

 <b>FUZETEC TECHNOLOGY CO., LTD.</b>	<b>NO.</b>	<b>PQ28-122E</b>		
	<b>Product Specification and Approval Sheet</b>	<b>Version</b>	<b>A0</b>	<b>Page</b>

## Radial Leaded PTC Resettable Fuse : FRVL Series

### 1. Summary

- (a) **RoHS Compliant (Lead Free) product**
- (b) **Applications : Wide variety of electronic equipment**
- (c) **Product Features : Solid state, Radial leaded product ideal for up to 120V<sub>AC/DC</sub>**
- (d) **Operation Current : 0.10A~3.75A**
- (e) **Maximum Operating Voltage : 120V<sub>AC/DC</sub>**
- (f) **Maximum Interrupt Voltage : 135V<sub>AC/DC</sub>**
- (g) **Temperature Range : -40°C to 85°C**

### 2. Agency Recognition

**UL : File No. E211981**  
**C-UL: \*File No. E211981**  
**TÜV : File No. R50122733**

\*FRVL040-120F~FRVL070-120F and FRVL090-120F~FRVL130-120F C-UL In Process.

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

Part Number	Hold Current	Trip Current	Max.Time to Trip	Max. Current	Max. Oper. 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
FRVL010-120F	0.10	0.20	10.0	2.0	120	135	0.84	3.00	7.50
FRVL017-120F	0.17	0.34	10.0	2.0	120	135	0.84	2.00	7.00
FRVL020-120F	0.20	0.40	9.0	2.0	120	135	1.08	1.83	4.40
FRVL025-120F	0.25	0.50	7.5	3.0	120	135	1.08	1.25	3.00
FRVL030-120F	0.30	0.60	8.5	3.0	120	135	1.44	0.88	2.10
FRVL040-120F	0.40	0.80	6.5	3.0	120	135	1.44	0.55	1.29
FRVL050-120F	0.50	1.00	6.0	3.0	120	135	1.56	0.50	1.17
FRVL065-120F	0.65	1.30	5.7	5.0	120	135	1.68	0.31	0.72
FRVL070-120F	0.75	1.50	6.3	5.0	120	135	1.80	0.25	0.60
FRVL075-120F	0.75	1.50	15.0	7.5	120	135	2.64	0.25	0.69
FRVL090-120F	0.90	1.80	7.2	5.0	120	135	1.80	0.20	0.47
FRVL100-120F	1.00	2.00	15.0	10.0	120	135	2.64	0.18	0.47
FRVL110-120F	1.10	2.20	8.2	8.0	120	135	2.28	0.15	0.38
FRVL125-120F	1.25	2.50	20.0	12.5	120	135	2.88	0.11	0.33
FRVL130-120F	1.35	2.70	9.6	10.0	120	135	2.64	0.12	0.30
FRVL135-120F	1.35	2.70	20.0	13.5	120	135	3.12	0.11	0.30
FRVL160-120F	1.60	3.20	11.4	12.0	120	135	3.12	0.09	0.22
FRVL185-120F	1.85	3.70	12.6	12.0	120	135	3.36	0.08	0.19
FRVL200-120F	2.00	4.20	36.0	20.0	120	135	4.32	0.08	0.21
FRVL250-120F	2.50	5.00	15.6	15.0	120	135	4.44	0.05	0.13
FRVL300-120F	3.00	6.00	19.8	17.0	120	135	4.56	0.04	0.10
FRVL375-120F	3.75	7.50	24.0	20.0	120	135	4.80	0.03	0.08

NOTE : Specification subject to change without notice.

2019/9/18



IH=Hold current-maximum current at which the device will not trip at 23°C still air.  
 IT=Trip current-minimum current at which the device will always trip at 23°C 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°C still air environment.  
 RMIN=Minimum device resistance at 23°C.  
 R1MAX=Maximum device resistance at 23°C, 1 hour after tripping .  
 Physical specifications:  
 Lead material: FRVL010-120F Tin plated copper clad steel, 24AWG.  
                   FRVL017-120F Tin plated copper, 24AWG.  
                   FRVL020-120F~FRVL070-120F and FRVL090-120F Tin plated copper, 22AWG.  
                   FRVL075-120F and FRVL100-120F~FRVL375-120F 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)**

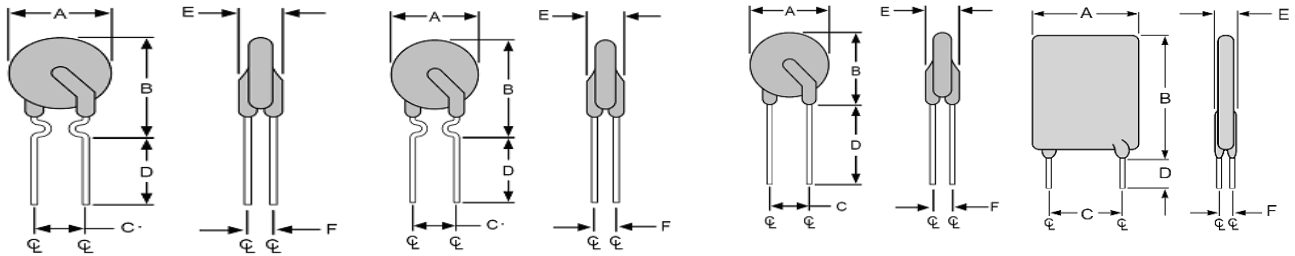


Fig.1

**FRVL010-120F~FRVL017-120F**  
 Lead Size :24AWG  
 Φ 0.51 mm Diameter

Fig.2

**FRVL020-120F~FRVL090-120F**  
 Lead Size :22AWG  
 Φ 0.65 mm Diameter

Fig.3

**FRVL110-120F~FRVL375-120F**  
 Lead Size :20AWG  
 Φ 0.81 mm Diameter

Fig.4

**FRVL075-120F ~FRVL200-120F**  
 Lead Size : 20AWG  
 Φ 0.81 mm Diameter

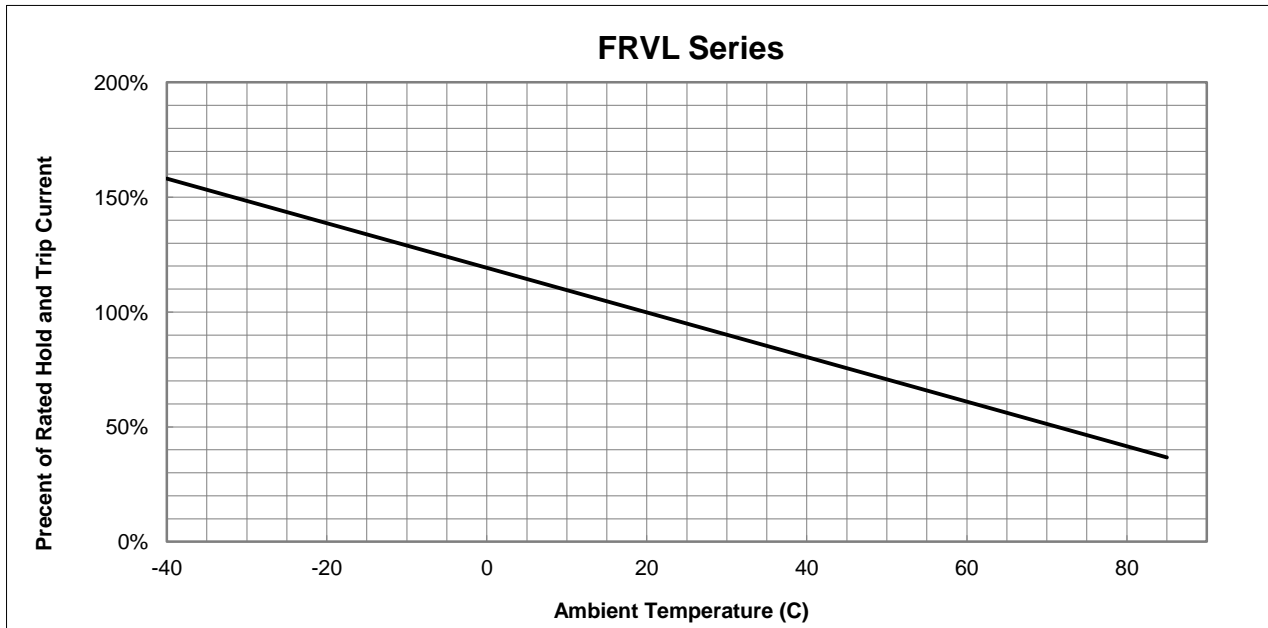
Part Number	Fig.	A	B	C	D	E	F
		Maximum	Maximum	Typical	Minimum	Maximum	Typical
FRVL010-120F	1	7.9	13.0	5.1	7.6	3.8	2.2
FRVL017-120F	1	7.9	13.0	5.1	7.6	3.8	2.2
FRVL020-120F	2	7.9	13.0	5.1	7.6	3.8	2.2
FRVL025-120F	2	7.9	13.0	5.1	7.6	3.8	2.2
FRVL030-120F	2	7.9	13.0	5.1	7.6	3.8	2.2
FRVL040-120F	2	8.2	14.2	5.1	7.6	3.8	2.2
FRVL050-120F	2	9.2	14.9	5.1	7.6	3.8	2.2
FRVL065-120F	2	9.7	14.9	5.1	7.6	3.8	2.2
FRVL070-120F	2	10.6	15.5	5.1	7.6	3.8	2.2
FRVL075-120F	4	10.9	17.0	5.1	7.6	4.1	2.2
FRVL090-120F	2	11.9	15.9	5.1	7.6	3.8	2.2
FRVL100-120F	4	11.5	20.1	5.1	7.6	4.1	2.2
FRVL110-120F	3	13.3	18.3	5.1	7.6	4.1	2.2
FRVL125-120F	4	14.0	21.7	5.1	7.6	4.1	2.2
FRVL130-120F	3	15.5	20.6	5.1	7.6	4.1	2.2
FRVL135-120F	4	16.3	21.7	5.1	7.6	4.1	2.2
FRVL160-120F	3	17.5	22.5	5.1	7.6	4.1	2.2

NOTE : Specification subject to change without notice.



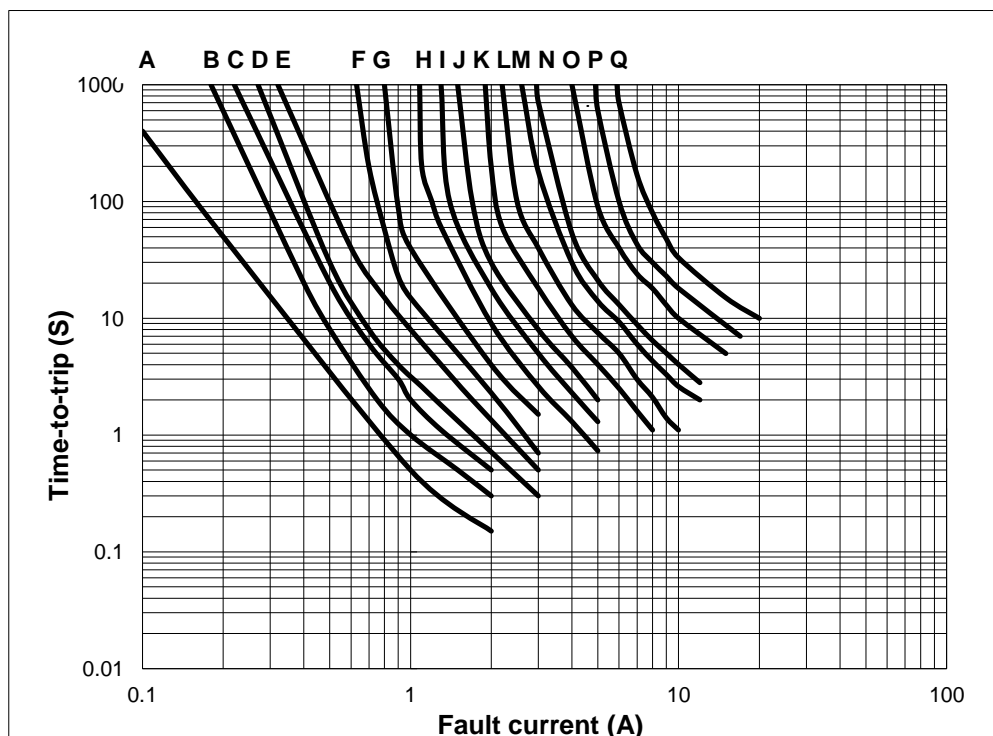
FRVL185-120F	3	19.9	24.9	5.1	7.6	4.1	2.2
FRVL200-120F	4	23.5	27.9	10.2	7.6	4.1	2.2
FRVL250-120F	3	22.5	27.5	10.2	7.6	4.1	2.2
FRVL300-120F	3	25.5	30.0	10.2	7.6	4.1	2.2
FRVL375-120F	3	29.5	34.0	10.2	7.6	4.1	2.2

### 5. Thermal Derating Curve



### 6. Typical Time-To-Trip at 23°C

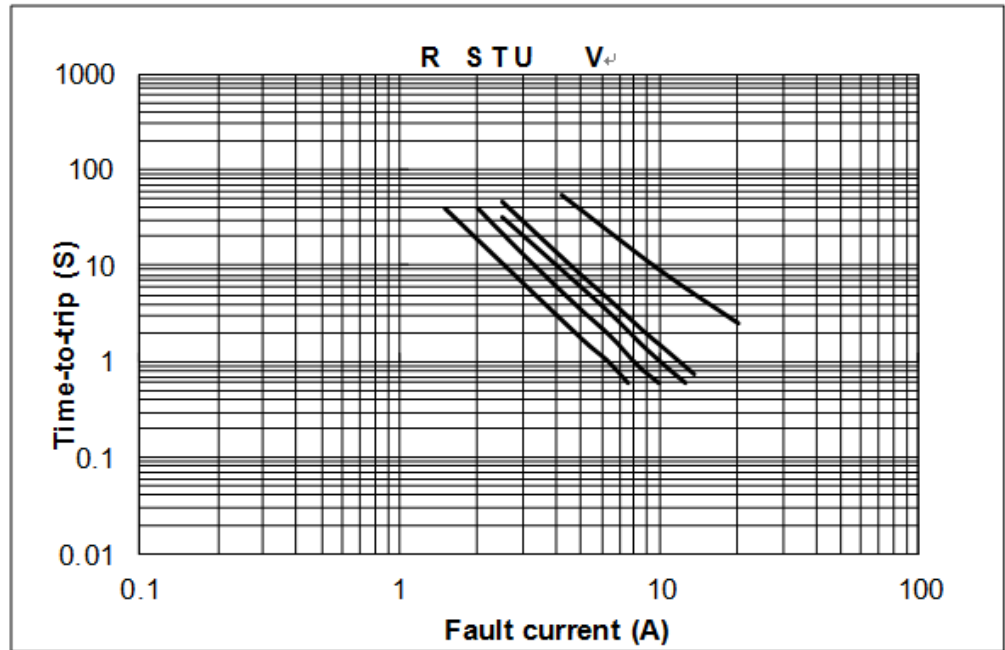
- A=FRVL010-120F
- B=FRVL017-120F
- C=FRVL020-120F
- D=FRVL025-120F
- E=FRVL030-120F
- F=FRVL040-120F
- G=FRVL050-120F
- H=FRVL065-120F
- I=FRVL070-120F
- J=FRVL090-120F
- K=FRVL110-120F
- L=FRVL130-120F
- M=FRVL160-120F
- N=FRVL185-120F
- O=FRVL250-120F
- P=FRVL300-120F
- Q=FRVL375-120F



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- R=FRVL075-120F
- S=FRVL100-120F
- T=FRVL125-120F
- U=FRVL135-120F
- V=FRVL200-120F



### 7. Material Specification

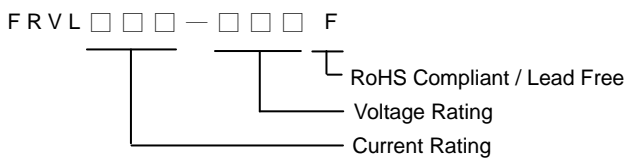
- Lead material : FRVL010-120F Tin plated copper clad steel, 24 AWG.
- FRVL017-120F Tin plated copper, 24 AWG.
- FRVL020-120F~FRVL070-120F and FRVL090-120F Tin plated copper, 22AWG.
- FRVL075-120F and FRVL100-120F~FRVL375-120F Tin plated copper, 20AWG.

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

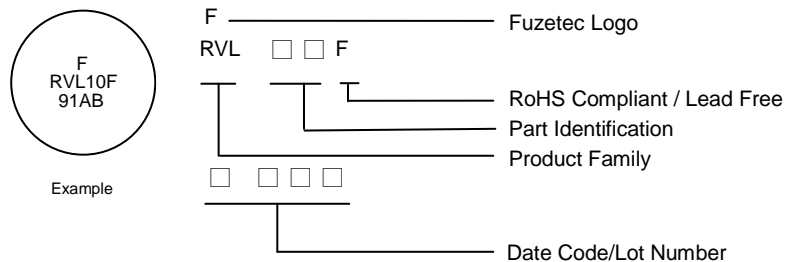
Insulating coating:Flame retardant epoxy, meets UL-94V-0 requirement

### 8. Part Numbering and Marking System

#### Part Numbering System



#### 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.



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