# 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 265$V_{AC/DC}$**
(d) **Operation Current: 50mA~550mA**
(e) **Maximum Operating Voltage: 240$V_{AC/DC}$**
(f) **Maximum Interrupt Voltage: 265$V_{AC/DC}$**
(g) **Temperature Range : -40℃ to 85℃**

## 2. Agency Recognition

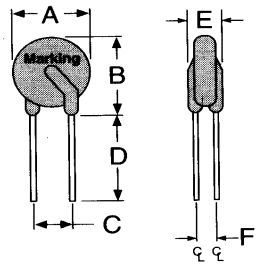
**UL: File No. E211981**
**C-UL: File No. E211981**
**TÜV: File No. R50087018**

## 3. Electrical Characteristics (23℃)

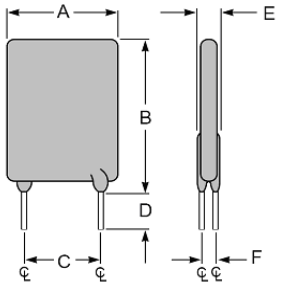
| Part Number | Hold Current | Trip Current | Max.Time to Trip | Maximum Current | Rated Voltage | Typical Power | Resistance Tolerance | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | $R_{MIN}$ | $R1_{MAX}$ |
| | $I_H$, A | $I_T$, A | at 5x$I_H$ | $I_{MAX}$, A | $V_{MAX}$, $V_{AC}$ | Pd, W | ohms | ohms |
| **FRV005-240F** | 0.05 | 0.12 | 15.0 | 1.0 | 240 | 0.70 | 18.50 | 65.00 |
| **FRV008-240F** | 0.08 | 0.19 | 15.0 | 1.2 | 240 | 0.80 | 7.40 | 26.00 |
| **FRV012-240F** | 0.12 | 0.30 | 15.0 | 1.2 | 240 | 1.00 | 3.00 | 12.00 |
| **FRV016-240F** | 0.16 | 0.37 | 15.0 | 2.0 | 240 | 1.40 | 2.50 | 7.80 |
| **FRV025-240F** | 0.25 | 0.56 | 18.5 | 3.5 | 240 | 1.50 | 1.30 | 3.80 |
| **FRV033-240F** | 0.33 | 0.74 | 18.5 | 4.5 | 240 | 1.70 | 0.83 | 2.60 |
| **FRV040-240F** | 0.40 | 0.90 | 24.0 | 5.5 | 240 | 2.00 | 0.60 | 1.90 |
| **FRV055-240F** | 0.55 | 1.25 | 26.0 | 7.0 | 240 | 3.40 | 0.45 | 1.45 |

$I_H$=Hold current-maximum current at which the device will not trip at 23℃ still air.
$I_T$=Trip current-minimum current at which the device will always trip at 23℃ still air.
$V_{MAX}$=Maximum voltage device can withstand without damage at its rated current.
$I_{MAX}$= Maximum fault current device can withstand without damage at rated voltage ($V_{MAX}$).
Pd=Typical power dissipated from device when in tripped state in 23℃ still air environment.
$R_{MIN}$=Minimum device resistance at 23℃.
$R1_{MAX}$=Maximum device resistance at 23℃, 1 hour after tripping.
Physical specifications:
Lead material: FRV005-240F~FRV016-240F Tin plated copper, 24AWG.
FRV025-240F~FRV040-240F Tin plated copper, 22AWG.
FRV055-240F Tin plated copper, 20AWG.
Soldering characteristics: MIL-STD-202, Method 208E.
Insulating coating:Flame retardant epoxy, meets UL-94V-0 requirement.

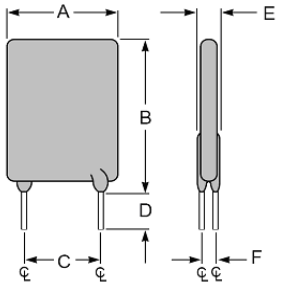
## 4. Production Dimensions (millimeter)




FRV 005-240F~FRV016-240F
Lead Size: 24AWG
Φ 0.51 mm Diameter



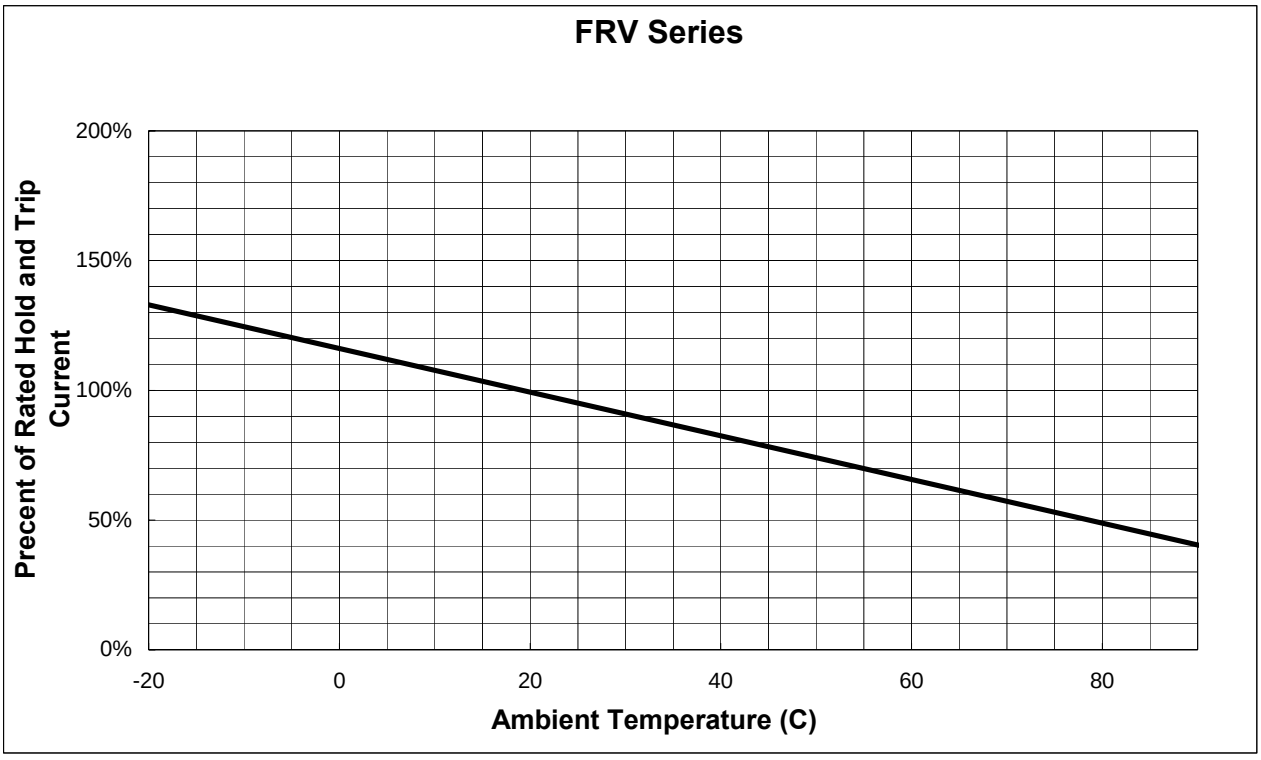

FRV025-240F~FRV040-240F
Lead Size: 22AWG
Φ 0.65 mm Diameter




FRV055-240F
Lead Size: 20AWG
Φ 0.81 mm Diameter

| Part Number | A Maximum | B Maximum | C Typical | D Minimum | E Maximum | F Typical |
|---|---|---|---|---|---|---|
| FRV005-240F | 8.3 | 10.7 | 5.1 | 7.6 | 3.8 | 1.6 |
| FRV008-240F | 8.3 | 10.7 | 5.1 | 7.6 | 3.8 | 1.6 |
| FRV012-240F | 8.3 | 10.7 | 5.1 | 7.6 | 3.8 | 1.6 |
| FRV016-240F | 9.9 | 12.5 | 5.1 | 7.6 | 3.8 | 1.6 |
| FRV025-240F | 9.6 | 17.4 | 5.1 | 7.6 | 3.8 | 1.8 |
| FRV033-240F | 11.4 | 16.5 | 5.1 | 7.6 | 3.8 | 1.8 |
| FRV040-240F | 11.5 | 19.5 | 5.1 | 7.6 | 3.8 | 1.8 |
| FRV055-240F | 14.0 | 21.7 | 5.1 | 7.6 | 4.1 | 1.9 |

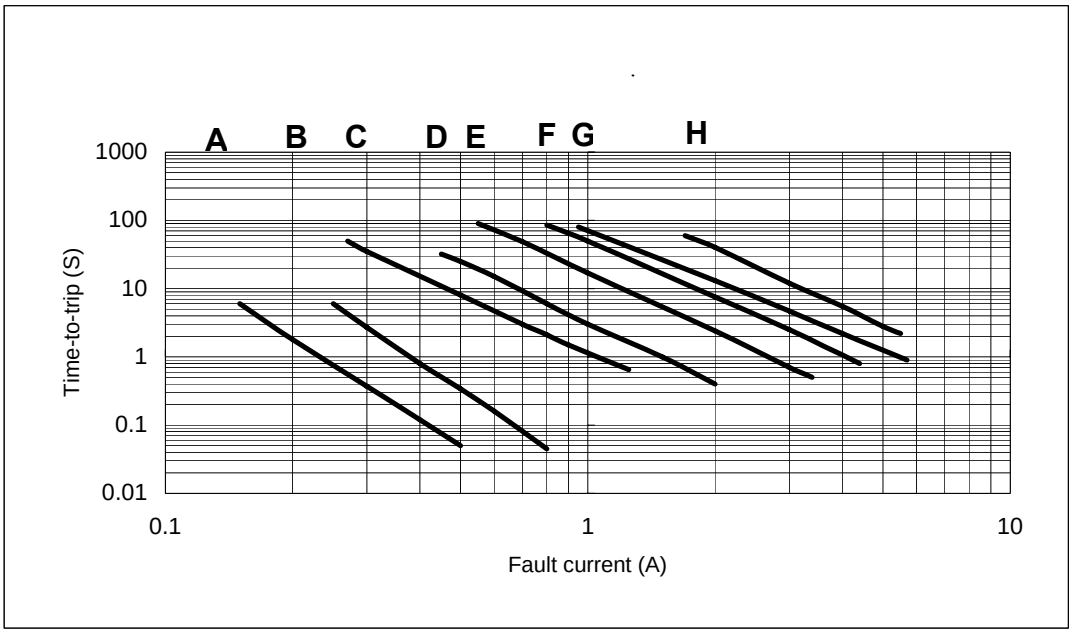
## 5. Thermal Derating Curve




NOTE : Specification subject to change without notice.

## 6. Typical Time-To-Trip at 23℃

**A= FRV005-240F**
**B= FRV008-240F**
**C= FRV012-240F**
**D= FRV016-240F**
**E= FRV025-240F**
**F= FRV033-240F**
**G= FRV040-240F**
**H= FRV055-240F**




## 7. Material Specification

Lead material：FRV005-240F~FRV016-240F Tin plated copper, 24AWG.
FRV025-240F~FRV040-240F Tin plated copper, 22AWG.
FRV055-240F 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

- RoHS Compliant / Lead Free
- Voltage rating
- Current rating

F
RV12F
81AB

Example

### Part Marking System

F — Fuzetec Logo

RV □ □ F
- RoHS Compliant / Lead Free Part Identification
- Product Family

□ □ □ □
- Date Code/Lot Number

**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.**