



Radial Leaded PTC Resettable Fuse : FRX90V Series

1. Summary

- (a) **RoHS Compliant (Lead Free) Product**
- (b) **Applications : Telecom and wide variety of electronic equipment.**
- (c) **Product Features : Low hold current, Solid state, Radial leaded product ideal for up to 90V**
- (d) **Operation Current : 100mA~3.75A**
- (e) **Maximum Voltage : Up to 90V**
- (f) **Temperature Range : -40°C to 85°C**

2. Agency Recognition

UL : E211981
 C-UL: E211981
 TÜV: R 50004084

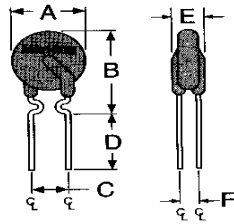
3. Electrical Characteristics (23°C)

| Part Number | Hold Current I_H, A | Trip Current I_T, A | Max. Time to Trip at 5x I_H | Maximum Current I_{MAX}, A | Rated Voltage V_{MAX}, Vdc | Typical Power P_d, W | Resistance Tolerance | |
|-------------|--------------------------|--------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------|----------------------|--------------------|
| | | | | | | | R_{MIN} ohms | R_{1MAX} ohms |
| FRX010-90F | 0.10 | 0.20 | 4.0 | 40 | 72/90 | 0.38 | 2.50 | 7.50 |
| FRX015-90F | 0.15 | 0.35 | 10.0 | 40 | 72/90 | 0.70 | 2.40 | 7.00 |
| FRX017-90F | 0.17 | 0.34 | 3.0 | 40 | 72/90 | 0.48 | 2.00 | 8.00 |
| FRX020-90F | 0.20 | 0.40 | 2.2 | 40 | 72/90 | 0.41 | 1.83 | 4.40 |
| FRX025-90F | 0.25 | 0.50 | 2.5 | 40 | 72/90 | 0.45 | 1.25 | 3.00 |
| FRX030-90F | 0.30 | 0.60 | 3.0 | 40 | 72/90 | 0.49 | 0.88 | 2.10 |
| FRX035-90F | 0.35 | 0.75 | 10.0 | 40 | 72/90 | 1.30 | 0.70 | 2.50 |
| FRX040-90F | 0.40 | 0.80 | 3.8 | 40 | 72/90 | 0.56 | 0.55 | 1.29 |
| FRX050-90F | 0.50 | 1.00 | 4.0 | 40 | 72/90 | 0.77 | 0.50 | 1.17 |
| FRX055-90F | 0.55 | 1.20 | 10.0 | 40 | 72/90 | 1.50 | 0.40 | 1.50 |
| FRX065-90F | 0.65 | 1.30 | 5.3 | 40 | 72/90 | 0.88 | 0.31 | 0.72 |
| FRX075-90F | 0.75 | 1.50 | 6.3 | 40 | 72/90 | 0.92 | 0.25 | 0.60 |
| FRX090-90F | 0.90 | 1.80 | 7.2 | 40 | 72/90 | 0.99 | 0.20 | 0.47 |
| FRX110-90F | 1.10 | 2.20 | 8.2 | 40 | 72/90 | 1.50 | 0.15 | 0.38 |
| FRX135-90F | 1.35 | 2.70 | 9.6 | 40 | 72/90 | 1.70 | 0.12 | 0.30 |
| FRX160-90F | 1.60 | 3.20 | 11.4 | 40 | 72/90 | 1.90 | 0.09 | 0.22 |
| FRX185-90F | 1.85 | 3.70 | 12.6 | 40 | 72/90 | 2.10 | 0.08 | 0.19 |
| FRX250-90F | 2.50 | 5.00 | 15.6 | 40 | 72/90 | 2.50 | 0.05 | 0.13 |
| FRX300-90F | 3.00 | 6.00 | 19.8 | 40 | 72/90 | 2.80 | 0.04 | 0.10 |
| FRX375-90F | 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: FRX010-90F~FRX090-90F Tin plated copper, 24 AWG.
 FRX110-90F~FRX375-90F Tin plated copper, 20 AWG.
 Soldering characteristics:MIL-STD-202, Method 208E.
 Insulating coating:Flame retardant epoxy, meets UL-94V-0 requirement.

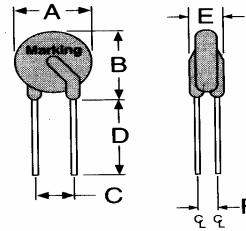
NOTE : Specification subject to change without notice.

4. Production Dimensions (millimeter)



FRX 010-90F ~ FRX 090-90F

Lead Size : 24AWG
 Φ 0.51 mm Diameter

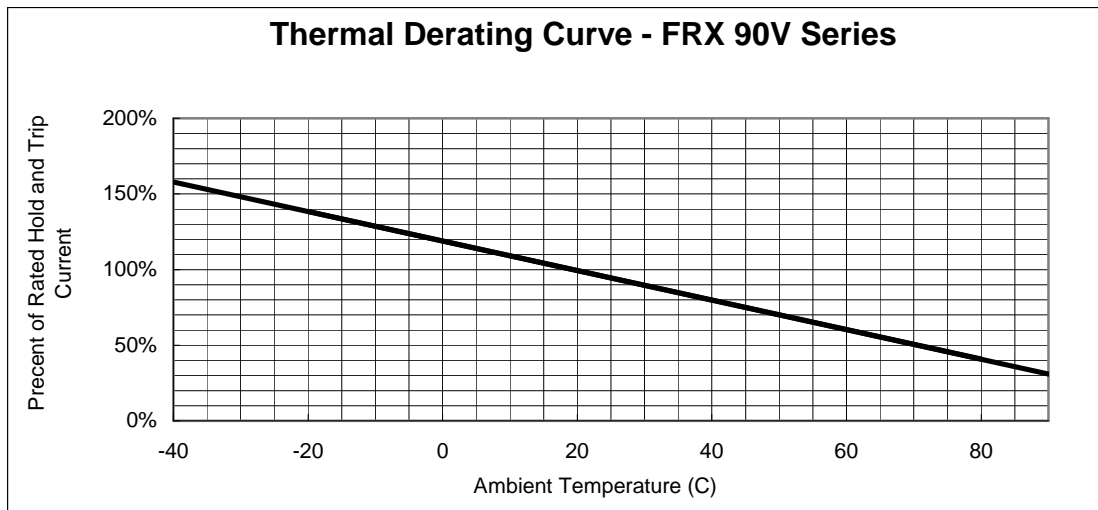


FRX 110-90F ~ FRX 375-90F

Lead Size : 20AWG
 Φ 0.81 mm Diameter

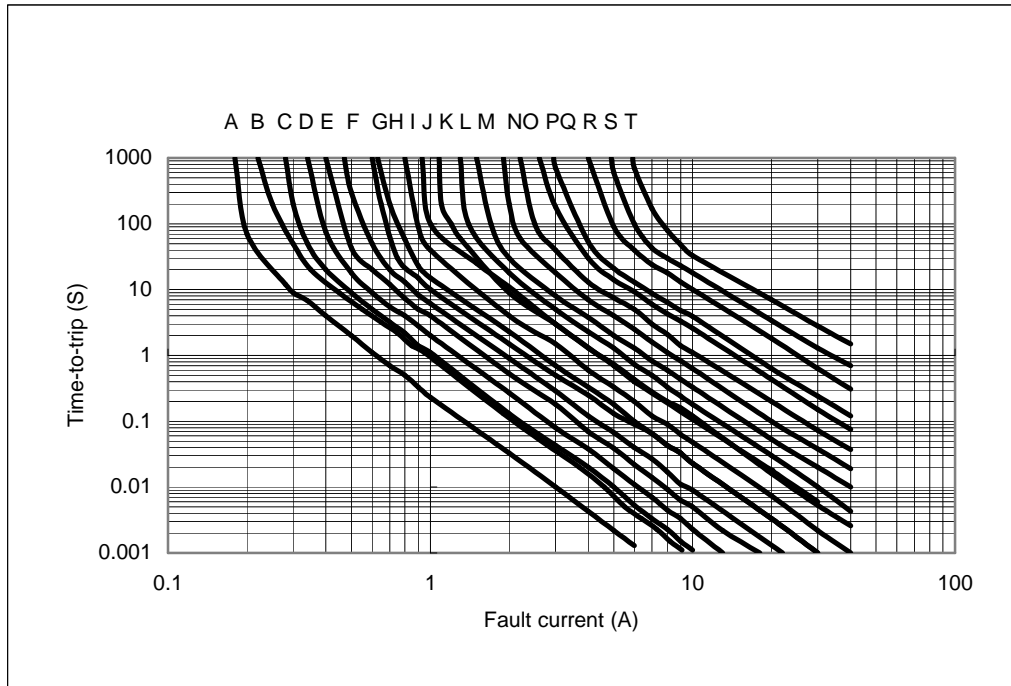
| Part Number | A | B | C | D | E | F |
|-------------|---------|---------|---------|---------|---------|---------|
| | Maximum | Maximum | Typical | Minimum | Maximum | Typical |
| FRX010-90F | 7.4 | 12.7 | 5.1 | 7.6 | 3.1 | 1.1 |
| FRX015-90F | 7.4 | 12.7 | 5.1 | 7.6 | 3.1 | 1.1 |
| FRX017-90F | 7.4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

5. Thermal Derating Curve



6. Typical Time-To-Trip at 23°C

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



7. Material Specification

Lead material : FRX010-90F~FRX090-90F Tin plated copper, 24 AWG.

FRX110-90F~FRX375-90F Tin plated copper, 20 AWG.

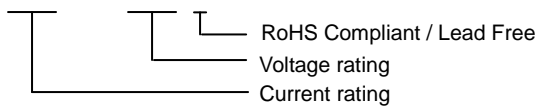
Soldering characteristics: MIL-STD-202, Method 208E.

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

8. Part Numbering and Marking System

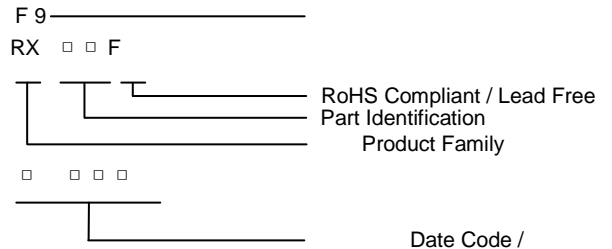
Part Numbering System

FRX □ □ □ - □ □ F



Example

Part Marking System



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.

NOTE : Specification subject to change without notice.