FUZETEC	NO.	PQ09-101E		
Product Specification and Approval Sheet	Version	2	Page	1/3

Radial Leaded PTC Resettable Fuse : FRH 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 Voltage : 60V/250V/600V**
(f) **Temperature Range : -40℃ to 85℃**

2. Agency Recognition

UL : File No. E211981
C-UL: File No. E211981
TÜV: File No. R 50021651

3. Electrical Characteristics (23℃)

Part Number	Hold Current	Maximum Current	Max Oper. Voltage	Max Int. Voltage	Resistance Tolerance	
					R_{MIN}	$R1_{MAX}$
	I_H, A	I_{MAX}, A	V_{MAX}, Vdc	V_{I-MAX},V	Ω	Ω
FRH080-250UF	0.08	3.0	60	250	14.0	33.0
FRH080-250F	0.08	3.0	60	250	14.0	33.0
FRH110-250UF	0.11	3.0	60	250	5.0	16.0
FRH110-250F	0.11	3.0	60	250	5.0	16.0
FRH120-250UF	0.12	3.0	60	250	6.0	16.0
FRH120-250F	0.12	3.0	60	250	4.0	16.0
FRH145-250UF	0.15	3.0	60	250	3.5	12.0
FRH145-250F	0.15	3.0	60	250	3.0	12.0
FRH180-250UF	0.18	10.0	60	250	0.8	4.0
FRH180-250F	0.18	10.0	60	250	0.8	4.0
FRH150-600F	0.15	3.0	60	600	6.0	22.0
FRH160-600F	0.16	3.0	60	600	4.0	18.0

I_H=Hold current-maximum current at which the device will not trip at 23℃ 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}).
R_{MIN}=Minimum device resistance at 23℃.
$R1_{MAX}$=Maximum device resistance at 23℃ 1 hour after tripping .
Physical specifications:
Lead material: FRH080-250F ~ FRH180-250F Tin plated copper,22 AWG.
FRH150-600F ~ FRH160-600F Tin plated copper,22 AWG.
Soldering characteristics:MIL-STD-202, Method 208E.
Insulating coating:Flame retardant epoxy ,meet UL-94V-0 requirement.

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

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

NOTE : Specification subject to change without notice.

4. Production Dimensions (millimeter)

Figure 1

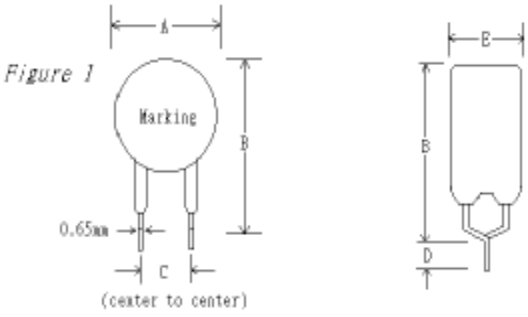
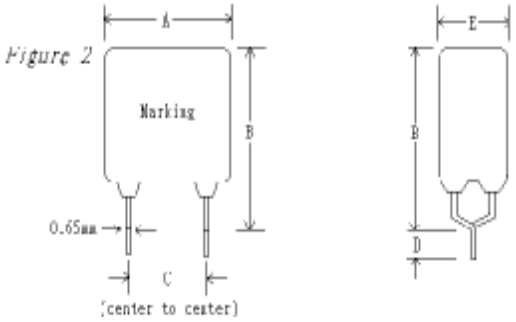


Figure 2

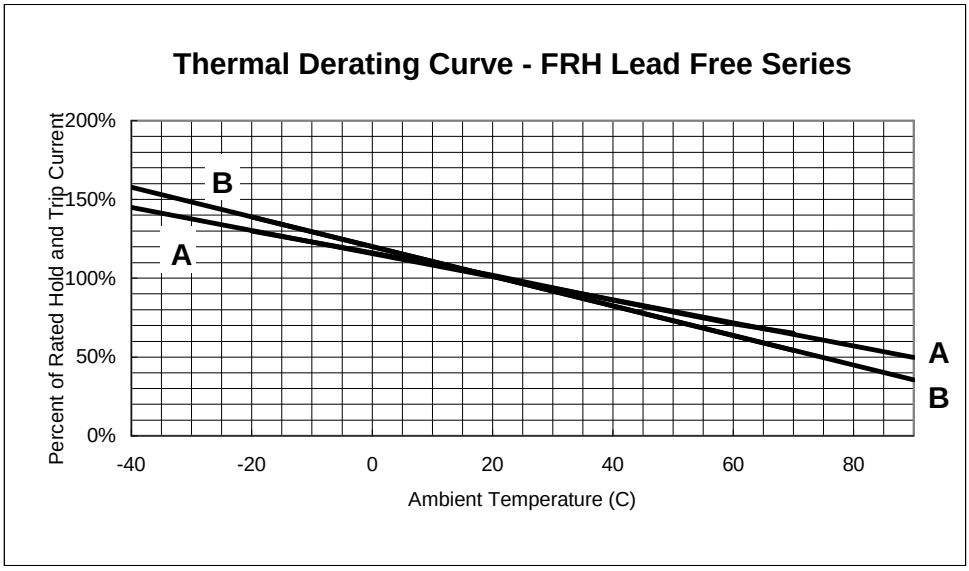


Lead Size :22AWG, Φ 0.65 mm Diameter

Lead Size : 22AWG, Φ 0.65 mm Diameter

Part Number	Fig	A	B	C	D	E
		Maximum	Maximum	Typical	Minimum	Maximum
FRH080-250UF	1	5.1	9.1	5.0	4.7	3.8
FRH080-250F	1	5.8	9.6	5.0	4.7	4.6
FRH110-250UF	1	5.9	9.4	5.0	4.7	3.8
FRH110-250F	1	6.8	9.9	5.0	4.7	4.6
FRH120-250UF	2	6.0	10.0	5.0	4.7	3.8
FRH120-250F	2	6.5	11.0	5.0	4.7	4.6
FRH145-250UF	2	6.0	10.0	5.0	4.7	3.8
FRH145-250F	2	6.5	11.0	5.0	4.7	4.6
FRH180-250UF	2	10.4	12.6	5.0	4.7	3.8
FRH180-250F	2	10.9	12.6	5.0	4.7	4.6
FRH150-600F	2	13.5	12.6	5.0	4.7	6.0
FRH160-600F	2	16.0	12.6	5.0	4.7	6.0

5. Thermal Derating Curve

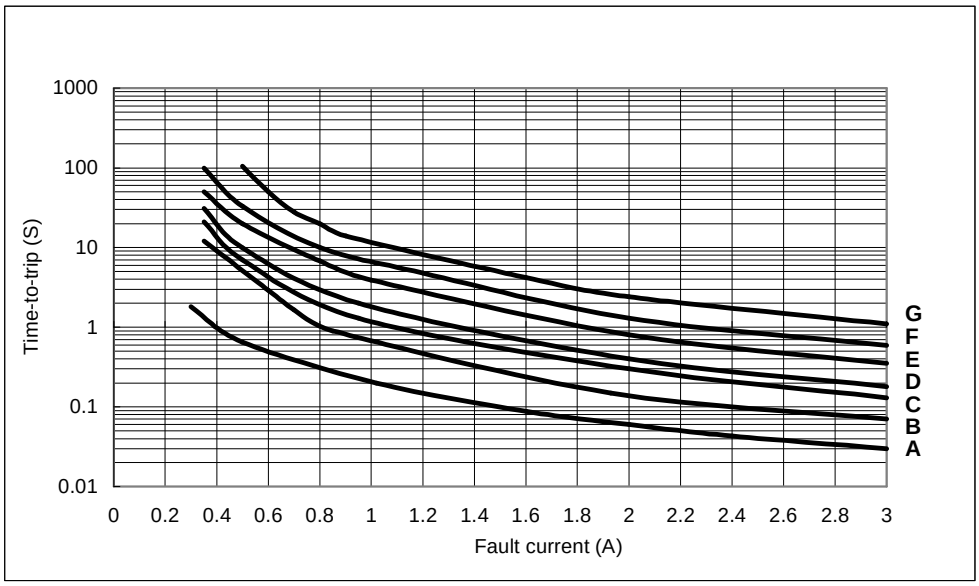


A= FRH180-250UF
FRH180-250F
B= All other FRH devices

NOTE : Specification subject to change without notice.

6. Typical Time-To-Trip at 23℃

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



7. Material Specification

Lead material：Tin plated copper, 22 AWG.

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

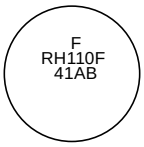
Insulating coating:Flame retardant epoxy, meets UL-94V-0 requirement

8. Part Numbering and Marking System

Part Numbering System

FRH □ □ □ — □ □ □ UF

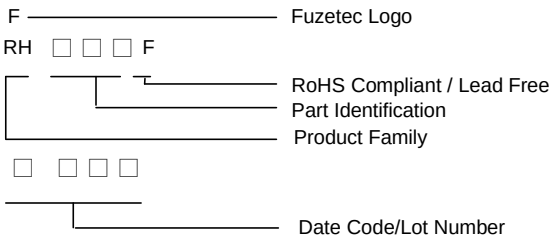
- RoHS Compliant / Lead Free
- Unencapsulated part
- Maximum interrupt
- Voltage rating
- Current rating



Example

*** 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.