

|   |   |                  |           |             |
|---|---|------------------|-----------|-------------|
|  <b>FUZETEC TECHNOLOGY CO., LTD.</b> | <b>NO.</b>                                      | <b>PQ24-101E</b> |           |             |
|   | <b>Product Specification and Approval Sheet</b> | <b>Version</b>   | <b>A8</b> | <b>Page</b> |

## Radial Leaded PTC Resettable Fuse: FRV Series

### 1. Summary

- (a) **RoHS Compliant (Lead Free) Product**
- (b) **Applications: Line Voltage Power Supply, Transformer and Appliances**
- (c) **Product Features: Low hold current, Solid state, Radial leaded product ideal for up to 265V<sub>AC/DC</sub>**
- (d) **Operation Current: 0.05A~2.00A**
- (e) **Maximum Operating Voltage: 240V<sub>AC/DC</sub>**
- (f) **Maximum Interrupt Voltage: 265V<sub>AC/DC</sub>**
- (g) **Temperature Range : FRV005-240F~FRV055-240F -40°C to 85°C  
FRV075-240F~FRV200-240F -20°C to 85°C**

### 2. Agency Recognition

UL: File No. E211981  
 C-UL: File No. E211981  
 TÜV: File No. R50087018

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

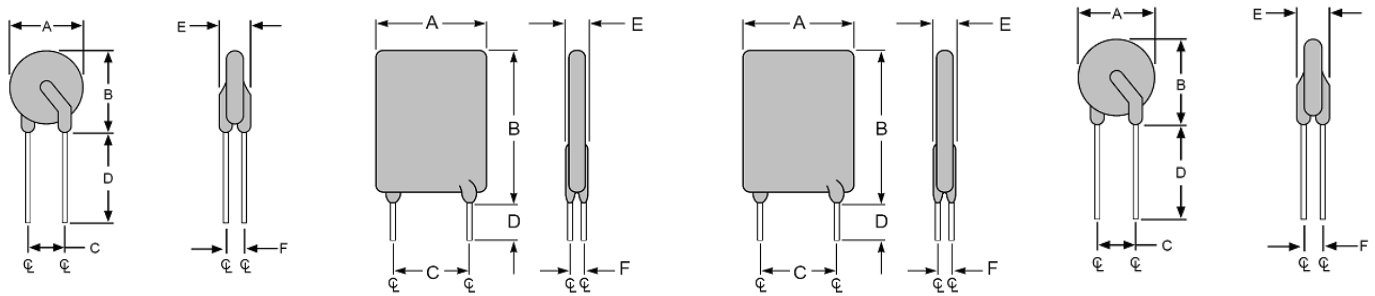
| Part Number | Hold Current       | Trip Current       | Max. Time to Trip      | Max. Current         | Rated Voltage                         | Max. Int. Voltage                       | Typ. Power         | Resistance       |                   |
|-------------|--------------------|--------------------|------------------------|----------------------|---------------------------------------|---|--------------------|------------------|-------------------|
|             | I <sub>H</sub> , A | I <sub>T</sub> , A | at 5xI <sub>H</sub> ,s | I <sub>MAX</sub> , A | V <sub>MAX</sub> , V <sub>AC/DC</sub> | V <sub>I-MAX</sub> , V <sub>AC/DC</sub> | P <sub>d</sub> , W | R <sub>MIN</sub> | R <sub>1MAX</sub> |
|             |                    |                    |                        |                      |                                       |   |                    | Ohms             | Ohms              |
| FRV005-240F | 0.05               | 0.12               | 15.0                   | 1.0                  | 240                                   | 265                                     | 0.70               | 18.50            | 65.00             |
| FRV008-240F | 0.08               | 0.19               | 15.0                   | 1.2                  | 240                                   | 265                                     | 0.80               | 7.40             | 26.00             |
| FRV012-240F | 0.12               | 0.30               | 15.0                   | 1.2                  | 240                                   | 265                                     | 1.00               | 3.00             | 12.00             |
| FRV016-240F | 0.16               | 0.37               | 15.0                   | 2.0                  | 240                                   | 265                                     | 1.40               | 2.50             | 7.80              |
| FRV025-240F | 0.25               | 0.56               | 18.5                   | 3.5                  | 240                                   | 265                                     | 1.50               | 1.30             | 3.80              |
| FRV033-240F | 0.33               | 0.74               | 21.0                   | 4.5                  | 240                                   | 265                                     | 1.70               | 0.83             | 2.60              |
| FRV040-240F | 0.40               | 0.90               | 24.0                   | 5.5                  | 240                                   | 265                                     | 2.00               | 0.60             | 1.90              |
| FRV055-240F | 0.55               | 1.25               | 26.0                   | 7.0                  | 240                                   | 265                                     | 3.40               | 0.45             | 1.45              |
| FRV075-240F | 0.75               | 1.50               | 18.0                   | 7.5                  | 240                                   | 265                                     | 2.60               | 0.32             | 0.84              |
| FRV100-240F | 1.00               | 2.00               | 21.0                   | 10.0                 | 240                                   | 265                                     | 2.90               | 0.22             | 0.58              |
| FRV125-240F | 1.25               | 2.50               | 23.0                   | 12.5                 | 240                                   | 265                                     | 3.30               | 0.17             | 0.44              |
| FRV150-240F | 1.50               | 3.00               | 23.0                   | 15.0                 | 240                                   | 265                                     | 3.70               | 0.12             | 0.32              |
| FRV200-240F | 2.00               | 4.00               | 28.0                   | 20.0                 | 240                                   | 265                                     | 4.50               | 0.09             | 0.22              |

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-minimum current at which the device will always trip at 23°C still air.  
 V<sub>MAX</sub>=Maximum voltage device can withstand without damage at its rated current.  
 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 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: FRV005-240F~FRV016-240F Tin plated copper clad steel, 24AWG.  
 FRV025-240F~FRV040-240F Tin plated copper, 22AWG.  
 FRV055-240F~FRV200-240F Tin plated copper, 20AWG.  
 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)**



**Fig.1**

Lead Size: 24AWG  
Φ 0.51 mm Diameter

**Fig.2**

Lead Size: 22AWG  
Φ 0.65 mm Diameter

**Fig.3**

Lead Size: 20AWG  
Φ 0.81 mm Diameter

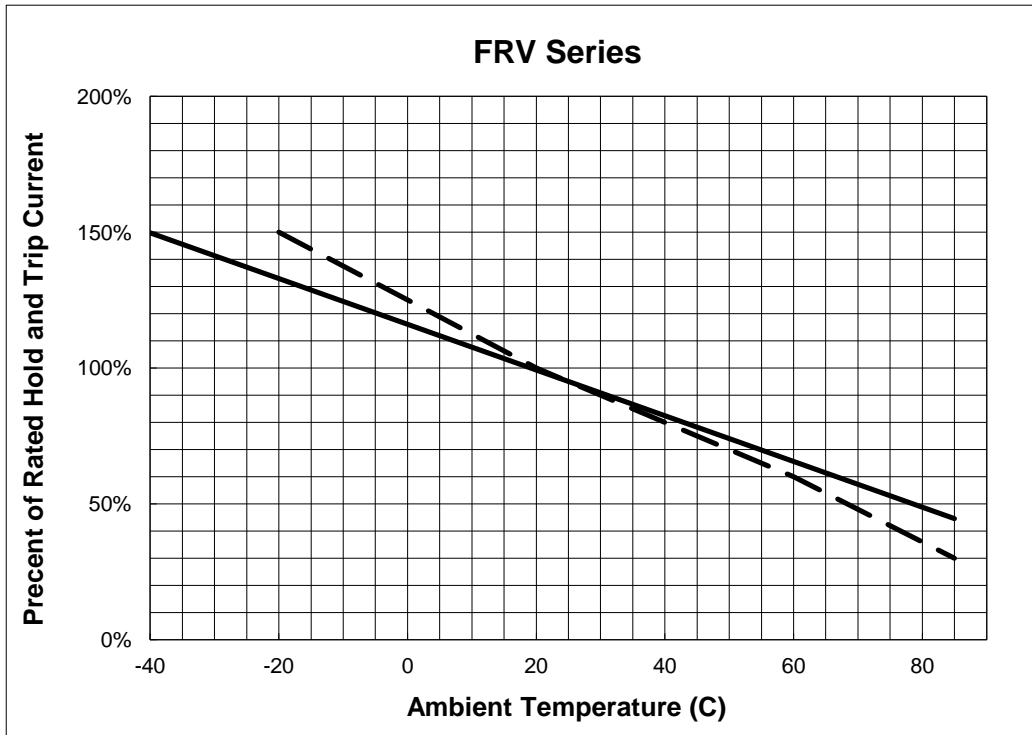
**Fig.4**

Lead Size: 20AWG  
Φ 0.81 mm Diameter

| Part Number | Figure | A       | B       | C       | D       | E       | F       |
|-------------|--------|---------|---------|---------|---------|---------|---------|
|             |        | Maximum | Maximum | Typical | Minimum | Maximum | Typical |
| FRV005-240F | 1      | 8.3     | 10.7    | 5.1     | 7.6     | 3.8     | 1.6     |
| FRV008-240F | 1      | 8.3     | 10.7    | 5.1     | 7.6     | 3.8     | 1.6     |
| FRV012-240F | 1      | 8.3     | 10.7    | 5.1     | 7.6     | 3.8     | 1.6     |
| FRV016-240F | 1      | 9.9     | 12.5    | 5.1     | 7.6     | 3.8     | 1.6     |
| FRV025-240F | 2      | 9.6     | 17.4    | 5.1     | 7.6     | 3.8     | 1.8     |
| FRV033-240F | 2      | 11.4    | 16.5    | 5.1     | 7.6     | 3.8     | 1.8     |
| FRV040-240F | 2      | 11.5    | 19.5    | 5.1     | 7.6     | 3.8     | 1.8     |
| FRV055-240F | 3      | 14.0    | 21.7    | 5.1     | 7.6     | 4.1     | 1.9     |
| FRV075-240F | 3      | 11.5    | 23.4    | 5.1     | 7.6     | 4.8     | 1.9     |
| FRV100-240F | 4      | 18.7    | 24.4    | 10.2    | 7.6     | 5.1     | 1.9     |
| FRV125-240F | 4      | 21.2    | 27.4    | 10.2    | 7.6     | 5.3     | 1.9     |
| FRV150-240F | 4      | 23.4    | 30.9    | 10.2    | 7.6     | 5.3     | 1.9     |
| FRV200-240F | 3      | 24.9    | 33.8    | 10.2    | 7.6     | 6.1     | 1.9     |



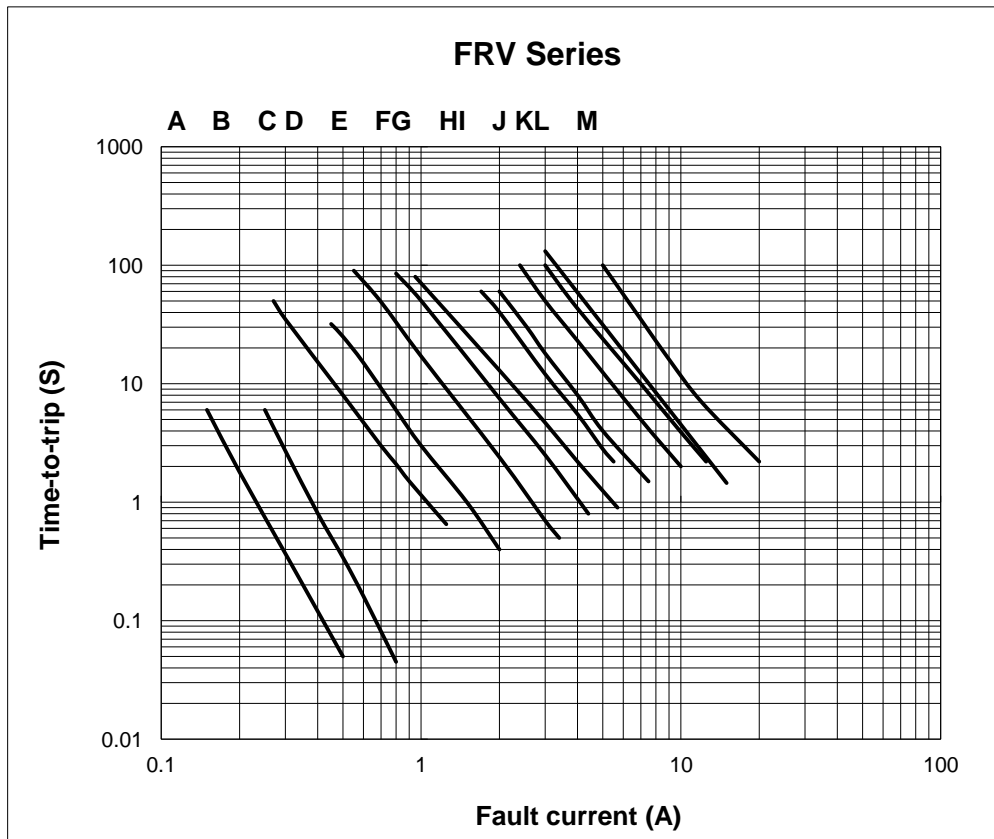
### 5. Thermal Derating Curve



**A** = FRV005-240F ~  
FRV055-240F  
**B** = FRV075-240F ~  
FRV200-240F

### 6. Typical Time-To-Trip at 23°C

- A= FRV005-240F
- B= FRV008-240F
- C= FRV012-240F
- D= FRV016-240F
- E= FRV025-240F
- F= FRV033-240F
- G= FRV040-240F
- H= FRV055-240F
- I= FRV075-240F
- J= FRV100-240F
- K= FRV125-240F
- L=FRV150-240F
- M= FRV200-240F



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## 7. Material Specification

Lead material : FRV005-240F~FRV016-240F Tin plated copper clad steel, 24AWG.

FRV025-240F~FRV040-240F Tin plated copper, 22AWG.

FRV055-240F~FRV200-240F Tin plated copper, 20AWG.

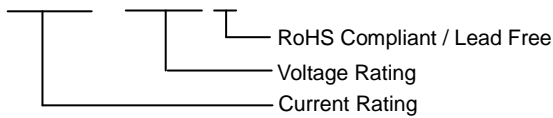
Soldering characteristics: MIL-STD-202, Method 208E.

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

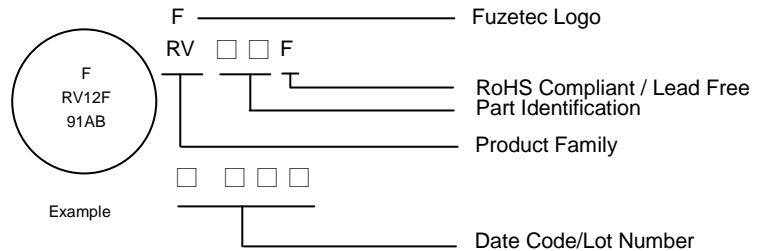
## 8. Part Numbering and Marking System

### Part Numbering System

FRV □ □ □ - □ □ □ F



### Part Marking System



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

**Warning:** - Each product should be carefully evaluated and tested for their suitability of application.



- Operation beyond the specified maximum rating 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, including some inert material such as silicone based oil, lubricant and etc. Prolonged contact will damage the device performance.
- Additional protection mechanism are strongly recommended to be used in conjunction with the PPTC device for protection against abnormal or failure conditions.
- Avoid use of PPTC device in a constrained space such as potting material, housing and containers where have limited space to accommodate device thermal expansion and/or contraction.

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

2019/9/17

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