radial Leaded Device (RLD Series)
 - Axial Leaded Strap Device (STD, VTD, VLD, LTD, LRD Series)
 - Other Custom-designed Device (Disc/Chip)
- (3) Compare the maximum ratings for V max and I max of the PTC device with the circuit in application and make sure that the circuit's requirement does not exceed the device ratings.
- (4) Check that the PTC device's trip time (time-to-trip) will protect the circuit.
- (5) Verify that the circuit operating temperatures are within the PTC device's normal operating temperature range.
- (6) Verify the performance and suitability of the chosen PTC device in the application.

12/6/2006

LTD-Axial Leaded Strap Lead(Pb) Free PTC Devices

THERMAL DERATING CURVE FOR LTD LF SERIES



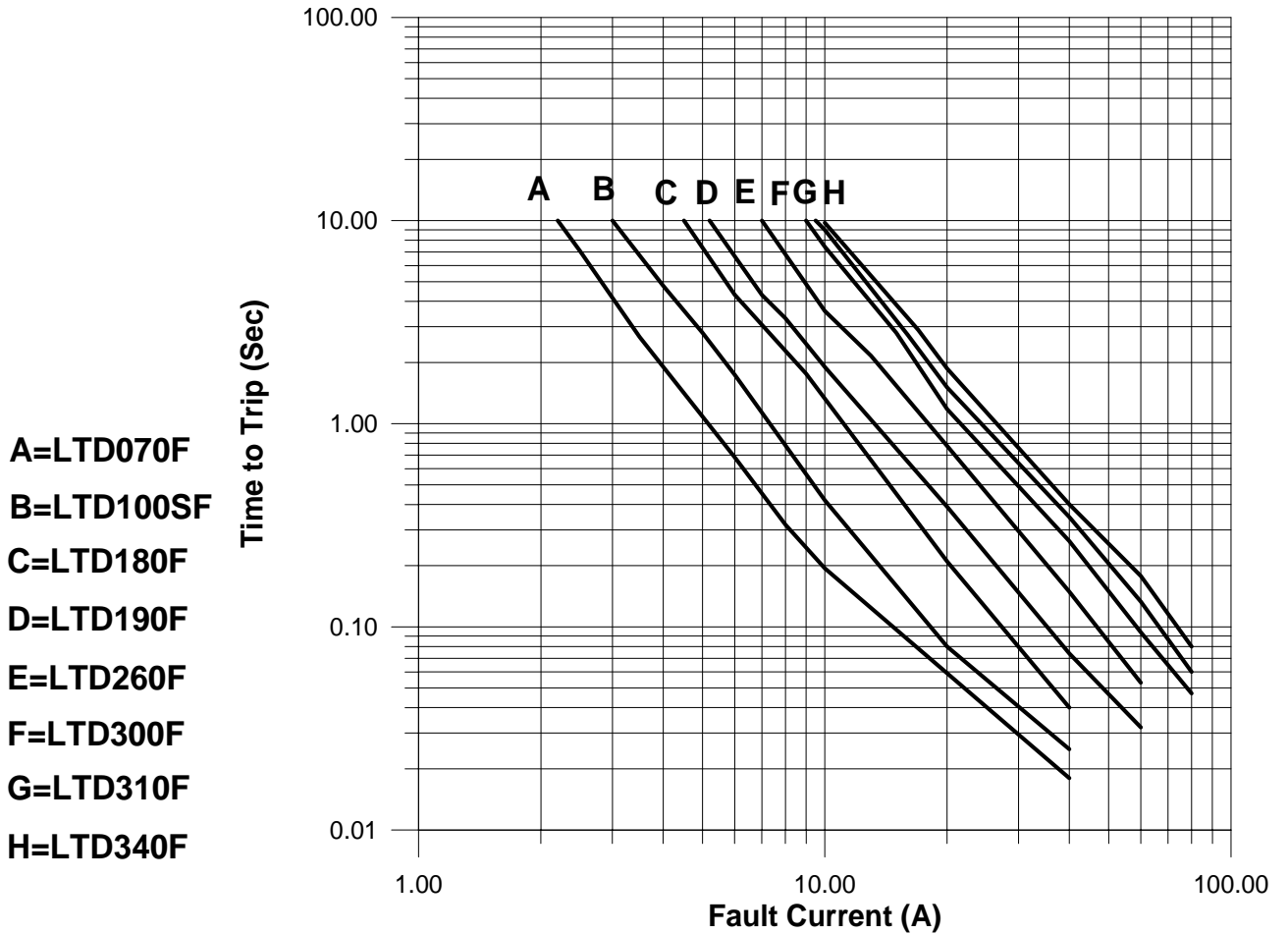
THERMAL DERATING CHART FOR LTD LF SERIES - I_{hold} (Amps)

Model	Ambient Operation Temperature								
	-40°C	-20°C	0°C	20°C	40°C	50°C	60°C	70°C	85°C
LTD070F	1.20	1.09	0.85	0.70	0.50	0.45	0.35	0.28	0.16
LTD070SF	1.20	1.09	0.85	0.70	0.50	0.45	0.35	0.28	0.16
LTD100F	1.86	1.60	1.40	1.00	0.80	0.70	0.60	0.44	0.23
LTD100SF	1.86	1.60	1.40	1.00	0.83	0.70	0.60	0.44	0.23
LTD100SSF	1.86	1.60	1.40	1.00	0.83	0.70	0.60	0.44	0.23
LTD180F	3.13	2.68	2.20	1.80	1.33	1.10	0.90	0.65	0.36
LTD180SF	3.13	2.68	2.20	1.80	1.33	1.10	0.90	0.65	0.36
LTD180SSF	3.13	2.68	2.20	1.80	1.33	1.10	0.90	0.65	0.36
LTD190F	3.32	2.86	2.40	1.90	1.48	1.25	1.10	0.79	0.43
LTD260F	4.30	3.72	3.10	2.60	1.98	1.69	1.40	1.11	0.60
LTD300F	5.10	4.40	3.70	3.00	2.30	1.95	1.60	1.25	0.69
LTD310F	5.36	4.58	3.70	3.10	2.36	2.01	1.70	1.30	0.71
LTD340F	5.52	4.79	4.00	3.40	2.60	2.24	1.90	1.51	0.78

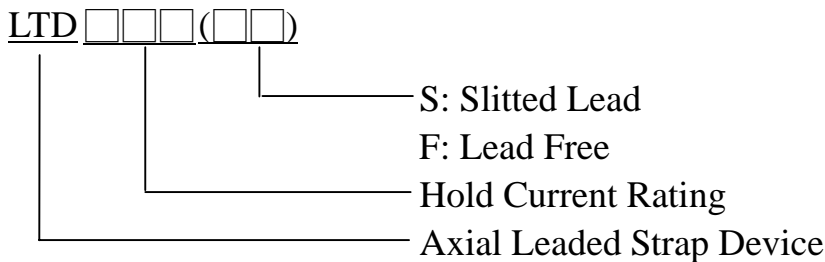
12/6/2006

LTD-Axial Leaded Strap Lead(Pb) Free PTC Devices

AVERAGE TIME-CURRENT CURVE FOR LTD LF SERIES



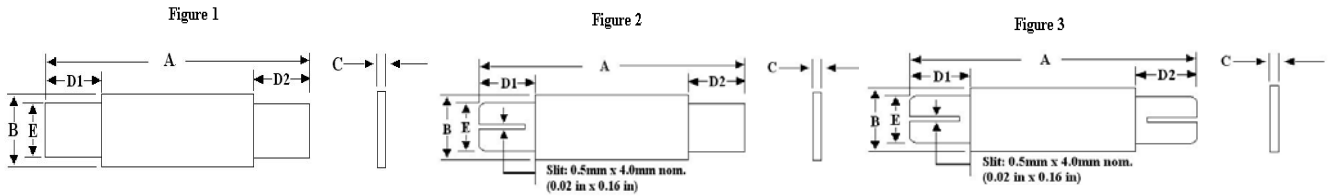
PART NUMBERING SYSTEM



12/6/2006



LTD-Axial Leaded Strap Lead(Pb) Free PTC Devices



PHYSICAL DIMENSIONS (mm)

Part Number	Fig.	A		B		C		D1	D2	E	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Min.	Max.
LTD070F	1	19.9	22.1	4.9	5.2	0.7	1.2	5.5	5.5	3.9	4.1
LTD070SF	2	19.9	22.1	4.9	5.2	0.7	1.2	5.5	5.5	3.9	4.1
LTD100F	1	20.9	23.1	4.9	5.2	0.6	1.0	4.1	4.1	3.9	4.1
LTD100SF	2	20.9	23.1	4.9	5.2	0.6	1.0	4.1	4.1	3.9	4.1
LTD100SSF	3	20.9	23.1	4.9	5.2	0.6	1.0	4.1	4.1	3.9	4.1
LTD180F	1	24.0	26.0	4.9	5.2	0.6	1.0	4.1	4.1	3.9	4.1
LTD180SF	2	24.0	26.0	4.9	5.2	0.6	1.0	4.1	4.1	3.9	4.1
LTD180SSF	3	24.0	26.0	4.9	5.2	0.6	1.0	4.1	4.1	3.9	4.1
LTD190F	1	21.3	23.4	10.2	11.0	0.5	1.0	5.0	5.0	4.8	5.4
LTD190SF	2	21.3	23.4	10.2	11.0	0.5	1.0	5.0	5.0	4.8	5.4
LTD260F	1	24.0	26.0	10.8	11.9	0.6	1.0	5.0	5.0	5.9	6.1
LTD300F	1	28.4	31.8	13.0	13.5	0.5	1.1	6.3	6.3	6.0	6.6
LTD310F	1	24.0	26.0	14.8	15.9	0.6	1.0	5.0	5.0	5.9	6.1
LTD340F	1	24.0	26.0	14.8	15.9	0.6	1.0	5.0	5.0	5.9	6.1

ENVIRONMENTAL SPECIFICATIONS

Operating/Storage Temperature	-40°C to +85°C	
Maximum Device Surface Temperature in Tripped State	120°C	
Passive Aging	+70°C, 1000 hours	±10% typical resistance change
Humidity Aging	+85°C, 85%R.H. 7days	±5% typical resistance change
Vibration	MIL-LTD-883C, Condition A	No change

PHYSICAL SPECIFICATIONS

Lead Material	0.13mm nominal thickness, quarter-hard nickel
Insulating Material	Polyester tape

©Specifications are subject to change without notice.

12/6/2006



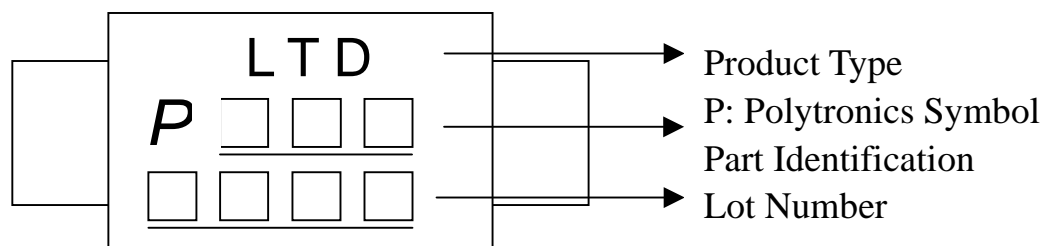
LTD-Axial Leaded Strap Lead(Pb) Free PTC Devices

PACKAGING INFORMATION

Product Description	Part I.D.	Bag Quantity(ea)	Standard Package(ea)
LTD070F	070F	500	10000
LTD070SF	070SF	500	10000
LTD100F	100F	500	10000
LTD100SF	100SF	500	10000
LTD100SSF	100SSF	500	10000
LTD180F	180F	500	10000
LTD180SF	180SF	500	10000
LTD180SSF	180SSF	500	10000
LTD190F	190F	500	10000
LTD190SF	190SF	500	10000
LTD260F	260F	500	10000
LTD300F	300F	500	10000
LTD310F	310F	500	10000
LTD340F	340F	500	10000

*All models are packaged in bulk.

PART MARKING SYSTEM



CROSS REFERENCE

Polytronics/ EVERFUSE™	Cross Reference	
	Raychem/ PolySwitch®	Bourns/ Multifuse®
LTD070F	LTP070F	MF-LS070
LTD070SF	LTP070SF	MF-LS070S
LTD100F	LTP100F	MF-LS100
LTD100SF	LTP100SF	MF-LS100S
LTD100SSF	LTP100SSF	N/A
LTD180F	LTP180F	MF-LS180
LTD180SF	LTP180SF	MF-LS180S
LTD180SSF	N/A	N/A
LTD190F	LTP190F	MF-LS190
LTD190SF	LTP190SF	MF-LS190S
LTD260F	LTP260F	MF-LS260
LTD300F	LTP300F	MF-LS300
LTD310F	LTP310F	N/A
LTD340F	LTP340F	MF-LS340

“EVERFUSE” is a registered trademark of Polytronics Technology Corp.

“Multifuse” is a registered trademark of Bourns , Inc.

“PolySwitch” is a registered trademark of Raychem Corporation.

© Specifications are subject to change without notice.

12/6/2006