



## 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 36V**
- (d) **Operation Current: 500mA~2.50A**
- (e) **Maximum Voltage: 36V**
- (f) **Temperature Range : -40°C to 85°C**

### 2. Agency Recognition

UL: E211981

C-UL: E211981

TUV : R50004084

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

Part Number	Hold Current	Trip Current	Maximum Current	Rated Voltage	Typical Power	Resistance	
	$I_H, A$	$I_T, A$	$I_{MAX}, A$	$V_{MAX}, V_{dc}$	$P_d, W$	$R_{MIN}$ $\Omega$	$R_{1MAX}$ $\Omega$
FRT050-33F	0.50	1.10	40	36	0.67	0.140	0.448
FRT075-33F	0.75	1.50	40	36	0.71	0.115	0.368
FRT090-33F	0.90	1.80	40	36	0.74	0.090	0.288
FRT120-33F	1.20	2.30	40	36	0.78	0.074	0.180
FRT135-33F	1.35	2.50	40	36	0.84	0.059	0.143
FRT160-33F	1.60	2.75	40	36	0.86	0.041	0.131
FRT190-33F	1.90	3.00	40	36	0.90	0.045	0.092
FRT220-33F	2.20	3.50	40	36	0.95	0.025	0.080
FRT250-33F	2.50	4.00	40	36	0.99	0.020	0.064

$I_H$ =Hold current-maximum current at which the device will not trip at 23°C still air.

$I_T$ =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 ( $V_{MAX}$ ).

$P_d$ =Typical power dissipated from device when in tripped state in 23°C still air environment.

$R_{MIN}$ =Minimum device resistance at 23°C.

$R_{1MAX}$ =Maximum device resistance at 23°C, 1 hour after tripping.

Physical specifications:

Lead material: Tin plated copper, 24 AWG.

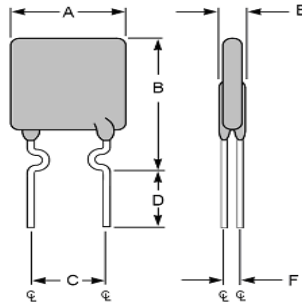
Soldering characteristics:MIL-STD-202, Method 208E.

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

NOTE : Specification subject to change without notice.



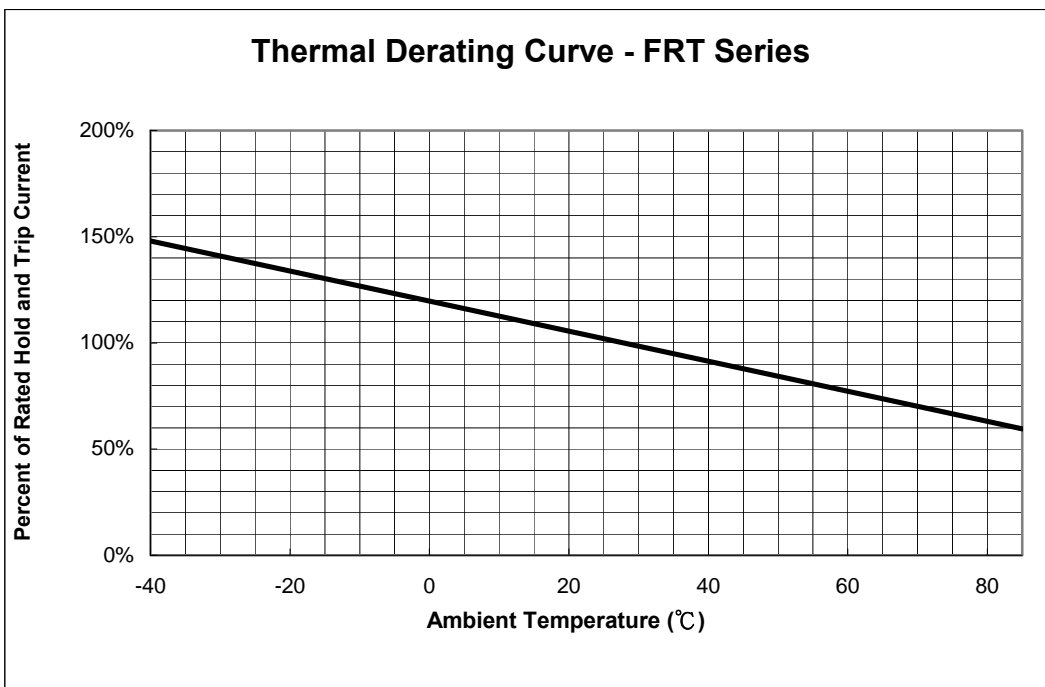
### 4. Production Dimensions (millimeter)



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

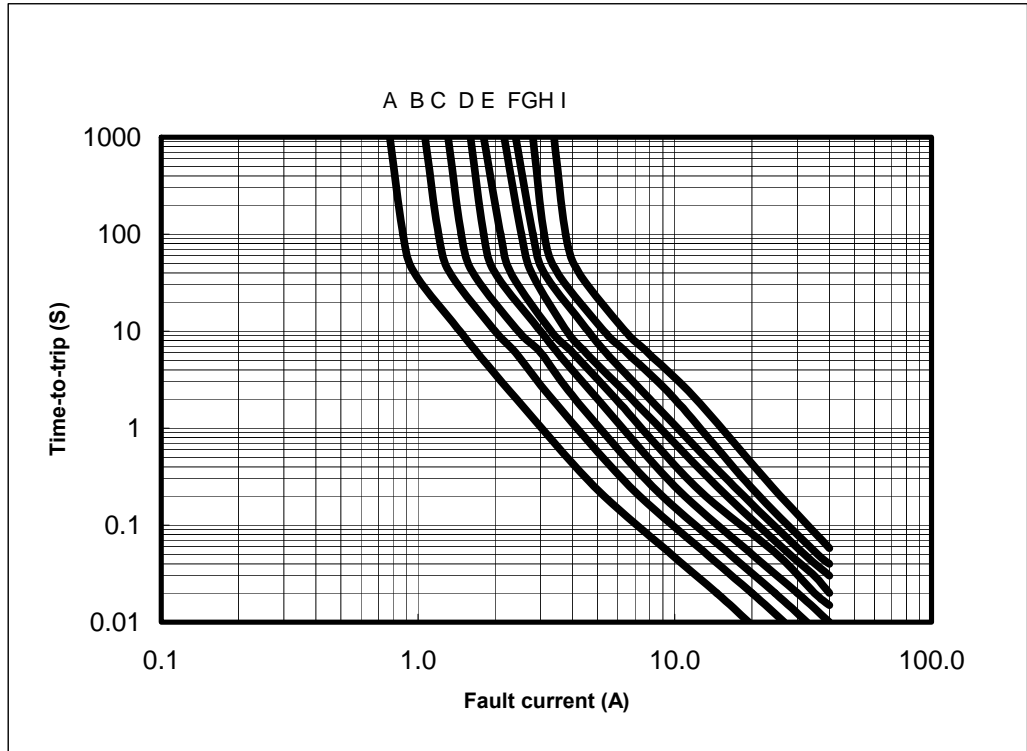


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### 6. Typical Time-To-Trip at 23°C

- 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, 24 AWG.

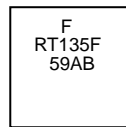
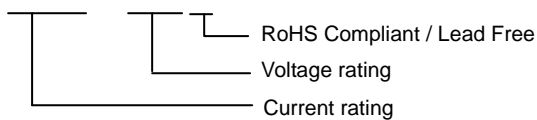
Soldering characteristics: MIL-STD-202, Method 208E.

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

### 8. Part Numbering and Marking System

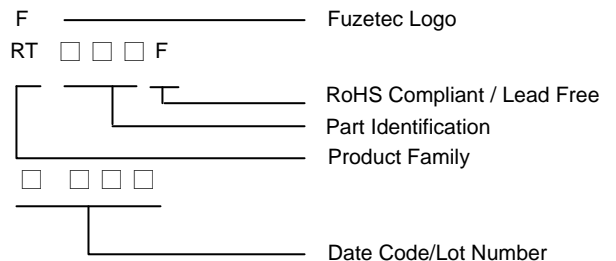
#### Part Numbering System

FRT □ □ □ - □ □ F



Example

#### Part Marking System



**Warning:** -Operation beyond the specified maximum ratings 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. Prolonged contact will damage the device performance.

NOTE : Specification subject to change without notice.