Radial Leaded PTC Resettable Fuse : FRX Series

1. Summary

(a) **RoHS Compliant (Lead Free) Product**
(b) **Applications : Wide variety of electronic equipment**
(c) **Product Features : Low hold current, Solid state, Radial leaded product ideal for up to 60V**
(d) **Operation Current : 50mA~3.75A**
(e) **Maximum Voltage : 60V**
(f) **Temperature Range : -40℃ to 85℃**

2. Agency Recognition

UL : File No. E211981
C-UL: File No. E211981
TÜV: File No. R 50004084

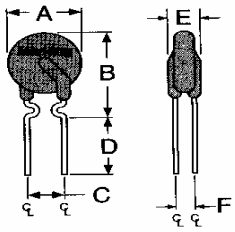
3. Electrical Characteristics (23℃)

Part Number	Hold Current	Trip Current	Max.Time to Trip	Maximum Current	Rated Voltage	Typical Power	Resistance Tolerance	
							R_{MIN}	$R1_{MAX}$
	I_H,A	I_T,A	at 5xI_H	I_{MAX},A	V_{MAX},V_{DC}	Pd, W	ohms	ohms
FRX005-60F	0.05	0.10	5.0	40	60	0.26	7.30	20.0
FRX010-60F	0.10	0.20	4.0	40	60	0.38	2.50	7.50
FRX017-60F	0.17	0.34	3.0	40	60	0.48	2.00	8.00
FRX020-60F	0.20	0.40	2.2	40	60	0.41	1.83	4.40
FRX025-60F	0.25	0.50	2.5	40	60	0.45	1.25	3.00
FRX030-60F	0.30	0.60	3.0	40	60	0.49	0.88	2.10
FRX040-60F	0.40	0.80	3.8	40	60	0.56	0.55	1.29
FRX050-60F	0.50	1.00	4.0	40	60	0.77	0.50	1.17
FRX065-60F	0.65	1.30	5.3	40	60	0.88	0.31	0.72
FRX075-60F	0.75	1.50	6.3	40	60	0.92	0.25	0.60
FRX090-60F	0.90	1.80	7.2	40	60	0.99	0.20	0.47
FRX110-60F	1.10	2.20	8.2	40	60	1.50	0.15	0.38
FRX135-60F	1.35	2.70	9.6	40	60	1.70	0.12	0.30
FRX160-60F	1.60	3.20	11.4	40	60	1.90	0.09	0.22
FRX185-60F	1.85	3.70	12.6	40	60	2.10	0.08	0.19
FRX250-60F	2.50	5.00	15.6	40	60	2.50	0.05	0.13
FRX300-60F	3.00	6.00	19.8	40	60	2.80	0.04	0.10
FRX375-60F	3.75	7.50	24.0	40	60	3.20	0.03	0.08

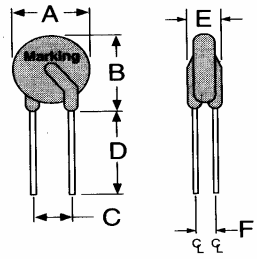
I_H=Hold current-maximum current at which the device will not trip at 23℃ still air.
I_T=Trip current-minimum current at which the device will always trip at 23℃ still air.
V_{MAX}=Maximum voltage device can withstand without damage at its rated current.
I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V_{MAX}).
Pd=Typical power dissipated from device when in tripped state in 23℃ still air environment.
R_{MIN}=Minimum device resistance at 23℃.
$R1_{MAX}$=Maximum device resistance at 23℃, 1 hour after tripping .
Physical specifications:
Lead material: FRX010-60F~FRX090-60F Tin plated copper, 24 AWG.
FRX110-60F~FRX375-60F 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)



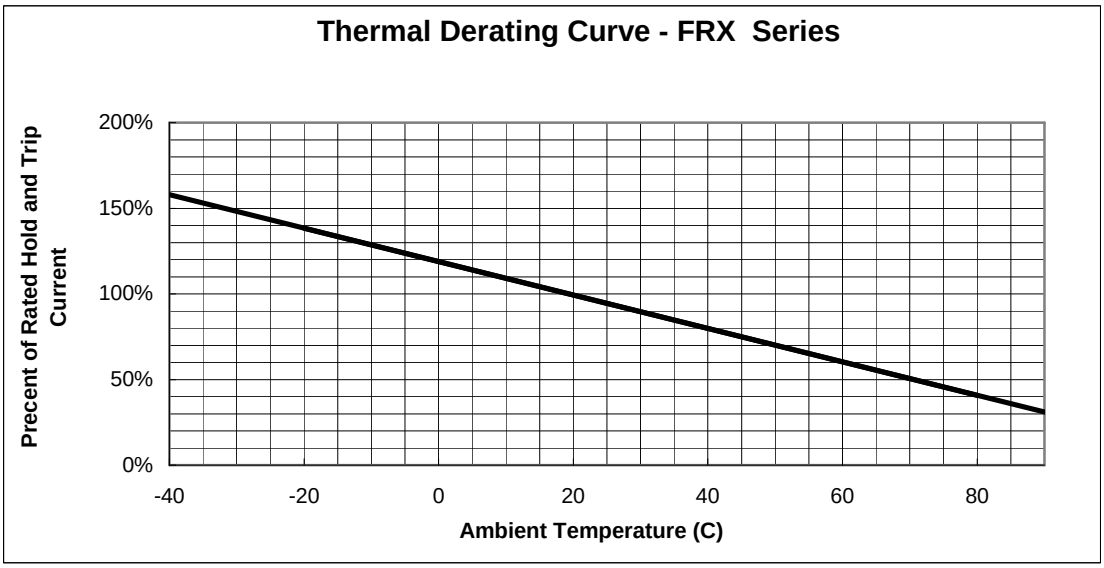
FRX 005-60F ~ FRX 090-60F
Lead Size : 24AWG
Φ 0.51 mm Diameter



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

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

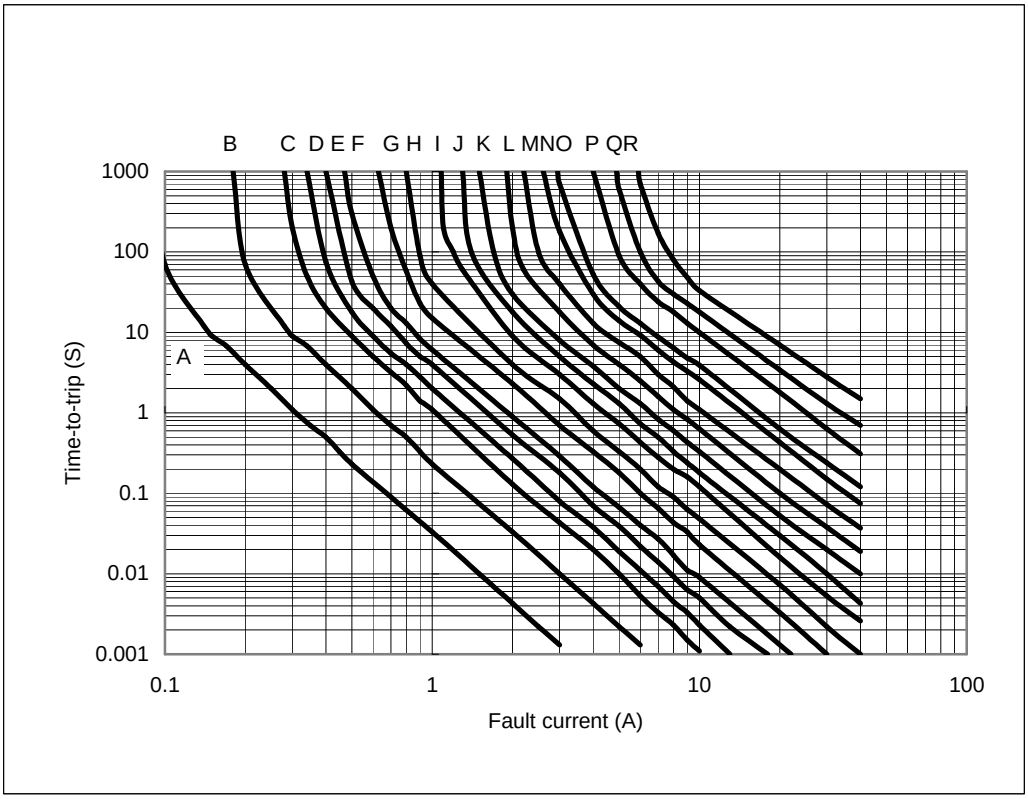
5. Thermal Derating Curve



NOTE : Specification subject to change without notice.

6. Typical Time-To-Trip at 23℃

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



7. Material Specification

Lead material：FRX005-60F~FRX090-60F Tin plated copper,24 AWG.

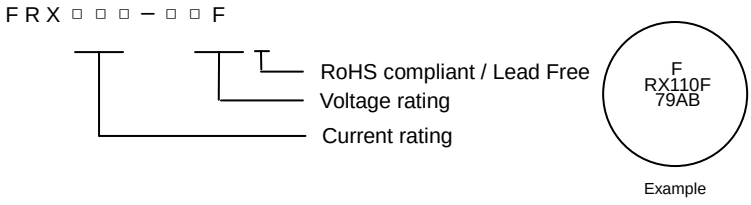
FRX110-60F~FRX375-60F Tin plated copper, 20 AWG.

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

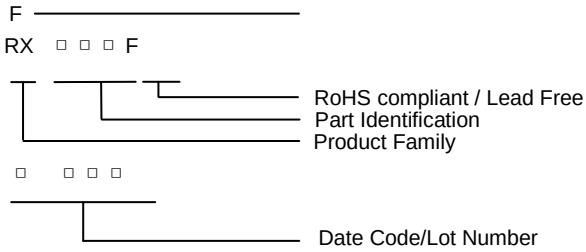
Insulating coating:Flame retardant epoxy, meets UL-94V-O requirement

8. Part Numbering and Marking System

Part Numbering System



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.