

# FUSES

## Resettable fuses

# PFRA

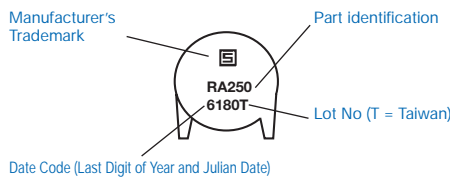
### Wire leaded PTC-Fuses Type PFRA

Cured, flame retardant epoxy  
Polymer insulating material  
meets UL 94V-0  
requirements  
Bulk packaging, tape and  
reel and Ammo-Pack avail-  
able on most models  
Agency recognition:  
\*\*UL, CSA, TÜV



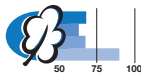
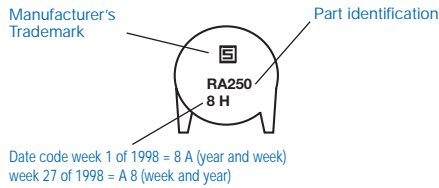
#### Typical Part Marking PFRA.030-900

Layout may vary

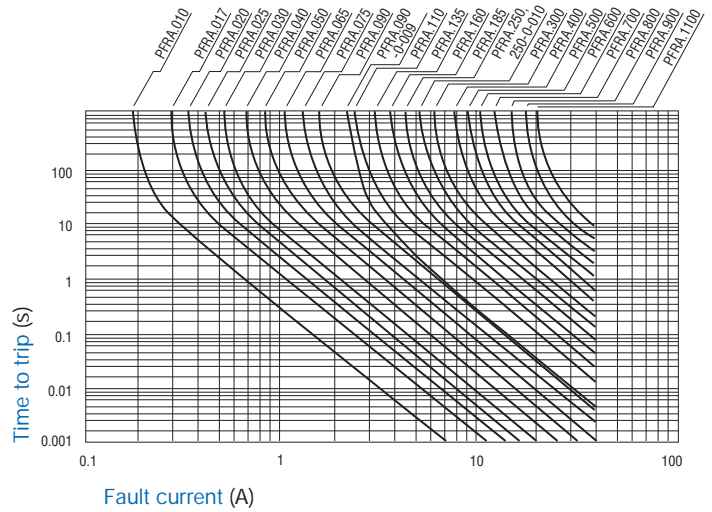


#### Typical Part Marking PFRA.010-025

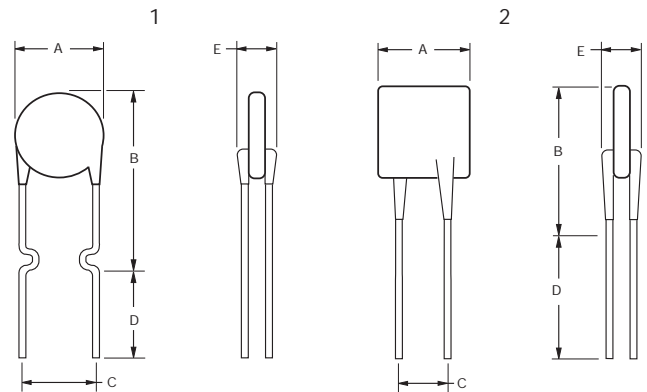
Layout may vary



### Typical Time to Trip at 23 °C



### Package



### Applications

Almost anywhere there is a low voltage power supply and a load to be protected, including:

- Computers and peripherals
- Transformer for toys
- Motors/fans

Kinked lead options available for board standoff

\*\* PFRA.010-050 rated at 30 V

### Environmental Characteristics

Operating/Storage Temperature	-40 °C to +85 °C	
Maximum Device Surface Temperature in Tripped State	125 °C	
Passive Aging	+85 °C, 1000 hours	±5% typ. resist. change
Humidity Aging	+85 °C, 85% R.H. 1000 hours	±5% typ. resist. change
Thermal Shock*)	+85 °C/-40 °C 10 times	±10% typ. resist. change
Mechanical Shock	MIL-STD-202, Method 213, Condition 1 (100 g, 6 sec.)	No resistance change
Solvent Resistance	MIL-STD-202, Method 215	No change
Vibration	MIL-STD-883C, Method 2007.1, Condition A	No change

\*) MIL-STD-202F, Method 107G

### Test Procedures And Requirements For Model PFRA Series

Test	Test Conditions	Accept/Reject Criteria
Visual/Mech.	Verify dimensions and materials	Per PF physical description
Resistance	In still air @ 23 °C	$R_{min} \leq R \leq R_{max}$
Time to Trip	At specified current $V_{max}$ , 23 °C	$T \leq \text{max. time to trip (sec.)}$
Hold Current	30 min. at $I_{hold}$	No trip
Trip Cycle Life	$V_{max}$ , $I_{max}$ , 100 cycles	No arcing or burning
Trip Endurance	$V_{max}$ , 48 hours	No arcing or burning

**Electrical Characteristics**

Type	V <sub>max</sub> V	I <sub>max</sub> A	I <sub>hold</sub>		I <sub>trip</sub>		Initial Resistance		1 Hour (R1) Post-Trip Resistance	Max. Time to trip at 23 °C	Tripped Power Dissipation
			Amperes		at 23 °C		Ohms at 23 °C		Ohms at 23 °C	Seconds at 23 °C	Watts at 23 °C
			Hold	Trip	min.	max.	R <sub>1 max.</sub>				
PFRA.010.X	60	40	0.10	0.20	2.50	4.50	7.50	4.0	0.38		
PFRA.017.X	60	40	0.17	0.34	3.30	5.21	8.00	3.0	0.48		
PFRA.020.X	60	40	0.20	0.40	1.50	2.84	4.40	2.2	0.40		
PFRA.025.X	60	40	0.25	0.50	1.00	1.95	3.00	2.5	0.45		
PFRA.030.X	60	40	0.30	0.60	0.76	1.36	2.10	3.0	0.50		
PFRA.040.X	60	40	0.40	0.80	0.52	0.86	1.29	3.8	0.55		
PFRA.050.X	60	40	0.50	1.00	0.41	0.77	1.17	4.0	0.75		
PFRA.065.X	60	40	0.65	1.30	0.27	0.48	0.72	5.3	0.90		
PFRA.075.X	60	40	0.75	1.50	0.18	0.40	0.60	6.3	0.90		
PFRA.090.X	60	40	0.90	1.80	0.14	0.31	0.47	7.2	1.00		
PFRA.090.X.009	30	40	0.90	1.80	0.07	0.12	0.22	5.9	0.60		
PFRA.110.X	30	40	1.10	2.20	0.10	0.18	0.27	6.6	0.70		
PFRA.135.X	30	40	1.35	2.70	0.065	0.115	0.17	7.3	0.80		
PFRA.160.X	30	40	1.60	3.20	0.055	0.105	0.15	8.0	0.90		
PFRA.185.X	30	40	1.85	3.70	0.04	0.07	0.11	8.7	1.00		
PFRA.250.X	30	40	2.50	5.00	0.025	0.048	0.07	10.3	1.20		
PFRA.250.X.010	30	40	2.50	5.00	0.020	0.05	0.08	10.3	1.20		
PFRA.300.X	30	40	3.00	6.00	0.02	0.05	0.08	10.8	2.00		
PFRA.400.X	30	40	4.00	8.00	0.01	0.03	0.05	12.7	2.50		
PFRA.500	30	40	5.00	10.00	0.01	0.03	0.05	14.5	3.00		
PFRA.600	30	40	6.00	12.00	0.005	0.02	0.04	16.0	3.50		
PFRA.700	30	40	7.00	14.00	0.005	0.02	0.03	17.5	3.80		
PFRA.800	30	40	8.00	16.00	0.005	0.02	0.03	18.8	4.00		
PFRA.900	30	40	9.00	18.00	0.005	0.01	0.02	20.0	4.20		
PFRA.1100	16	100	11.00	22.00	0.003	0.01	0.014	20.0	4.50		

**Packaging**

Bulk  
(leave.X space)

500 per bag

Tape and reel  
X=.2

PFRA.010–PFRA.160 – 12.7 mm device pitch = 3000 pcs. per reel ;  
PFRA.185–PFRA.400 – 25.4 mm device pitch = 1500 pcs. per reel  
PFRA.090.X.009 & PFR.A250.X.010 = 3000 pcs. per reel

Ammo Pack  
X=.3

PFRA.010–PFRA.160 – 12.7mm device pitch = 2000 pcs. per reel ;  
PFRA.185–PFRA.400 – 25.4mm device pitch = 1000 pcs. per reel ;  
PFRA.090.X.009 & PFRA.250.X.010 = 2000 pcs. per reel

**Dimensions**

Type	A	B	C		D	E	Style	Lead	Material
	max.	max.	nominal	Tol. ±	min.	max.			
PFRA.010.X	7.4	12.7	5.1	0.7	7.6	3.1	1	0.51 dia./ Ø	Sn/NiCu
PFRA.017.X	7.4	12.7	5.1	0.7	7.6	3.1	1	0.51 dia./ Ø	Sn/NiCu
PFRA.020.X	7.4	12.7	5.1	0.7	7.6	3.1	1	0.51 dia./ Ø	Sn/CuFe
PFRA.025.X	7.4	12.7	5.1	0.7	7.6	3.1	1	0.51 dia./ Ø	Sn/CuFe
PFRA.030.X	7.4	13.4	5.1	0.7	7.6	3.1	1	0.51 dia./ Ø	Sn/CuFe
PFRA.040.X	7.4	13.7	5.1	0.7	7.6	3.1	1	0.51 dia./ Ø	Sn/CuFe
PFRA.050.X	7.9	13.7	5.1	0.7	7.6	3.1	1	0.51 dia./ Ø	Sn/Cu
PFRA.065.X	9.7	15.2	5.1	0.7	7.6	3.1	1	0.51 dia./ Ø	Sn/Cu
PFRA.075.X	10.4	16.0	5.1	0.7	7.6	3.1	1	0.51 dia./ Ø	Sn/Cu
PFRA.090.X	11.7	16.7	5.1	0.7	7.6	3.1	1	0.51 dia./ Ø	Sn/Cu
PFRA.090.X.009	7.4	12.2	5.1	0.7	7.6	3.0	2	0.51 dia./ Ø	Sn/Cu
PFRA.110.X	8.9	14.0	5.1	0.7	7.6	3.0	1	0.51 dia./ Ø	Sn/Cu
PFRA.135.X	8.9	18.9	5.1	0.7	7.6	3.0	1	0.51 dia./ Ø	Sn/Cu
PFRA.160.X	10.2	16.8	5.1	0.7	7.6	3.0	1	0.51 dia./ Ø	Sn/Cu
PFRA.185.X	12.0	18.4	5.1	0.7	7.6	3.0	1	0.51 dia./ Ø	Sn/Cu
PFRA.250.X	12.0	18.3	5.1	0.7	7.6	3.0	2	0.81 dia./ Ø	Sn/Cu
PFRA.250.X.010	12.0	18.3	5.9	0.7	7.6	3.1	2	0.51 dia./ Ø	Sn/Cu
PFRA.300.X	12.0	18.3	5.1	0.7	7.6	3.0	2	0.81 dia./ Ø	Sn/Cu
PFRA.400.X	14.4	24.8	5.1	0.7	7.6	3.0	2	0.81 dia./ Ø	Sn/Cu
PFRA.500	17.4	24.9	10.2	0.7	7.6	3.0	2	0.81 dia./ Ø	Sn/Cu
PFRA.600	19.3	31.9	10.2	0.7	7.6	3.0	2	0.81 dia./ Ø	Sn/Cu
PFRA.700	22.1	29.8	10.2	0.7	7.6	3.0	2	0.81 dia./ Ø	Sn/Cu
PFRA.800	24.2	32.9	10.2	0.7	7.6	3.0	2	0.81 dia./ Ø	Sn/Cu
PFRA.900	24.2	32.9	10.2	0.7	7.6	3.0	2	0.81 dia./ Ø	Sn/Cu
PFRA.1100	24.2	32.9	10.2	0.7	7.6	3.0	2	0.81 dia./ Ø	Sn/Cu

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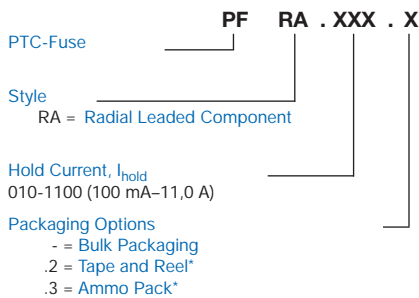
# PFRA

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### Thermal Derating Chart-I<sub>hold</sub> (Amps)

Type	Ambient Operating Temperature								
	-40 °C	-20 °C	0 °C	23 °C	40 °C	50 °C	60 °C	70 °C	85 °C
PFRA.010.X	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.04
PFRA.017.X	0.26	0.23	0.20	0.17	0.14	0.12	0.11	0.09	0.07
PFRA.020.X	0.31	0.27	0.24	0.20	0.16	0.14	0.13	0.11	0.08
PFRA.025.X	0.39	0.34	0.30	0.25	0.20	0.18	0.16	0.14	0.10
PFRA.030.X	0.47	0.41	0.36	0.30	0.24	0.22	0.19	0.16	0.12
PFRA.040.X	0.62	0.54	0.48	0.40	0.32	0.29	0.25	0.22	0.16
PFRA.050.X	0.78	0.68	0.60	0.50	0.41	0.36	0.32	0.27	0.20
PFRA.065.X	1.01	0.88	0.77	0.65	0.53	0.47	0.41	0.35	0.26
PFRA.075.X	1.16	1.02	0.89	0.75	0.61	0.54	0.47	0.41	0.30
PFRA.090.X	1.40	1.22	1.07	0.90	0.73	0.65	0.57	0.49	0.36
PFRA.090.X.009	1.40	1.22	1.07	0.90	0.73	0.65	0.57	0.49	0.36
PFRA.110.X	1.60	1.43	1.27	1.10	0.91	0.85	0.75	0.67	0.57
PFRA.135.X	1.96	1.76	1.55	1.35	1.12	1.04	0.92	0.82	0.70
PFRA.160.X	2.32	2.08	1.84	1.60	1.33	1.23	1.09	0.98	0.83
PFRA.185.X	2.68	2.41	2.13	1.85	1.54	1.42	1.26	1.13	0.96
PFRA.250.X	3.63	3.25	2.88	2.50	2.08	1.93	1.70	1.53	1.30
PFRA.250.X.010	3.63	3.25	2.88	2.50	2.08	1.93	1.70	1.53	1.30
PFRA.300.X	4.35	3.90	3.45	3.00	2.49	2.31	2.04	1.83	1.56
PFRA.400.X	5.80	5.20	4.60	4.00	3.32	3.08	2.72	2.44	2.08
PFRA.500	7.25	6.50	5.75	5.00	4.15	3.85	3.40	3.05	2.60
PFRA.600	8.70	7.80	6.90	6.00	4.98	4.62	4.08	3.66	3.12
PFRA.700	10.15	9.10	8.05	7.00	5.81	5.39	4.76	4.72	3.64
PFRA.800	11.60	10.40	9.20	8.00	6.64	6.16	5.44	4.88	4.16
PFRA.900	13.05	11.70	10.35	9.00	7.47	6.39	6.12	5.49	4.68
PFRA.1100	16.10	14.60	13.10	11.00	9.40	8.80	7.80	6.90	5.20

### How To Order



\*Packaged per E1486-B

#### Note:

Add designator "009" or "010" after Packaging Option Code to specify Models PFRA.090.009 or PFRA.250.010.