

## FRA Series (Obsolete)



**RoHS Compliant & Lead Free**



**Application:**

Wide variety of electronic equipment

**Product Features:**

Low hold current, Solid state  
Radial-leaded product ideal for up to 120V<sub>DC</sub>/120V<sub>AC</sub>

**Operation Current:** 0.10A~3.75A

**Maximum Voltage:** 120V<sub>DC</sub>/120V<sub>AC</sub>

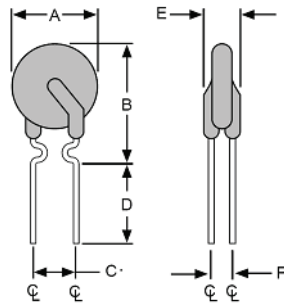
**Temperature Range:** -40°C to 85°C

## Electrical Characteristics(23°C)

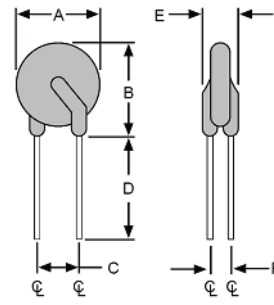
Part Number	Hold Current	Trip Current	Max.Time to Trip	Max. Current	Rated Voltage	Typical Power	Resistance Tolerance	
							R <sub>MIN</sub>	R <sub>1MAX</sub>
	I <sub>H</sub> , A	I <sub>T</sub> , A	at 5xI <sub>H</sub> , s	I <sub>MAX</sub> , A	V <sub>MAX</sub> ,V <sub>AC/DC</sub>	P <sub>d</sub> , W	Ohms	Ohms
FRA010-120F	0.10	0.20	4.0	2.0	120	0.57	2.50	7.50
FRA017-120F	0.17	0.34	3.0	2.0	120	0.59	2.00	7.00
FRA020-120F	0.20	0.40	2.2	2.0	120	0.62	1.83	4.40
FRA025-120F	0.25	0.50	2.5	3.0	120	0.68	1.25	3.00
FRA030-120F	0.30	0.60	3.0	3.0	120	0.74	0.88	2.10
FRA040-120F	0.40	0.80	3.8	3.0	120	0.84	0.55	1.29
FRA050-120F	0.50	1.00	4.0	3.0	120	1.16	0.50	1.17
FRA065-120F	0.65	1.30	5.3	3.0	120	1.32	0.31	0.72
FRA075-120F	0.75	1.50	6.3	5.0	120	1.38	0.25	0.60
FRA090-120F	0.90	1.80	7.2	5.0	120	1.49	0.20	0.47
FRA110-120F	1.10	2.20	8.2	5.0	120	2.25	0.15	0.38
FRA135-120F	1.35	2.70	9.6	8.0	120	2.55	0.12	0.30
FRA160-120F	1.60	3.20	11.4	8.0	120	2.85	0.09	0.22
FRA185-120F	1.85	3.70	12.6	8.0	120	3.15	0.08	0.19
FRA250-120F	2.50	5.00	15.6	12.0	120	3.75	0.05	0.13
FRA300-120F	3.00	6.00	19.8	15.0	120	4.20	0.04	0.10
FRA375-120F	3.75	7.50	24.0	15.0	120	4.80	0.03	0.08

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 the 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: FRA010-120F~FRA090-120F Tin plated copper, 22 AWG.  
 FRA110-120F~FRA375-120F Tin plated copper, 20 AWG.  
 Soldering characteristics:MIL-STD-202, Method 208E.  
 Insulating coating:Flame retardant epoxy, meets UL 94 V-0 requirement.

## FRA Product Dimensions (Millimeter)



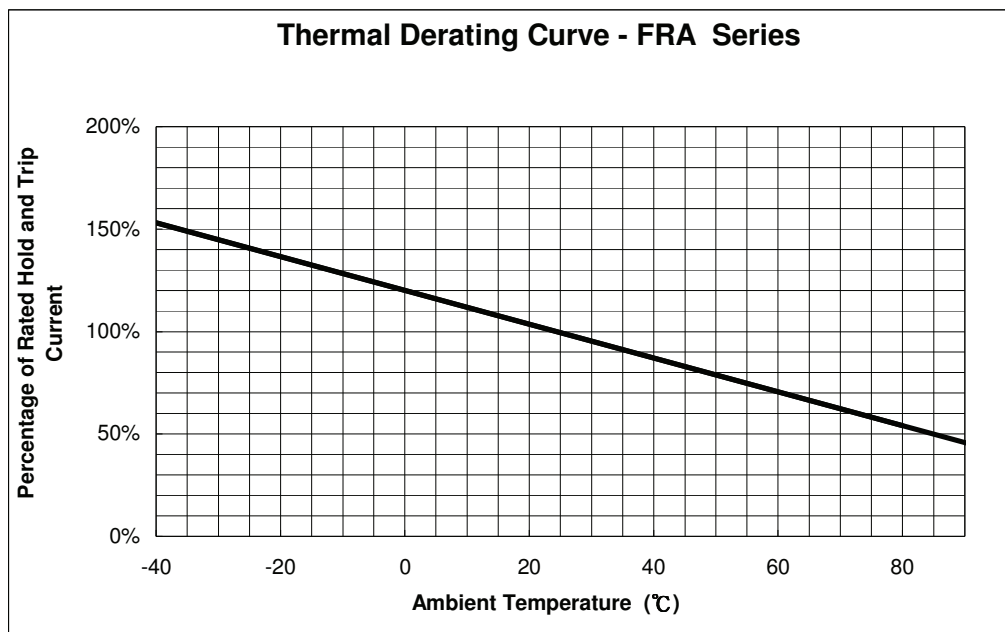
FRA010-120F ~ FRA090-120F  
Lead Size: 22AWG,  
Φ 0.65 mm Diameter



FRA110-120F ~ FRA375-120F  
Lead Size : 20AWG,  
Φ 0.81 mm Diameter

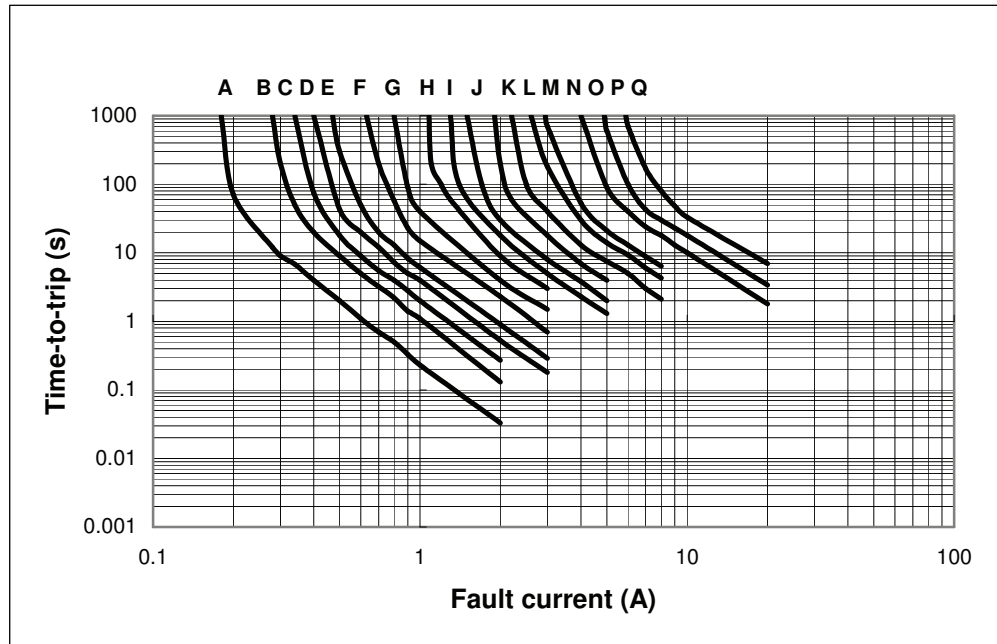
Part Number	A	B	C	D	E	F
	Maximum	Maximum	Typical	Minimum	Maximum	Typical
FRA010-120F	7.9	12.7	5.1	7.6	5.0	3.0
FRA017-120F	7.9	12.7	5.1	7.6	5.0	3.0
FRA020-120F	7.9	12.7	5.1	7.6	5.0	3.0
FRA025-120F	7.9	12.7	5.1	7.6	5.0	3.0
FRA030-120F	7.9	13.0	5.1	7.6	5.0	3.0
FRA040-120F	8.2	14.2	5.1	7.6	5.0	3.0
FRA050-120F	9.2	14.9	5.1	7.6	5.0	3.0
FRA065-120F	9.7	14.9	5.1	7.6	5.0	3.0
FRA075-120F	10.6	15.5	5.1	7.6	5.0	3.0
FRA090-120F	11.9	15.9	5.1	7.6	5.0	3.0
FRA110-120F	13.3	18.3	5.1	7.6	5.0	3.0
FRA135-120F	15.5	20.6	5.1	7.6	5.0	3.0
FRA160-120F	17.5	22.5	5.1	7.6	5.0	3.0
FRA185-120F	19.9	24.9	5.1	7.6	5.0	3.0
FRA250-120F	22.5	27.5	10.2	7.6	5.0	3.0
FRA300-120F	25.5	30.0	10.2	7.6	5.0	3.0
FRA375-120F	29.5	34.0	10.2	7.6	5.0	3.0

## Thermal Derating Curve

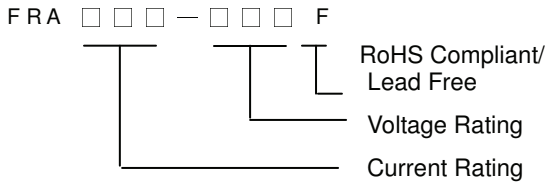


## Typical Time-To-Trip at 23°C

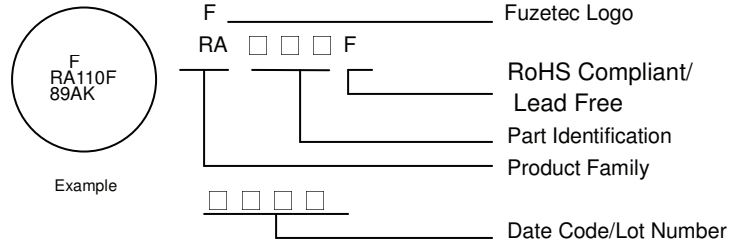
- A = FRA010-120F
- B = FRA017-120F
- C = FRA020-120F
- D = FRA025-120F
- E = FRA030-120F
- F = FRA040-120F
- G = FRA050-120F
- H = FRA065-120F
- I = FRA075-120F
- J = FRA090-120F
- K = FRA110-120F
- L = FRA135-120F
- M = FRA160-120F
- N = FRA185-120F
- O = FRA250-120F
- P = FRA300-120F
- Q = FRA375-120F



## Part Numbering System



## Part Marking System



## Standard Package

P/N	Pcs /Bag	Reel/Tape
FRA010-120F	300	1.5K
FRA017-120F	300	1.5K
FRA020-120F	300	1.5K
FRA025-120F	300	1.5K
FRA030-120F	300	1.5K
FRA040-120F	300	1.5K
FRA050-120F	300	1.5K
FRA065-120F	300	1.5K
FRA075-120F	300	1.5K

P/N	Pcs /Bag	Reel/Tape
FRA090-120F	300	1.5K
FRA110-120F	300	600
FRA135-120F	200	600
FRA160-120F	200	-----
FRA185-120F	200	-----
FRA250-120F	100	-----
FRA300-120F	100	-----
FRA375-120F	100	-----

- 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.

