

<b>RFE</b>    <b>FUZETEC</b>	<b>NO.</b>	<b>PQ02-101E</b>		
<b>Product Specification and Approval Sheet</b>	<b>Version</b>	<b>1</b>	<b>Page</b>	<b>1/3</b>

## Radial Leaded PTC Resettable Fuse: FRU Series

### 1. Summary

- (a) **RoHs Compliant (Lead Free) Product**
- (b) **Applications: Wide variety of electronic equipment**
- (c) **Product Features: Low resistance, High hold current, Solid state, Radial leaded product ideal for up to 30V<sub>DC</sub>**
- (d) **Operation Current: 0.9A~9.0A**
- (e) **Maximum Voltage: 30V<sub>DC</sub>**
- (f) **Temperature Range: -40°C to 85°C**

### 2. Agency Recognition

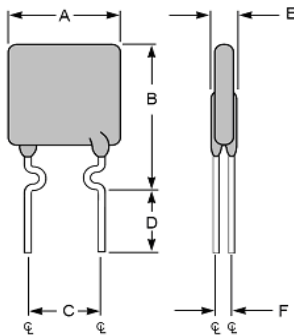
UL: File No. E211981  
 C-UL: File No. E211981  
 TÜV: File No. R50004084

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

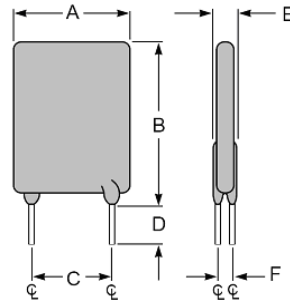
Part Number	Hold Current	Trip Current	Max. Time To Trip	Maximum Current	Rated Voltage	Typical Power	Resistance	
							R <sub>MIN</sub>	R <sub>1MAX</sub>
	I <sub>H</sub> , A	I <sub>T</sub> , A	at 5xI <sub>H</sub> , s	I <sub>MAX</sub> , A	V <sub>MAX</sub> , V <sub>DC</sub>	P <sub>d</sub> , W	Ohm	Ohm
FRU090-30F	0.90	1.80	5.9	100	30	0.6	0.070	0.220
FRU110-30F	1.10	2.20	6.6	100	30	0.7	0.050	0.170
FRU135-30F	1.35	2.70	7.3	100	30	0.8	0.040	0.130
FRU160-30F	1.60	3.20	8.0	100	30	0.9	0.030	0.110
FRU185-30F	1.85	3.70	8.7	100	30	1.0	0.030	0.090
FRU250-30F	2.50	5.00	10.3	100	30	1.2	0.020	0.070
FRU300-30F	3.00	6.00	10.8	100	30	2.0	0.020	0.080
FRU400-30F	4.00	8.00	12.7	100	30	2.5	0.010	0.050
FRU500-30F	5.00	10.00	14.5	100	30	3.0	0.010	0.050
FRU600-30F	6.00	12.00	16.0	100	30	3.5	0.005	0.040
FRU700-30F	7.00	14.00	17.5	100	30	3.8	0.005	0.030
FRU800-30F	8.00	16.00	18.8	100	30	4.0	0.005	0.020
FRU900-30F	9.00	18.00	20.0	100	30	4.2	0.005	0.020

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.  
 I<sub>MAX</sub>= Maximum fault current device can withstand without damage at rated voltage (V<sub>MAX</sub>).  
 V<sub>MAX</sub>=Maximum voltage device can withstand without damage at its rated current.  
 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: FRU090-30F~FRU250-30F Tin plated copper clad steel, 24 AWG.  
 FRU300-30F~FRU900-30F Tin plated copper, 20 AWG.  
 Soldering characteristics: MIL-STD-202, Method 208E.  
 Insulating coating: Flame retardant epoxy, meets UL-94V-0 requirement.

**4. Production Dimensions (millimeter)**



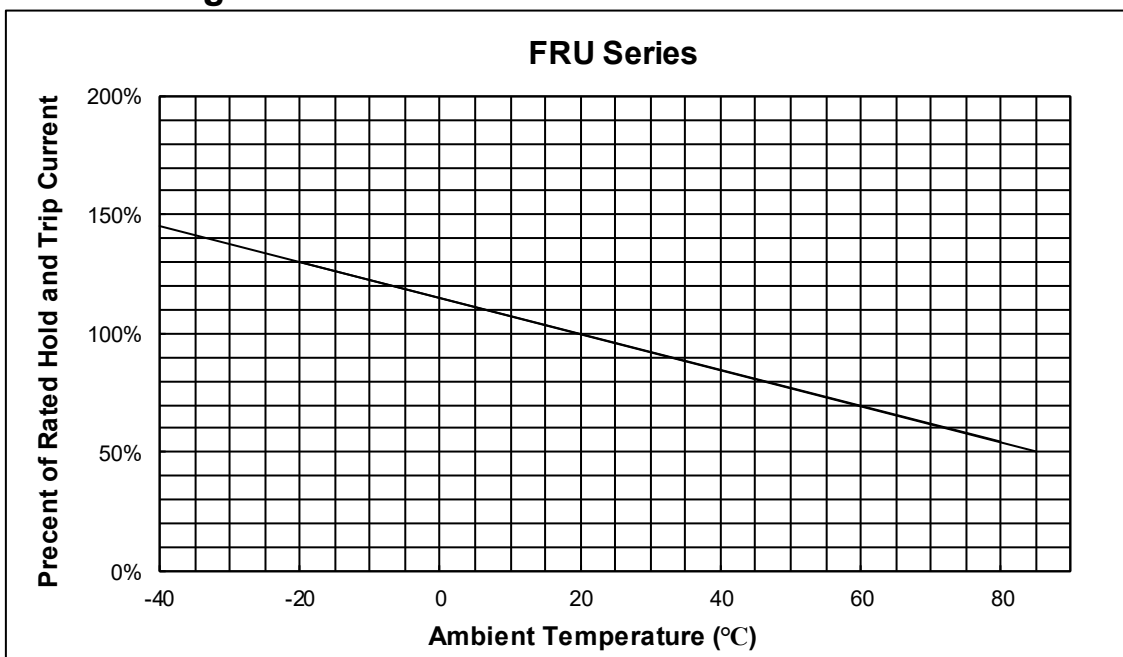
**Fig. 1**  
Lead Size: 24AWG  
φ 0.51 mm Diameter



**Fig. 2**  
Lead Size: 20AWG  
φ 0.81 mm Diameter

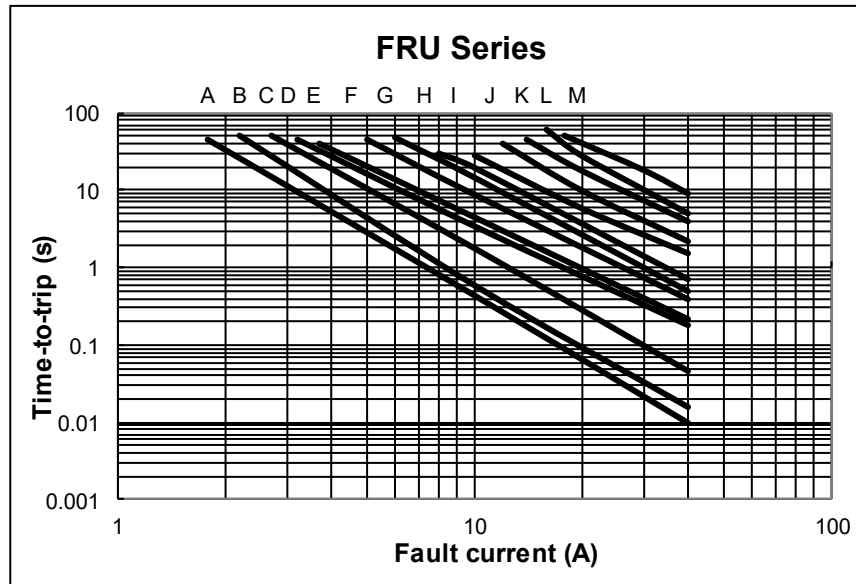
Part Number	Fig	A	B	C	D	E	F
		Maximum	Maximum	Typical	Minimum	Maximum	Typical
FRU090-30F	1	7.4	12.2	5.1	7.6	3.0	0.9
FRU110-30F	1	7.4	14.2	5.1	7.6	3.0	0.9
FRU135-30F	1	8.9	13.5	5.1	7.6	3.0	0.9
FRU160-30F	1	8.9	15.2	5.1	7.6	3.0	0.9
FRU185-30F	1	10.2	15.7	5.1	7.6	3.0	0.9
FRU250-30F	1	11.4	18.3	5.1	7.6	3.0	0.9
FRU300-30F	2	11.4	17.3	5.1	7.6	3.0	1.2
FRU400-30F	2	14.0	20.1	5.1	7.6	3.0	1.2
FRU500-30F	2	14.0	24.9	10.2	7.6	3.0	1.2
FRU600-30F	2	16.5	24.9	10.2	7.6	3.0	1.2
FRU700-30F	2	19.1	26.7	10.2	7.6	3.0	1.2
FRU800-30F	2	21.6	29.2	10.2	7.6	3.0	1.2
FRU900-30F	2	24.1	29.7	10.2	7.6	3.0	1.2

**5. Thermal Derating Curve**



### 6. Typical Time-To-Trip at 23°C

- A =FRU090-30F
- B =FRU110-30F
- C =FRU135-30F
- D =FRU160-30F
- E =FRU185-30F
- F =FRU250-30F
- G =FRU300-30F
- H =FRU400-30F
- I =FRU500-30F
- J =FRU600-30F
- K =FRU700-30F
- L =FRU800-30F
- M =FRU900-30F



### 7. Material Specification

Lead material: FRU090-30F~FRU250-30F Tin plated copper clad steel, 24 AWG.

FRU300-30F~FRU900-30F Tin plated copper, 20 AWG.

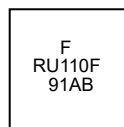
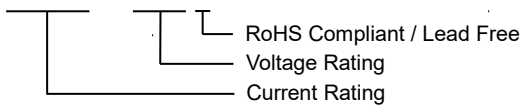
Soldering characteristics: MIL-STD-202, Method 208E.

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

### 8. Part Numbering and Marking System

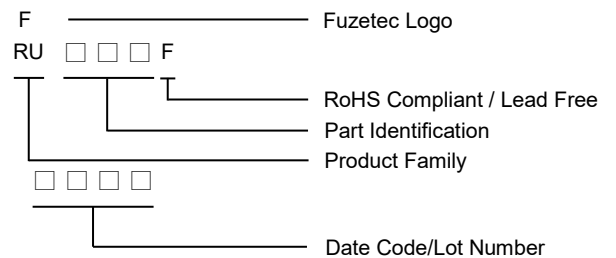
#### Part Numbering System

FRU □ □ □ - □ □ F



Example

#### 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.