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: 0.05A~2.00A
(e) Maximum Operating Voltage: 240$V_{AC/DC}$
(f) Maximum Interrupt Voltage: 265$V_{AC/DC}$
(g) Temperature Range: FRV005-240F~FRV055-240F -40℃ to 85℃
FRV075-240F~FRV200-240F -20℃ 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	Max. Current	Rated Voltage	Max. Int. Voltage	Typ. Power	Resistance	
								R_{MIN}	$R1_{MAX}$
	I_H, A	I_T, A	at 5xI_H, s	I_{MAX}, A	V_{MAX}, $V_{AC/DC}$	V_{I-MAX}, $V_{AC/DC}$	Pd, W	Ohm	Ohm
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_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 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.

4. Production Dimensions (millimeter)

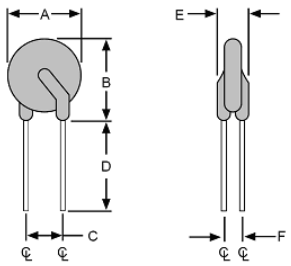


Fig.1

Lead Size: 24AWG

φ 0.51 mm Diameter

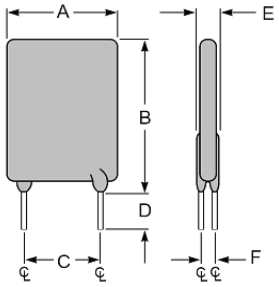


Fig.2

Lead Size: 22AWG

φ 0.65 mm Diameter

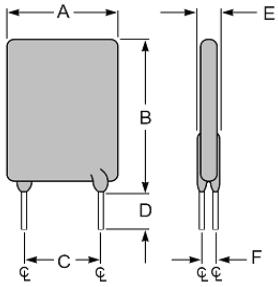


Fig.3

Lead Size: 20AWG

φ 0.81 mm Diameter

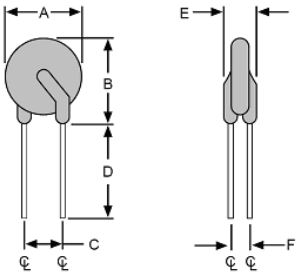


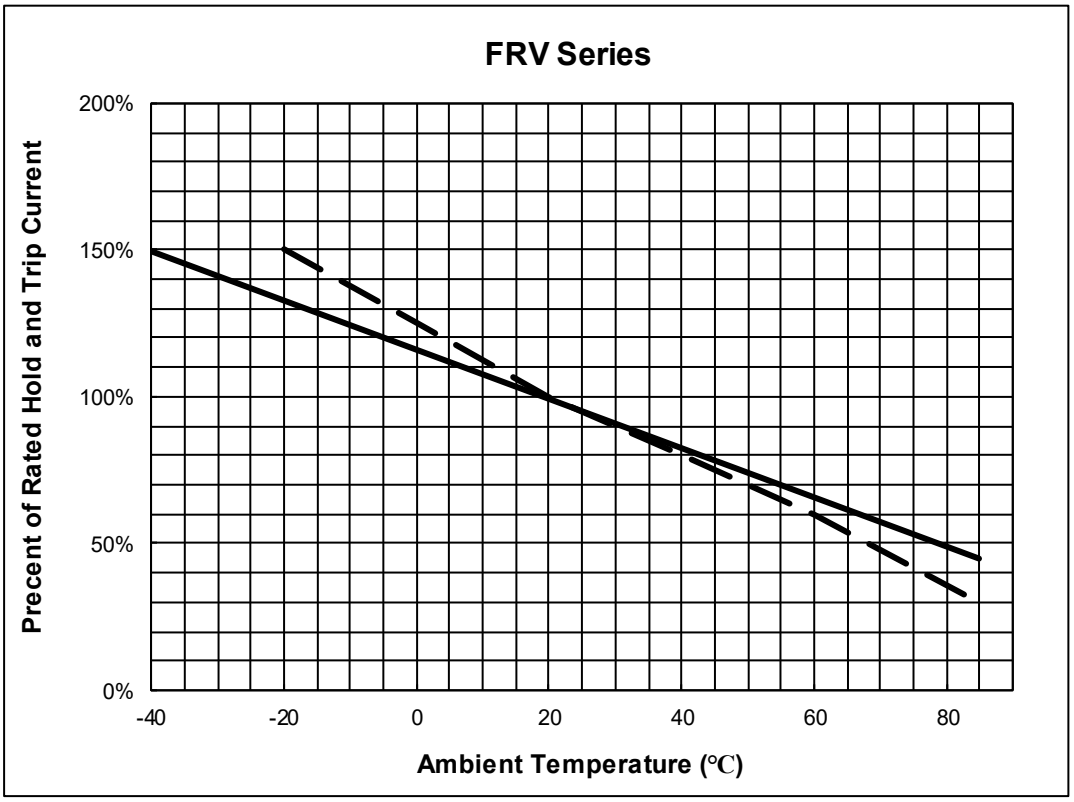
Fig.4

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

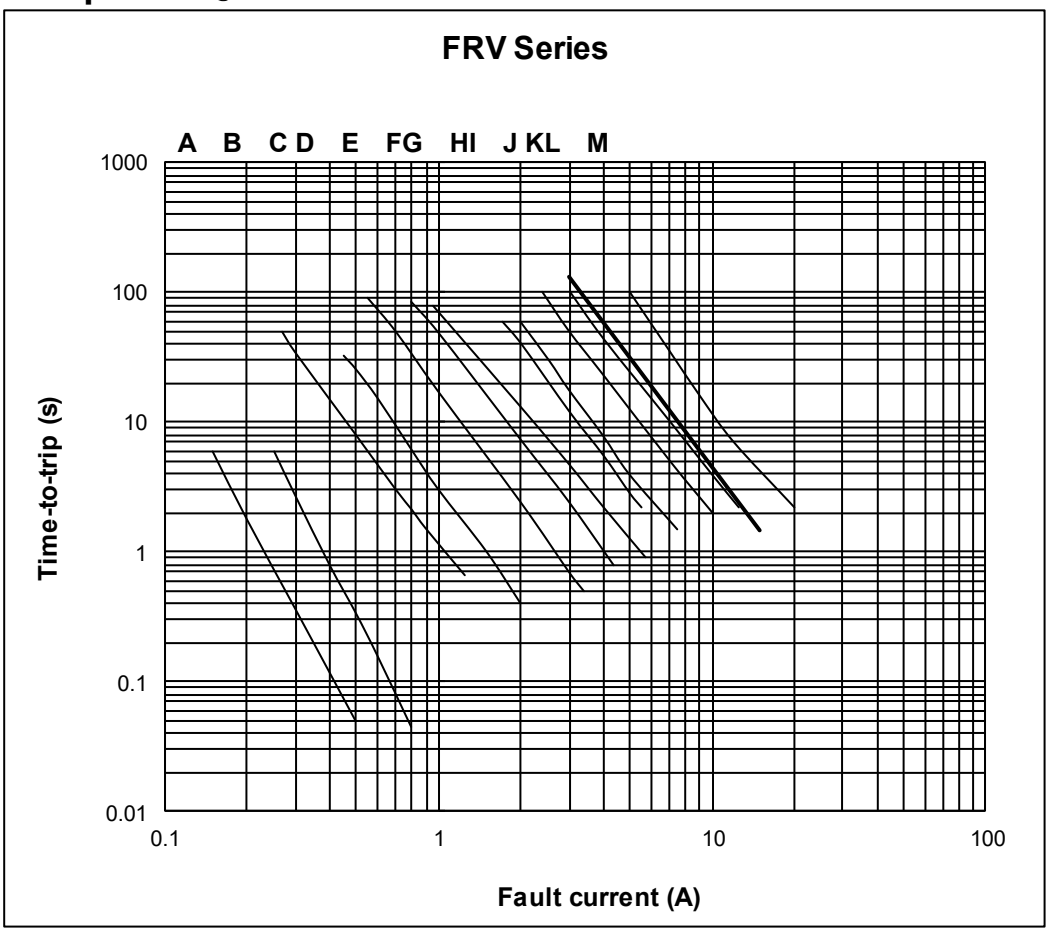


A = FRV005-240F~ FRV055-240F

B = FRV075-240F ~ FRV200-240F

6. Typical Time-To-Trip at 23℃

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



7. Material Specification

Lead material: FRV005-240F~FRV016-240F Tin plated copper clad steel, 24AWG.
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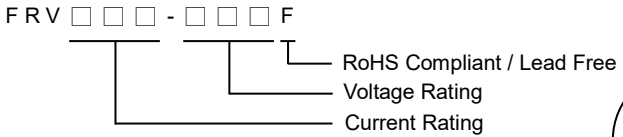
Soldering characteristics: MIL-STD-202, Method 208E.

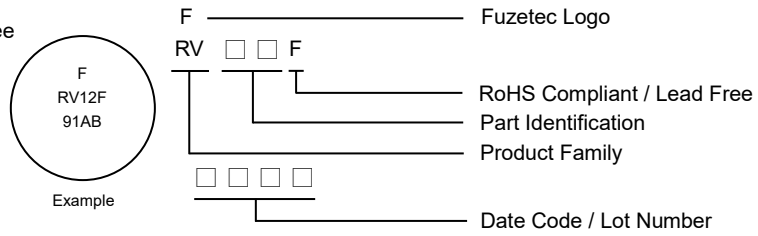
Insulating coating: Flame retardant epoxy, meets UL-94V-0 requirement.

8. Part Numbering and Marking System

Part Numbering System



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.