

 <b>FUZETEC TECHNOLOGY CO., LTD.</b>	<b>NO.</b>	<b>PQ15-101E</b>		
	<b>Product Specification and Approval Sheet</b>	<b>Version</b>	<b>A2</b>	<b>Page</b>

## Radial Leaded PTC Resettable Fuse: FRT Series

### 1. Summary

- (a) **RoHS Compliant (Lead Free) Product**
- (b) **Applications: IEEE 1394 FireWire, Computers & Consumer electronics**
- (c) **Product Features: Fast trip time, Lower Trip-to-hold Ratio, Radial-leaded product ideal for up to 36VDC**
- (d) **Operation Current: 0.50A~2.50A**
- (e) **Maximum Voltage: 36VDC**
- (f) **Temperature Range : -40°C to 85°C**

### 2. Agency Recognition

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

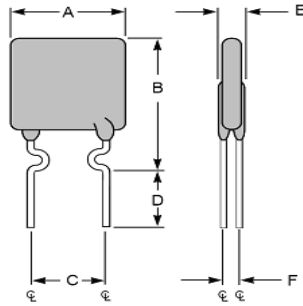
### 3. Electrical Characteristics (23°C)

Part Number	Hold Current	Trip Current	Max.Time To Trip	Max. Current	Rated 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> , VDC	P <sub>d</sub> , W	R <sub>MIN</sub>	R <sub>1MAX</sub>
							Ohms	Ohms
<b>FRT050-33F</b>	0.50	1.10	5.0	40	36	0.67	0.140	0.448
<b>FRT075-33F</b>	0.75	1.50	4.0	40	36	0.71	0.115	0.368
<b>FRT090-33F</b>	0.90	1.80	3.5	40	36	0.74	0.090	0.288
<b>FRT120-33F</b>	1.20	2.30	3.5	40	36	0.78	0.074	0.180
<b>FRT135-33F</b>	1.35	2.50	4.5	40	36	0.84	0.059	0.143
<b>FRT160-33F</b>	1.60	2.75	4.5	40	36	0.86	0.041	0.131
<b>FRT190-33F</b>	1.90	3.00	3.5	40	36	0.90	0.045	0.092
<b>FRT220-33F</b>	2.20	3.50	6.5	40	36	0.95	0.025	0.080
<b>FRT250-33F</b>	2.50	4.00	8.0	40	36	0.99	0.020	0.064

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: Tin plated copper clad steel, 24 AWG.  
 Soldering characteristics:MIL-STD-202, Method 208E.  
 Insulating coating:Flame retardant epoxy, meets UL-94V-0 requirement.



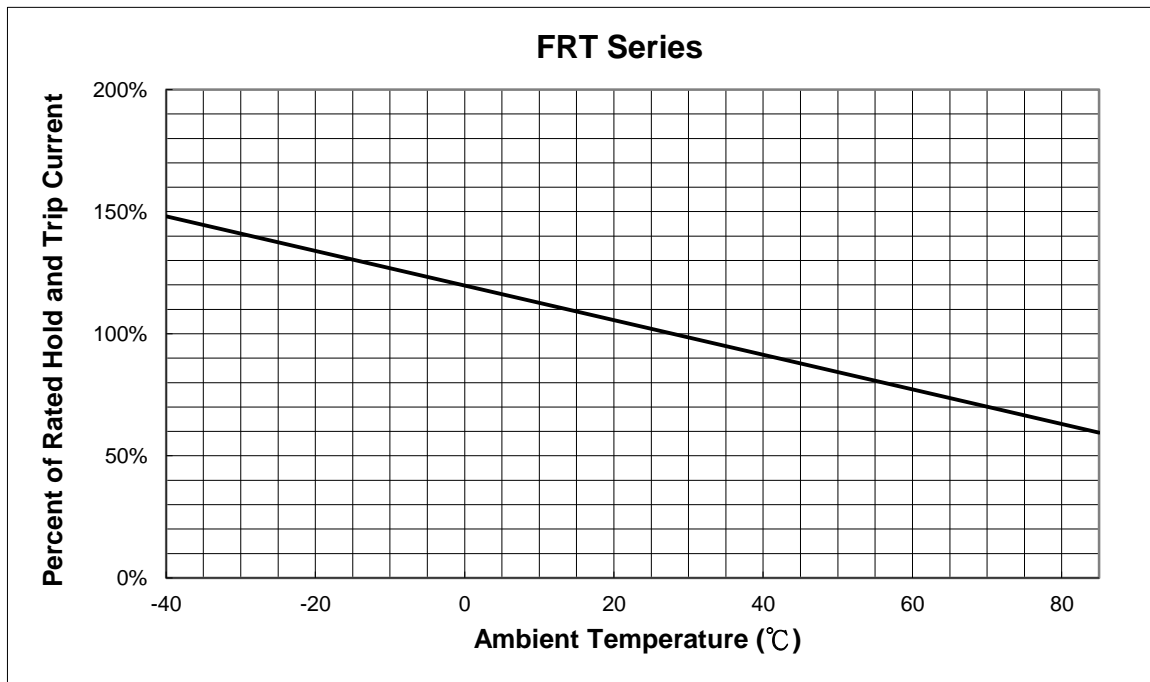
### 4. Production Dimensions (millimeter)



Lead Size :24AWG  
Φ 0.51 mm Diameter

Part Number	A	B	C	D	E	F
	Maximum	Maximum	Typical	Minimum	Maximum	Typical
FRT050-33F	7.4	12.2	5.1	7.6	3.0	1.1
FRT075-33F	7.4	12.2	5.1	7.6	3.0	1.1
FRT090-33F	7.4	12.2	5.1	7.6	3.0	1.1
FRT120-33F	7.4	12.2	5.1	7.6	3.0	1.1
FRT135-33F	7.4	14.2	5.1	7.6	3.0	1.1
FRT160-33F	7.4	14.0	5.1	7.6	3.0	1.1
FRT190-33F	9.0	13.5	5.1	7.6	3.0	1.1
FRT220-33F	10.0	17.0	5.1	7.6	3.0	1.1
FRT250-33F	10.0	19.5	5.1	7.6	3.0	1.1

### 5. Thermal Derating Curve

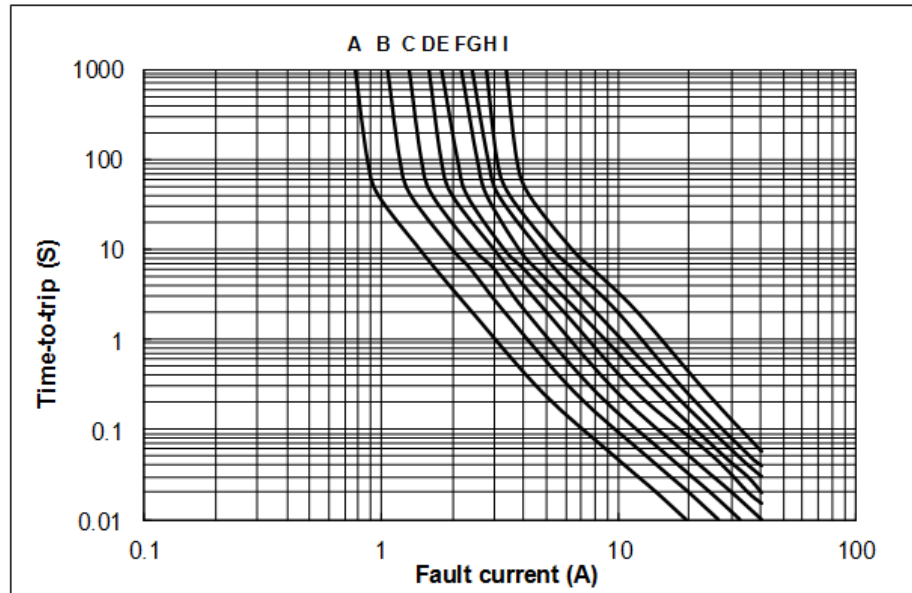


NOTE : Specification subject to change without notice.



### 6. Typical Time-To-Trip at 23°C

- A= FRT050-33F
- B= FRT075-33F
- C= FRT090-33F
- D= FRT120-33F
- E= FRT135-33F
- F= FRT160-33F
- G= FRT190-33F
- H= FRT220-33F
- I = FRT250-33F



### 7. Material Specification

Lead material : Tin plated copper clad steel, 24 AWG.

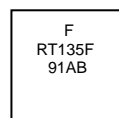
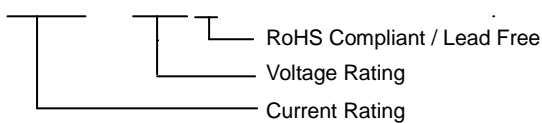
Soldering characteristics: MIL-STD-202, Method 208E.

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

### 8. Part Numbering and Marking System

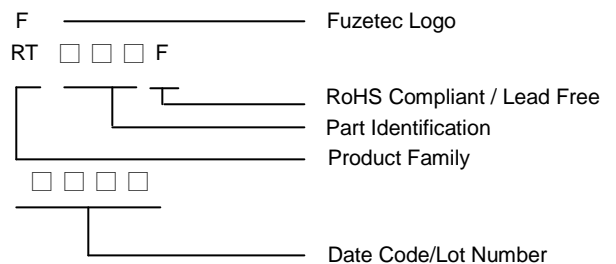
#### Part Numbering System

FRT □ □ □ - □ □ 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.

NOTE : Specification subject to change without notice.

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