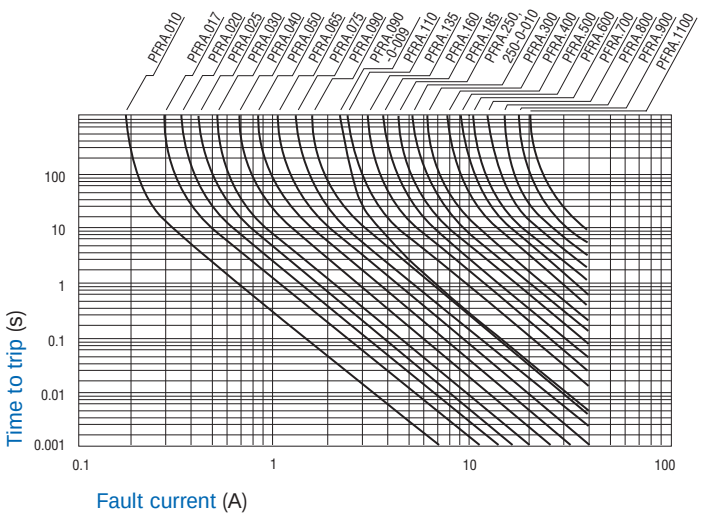
Wire leaded PTC-Fuses Type PFRA

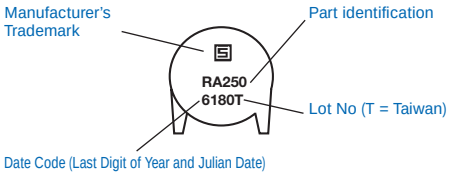
Cured, flame retardant epoxy Polymer insulating material meets UL 94V-0 requirements
Bulk packaging, tape and reel and Ammo-Pack available on most models
Agency recognition:
**UL, CSA, TÜV

Typical Time to Trip at 23 °C



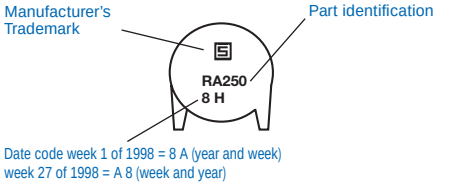
Typical Part Marking
PFRA.030–900

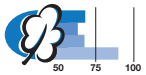
Layout may vary



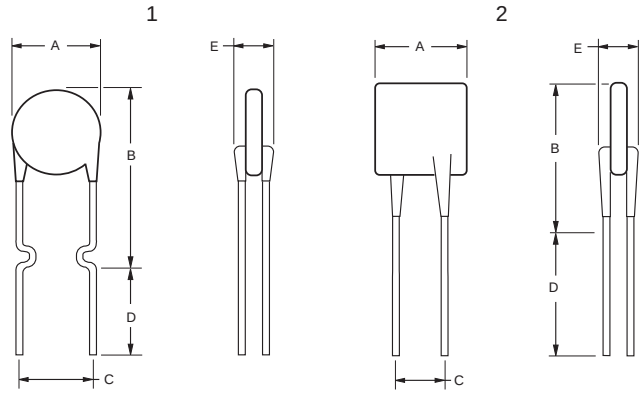
Typical Part Marking
PFRA.010–025

Layout may vary





Package



Kinked lead options available for board standoff

** PFRA.010–050 rated at 30 V

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

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 spezified current V_{max}, 23 °C	T ≤ 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_{max}	I_{max}	I_{hold}	I_{trip}	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
	V	A	Hold	Trip	min.	max.	$R_{1\ max.}$		
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			
	max.	max.	nominal	Tol. ±	min.	max.	Style	Lead	Material
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

Thermal Derating Chart-I_{hold} (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

PF RA . XXX . X

PTC-Fuse

Style
RA = Radial Leaded Component

Hold Current, I_{hold}
010-1100 (100 mA–11,0 A)

Packaging Options
- = Bulk Packaging
.2 = Tape and Reel*
.3 = Ammo Pack*

*Packaged per EI486-B

Note:
Add designator “009” or “010” after Packaging Option Code to specify Models PFRA.090.009 or PFRA.250.010.

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