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|  FUZETEC TECHNOLOGY CO., LTD. | NO. | PQ33-101E | | |
| | Product Specification and Approval Sheet | Version | 9 | Page |

Radial Leaded PTC Resettable Fuse : FRHV 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/100V/250V/600V**
- (d) **Operation Current : 0.08A~0.40A**
- (e) **Maximum Operation Voltage : 60V/100V/250Vdc**
- (f) **Maximum Interrupt Voltage : 250V/600VAC**
- (g) **Temperature Range : -40°C to 85°C**

2. Agency Recognition

UL : File No. E211981
 C-UL: File No. E211981
 TÜV: *File No. R50138901

*FRH200-600VF~FRH400-600F TÜV In Process.

3. Electrical Characteristics (23°C)

| Part Number | Hold Current | Trip Current | Max. Time To Trip | | Max. Current | Max. Oper. Voltage | Max. Int. Voltage | Typ. Power | Resistance | |
|--------------|--------------|--------------|--------------------|--------------------|--------------|--------------------|-------------------|------------|------------|-------|
| | | | Current | Time | | | | | RMIN | R1MAX |
| | | | I _H , A | I _T , A | | | | | A | Sec |
| FRH080-250VF | 0.08 | 0.16 | 0.35 | 4.0 | 3.0 | 100 | 250 | 1.0 | 14.00 | 33.00 |
| FRH110-250VF | 0.11 | 0.22 | 1.00 | 2.0 | 3.0 | 100 | 250 | 1.0 | 5.00 | 16.00 |
| FRH120-250VF | 0.12 | 0.24 | 1.00 | 2.0 | 3.0 | 100 | 250 | 1.0 | 4.00 | 16.00 |
| FRH145-250VF | 0.15 | 0.29 | 1.00 | 2.5 | 3.0 | 100 | 250 | 1.0 | 3.00 | 12.00 |
| FRH180-250XF | 0.18 | 0.65 | 3.00 | 2.0 | 10.0 | 100 | 250 | 1.5 | 0.80 | 4.00 |
| FRH150-600MF | 0.15 | 0.30 | 1.00 | 4.0 | 3.0 | 250 | 600 | 1.0 | 6.00 | 17.00 |
| FRH160-600MF | 0.16 | 0.32 | 1.00 | 7.0 | 3.0 | 250 | 600 | 1.0 | 4.00 | 16.00 |
| FRH160-600VF | 0.16 | 0.32 | 1.00 | 7.0 | 3.0 | 250 | 600 | 1.0 | 4.00 | 18.00 |
| FRH200-600VF | 0.20 | 0.40 | 1.00 | 12.0 | 3.0 | 250 | 600 | 1.0 | 4.00 | 13.50 |
| FRH250-600VF | 0.25 | 0.86 | 3.00 | 1.0 | 3.0 | 250 | 600 | 1.0 | 1.00 | 7.00 |
| FRH400-600F | 0.40 | 1.00 | 3.00 | 4.0 | 3.0 | 60 | 600 | 1.0 | 0.95 | 1.90 |

I_H=Hold current-maximum current at which the device will not trip at 23°C still air.
 I_T=Trip current-maximum current at which the device will always trip at 23°C still air.
 V_{MAX}=Maximum operating voltage at which the device can withstand without damage at its rated current.
 V_{I-MAX} = Maximum interrupt voltage device can withstand for short period of time. (Not for long term.)
 I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V_{MAX}).
 Pd=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: Tin plated copper, 22 AWG.
 Soldering characteristics:MIL-STD-202, Method 208E.
 Insulating coating:Flame retardant epoxy ,meet UL-94V-0 requirement.

*NOTE : All FRHV products are designed to assist equipment to pass ITU, UL1950 or GR1089 specification.
 *FRH150-600MF, FRH160-600VF meet UL497A Overvoltage and Endurance Conditioning requirements for Thermistor type component.

CAUTION : FRHV devices are not intended for continuous use of Line Voltage such as 120VAC ~ 600VAC and above.

NOTE : Specification subject to change without notice.

4. Production Dimensions (millimeter)

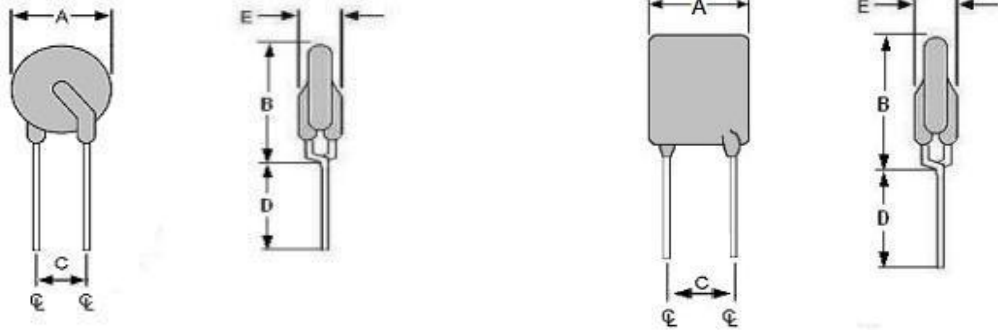


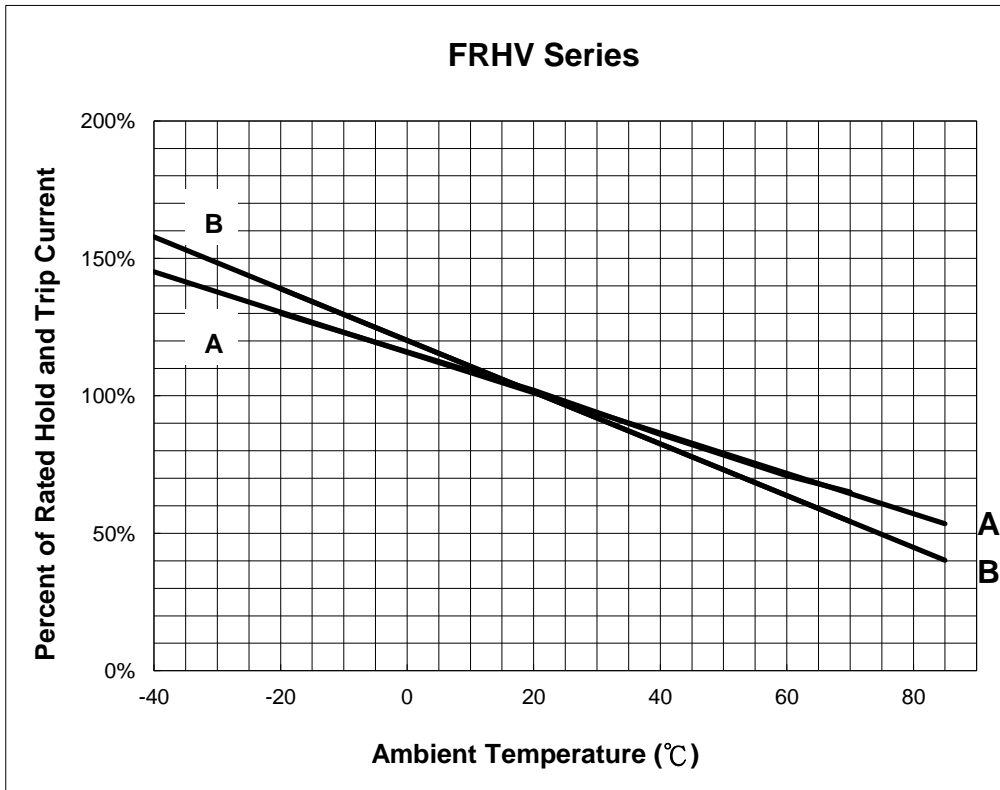
Fig.1
Lead Size :22AWG,
Φ 0.65 mm Diameter

Fig.2
Lead Size : 22AWG,
Φ 0.65 mm Diameter

| Part Number | Fig | A | B | C | D | E |
|--------------|-----|---------|---------|---------|---------|---------|
| | | Maximum | Maximum | Typical | Minimum | Maximum |
| FRH080-250VF | 1 | 5.8 | 9.6 | 5.0 | 4.7 | 4.6 |
| FRH110-250VF | 1 | 6.8 | 9.9 | 5.0 | 4.7 | 4.6 |
| FRH120-250VF | 2 | 6.5 | 11.0 | 5.0 | 4.7 | 4.6 |
| FRH145-250VF | 2 | 6.5 | 11.0 | 5.0 | 4.7 | 4.6 |
| FRH180-250XF | 1 | 9.0 | 12.0 | 5.0 | 4.7 | 3.8 |
| FRH150-600MF | 2 | 9.0 | 12.5 | 5.0 | 4.7 | 4.6 |
| FRH160-600MF | 2 | 9.0 | 12.5 | 5.0 | 4.7 | 4.6 |
| FRH160-600VF | 2 | 16.0 | 12.6 | 5.0 | 4.7 | 6.0 |
| FRH200-600VF | 2 | 12.0 | 14.0 | 5.0 | 4.7 | 6.0 |
| FRH250-600VF | 2 | 12.0 | 15.0 | 5.0 | 4.7 | 6.0 |
| FRH400-600F | 2 | 15.0 | 14.5 | 5.0 | 4.7 | 6.0 |



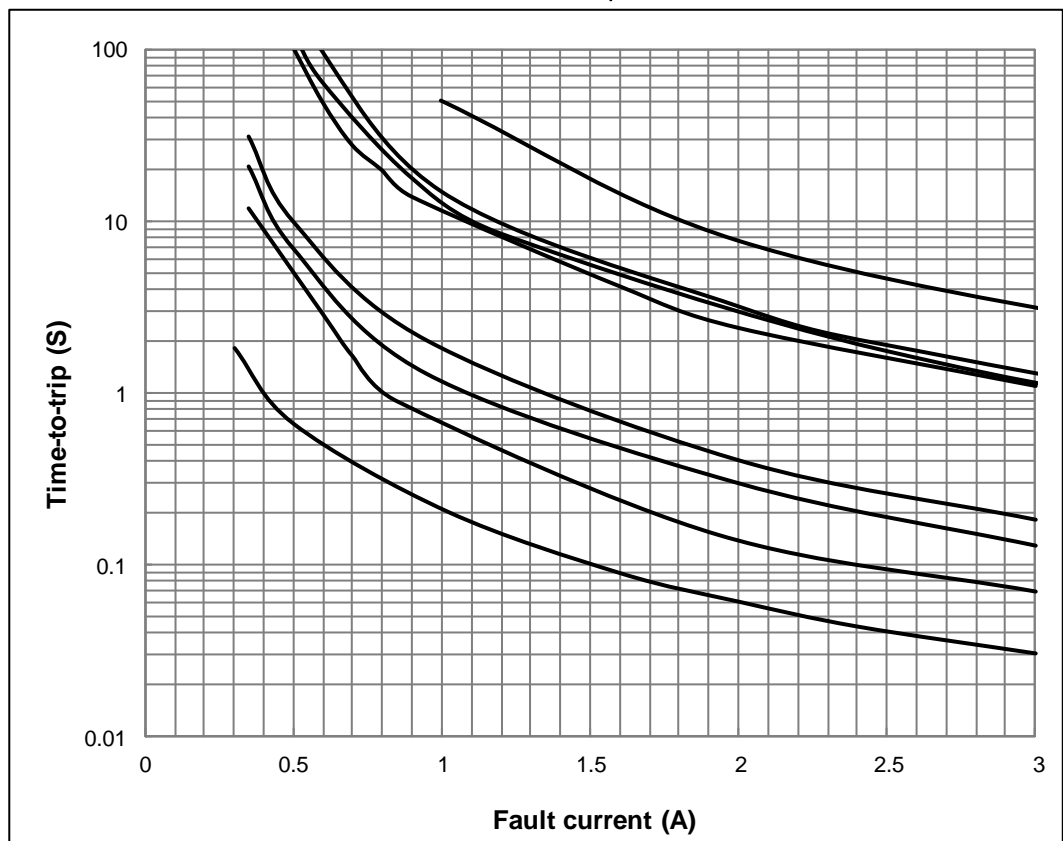
5. Thermal Derating Curve



A= FRH180-250XF
 B= All other FRHV devices

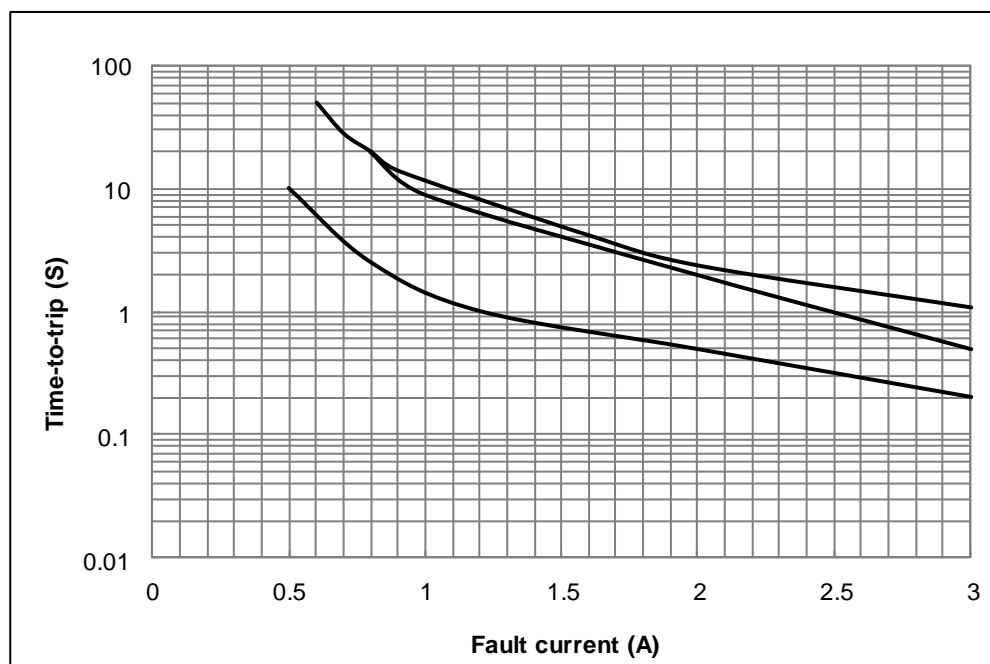
6. Typical Time-To-Trip at 23°C

- A= FRH080-250VF
- B= FRH110-250VF
- C= FRH120-250VF
- D= FRH145-250VF
- E= FRH160-600VF
- F= FRH200-600VF
- G= FRH250-600VF
- H= FRH400-600F



NOTE : Specification subject to change without notice.

I= FRH160-600MF
 J= FRH180-250XF
 K= FRH150-600MF

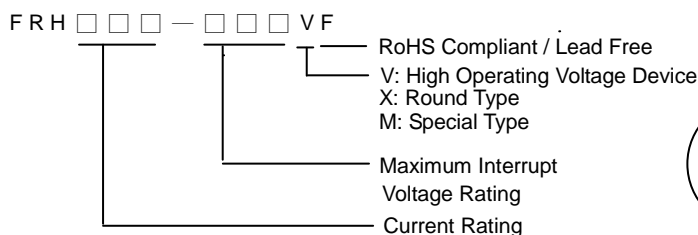


7. Material Specification

- Lead material : Tin plated copper, 22 AWG.
- Soldering characteristics: MIL-STD-202, Method 208E.
- Insulating coating: Flame retardant epoxy, meets UL-94V-0 requirement

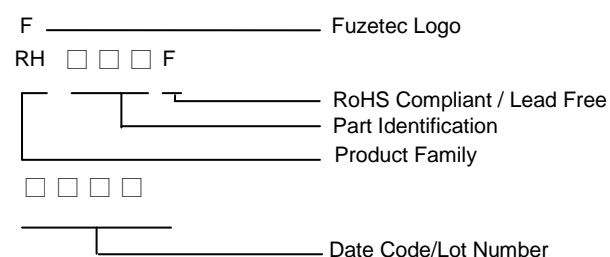
8. Part Numbering and Marking System

Part Numbering System



Example

Part Marking System



* FRH150-600MF Marking : RH6150F , FRH160-600MF Marking : RH6160F , FRH160-600VF Marking : RH6160F

* FRH200-600VF Marking : RH6200F , FRH250-600VF Marking : RH6250F , FRH400-600F Marking : RH6400F

Note: Font on Marking may look slightly different due to fine turnings of each Marking printer.

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.