

Radial Leaded PTC FRX Series

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-54151736
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)



✧ **RoHS Compliant**
(Lead Free) Available

Application:

Wide variety of electronic equipment

Product Features:

Low hold current, Solid state

Radial-leaded product ideal for up to 60V

Operation Current: 50mA ~ 3.75A

Maximum Voltage: 60V

Temperature Range: -40°C to 85°C

Agency Recognition: UL(E211981)

C-UL(E211981)

TÜV (R3-50004084)

Electrical Characteristics(23°C)

Part Number	Hold Current	Trip Current	Max.Time to Trip	Maximum Current	Rated Voltage	Typical Power	Resistance Tolerance	
	I _H , A	I _T , A	at 5xI _H , S	I _{MAX} , A	V _{MAX} , Vdc	P _d , W	R _{MIN}	R _{1MAX}
FRX005-60	0.05	0.10	5.0	40	60	0.26	7.30	20.0
FRX010-60	0.10	0.20	4.0	40	60	0.38	2.50	7.50
FRX017-60	0.17	0.34	3.0	40	60	0.48	2.00	7.00
FRX020-60	0.20	0.40	2.2	40	60	0.41	1.83	4.40
FRX025-60	0.25	0.50	2.5	40	60	0.45	1.25	3.00
FRX030-60	0.30	0.60	3.0	40	60	0.49	0.88	2.10
FRX040-60	0.40	0.80	3.8	40	60	0.56	0.55	1.29
FRX050-60	0.50	1.00	4.0	40	60	0.77	0.50	1.17
FRX065-60	0.65	1.30	5.3	40	60	0.88	0.31	0.72
FRX075-60	0.75	1.50	6.3	40	60	0.92	0.25	0.60
FRX090-60	0.90	1.80	7.2	40	60	0.99	0.20	0.47
FRX110-60	1.10	2.20	8.2	40	60	1.50	0.15	0.38
FRX135-60	1.35	2.70	9.6	40	60	1.70	0.12	0.30
FRX160-60	1.60	3.20	11.4	40	60	1.90	0.09	0.22
FRX185-60	1.85	3.70	12.6	40	60	2.10	0.08	0.19
FRX250-60	2.50	5.00	15.6	40	60	2.50	0.05	0.13
FRX300-60	3.00	6.00	19.8	40	60	2.80	0.04	0.10
FRX375-60	3.75	7.50	24.0	40	60	3.20	0.03	0.08

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at its rated current.

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V max).

P_d=Typical power dissipated from device when in the tripped state in 23°C still air environment.

R_{MIN}=Minimum device resistance at 23°C.

R_{1MAX}=Maximum device resistance at 23°C, 1 hour after tripping .

Physical specifications:

Lead material: FRX005~FRX090 Tin plated copper, 24 AWG.

FRX110~FRX375 Tin plated copper, 20 AWG.

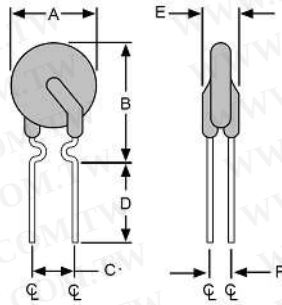
Soldering characteristics: MIL-STD-202, Method 208E.

Insulating coating:Flame retardant epoxy, meet UL-94V-0 requirement.

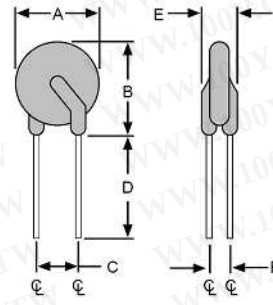
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FRX Product Dimensions (Millimeters)



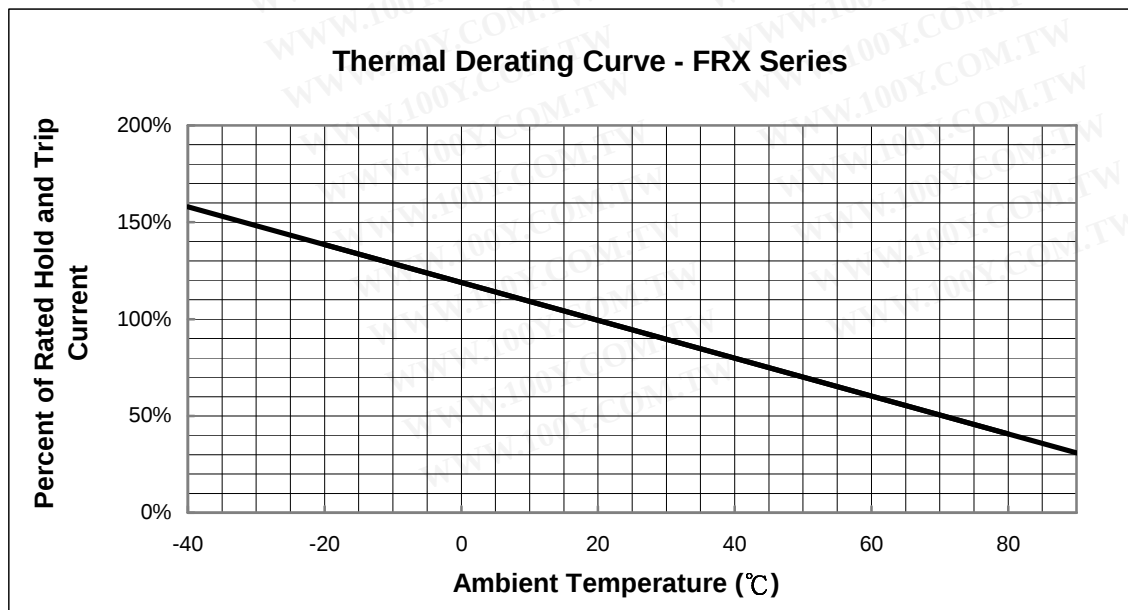
FRX 005-60 ~ FRX 090-60
 Lead Size: 24AWG,
 Φ 0.51 mm Diameter



FRX FRX 110-60 ~ FRX 375-60
 Lead Size: 20AWG,
 Φ 0.81 mm Diameter

Part Number	A	B	C	D	E	F
	Maximum	Maximum	Typical	Minimum	Maximum	Typical
FRX005-60	7.4	12.7	5.1	7.6	3.1	1.1
FRX010-60	7.4	12.7	5.1	7.6	3.1	1.1
FRX017-60	7.4	12.7	5.1	7.6	3.1	1.1
FRX020-60	7.4	12.7	5.1	7.6	3.1	1.1
FRX025-60	7.4	12.7	5.1	7.6	3.1	1.1
FRX030-60	7.4	13.0	5.1	7.6	3.1	1.1
FRX040-60	7.6	13.5	5.1	7.6	3.1	1.1
FRX050-60	7.9	13.7	5.1	7.6	3.1	1.1
FRX065-60	9.7	14.5	5.1	7.6	3.1	1.1
FRX075-60	10.4	15.2	5.1	7.6	3.1	1.1
FRX090-60	11.7	15.8	5.1	7.6	3.1	1.1
FRX110-60	13.0	18.0	5.1	7.6	3.1	1.4
FRX135-60	14.5	19.6	5.1	7.6	3.1	1.4
FRX160-60	16.3	21.3	5.1	7.6	3.1	1.4
FRX185-60	17.8	22.9	5.1	7.6	3.1	1.4
FRX250-60	21.3	26.4	10.2	7.6	3.1	1.4
FRX300-60	24.9	30.0	10.2	7.6	3.1	1.4
FRX375-60	28.5	33.5	10.2	7.6	3.1	1.4

Thermal Derating Curve



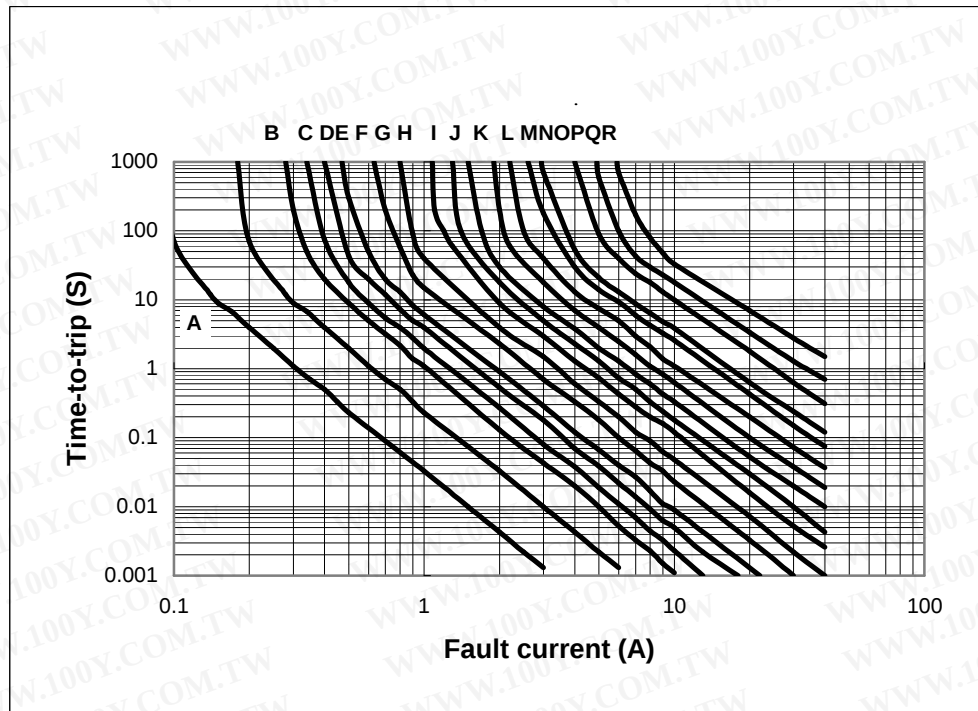
NOTE : All Specification subject to change without notice.

Radial Leaded PTC FRX Series

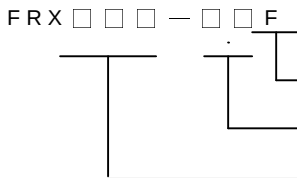
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Typical Time-To-Trip at 23°C

A= FRX005-60
B = FRX010-60
C = FRX017-60
D = FRX020-60
E = FRX025-60
F = FRX030-60
G = FRX040-60
H = FRX050-60
I = FRX065-60
J = FRX075-60
K= FRX090-60
L = FRX110-60
M = FRX135-60
N = FRX160-60
O = FRX185-60
P = FRX250-60
Q = FRX300-60
R = FRX375-60



Part Numbering System

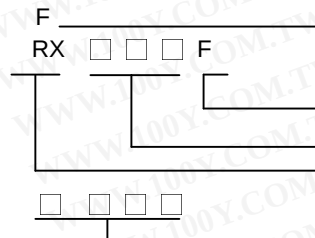


RoHS Compliant/
Lead Free
Voltage Rating
Current Rating

Part Marking System



Example



Fuzetec Logo
RoHS Compliant/
Lead Free
Part Identification
Product Family
Date Code/Lot

Standard Package

P/N	Pcs /Bag	Reel/Tape
FRX005-60	500	3K
FRX010-60	500	3K
FRX017-60	500	3K
FRX020-60	500	3K
FRX025-60	500	3K
FRX030-60	500	3K
FRX040-60	500	3K
FRX050-60	500	3K
FRX065-60	300	3K

P/N	Pcs /Bag	Reel/Tape
FRX075-60	300	3K
FRX090-60	300	3K
FRX110-60	300	1.5K
FRX135-60	200	1.5K
FRX160-60	200	1.5K
FRX185-60	200	1.5K
FRX250-60	100	-----
FRX300-60	100	-----
FRX375-60	100	-----

Warning:



- Operation beyond the specified maximum ratings or improper use may result in damage and possible electrical arcing and/or flame.
- PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.
- Avoid contact of PPTC device with chemical solvent. Prolonged contact will damage the device performance.

Radial Leaded PTC FRX 90V Series

※ RoHS Compliant
(Lead Free) Available

Electrical Characteristics (23°C)



Application:

Telecom & wide variety of electronic equipment

Product Features:

Low hold current, Solid state, Radial leaded product ideal for up to 90V

Operation Current: 100mA~3.75A

Maximum Voltage: Up to 90V

Temperature Range: -40°C to 85°C

Agency Recognition: UL (E211981)

C-UL (E211981)

TÜV (R50004084)

Part Number	Hold Current	Trip Current	Max.Time to Trip	Maximum Current	Rated Voltage	Typical Power	Resistance Tolerance	
	I _H , A	I _T , A	at 5xI _H , S	I _{MAX} , A	V _{MAX} , Vdc	P _d , W	R _{MIN}	R _{1MAX}
FRX010-90	0.10	0.20	4.0	40	72/90	0.38	2.50	7.50
FRX015-90	0.15	0.35	10.0	40	72/90	0.70	2.40	7.00
FRX017-90	0.17	0.34	3.0	40	72/90	0.48	2.00	5.00
FRX020-90	0.20	0.40	2.2	40	72/90	0.41	1.83	4.40
FRX025-90	0.25	0.50	2.5	40	72/90	0.45	1.25	3.00
FRX030-90	0.30	0.60	3.0	40	72/90	0.49	0.88	2.10
FRX035-90	0.35	0.75	10.0	40	72/90	1.30	0.70	2.50
FRX040-90	0.40	0.80	3.8	40	72/90	0.56	0.55	1.29
FRX050-90	0.50	1.00	4.0	40	72/90	0.77	0.50	1.17
FRX055-90	0.55	1.20	10.0	40	72/90	1.50	0.40	1.50
FRX065-90	0.65	1.30	5.3	40	72/90	0.88	0.31	0.72
FRX075-90	0.75	1.50	6.3	40	72/90	0.92	0.25	0.60
FRX090-90	0.90	1.80	7.2	40	72/90	0.99	0.20	0.47
FRX110-90	1.10	2.20	8.2	40	72/90	1.50	0.15	0.38
FRX135-90	1.35	2.70	9.6	40	72/90	1.70	0.12	0.30
FRX160-90	1.60	3.20	11.4	40	72/90	1.90	0.09	0.22
FRX185-90	1.85	3.70	12.6	40	72/90	2.10	0.08	0.19
FRX250-90	2.50	5.00	15.6	40	72/90	2.50	0.05	0.13
FRX300-90	3.00	6.00	19.8	40	72/90	2.80	0.04	0.10
FRX375-90	3.75	7.50	24.0	40	72/90	3.20	0.03	0.08

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.

I_T=Trip current-minimum current at which the device will always trip at 23°C still air.

V_{MAX}=Maximum voltage device can withstand without damage at its rated current.

I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V_{MAX}).

P_d=Typical power dissipated from device when in tripped state in 23°C still air environment.

R_{MIN}=Minimum device resistance at 23°C.

R_{1MAX}=Maximum device resistance at 23°C, 1 hour after tripping.

Physical specifications:

Lead material: FRX010~FRX090 Tin plated copper, 24 AWG.

FRX110~FRX375 Tin plated copper, 20 AWG.

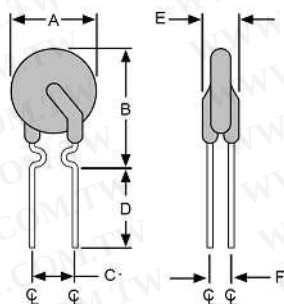
Soldering characteristics: MIL-STD-202, Method 208E.

Insulating coating:Flame retardant epoxy, meets UL-94V-0 requirement.

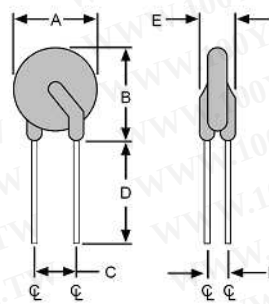
Radial Leaded PTC FRX 90V Series

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FRX90V Production Dimensions (millimeter)



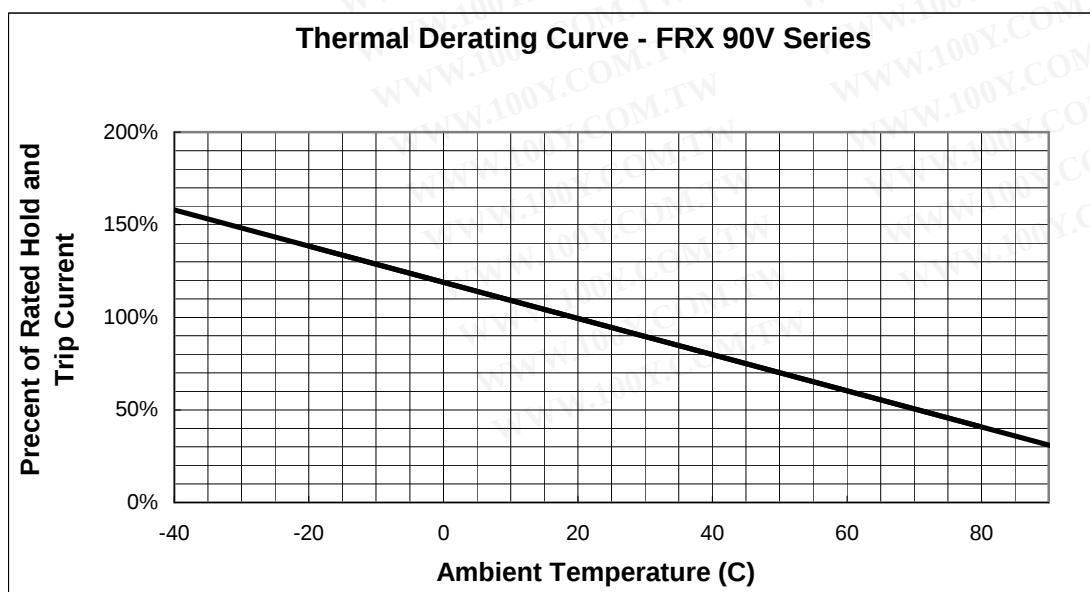
FRX 010-90 ~ FRX 090-90
Lead Size : 24AWG
Φ 0.51 mm Diameter



FRX 110-90 ~ FRX 375-90
Lead Size : 20AWG
Φ 0.81 mm Diameter

Part Number	A Maximum	B Maximum	C Typical	D Minimum	E Maximum	F Typical
FRX010-90	7.4	12.7	5.1	7.6	3.1	1.1
FRX015-90	7.4	12.7	5.1	7.6	3.1	1.1
FRX017-90	7.4	12.7	5.1	7.6	3.1	1.1
FRX020-90	7.4	12.7	5.1	7.6	3.1	1.1
FRX025-90	7.4	12.7	5.1	7.6	3.1	1.1
FRX030-90	7.4	13.0	5.1	7.6	3.1	1.1
FRX035-90	7.4	12.7	5.1	7.6	3.1	1.1
FRX040-90	7.6	13.5	5.1	7.6	3.1	1.1
FRX050-90	7.9	13.7	5.1	7.6	3.1	1.1
FRX055-90	9.7	14.0	5.1	7.6	3.1	1.1
FRX065-90	9.7	14.5	5.1	7.6	3.1	1.1
FRX075-90	10.4	15.2	5.1	7.6	3.1	1.1
FRX090-90	11.7	15.8	5.1	7.6	3.1	1.1
FRX110-90	13.0	18.0	5.1	7.6	3.1	1.4
FRX135-90	14.5	19.6	5.1	7.6	3.1	1.4
FRX160-90	16.3	21.3	5.1	7.6	3.1	1.4
FRX185-90	17.8	22.9	5.1	7.6	3.1	1.4
FRX250-90	21.3	26.4	10.2	7.6	3.1	1.4
FRX300-90	24.9	30.0	10.2	7.6	3.1	1.4
FRX375-90	28.5	33.5	10.2	7.6	3.1	1.4

Thermal Derating Curve



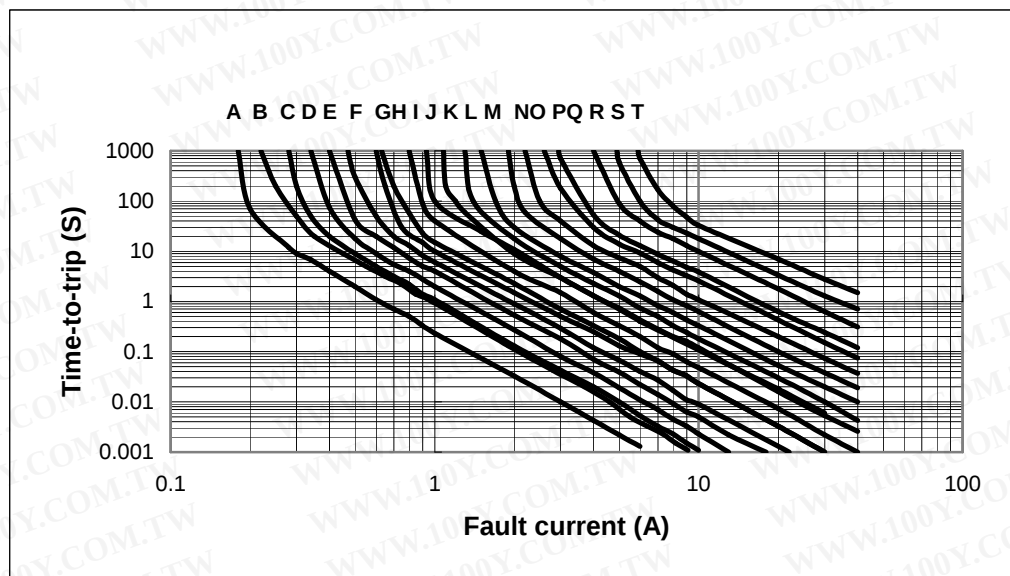
NOTE : All Specification subject to change without notice.

Radial Leaded PTC

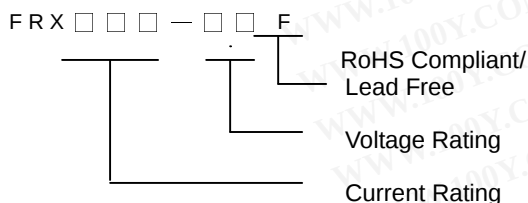
FRX 90V Series

Typical Time-To-Trip at 23°C

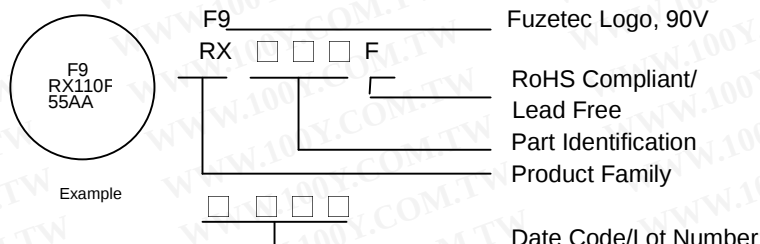
A = FRX010-90
 B = FRX015-90
 C = FRX017-90
 D = FRX020-90
 E = FRX025-90
 F = FRX030-90
 G = FRX035-90
 H = FRX040-90
 I = FRX050-90
 J = FRX055-90
 K = FRX065-90
 L = FRX070-90
 M = FRX090-90
 N = FRX110-90
 O = FRX135-90
 P = FRX160-90
 Q = FRX185-90
 R = FRX250-90
 S = FRX300-90
 T = FRX375-90



Part Numbering System



Part Marking System



Standard Package

P/N	Pcs /Bag	Reel/Tape
FRX010-90	500	3K
FRX015-90	500	3K
FRX017-90	500	3K
FRX020-90	500	3K
FRX025-90	500	3K
FRX030-90	500	3K
FRX035-90	500	3K
FRX040-90	500	3K
FRX050-90	500	3K
FRX055-90	500	3K

P/N	Pcs /Bag	Reel/Tape
FRX065-90	300	3K
FRX075-90	300	3K
FRX090-90	300	3K
FRX110-90	200	1.5K
FRX135-90	200	1.5K
FRX160-90	200	1.5K
FRX185-90	200	1.5K
FRX250-90	100	-----
FRX300-90	100	-----
FRX375-90	100	-----

Warning:



- Operation beyond the specified maximum ratings or improper use may result in damage and possible electrical arcing and/or flame.
- PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.
- Avoid contact of PPTC device with chemical solvent. Prolonged contact will damage the device performance.