

 <b>FUZETEC TECHNOLOGY CO., LTD.</b>	<b>NO.</b>	<b>PQ33-101E</b>		
	<b>Product Specification and Approval Sheet</b>	<b>Version</b>	<b>2</b>	<b>Page</b>

## 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/250V/600V**
- (d) **Operation Current : 80mA~180mA**
- (e) **Maximum Operation Voltage : 100V/250V**
- (f) **Maximum Interrupt Voltage : 250V/600V**
- (g) **Temperature Range : -40°C to 85°C**

### 2. Agency Recognition

UL : File No. E211981  
C-UL: File No. E211981  
TÜV: File No. R 50138901

### 3. Electrical Characteristics (23°C)

Part Number	Hold Current	Trip Current	Max. Time To Trip		Maximum Current	Max Oper. Voltage	Max Int. Voltage	Typical Power	Resistance	
			Current	Time					R <sub>MIN</sub>	R <sub>1MAX</sub>
			I <sub>H</sub> , A	I <sub>T</sub> , A					A	Sec
FRH080-250UVF	0.08	0.16	0.35	4.0	3.0	100	250	1.0	14.0	33.0
FRH080-250VF	0.08	0.16	0.35	4.0	3.0	100	250	1.0	14.0	33.0
FRH110-250UVF	0.11	0.22	1.00	2.0	3.0	100	250	1.0	5.0	16.0
FRH110-250VF	0.11	0.22	1.00	2.0	3.0	100	250	1.0	5.0	16.0
FRH120-250UVF	0.12	0.24	1.00	2.0	3.0	100	250	1.0	6.0	16.0
FRH120-250VF	0.12	0.24	1.00	2.0	3.0	100	250	1.0	4.0	16.0
FRH145-250UVF	0.15	0.29	1.00	2.5	3.0	100	250	1.0	3.5	12.0
FRH145-250VF	0.15	0.29	1.00	2.5	3.0	100	250	1.0	3.0	12.0
FRH180-250UVF	0.18	0.65	1.50	10.0	10.0	100	250	1.5	0.8	4.0
FRH180-250VF	0.18	0.65	1.50	11.0	10.0	100	250	1.5	0.8	4.0
FRH180-250XF	0.18	0.65	3.00	2.0	10.0	100	250	1.5	0.8	4.0
FRH150-600VF	0.15	0.30	1.00	5.0	3.0	250	600	1.0	6.0	22.0
FRH150-600MF	0.15	0.30	1.00	4.0	3.0	250	600	1.0	6.0	17.0
FRH160-600VF	0.16	0.32	1.00	7.0	3.0	250	600	1.0	4.0	18.0

I<sub>H</sub>=Hold current-maximum current at which the device will not trip at 23°C still air.  
I<sub>T</sub>=Trip current-maximum current at which the device will always trip at 23°C still air.  
V<sub>MAX</sub>=Maximum operating voltage at which the device can withstand without damage at its rated current.  
V<sub>I-MAX</sub> = Maximum interrupt voltage device can withstand for short period of time. (Not for long term.)  
I<sub>MAX</sub>= Maximum fault current device can withstand without damage at rated voltage (V<sub>MAX</sub>).  
P<sub>d</sub>=Typical power dissipated from device when in the tripped state in 23°C still air environment.  
R<sub>MIN</sub>=Minimum device resistance at 23°C.  
R<sub>1MAX</sub>=Maximum device resistance at 23°C 1 hour after tripping .  
Physical specifications:  
Lead material: FRH080-250VF ~ FRH180-250VF Tin plated copper,22 AWG.  
FRH150-600VF ~ FRH160-600VF Tin plated copper,22 AWG.  
Soldering characteristics:MIL-STD-202, Method 208E.  
Insulating coating:Flame retardant epoxy ,meet UL-94V-0 requirement.

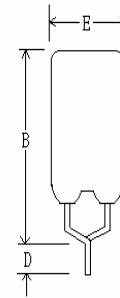
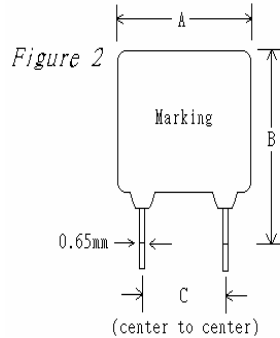
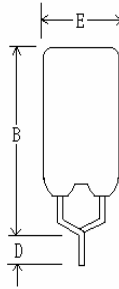
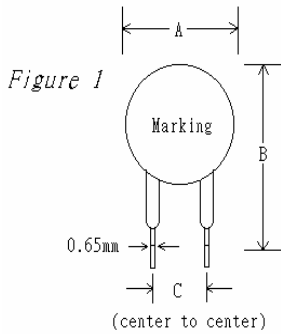
**NOTE : Specification subject to change without notice.**



NOTE : All FRH products are designed to assist equipment to pass ITU, UL1950 or GR1089 specification.

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

**4. Production Dimensions (millimeter)**



Lead Size :22AWG,  
Φ 0.65 mm Diameter

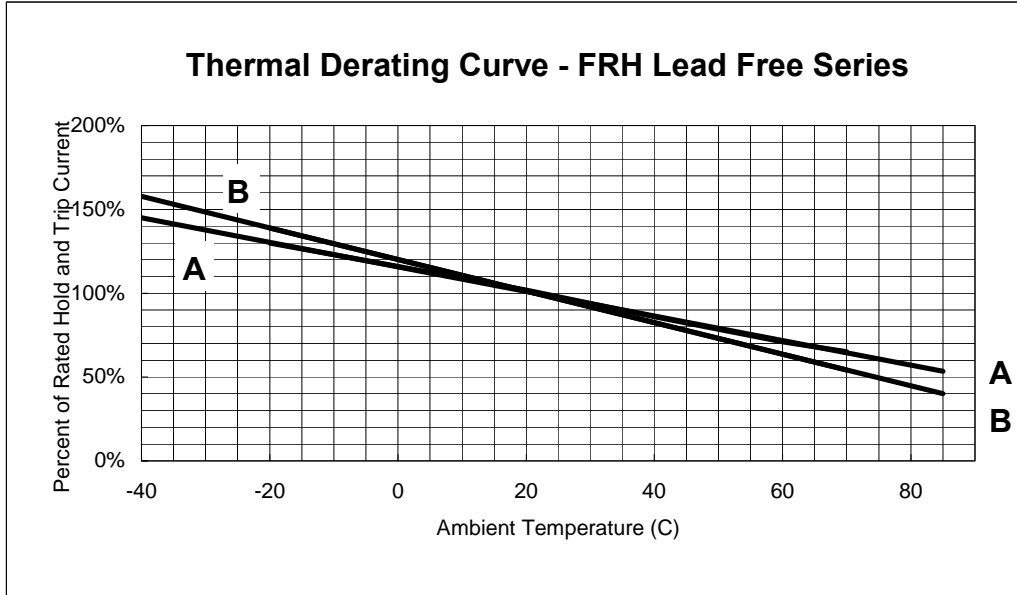
Lead Size : 22AWG,  
Φ 0.65 mm Diameter

Part Number	Fig	A	B	C	D	E
		Maximum	Maximum	Typical	Minimum	Maximum
FRH080-250UVF	1	5.1	9.1	5.0	4.7	3.8
FRH080-250VF	1	5.8	9.6	5.0	4.7	4.6
FRH110-250UVF	1	5.9	9.4	5.0	4.7	3.8
FRH110-250VF	1	6.8	9.9	5.0	4.7	4.6
FRH120-250UVF	2	6.0	10.0	5.0	4.7	3.8
FRH120-250VF	2	6.5	11.0	5.0	4.7	4.6
FRH145-250UVF	2	6.0	10.0	5.0	4.7	3.8
FRH145-250VF	2	6.5	11.0	5.0	4.7	4.6
FRH180-250UVF	2	10.4	12.6	5.0	4.7	3.8
FRH180-250VF	2	10.9	12.6	5.0	4.7	4.6
FRH180-250XF	1	9.0	12.0	5.0	4.7	3.8
FRH150-600VF	2	14.0	12.6	5.0	4.7	6.0
FRH150-600MF	2	9.0	12.5	5.0	4.7	4.6
FRH160-600VF	2	16.0	12.6	5.0	4.7	6.0

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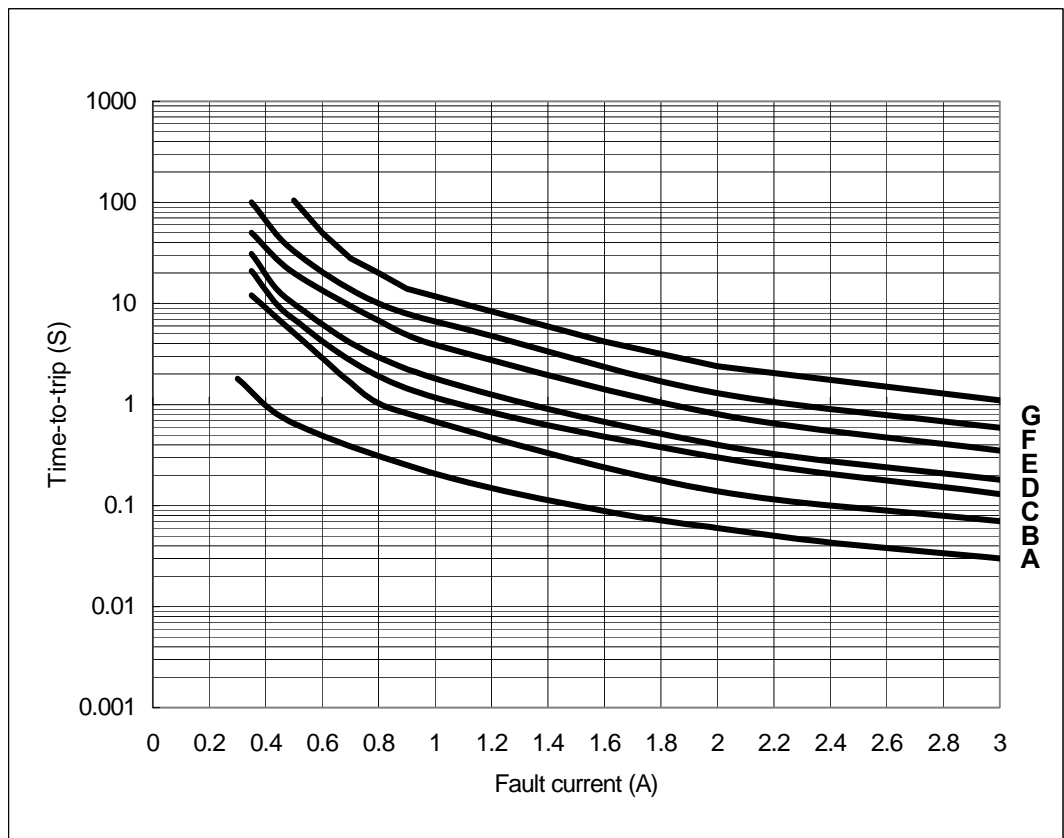
### 5. Thermal Derating Curve



A= FRH180-250UVF  
 FRH180-250VF &  
 FRH180-250XF  
 B= All other FRHV devices

### 6. Typical Time-To-Trip at 23°C

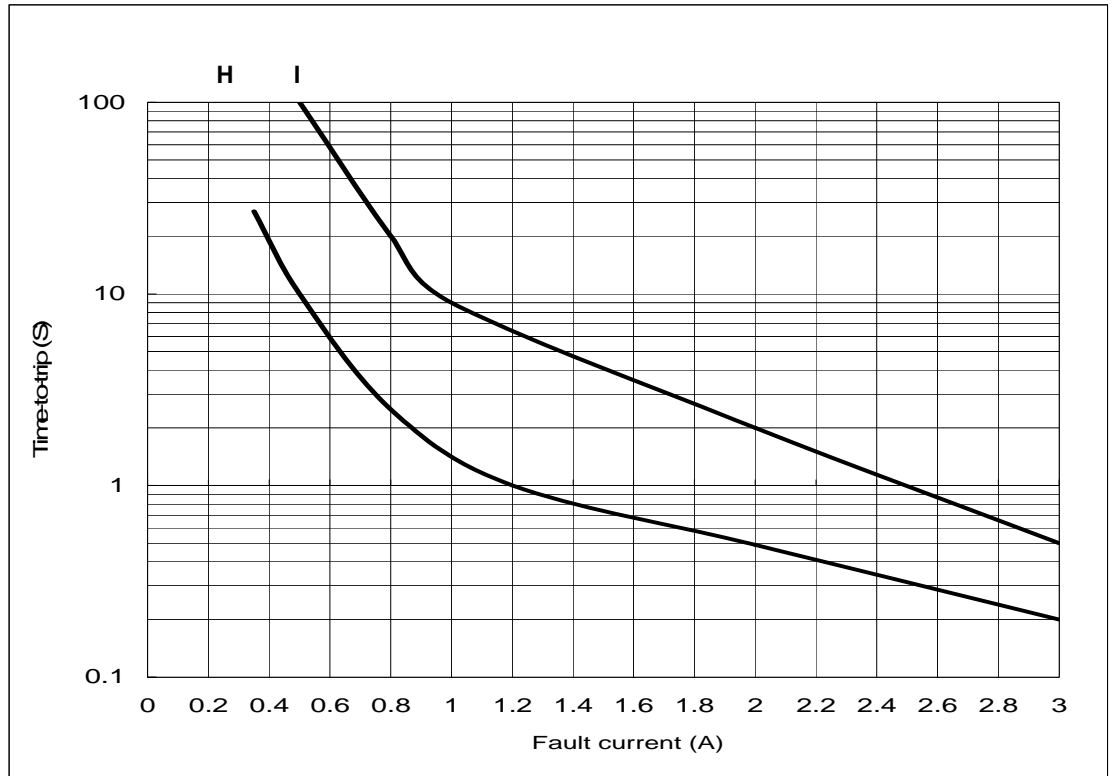
- A=FRH080-250UVF & FRH080-250VF
- B=FRH110-250UVF & FRH110-250VF
- C=FRH120-250UVF & FRH120-250VF
- D=FRH145-250UVF & FRH145-250VF
- E=FRH180-250UVF & FRH180-250VF
- F=FRH150-600VF
- G=FRH160-600VF



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H = FRH180-250XF  
I = FRH150-600MF

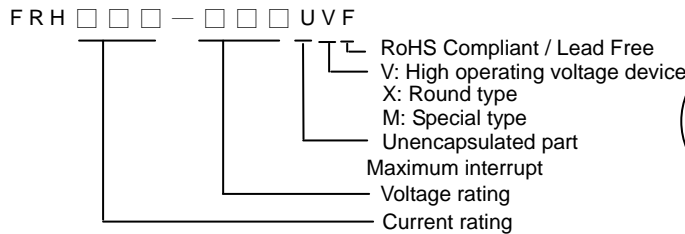


### 7. Material Specification

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

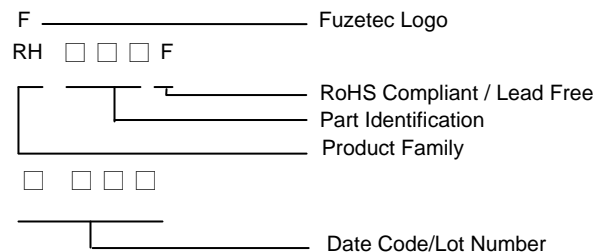
### 8. Part Numbering and Marking System

#### Part Numbering System



\* FRH150-600F Marking : RH6150F  
\* FRH160-600F Marking : RH6160F

#### 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.