

RLD 72P XF Series Devices

2009.10.07

- The Radial Leaded devices (RLD Series), a polymer-based Positive Temperature Coefficient (PTC) device to protect electrical circuits against over-current conditions with resettable feature, is fully compatible with current industrial standards.
- The Radial Leaded devices designed to provide different product series offer 72Vdc maximum voltage with a maximum 40A short circuit rating.
- Applications: The radial leaded product series is ideal for computers and peripherals, general electronics and can be applied to almost anywhere there is a low voltage power supply and a load to be protected.
- Agency Approval: UL/CSA File # E201431
TÜV Certificate # R50103284



RLD XF Series



ELECTRICAL CHARACTERISTICS

Part Number	I _{hold} (A)	I _{trip} (A)	V _{max} (Vdc)	I _{max} (A)	P _d ^{typ.} (W)	Maximum Time To Trip		Resistance		Agency Approval
						Current (A)	Time (Sec.)	R _{min} (Ω)	R _{1max} (Ω)	
RLD72P020XF	0.20	0.40	72	40	0.41	1.00	2.20	1.830	4.400	UL/CSA/TUV
RLD72P025XF	0.25	0.50	72	40	0.45	1.25	2.50	1.250	3.000	UL/CSA/TUV
RLD72P030XF	0.30	0.60	72	40	0.49	1.50	3.00	0.880	2.100	UL/CSA/TUV
RLD72P040XF	0.40	0.80	72	40	0.56	2.00	3.80	0.550	1.290	UL/CSA/TUV
RLD72P050XF	0.50	1.00	72	40	0.77	2.50	4.00	0.500	1.170	UL/CSA/TUV
RLD72P065XF	0.65	1.30	72	40	0.88	3.25	5.30	0.310	0.720	UL/CSA/TUV
RLD72P075XF	0.75	1.50	72	40	0.92	3.75	6.30	0.250	0.600	UL/CSA/TUV
RLD72P090XF	0.90	1.80	72	40	0.99	4.50	7.20	0.200	0.470	UL/CSA/TUV
RLD72P110XF	1.10	2.20	72	40	1.50	5.50	8.20	0.150	0.380	UL/CSA/TUV
RLD72P135XF	1.35	2.70	72	40	1.70	6.75	9.60	0.120	0.300	UL/CSA/TUV
RLD72P160XF	1.60	3.20	72	40	1.90	8.00	11.40	0.090	0.220	UL/CSA/TUV
RLD72P185XF	1.85	3.70	72	40	2.10	9.25	12.60	0.080	0.190	UL/CSA/TUV
RLD72P250XF	2.50	5.00	72	40	2.50	12.50	15.60	0.050	0.130	UL/CSA/TUV
RLD72P300XF	3.00	6.00	72	40	2.80	15.00	19.80	0.040	0.100	UL/CSA/TUV
RLD72P375XF	3.75	7.50	72	40	3.20	18.75	24.00	0.030	0.080	UL/CSA/TUV

Note: I_{hold} = Hold current: maximum current device will pass without tripping in 23°C still air.

I_{trip} = Trip current: minimum current at which the device will trip in 23°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 23°C still air.

R_{min} = Minimum resistance of device in initial (un-soldered) state.

R_{1max} = Maximum resistance of device at 23°C measured one hour after tripping.

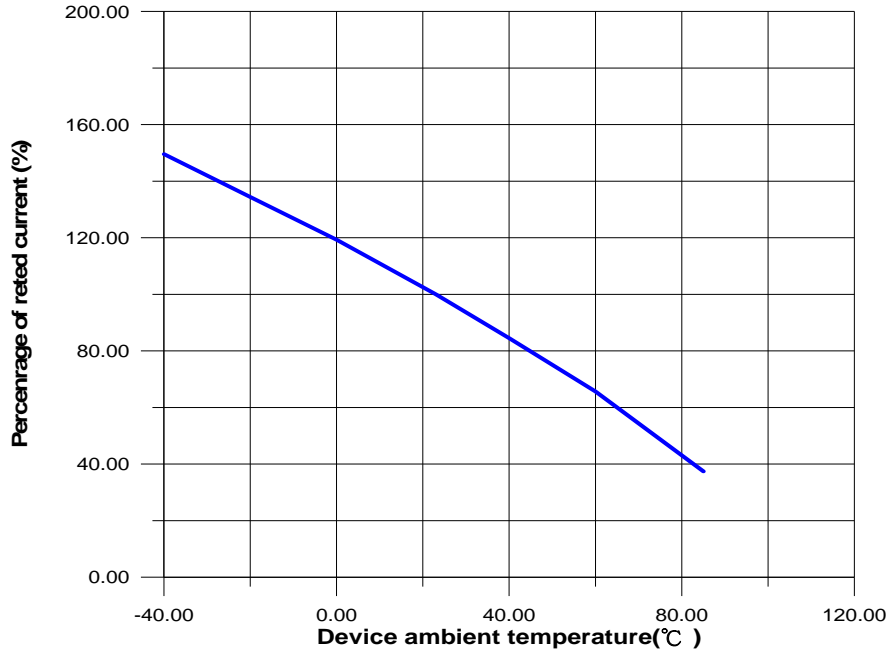
Caution: Operation beyond the specified rating may result in damage and possible arcing and flame.

Recognitions: UL, CSA, TUV recognized

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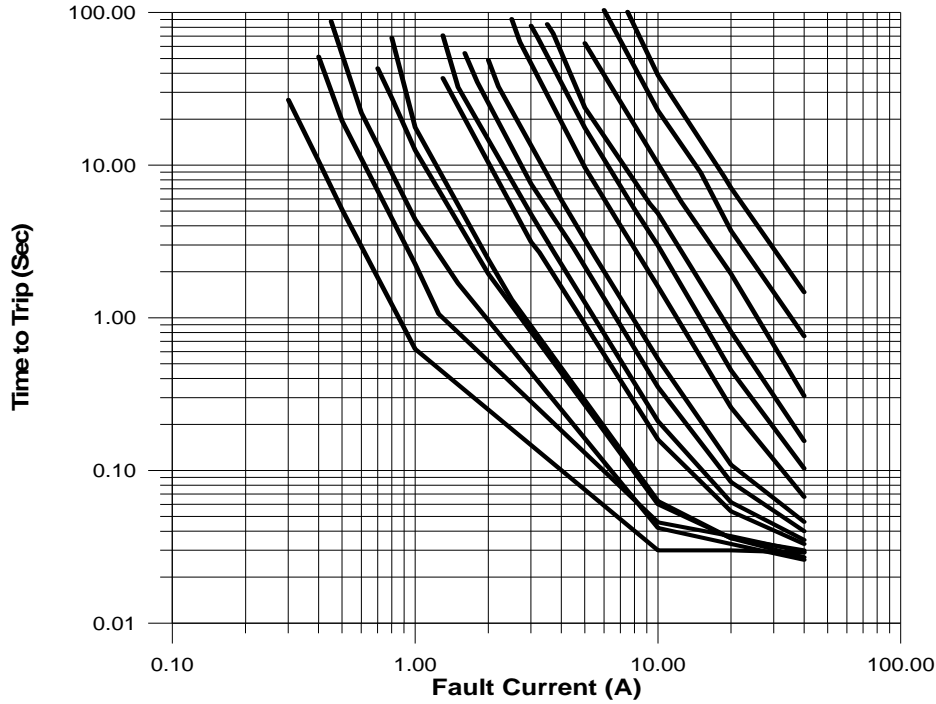
How to Select a Polymer PTC fuse:

- (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 Series)
 - High Voltage Radial Leaded Device (HVR)
 - 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.

THERMAL DERATING CURVE FOR RLD X SERIES

THERMAL DERATING CHART FOR RLD72V SERIES – I_{hold} (Amps)
(RECOMMENDED DATA)

Model	Ambient Operation Temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
RLD72P020XF	0.31	0.27	0.24	0.20	0.16	0.14	0.13	0.11	0.08
RLD72P025XF	0.39	0.34	0.30	0.25	0.20	0.18	0.16	0.14	0.10
RLD72P030XF	0.47	0.41	0.36	0.30	0.24	0.22	0.19	0.16	0.12
RLD72P040XF	0.62	0.54	0.48	0.40	0.32	0.29	0.25	0.22	0.16
RLD72P050XF	0.78	0.68	0.60	0.50	0.41	0.36	0.32	0.27	0.20
RLD72P065XF	1.01	0.88	0.77	0.65	0.53	0.47	0.41	0.35	0.26
RLD72P075XF	1.16	1.02	0.89	0.75	0.61	0.54	0.47	0.41	0.30
RLD72P090XF	1.40	1.22	1.07	0.90	0.73	0.65	0.57	0.49	0.36
RLD72P110XF	1.71	1.50	1.31	1.10	0.89	0.79	0.69	0.59	0.44
RLD72P135XF	2.09	1.84	1.61	1.35	1.09	0.97	0.85	0.73	0.54
RLD72P160XF	2.48	2.18	1.90	1.60	1.30	1.15	1.01	0.86	0.64
RLD72P185XF	2.87	2.52	2.20	1.85	1.50	1.33	1.17	1.00	0.74
RLD72P250XF	3.88	3.40	2.98	2.50	2.03	1.80	1.58	1.35	1.00
RLD72P300XF	4.65	4.08	3.57	3.00	2.43	2.16	1.89	1.62	1.20
RLD72P375XF	5.81	5.10	4.46	3.75	3.04	2.70	2.36	2.03	1.50

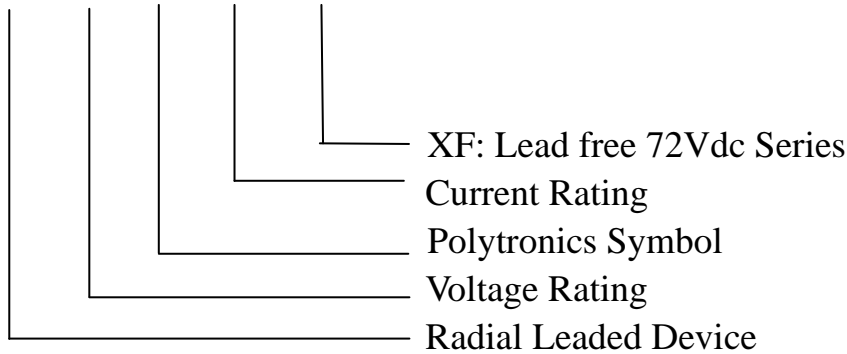
AVERAGE TIME-CURRENT CURVE FOR RLD X SERIES



- A = RLD72P020XF
- B = RLD72P025XF
- C = RLD72P030XF
- D = RLD72P040XF
- E = RLD72P050XF
- F = RLD72P065XF
- G = RLD72P075XF
- H = RLD72P090XF
- I = RLD72P110XF
- J = RLD72P135XF
- K = RLD72P160XF
- L = RLD72P185XF
- M = RLD72P250XF
- N = RLD72P300XF
- O = RLD72P375XF

PART NUMBERING SYSTEM

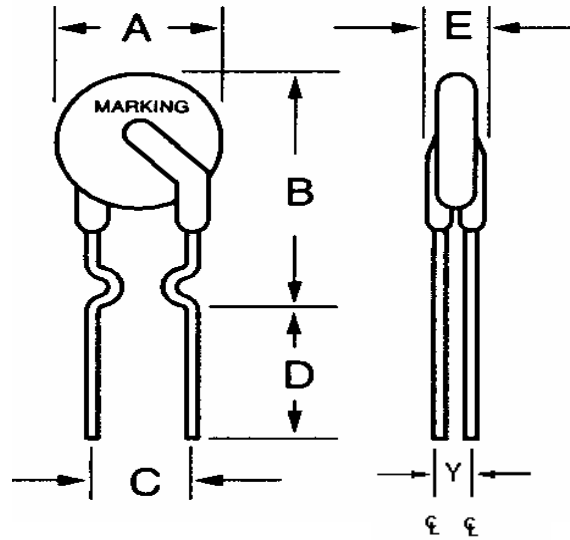
RLD P F



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RLD 72P XF Series Figure



PHYSICAL DIMENSIONS (mm)

Part Number	A (max.)	B (max.)	C (typ.)	D (min.)	E (max.)	Y (typ.)	Physical Characteristics Lead	Material
RLD72P020XF	7.4	11.7	5.1±0.7	7.6	3.1	1.2	0.51 dia.	Sn/CuFe
RLD72P025XF	7.4	12.7	5.1±0.7	7.6	3.1	1.2	0.51 dia.	Sn/CuFe
RLD72P030XF	7.4	12.7	5.1±0.7	7.6	3.1	1.2	0.51 dia.	Sn/CuFe
RLD72P040XF	7.6	13.5	5.1±0.7	7.6	3.1	1.2	0.51 dia.	Sn/CuFe
RLD72P050XF	7.9	13.7	5.1±0.7	7.6	3.1	1.2	0.51 dia.	Sn/Cu
RLD72P065XF	9.4	14.5	5.1±0.7	7.6	3.1	1.2	0.51 dia.	Sn/Cu
RLD72P075XF	10.2	15.2	5.1±0.7	7.6	3.1	1.2	0.51 dia.	Sn/Cu
RLD72P090XF	11.2	15.8	5.1±0.7	7.6	3.1	1.2	0.51 dia.	Sn/Cu
RLD72P110XF	12.8	17.5	5.1±0.7	7.6	3.1	1.4	0.81 dia.	Sn/Cu
RLD72P135XF	14.5	19.1	5.1±0.7	7.6	3.1	1.4	0.81 dia.	Sn/Cu
RLD72P160XF	16.3	20.8	5.1±0.7	7.6	3.1	1.4	0.81 dia.	Sn/Cu
RLD72P185XF	17.5	22.4	5.1±0.7	7.6	3.1	1.4	0.81 dia.	Sn/Cu
RLD72P250XF	20.8	25.4	10.2±1.0	7.6	3.1	1.4	0.81 dia.	Sn/Cu
RLD72P300XF	23.9	28.6	10.2±1.0	7.6	3.1	1.4	0.81 dia.	Sn/Cu
RLD72P375XF	27.2	31.8	10.2±1.0	7.6	3.1	1.4	0.81 dia.	Sn/Cu

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聚鼎科技股份有限公司 Polytronics Technology Corp.

新竹市科學工業園區工業東四路 24-1 號 24-1, Industry E.4th Rd. Science Park, Hsinchu, Taiwan. TEL:+886-3-5643931 FAX:+886-3-5644624

E-mail: sales@ptc.com.tw [Http://www.ptc.com.tw](http://www.ptc.com.tw)

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	+85°C to -40°C 10 times	±5% typical resistance change
Solvent Resistance	MIL-STD-202, Method 215F	No change

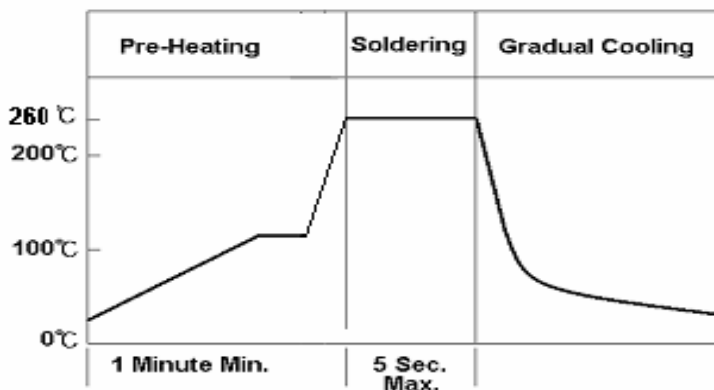
PHYSICAL SPECIFICATIONS

Lead Material	P020XF-P040XF: Tin-plated copper clad steel P050XF-P375XF: Tin-plated copper	
Soldering Characteristics	Solderability per MIL-STD-202, Method 208E	
Insulating Material	Cured, flame retardant epoxy polymer meets UL94V-0 requirements.	
Device Labeling	Marked with the letter "P", voltage, amperage rating, and lot number.	

WAVE SOLDERING INFORMATION

Pre-Heating Zone	Refer to the condition recommended by the flux manufacturer. Max. ramping rate should not exceed 4°C/Sec.
Soldering Zone	Max. solder temperature should not exceed 260°C
Cooling Zone	Cooling by natural convection in air.

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TAPE AND REEL SPECIFICATIONS

Product availability: RLD72P020XF~RLD72P300XF

Devices taped using EIA468-B/IEC286-2 standards. See table below and Figures 1 and 2 for details.

Dimension Description	EIA Mark	IEC Mark	Dimensions	
			Dim.(mm)	Tol.(mm)
Carrier tape width	W	W	18	-0.5/+1.0
Hold down tape width	W ₄	W ₀	11	min.
Top distance between tape edges	W ₆	W ₂	3	max.
Sprocket hole position	W ₅	W ₁	9	-0.5+0.75
Sprocket hole diameter*	D ₀	D ₀	4	-0.32/+0.2
Abscissa to plane(straight lead)	H	H	18.5	+3.0
Abscissa to plane(kinked lead)	H ₀	H ₀	16	+0.5
Abscissa to top P020XF-P090XF	H ₁	H ₁	32.2	max.
Abscissa to top P110XF-P300XF	H ₁		47.5	max.
Overall width without lead protrusion:P020XF-P090XF	C ₁		42.5	max.
Overall width without lead protrusion:P110XF-P300XF			57	
Overall width with lead protrusion:P020XF-P090XF	C ₂		43.2	max.
Overall width with lead protrusion:P110XF-P300XF			58	
Lead protrusion	L ₁	l ₁	1.0	max.
Protrusion of cut out	L	L	11	max.
Protrusion beyond hold-down tape	l ₂	l ₂	Not specified	
Sprocket hole pitch:P020XF-P090XF	P ₀	P ₀	12.7	+0.3
Sprocket hole pitch:P110XF-P300XF	P ₀	P ₀	25.4	+0.5
Pitch tolerance			20 consecutive.	+1
Device pitch:P020XF-P090XF			12.7	
Device pitch:P110XF-P300XF			25.4	
Tape thickness	t	t	0.9	max.
Tape thickness with splice	t ₁		2.0	max.
Splice sprocket hole alignment			0	+0.3
Body lateral deviation	Δh	Δh	0	+1.0
Body tape plane deviation	Δp	Δp	0	+1.3
Ordinate to adjacent component lead*:P020XF-P090XF	P ₁	P ₁	3.81	+0.7
Ordinate to adjacent component lead*:P110XF-P300XF			7.62	+0.7
Lead spacing:P020XF-P185XF	F	F	5.08	+0.8
Lead spacing:P250XF-P300XF	F	F	10.18	+0.8
Reel width P020XF-P065XF	w ₂	w	56	max.
Reel width P075XF-P300XF	w ₂	w	63.5	max.
Reel diameter	a	d	370	max.
Space between flanges less device*	w ₁		4.75	-3.25/+9.25
Arbor hole diameter	c	f	26	+12.0
Core diameter*	n	h	91	max.
Box			56/372/372	max.
Consecutive missing places			None	
Empty places per reel			0.1% max.	

* Differs from EIA specification



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E-mail: sales@ptc.com.tw [Http://www.ptc.com.tw](http://www.ptc.com.tw)

TAPE AND REEL SPECIFICATIONS

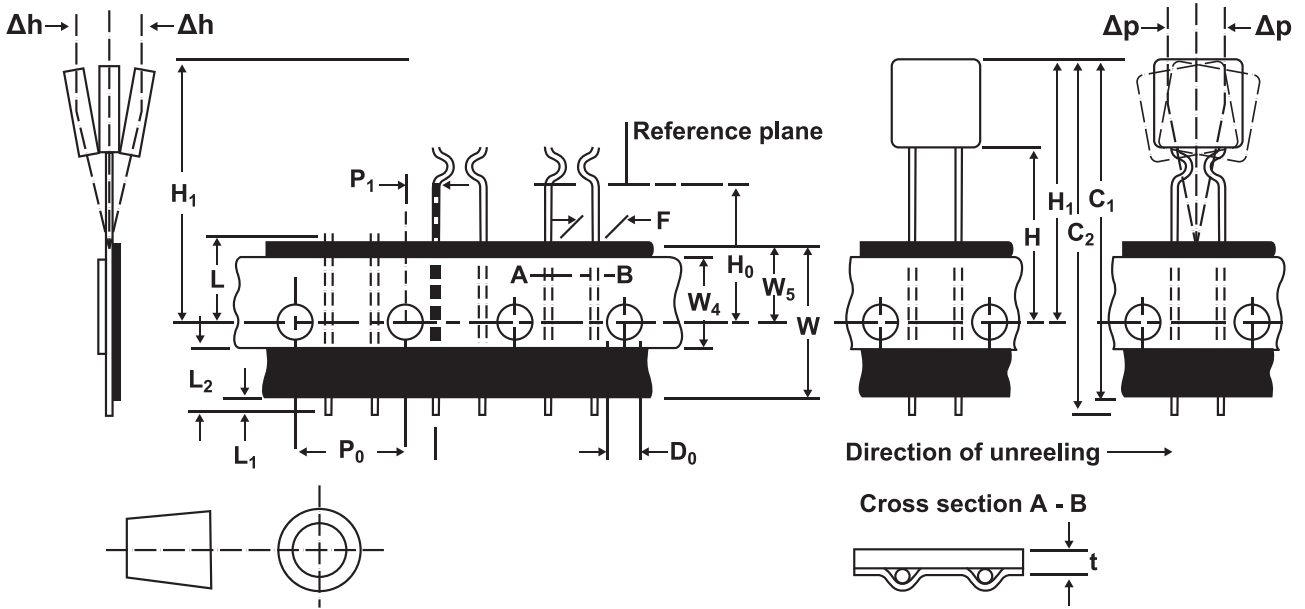


Figure 1

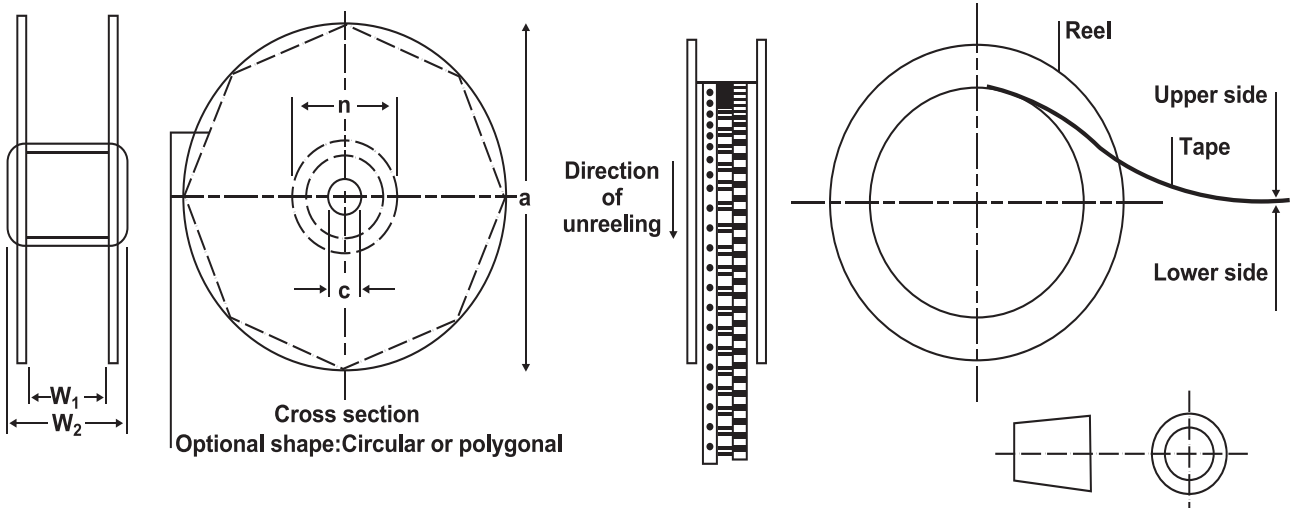


Figure 2

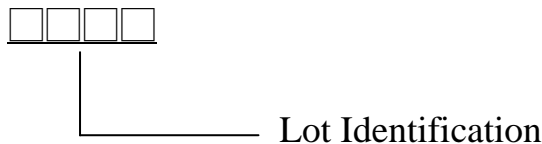
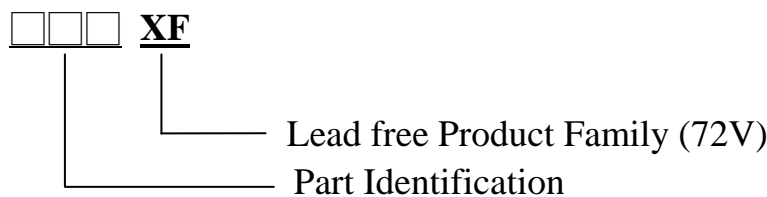
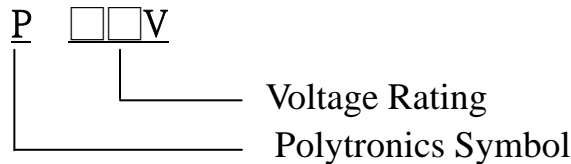
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PACKAGING INFORMATION

Product Description	Part I.D.	Bag Quantity	Reel Quantity	Ammopack Quantity
RLD72P020XF	020	500	2000	2000
RLD72P025XF	025	500	2000	2000
RLD72P030XF	030	500	2000	2000
RLD72P040XF	040	500	2000	2000
RLD72P050XF	050	500	2000	2000
RLD72P065XF	065	500	2000	2000
RLD72P075XF	075	500	2000	2000
RLD72P090XF	090	500	2000	2000
RLD72P110XF	110	500	1000	1000
RLD72P135XF	135	200	1000	1000
RLD72P160XF	160	200	1000	1000
RLD72P185XF	185	200	1000	1000
RLD72P250XF	250	200	1000	1000
RLD72P300XF	300	200	1000	1000
RLD72P375XF	375	100	N/A	N/A

PART MARKING SYSTEM



CROSS REFERENCE

Polytronics/ EVERFUSE™	Cross Reference	
	Raychem/ PolySwitch®	Bourns/ Multifuse®
RLD72P020XF	RXEF020	MF-R020
RLD72P025XF	RXEF025	MF-R025
RLD72P030XF	RXEF030	MF-R030
RLD72P040XF	RXEF040	MF-R040
RLD72P050XF	RXEF050	MF-R050
RLD72P065XF	RXEF065	MF-R065
RLD72P075XF	RXEF075	MF-R075
RLD72P090XF	RXEF090	MF-R090
RLD72P110XF	RXEF110	MF-RX110
RLD72P135XF	RXEF135	MF-RX135
RLD72P160XF	RXEF160	MF-RX160
RLD72P185XF	RXEF185	MF-RX185
RLD72P250XF	RXEF250	MF-RX250
RLD72P300XF	RXEF300	MF-RX300
RLD72P375XF	RXEF375	MF-RX375

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

“PolySwitch” is a registered trademark of Raychem Corporation.

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