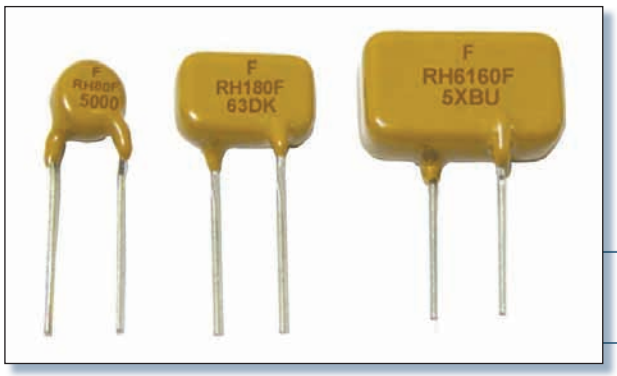

Type FRH Series

Polymeric Positive Temperature Coefficient (PPTC)

Approvals

UL / cUL Recognized	0.08A ~ 0.16A
TUV	0.08A ~ 0.16A

Agency File Numbers

UL / cUL	E211981
TUV	R50021651

Electrical Characteristics

Operating/Storage Temperature
-40°C to +85°C

Passive Aging
+85°C, 1000Hours,
±5% Typical Resistance Change

Humidity Aging
+85°C, 85%R.H., 1000Hours,
±5% Typical Resistance Change

Insulating Coating:
Flame retardant epoxy,
meets UL 94 V-0 requirements

Soldering Characteristics:
MIL-STD-202, Method 208E

Physical Characteristics

Materials
FRH080F~180-250F: Tin-plated copper (22AWG) ø0.65mm(0.025 in).
FRH150F~160-600F: Tin-plated copper (22AWG) ø0.65mm(0.025 in).

Electrical Properties

Part Number	Hold Current	Trip Current	Max.Time To Trip		Max. Current	Max. Oper. Voltage	Max. Int. Voltage	Typical Power	Resistance	
			Current	Time					R_{min}	$R1_{max}$
	I_{hold}, A	I_{trip}, A	A	Sec	I_{max}, A	V_{max}, VDC	VI-max, V	P_d, W	Ohms	Ohms
FRH080-250UF	0.08	0.16	0.35	4.0	3.0	60	250	1.0	14.0	33.0
FRH080-250F	0.08	0.16	0.35	4.0	3.0	60	250	1.0	14.0	33.0
FRH110-250UF	0.11	0.22	1.00	2.0	3.0	60	250	1.0	5.0	16.0
FRH110-250F	0.11	0.22	1.00	2.0	3.0	60	250	1.0	5.0	16.0
FRH120-250UF	0.12	0.24	1.00	2.0	3.0	60	250	1.0	6.0	16.0
FRH120-250F	0.12	0.24	1.00	2.0	3.0	60	250	1.0	4.0	16.0
FRH145-250UF	0.15	0.29	1.00	2.5	3.0	60	250	1.0	3.5	12.0
FRH145-250F	0.15	0.29	1.00	2.5	3.0	60	250	1.0	3.0	12.0
FRH180-250UF	0.18	0.65	1.50	10.0	10.0	60	250	1.5	0.8	4.0
FRH180-250F	0.18	0.65	1.50	11.0	10.0	60	250	1.5	0.8	4.0
FRH150-600F	0.15	0.30	1.00	5.0	3.0	60	600	1.6	6.0	22.0
FRH160-600F	0.16	0.32	1.00	7.0	3.0	60	600	1.6	4.0	18.0

I_{hold} = Hold Current: maximum current device will sustain for 4 hours without tripping in 23°C still air.
I_{trip} = Trip Current: minimum current at which the device will trip in 23°C still air.
V_{max} = Maximum voltage device can withstand without damage at rated current (Imax).
I_{max} = Maximum fault current device can withstand without damage at rated voltage (Vmax).
P_d = Power dissipated from device when in the tripped state at 23°C still air.
R_{min} = Minimum resistance of device in initial (un-soldered) state.
$R1_{max}$ = Maximum resistance of device at 23°C measured one hour after tripping.
VI_{max} = Maximum interrupt voltage device can withstand for short period of time.

CAUTION: Operation beyond the specified ratings may result in damage and possible arcing and flame.

Physical Dimensions (Unit: mm)

Part Number	Figure	A	B	C	D	E	F
		MAX	MAX	Typical	MIN	MAX	Typical
FRH080-250UF	1	5.1	9.1	5.0	4.7	3.8	1.2
FRH080-250F	1	5.8	9.6	5.0	4.7	4.6	1.2
FRH110-250UF	1	5.9	9.4	5.0	4.7	3.8	1.2
FRH110-250F	1	6.8	9.9	5.0	4.7	4.6	1.2
FRH120-250UF	2	6.0	10.0	5.0	4.7	3.8	1.2
FRH120-250F	2	6.5	11.0	5.0	4.7	4.6	1.2
FRH145-250UF	2	6.0	10.0	5.0	4.7	3.8	1.2
FRH145-250F	2	6.5	11.0	5.0	4.7	4.6	1.2
FRH180-250UF	2	10.4	12.6	5.0	4.7	3.8	1.2
FRH180-250F	2	10.9	12.6	5.0	4.7	4.6	1.2
FRH150-600F	2	14.0	12.6	5.0	4.7	6.0	1.2
FRH160-600F	2	16.0	12.6	5.0	4.7	6.0	1.2

NOTE: All FRH products are designed to assist equipment to pass ITU, UL60950, GR1089 and TIA-968-A specification.
CAUTION: FRH devices are not intended for continous use of Line Voltage such as 120 VAC ~ 240VAC and above.

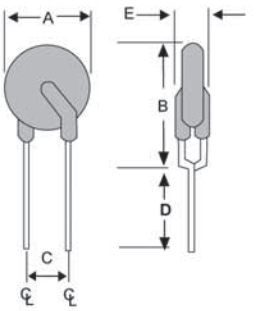

Figure 1

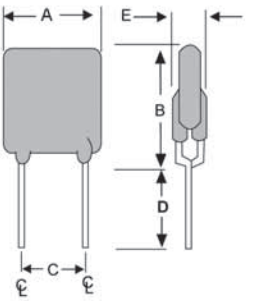

Figure 2

Packaging

In Bulk:	FRH080F~145-250F	300 pcs per box
	FRH180F~250(U)F	200 pcs per box
	FRH150F~160-600F	100 pcs per box
On Tape:	FRH080F~145-250(U)F	1500 pcs per reel
	FRH180F~250(U)F	1200 pcs per reel
	FRH150F~160-600F	600 pcs per reel

Mersen Canada Toronto Inc.
88 Horner Avenue, Toronto,Ontario M8Z 5Y3
Tel: (416) 252-9381
Fax: (416) 252-6572
Web: www.ca-ferrazshawmut.mersen.com
E-mail: customerservice.tor@mersen.com