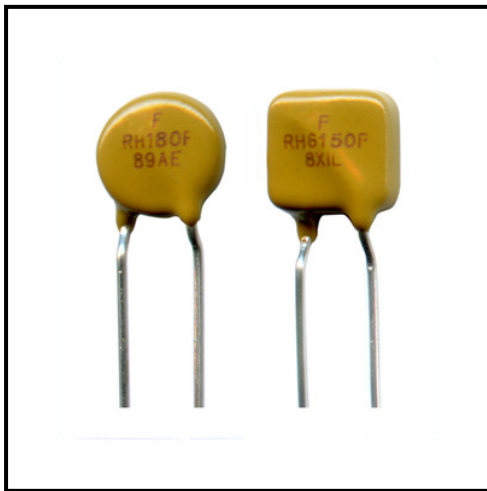


## FRHV Series



**RoHS Compliant & Lead Free**



**Application:**

Telecommunication and Data transmitting

**Product Features:**

Low hold current, Solid state

**Operation Current:** 0.08 A~0.18A

**Max. Operation Voltage:** 100V/250V<sub>DC</sub>

**Max. Interrupt Voltage:** 250V/600V

**Temperature Range:** -40°C to 85°C

**Agency Recognition:** UL(E211981) ,C-UL(E211981)

TÜV (R50138901)

\*UL497A

### Electrical Characteristics (23°C)

Part Number	Hold Current	Trip Current	Max. Time To Trip		Max. Current	Max. Oper. Voltage	Max. Int. Voltage	Typical Power	Resistance	
			Current	Time					R <sub>MIN</sub>	R <sub>1MAX</sub>
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	3.0	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>).

Pd=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 94 V-0 requirement.

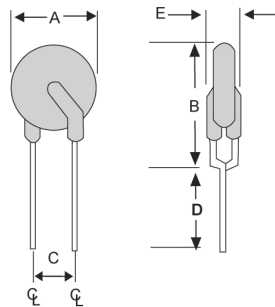
**NOTE : All FRHV products are designed to assist equipment to pass ITU, UL60950, GR1089 and TIA-968-A specification.**

\* FRH150-600VF, FRH150-600MF, FRH160-600VF meet UL497A overvoltage test requirement.

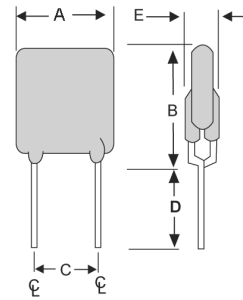
**CAUTION : FRH devices are not intended for continuous use of Line Voltage such as 120 VAC~ 240VAC and above.**

### III - Product - Radial Leaded PTC

#### FRHV Product Dimensions (Millimeter)



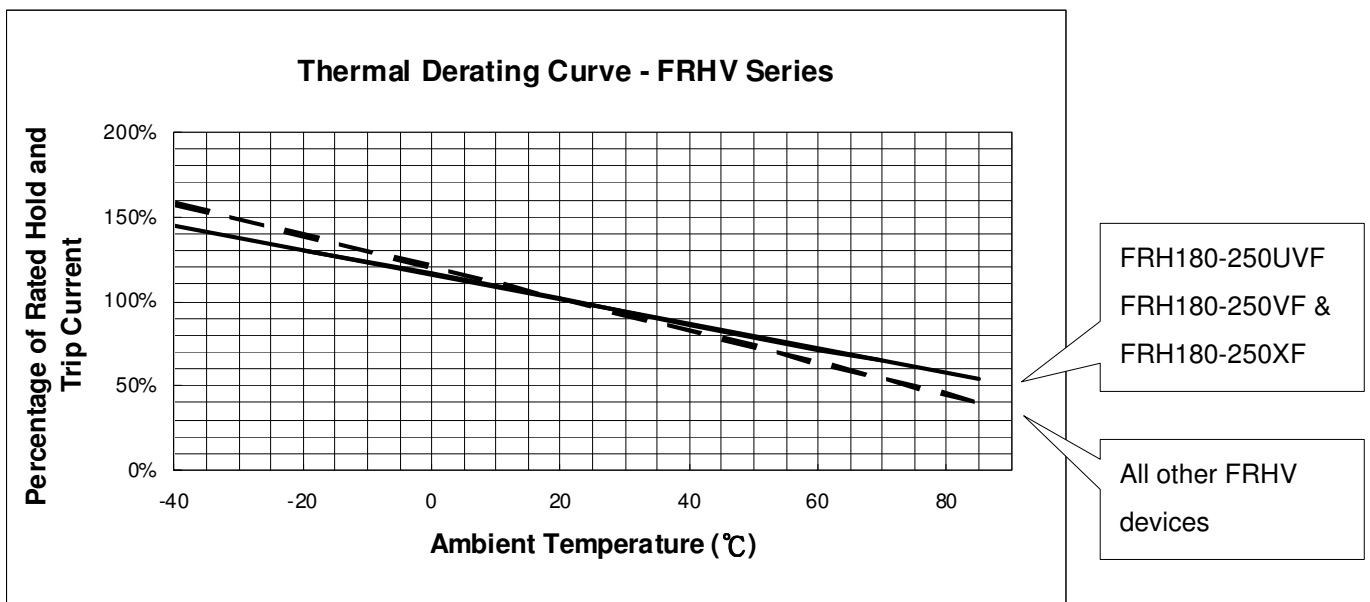
**Figure 1**  
Lead Size :22AWG,  
Φ 0.65 mm Diameter



**Figure 2**  
Lead Size : 22AWG,  
Φ 0.65 mm Diameter

Part Number	Figure	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	13.5	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

#### Thermal Derating Curve



NOTE : All Specifications subject to change without notice.

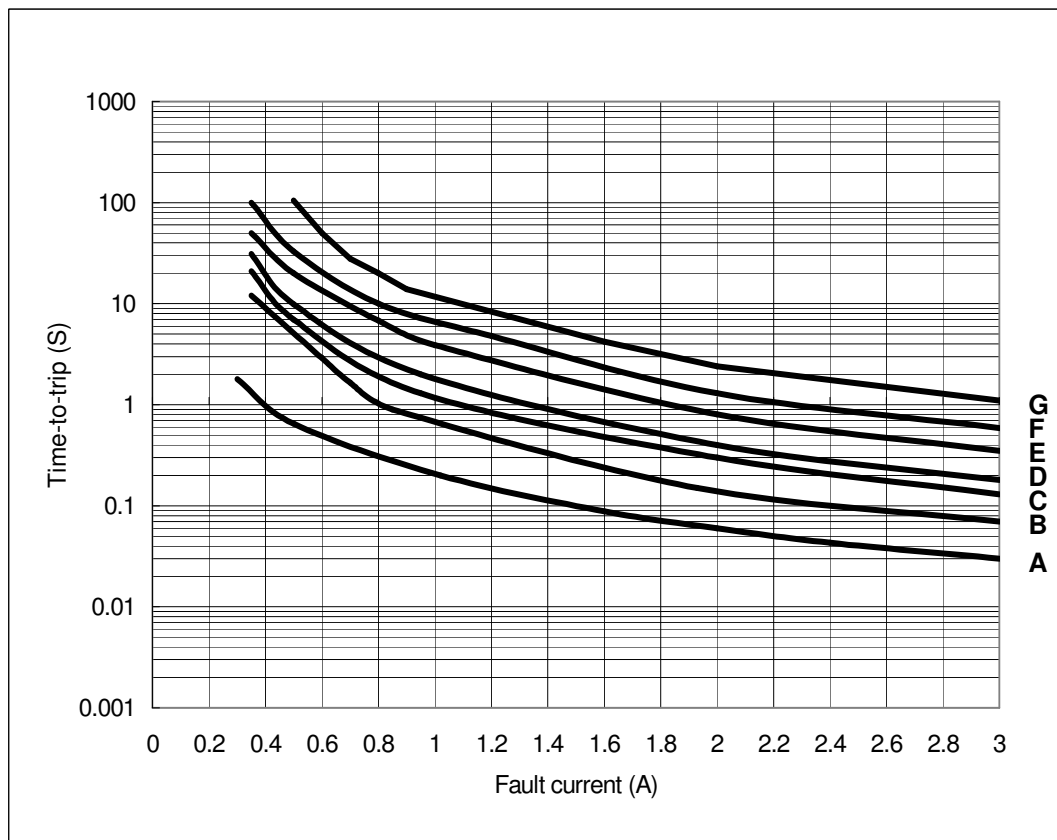
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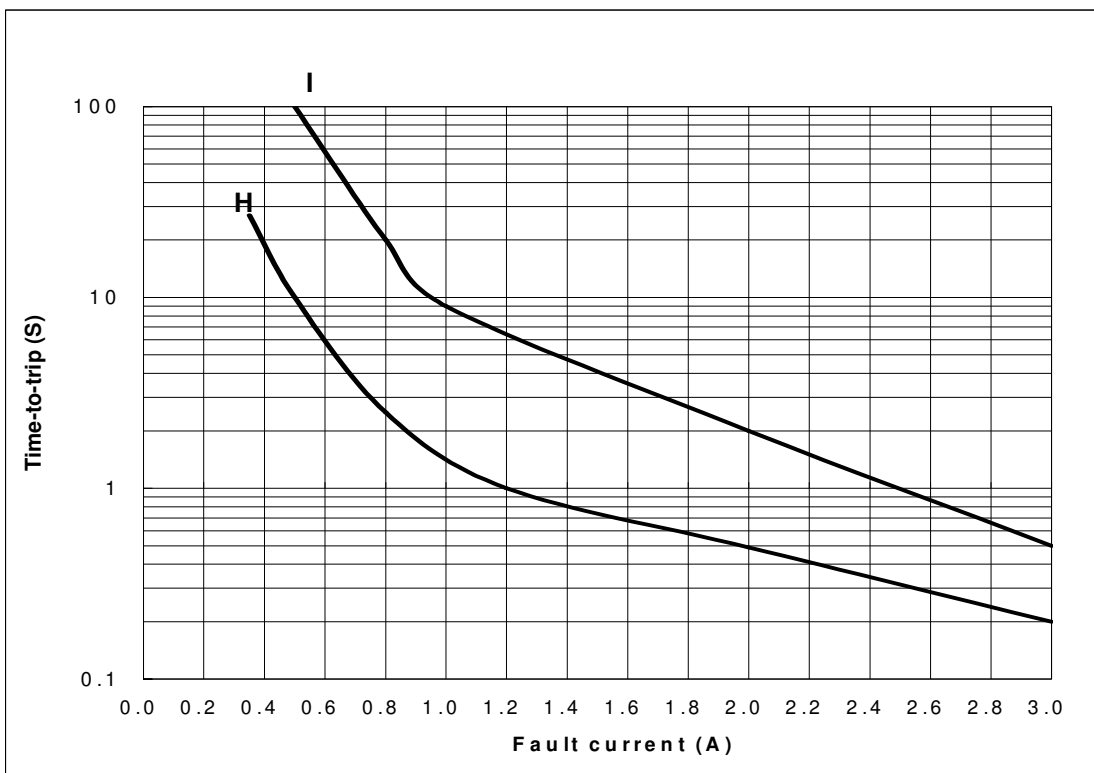
### III - Product - Radial Leaded PTC

#### 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

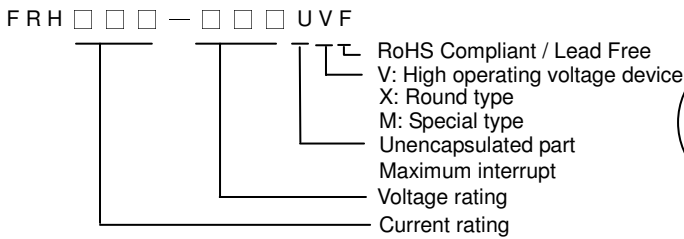


- H = FRH180-250XF
- I = FRH150-600MF

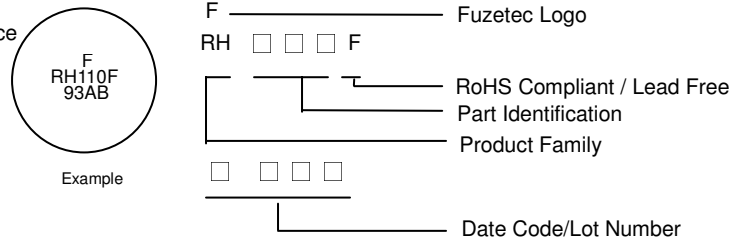


NOTE : All Specifications subject to change without notice.

## Part Numbering System



## Part Marking System



\* FRH150-600F Marking : RH6150F

\* FRH160-600F Marking : RH6160F

## Standard Package

P/N	Pcs /Bag	Reel/Tape
FRH080-250UVF	300	1.5K
FRH080-250VF	300	1.5K
FRH110-250UVF	300	1.5K
FRH110-250VF	300	1.5K
FRH120-250UVF	300	1.5K
FRH120-250VF	300	1.5K
FRH145-250UVF	300	1.5K

P/N	Pcs /Bag	Reel/Tape
FRH145-250VF	300	1.5K
FRH180-250UVF	300	1.2K
FRH180-250VF	200	1.2K
FRH180-250XF	200	1.5K
FRH150-600VF	100	600
FRH150-600MF	100	1.5K
FRH160-600VF	100	600

**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.