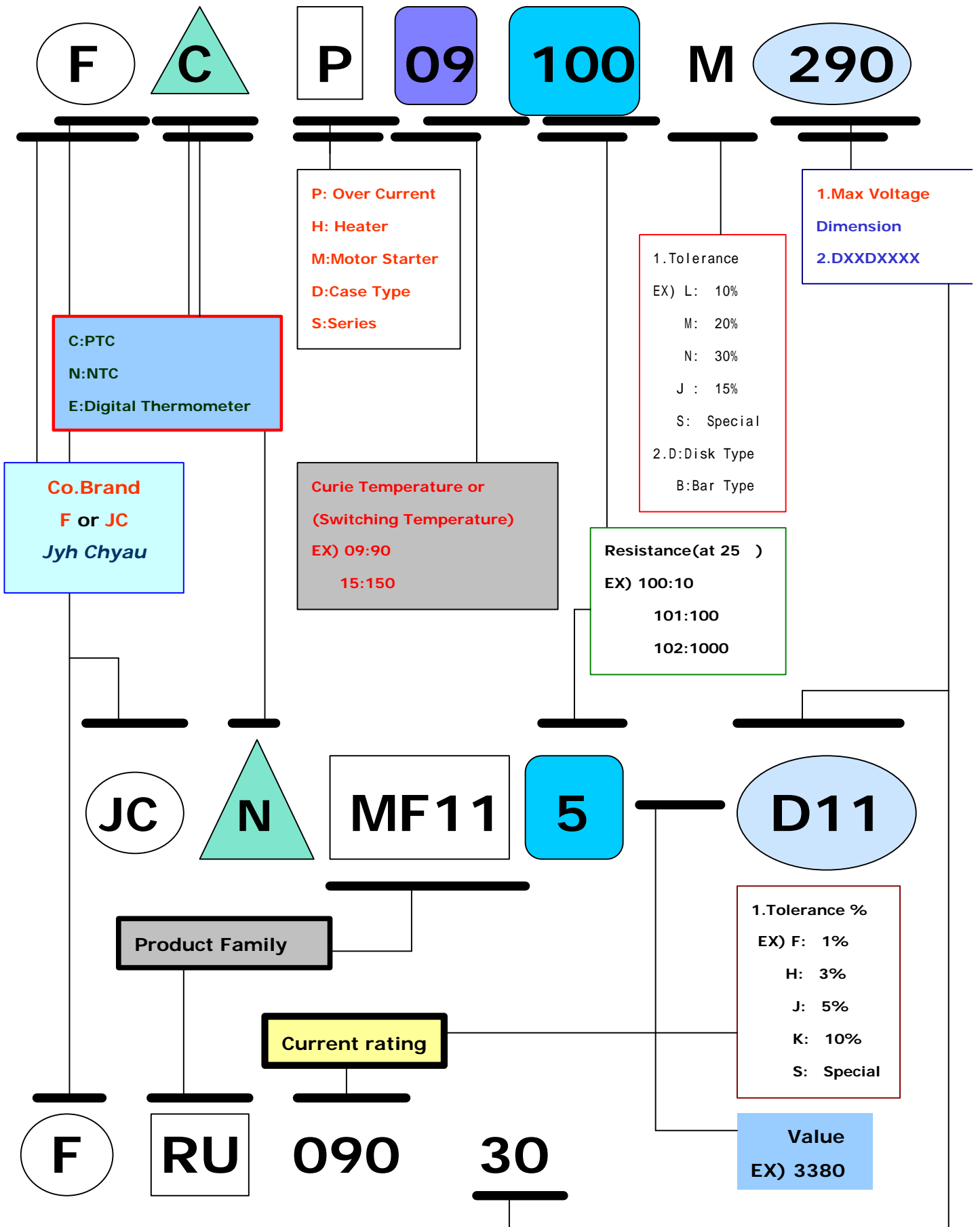




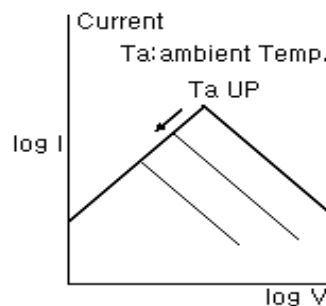
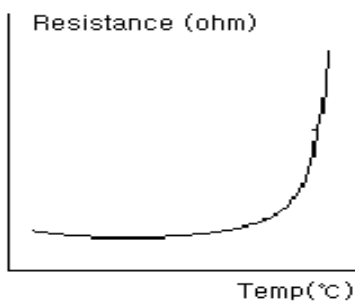
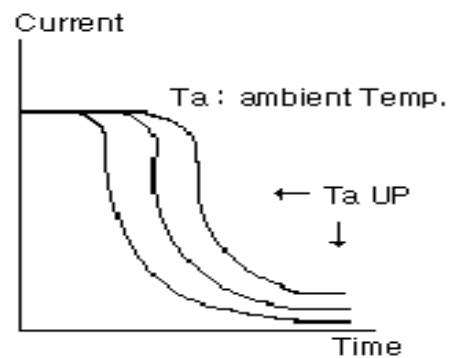
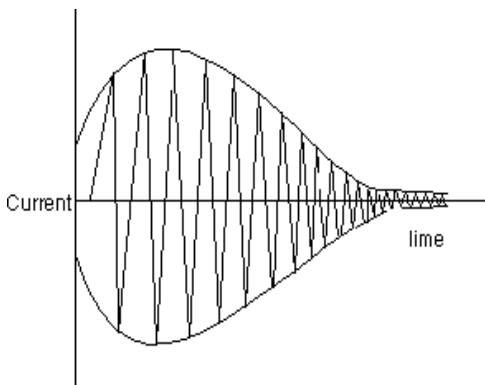
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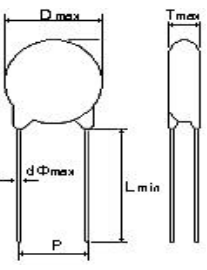


PTC THERMISTORS FOR DEGAUSSING

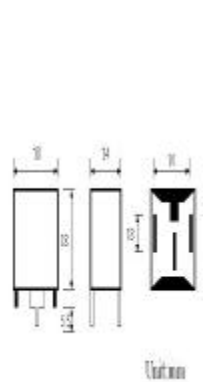
To minimize picture distortion and beam landing error (color impurity), the shadow mask, and associated material parts of the tube, TVs/Monitors must be demagnetized at switch on. This is done by passing decaying AC through the degaussing coil. An alternating magnetic field is generated, which gradually decays to demagnetize the tube. The high inrush current into the degaussing coil but low residual current after degaussing are two main factors for degaussing color TVs/Monitors. In other words, the larger the ratio of inrush current to residual current if the better the degaussing will be achieved. There are two kinds of PTC thermistors for degaussing in our product categories, lead and case types. Based on its various usages, case type has single and dual PTC elements with wide range models, in term of resistance.



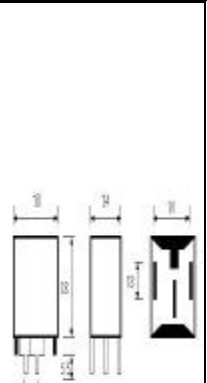
Bulk Packing Type

	Part No.	Curie Point	$R_{25\pm\%}(O)$	V rated	Operation Current		Degaussing Coil Res. ()
					Inrush Current	Ire. After 60 Sec	
	FCP090M290	60	$9\pm 20\%$	AC 110/220V	>15(A p-p)	<15(A p-p)	12
FCP140M290	60	$14\pm 20\%$	AC 110/220V	>25(A p-p)	<12(A p-p)	10	

Single Case Type

	Part No.	Curie Point	$R_{25\pm\%}(O)$	V rated	Operation Current		Degaussing Coil Res. ()
					Inrush Current	Ire. After 60 Sec	
	FCDA050M140	60	$5\pm 20\%$	AC 110V	>27(Ap-p)	<18(Ap-p)	4
FCDA090M140	60	$9\pm 20\%$	AC 220V	>26(A p-p)	<10(A p-p)	12	
FCDA100M140	60	$10\pm 20\%$	AC 220V	>24(A p-p)	<10(A p-p)	12	
FCDA140M140	60	$14\pm 20\%$	AC 220V	>20(A p-p)	<10(A p-p)	12	
FCDA180M140	60	$18\pm 20\%$	AC 220V	>18(A p-p)	<8(A p-p)	12	
FCDA200M140	60	$20\pm 20\%$	AC 220V	>17(A p-p)	<8(A p-p)	12	
FCDA220M140	60	$22\pm 20\%$	AC 220V	>16(A p-p)	<8(A p-p)	12	
FCDA270M290	60	$27\pm 20\%$	AC 220V	>14(A p-p)	<8(A p-p)	12	
FCDA300M290	60	$30\pm 20\%$	AC 220V	>12(A p-p)	<8(A p-p)	12	

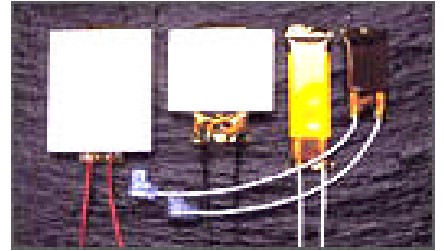
Dual Case Type

	Part No.	Curie Point	$R_{25\pm\%}(O)$	V rated	Operation Current		Degaussing Coil Res. ()
					Inrush Current	Ire. After 60 Sec	
	FCDC0405M140	60	$4.5\pm 20\%$	AC 110/220V	>21(A p-p)	<18(A p-p)	20
FCDC070M140	60	$7\pm 20\%$	AC 110/220V	>19(A p-p)	<6(A p-p)	20	
FCDC090M140	60	$9\pm 20\%$	AC 220V	>30(A p-p)	<3(A p-p)	20	
FCDC100M140	60	$10\pm 20\%$	AC 220V	>24(A p-p)	<3(A p-p)	20	
FCDC120M290	60	$12\pm 20\%$	AC 220V	>22(A p-p)	<3(A p-p)	12	
FCDC140M290	60	$14\pm 20\%$	AC 220V	>20(A p-p)	<3(A p-p)	12	
FCDC180M290	60	$18\pm 20\%$	AC 220V	>18(A p-p)	<3(A p-p)	12	
FCDC200M290	60	$20\pm 20\%$	AC 220V	>17(A p-p)	<3(A p-p)	12	
FCDC220M290	60	$22\pm 20\%$	AC 220V	>16(A p-p)	<2(A p-p)	12	
FCDC270M290	60	$27\pm 20\%$	AC 220V	>14(A p-p)	<2(A p-p)	12	

Heater Series

No matter either applied voltage or ambient temperature are changed, self-regulating PTC thermistors can constantly keep at certain specified temperature. These PTC thermistors have remarkable features including rapid heating-up non-over heating, space-saving, and self-regulating.

Other dimensions, shape and ratings are available on request



Disc Typt (mm)		
B-Type (mm)		
W	18.5±0.5	
L _{Max}	45	
t	3.5±0.2	
l _{Max}	200	
d	1.3±0.2	
P-Type (mm)		
W1	40.0±2.0	
L1 _{Max}	40.0±1.0	
t	9.0±1.0	
L _{Max}	200	
d	1.3±0.2	

SPECIFICATIONS

Model No.	Resistance at 25 (O)	Curie Temp. (±10)	Rated Voltage(Vrms)	Max. Voltage(Vrms)	Surface Temp()
FCHB20202SB2114R7	800 3,500	200	AC100V &220V	AC110V &265V	(180 270)±10
FCHB22202SB2114R7	800 3,500	220			
FCHB24202SB2114R7	800 3,500	240			
FCHB26202SB2114R7	800 3,500	260			
FCHB28202SB2114R7	1,000 3,000	280			
FCHB30202SB2114R7	1,500 4,000	300			
FCHP24202SB2114R7	800 3,500	240	AC100V &220V	AC140V &265V	(200 260)±10
FCHP25202SB2114R7	800 3,500	250			
FCHP26202SB2114R7	800 3,500	260			
FCHP28202SB2114R7	1,000 3,000	280			
FCHP30202SB2114R7	1,500 4,000	300			

Electronic Mosquito Killer

Model No.	Resistance at 25 (O)	Curie Temp. (±10)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Surface Temp ()	D(F) (mm) (±1.0)	t (mm)
FCH17422SD08	4,200±35%	170	AC 230	AC 265	150±5	7.0	max. 5.0.
FCH18202SD07	500 3,000	180	AC 100 & 220	AC 150 & 265	165±5	7.0	
FCH18202SD08		180			165±5	8.0	
FCH20202SD10		200			170±5	10.0	
FCH20202SD11		200			170±5	11.0	
FCH21202SD11		210			180±5	11.0	
FCH21202SD13		210			180±5	13.1	
FCH22202SD11		220			185±5	11.0	
FCH24202SD11		240			195±5	11.0	

General Heater(For low voltage)

(mm)

Model No.	Resistance at 25 (Ω)	CurieTemp. (±10)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Surface Temp ()	D(W) (±2.0)	L (±0.3)	t (±0.1)
FCH10500SB1806	40~100	100	DC 12	DC 36	105±7	17.6	5.7	1.5
FCH24400SB1806	20~60	240	DC 12	DC 15	205±7	17.6	5.7	
FCH28400SB1806	20~60	280	DC 12	DC 15	235±7	17.6	5.7	
FCH18400SB3005	20~60	180	DC 24	DC 30	165±7	30.0	5.2	2.1
FCH21400SB3005	20~60	210	DC 24	DC 30	193±7	30.0	5.2	2.1
FCH24400SB3005	20~60	240	DC 24	DC 30	220±7	30.0	5.2	2.1
FCH25400SB3005	20~60	250	DC 24	DC 30	230±7	30.0	5.2	2.1
FCH28200SB2810	15~30	280	DC 12	DC 24	235±7	28.0	10.0	2.1

For high voltage

(mm)

Model No	Resistance at 25 (Ω)	CurieTemp. (±10)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Surface Temp ()	D(W) (±2.0)	L (±0.3)	t (±0.2)
FCH05102SD17-4R3	500 1,500	50	AC 220	AC 265	73±10	17.0	-	2.5
FCH06102SD17-4R3	500 1,500	60	AC 100	AC 125	73±10	17.0	-	2.5
FCH08201SD17-4R3	80 450	80	AC 220	AC 265	105±10	17.0	-	2.5
FCH10201SD17-4R3	80 450	100	AC 100	AC 125	105±10	17.0	-	2.5
FCH08102SD07	600 4,000	80	AC 220	AC 265	90±5	7.0	-	2.0
FCH08102SD14	600 4,000	80	AC 220	AC 265	90±5	12.0	-	2.5
FCH10501SD17	200 800	100	AC 100	AC 125	100±5	17.0	-	2.5
FCH10102SB1002R8	1,000±50%	100	AC 120	AC 132	94±5	10.0	2.8	2.0
FCH13501SB1002R8	500±50%	130	AC 120	AC 132	123±5	10.0	2.8	2.0
FCH18122SB1002R8	1,200±50%	180	AC 120	AC 132	150±5	10.0	2.8	2.0
FCH12142ND12	1,400±30%	120	AC 220	AC 265	115±10	12.0	-	2.2
FCH13601NB3005	600±30%	130			125±10	30.0	5.2	2.2

For high voltage

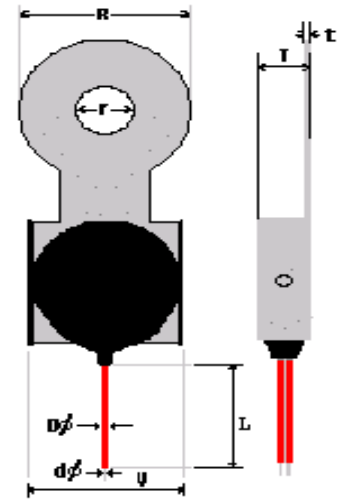
(mm)

Model No	Resistance at 25 (O)	CurieTemp. (±10)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Surface Temp ()	D(W) (±2.0)	L (±0.3)	t (±0.2)
FCH22202SB3005	600 4,000	220	AC 220	AC 265	200±10	30.0	5.2	2.2
FCH26202SB3005	600 4,000	260			240±10	30.0	5.2	2.2
FCH27202SB3005	600 4,000	270			250±10	30.0	5.2	2.2
FCH25202SB2114R7	1,000 4,000	250			235±10	20.5	14.7	2.2
FCH26202SB2114R7	1,000 4,000	260			240±10	20.5	14.7	2.2
FCH28202SB2114R7	1,000 4,000	280			260±10	20.5	14.7	2.2
FCH20202SB2409	600 4,000	200			190±10	24.0	9.0	2.2
FCH22202SB2409	600 4,000	220			210±10	24.0	9.0	2.2
FCH24202SB2409	600 4,000	240			220±10	24.0	9.0	2.2
FCH25202SB2409	600 4,000	250			235±10	24.0	9.0	2.2
FCH28202SB2409	600 4,000	280			260±10	24.0	9.0	2.2
FCH22202SB2810	600 4,000	220			210±10	28.0	10.0	2.2
FCH24202SB2810	600 4,000	240			225±10	28.0	10.0	2.2
FCH28202SB2810	600 4,000	280			260±10	28.0	10.0	2.2
FCH22202SB3806	600 4,000	220			210±10	38.0	6.2	2.2
FCH24202SB3806	600 4,000	240			225±10	38.0	6.2	2.2
FCH26202SB3806	600 4,000	260			235±10	38.0	6.2	2.2
FCH28202SB3806	600 4,000	280			260±10	38.0	6.2	2.2

Over Temperature Protection

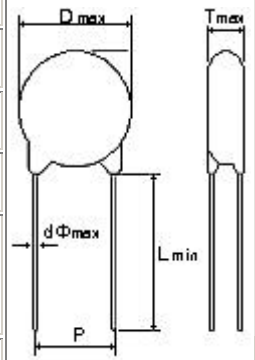
ST-Type

R	7.5±0.5
r	3.2±0.1
T	4.3±0.5
t	0.5±0.1
W	6.5±0.5
L	60.0±5.0
DF	1.2±0.2
dF	0.45±0.1



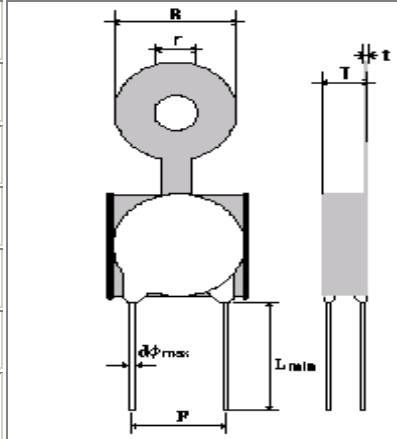
SR-Type

Tmax	3.5
Dmax	5.5
Hmax	10.0
Lmax	25.0
F	5.0±1.0
dF	0.5±0.1



SY-Type

R	7.5±0.5
r	3.5±0.5
T	4.0±0.5
t	0.4±0.1
Lmin	25.0
F	5.0±1.0
dF	0.5±0.1



Model No.	Max. Voltage (V)	Curie Temp.	Sensing Temp.(ST)	Resistance Value (Ω)		
				at 25	at ST-10	at ST+10
FCSSR(T/L)06850SD05	DC 24	60 (±5)	80 ()	Max. 100	Max. 550	Min. 550
FCSSR(T/L)07850SD05	DC 24	70 (±5)	90 ()	Max. 100	Max. 550	Min. 550
FCSSR(T/L)08500SD05	DC 24	80 (±5)	100 ()	Max. 100	Max. 570	Min. 570
FCSSR(T/L)09500SD05	DC 24	90 (±5)	110 ()	Max. 100	Max. 570	Min. 570
FCSSR(T/L)10500SD05	DC 24	100 (±5)	120 ()	Max. 100	Max. 570	Min. 1,330
FCSSR(T/L)12500SD05	DC 24	120 (±5)	140 ()	Max. 100	Max. 570	Min. 1,330

PTC THERMISTORS OVER-CURRENT PROTECTION

Other dimension or rating is available on request.

Those PTC thermistors are designed for protecting the circuits against current, voltage, and temperature overloads. When placed in series with an electronic circuit (Fig. 1), a PTC thermistor will not be tripped under non-operation current value. However, an overload will quickly heat up the PTC thermistor, at around the curie point temperature; the resistance of the PTC thermistor becomes high, limiting the current to below its non-operation current value and then protecting the circuit. Meanwhile, removing the overload or switching off the supply allows the PTC thermistor to cool down and return to its low resistance state, ready to resume its protective function.

LIFE TESTING CONDITIONS

1. Normal Temperature Intermittent Load Test:

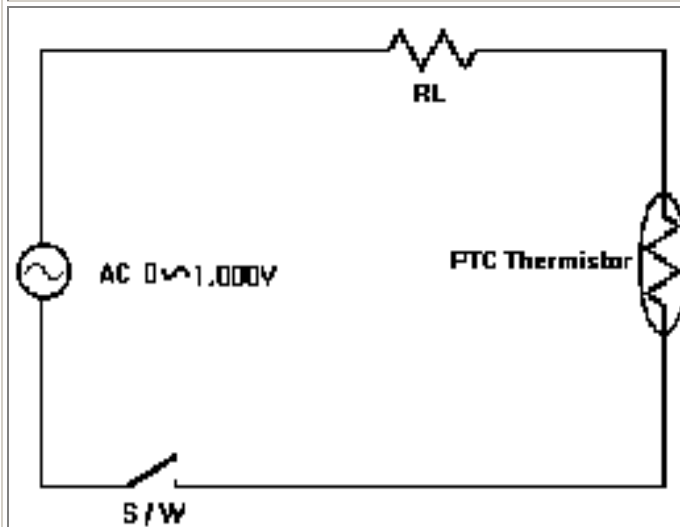
Under ambient temperature 25°C , the PTC thermistors are applied to rated voltage, 1 minute "ON" and 5 minutes "OFF", continuously for 10,000 times. After testing, the fluctuation ratio of the tested PTC thermistors resistance should be within $R: \pm 20\%$.

2. High Temperature and Humidity Intermittent Load Test:

Under ambient temperature $40 \pm 2^\circ\text{C}$ and 90~95% humidity, the PTC thermistors are applied to rated voltage, 1 minute "ON" and 5 minutes "OFF", continuously for 10,000 times. After testing, the fluctuation ratio of the tested PTC thermistors resistance should be within $R: \pm 20\%$.

3. High Temperature and Humidity Zero Power Test:

PTC thermistors are kept under ambient temperature $45 \pm 5^\circ\text{C}$ and 90~95% humidity for 720 hours. After testing, then the fluctuation ratio of the tested PTC thermistors resistance should be within $R: \pm 20\%$.



Curie Temp. (Tc) :50

Model No.	Resistance at 25 (O)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Non - Operating Current (mA)	Switching Current (mA)	Curie Temp. (± 10)	Switching Time (Max. : sec)	Withstand Voltage (Vrms)
FCP05251N265	250 \pm 30%	220	265	10	20	50	8	300
FCP05601N265	600 \pm 30%	220	265	6	12	50	8	400
FCP05102N265	1,000 \pm 30%	220	265	4	8	50	8	700
FCP05152N265	1,500 \pm 30%	220	265	3.7	7.4	50	8	700
FCP05251N265	250 \pm 30%	220	265	8	16	50	8	700
FCP05301N265	300 \pm 30%	220	265	7	14	50	8	600
FCP05151N265	150 \pm 30%	220	265	17	34	50	8	600
FCP05151N265	150 \pm 30%	220	265	19	38	50	8	650

Curie Temp. (Tc) : 60 80

Model No.	Resistance at 25 (O)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Non - Operating Current (mA)	Switching Current (mA)	Curie Temp. (± 10)	Switching Time (Max. : sec)	Withstand Voltage (Vrms)
FCP06102N265	1,000 \pm 30%	220	265	5	10	60	8	750
FCP06700N080	70 \pm 30%	60	80	22	44	60	8	200
FCP08152N265	1,500 \pm 30%	220	265	7	14	80	8	700
FCP08122N265	1,200 \pm 30%	220	265	9	18	80	8	700
FCP08152N265	1,500 \pm 30%	220	265	7.5	15	80	8	700
FCP08302N265	3,000 \pm 30%	220	265	5	10	80	8	700
FCP08151N265	150 \pm 30%	220	265	25	50	80	8	600
FCP08251N265	250 \pm 30%	220	265	22	44	80	8	700
FCP08501N265	500 \pm 30%	220	265	14	28	80	8	
FCP08122N265	1,200 \pm 30%	220	265	10	20	80	8	750
FCP08152N265	1,500 \pm 30%	220	265	8	16	80	8	

Curie Temp. (Tc) : 60 80

Model No.	Resistance at 25 (Ω)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Non - Operating Current (mA)	Switching Current (mA)	Curie Temp. (±10 °C)	Switching Time (Max. : sec)	Withstand Voltage (Vrms)
FCP08050N265	5 ± 30%	DC 20	DC 24	160	320	80	-	150
FCP08070N265	7 ± 30%	DC 20	DC 24	120	240	80	-	
FCP08100N265	10 ± 30%	DC 60	DC 80	90	180	80	8	
FCP08102N265	1,000±30%	220	265	10	20	80	8	700
FCP08470N265	47 ± 30%	220	265	30	60	80	8	300
FCP08101N265	100 ± 30%	220	265	32	64	80	8	550
FCP08151N265	150 ± 30%	220	265	27	54	80	8	700
FCP08110N265	11 ± 30%	220	250	100	200	80	8	400
FCP08200N265	20 ± 30%	220	265	80	160	80	8	
FCP08150N265	15 ± 30%	220	265	90	180	80	8	450
FCP08520N265	52 ± 30%	220	265	60	120	80	8	
FCP08151N265	150 ± 30%	220	265	30	60	80	8	700
FCP08100N265	10 ± 30%	220	265	110	220	80	8	450
FCP08150N265	15 ± 30%	100	150	120	240	80	8	500
FCP08500N265	50 ± 30%	220	265	50	100	80	8	600
FCP08080N265	8 ± 30%	220	265	170	350	80	8	600

Curie Temp. (Tc) : 100

Model No.	Resistance at 25 (O)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Non - Operating Current (mA)	Switching Current (mA)	Curie Temp. (± 10)	Switching Time (Max. : sec)	Withstand Voltage (Vrms)
FCP10151N265	150 \pm 30%	220	265	36	72	100	8	700
FCP10152N265	1,500 \pm 30%	220	265	12	24	100	8	700
FCP10151N265	150 \pm 30%	220	265	40	80	100	8	600
FCP10251N265	250 \pm 30%	220	265	23	46	100	8	
FCP10381N265	380 \pm 30%	220	265	24	48	100	8	
FCP10801N450	800 \pm 30%	220	450	14	28	100	8	700
FCP10102N450	1,000 \pm 30%	220	450	15	30	100	8	750
FCP10152N550	1,500 \pm 30%	220	550	12	24	100	8	
FCP10502N265	5,000 \pm 30%	220	265	7.5	15	100	8	
FCP10181N265	180 \pm 30%	220	265	31	62	100	10	400
FCP09005N024	0.5 \pm 30%	12	24					

Curie Temp. (Tc) : 120

Model No.	Resistance at 25 (O)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Non - Operating Current (mA)	Switching Current (mA)	Curie Temp. (± 10)	Switching Time (Max. : sec)	Withstand Voltage (Vrms)
FCP12201N220	200 \pm 30%	180	220	33	66	120	8	600
FCP12231N220	230 \pm 30%	180	220	30	60	120	8	
FCP12251N265	250 \pm 30%	220	265	30	60	120	8	
FCP12151N265	150 \pm 30%	220	265	50	100	120	8	
FCP12251N265	250 \pm 30%	220	265	30	60	120	8	
FCP12501N265	500 \pm 30%	220	265	24	48	120	8	

Curie Temp. (Tc) : 120

Model No.	Resistance at 25 (O)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Non - Operating Current (mA)	Switching Current (mA)	Curie Temp. (± 10)	Switching Time (Max. : sec)	Withstand Voltage (Vrms)
FCP12600N265	60 \pm 30%	220	265	70	140	120	8	400
FCP12700N265	70 \pm 30%	220	265	65	130	120	8	
FCP12950N265	95 \pm 30%	220	265	55	110	120	8	
FCP12101N265	100 \pm 30%	220	265	55	110	120	8	600
FCP12121N265	120 \pm 30%	220	265	50	100	120	8	
FCP12151N265	150 \pm 30%	220	265	45	90	120	8	
FCP12201N265	200 \pm 30%	220	265	41	82	120	8	
FCP12351N265	350 \pm 30%	220	265	32	64	120	8	700
FCP12501N420	500 \pm 30%	220	420	27	54	120	8	
FCP12601N420	600 \pm 30%	220	420	26	52	120	8	
FCP12102N500	1,000 \pm 30%	220	500	20	40	120	8	700
FCP12122N265	1,200 \pm 30%	220	265	17	34	120	8	
FCP12152N500	1,500 \pm 30%	220	500	16	32	120	8	
FCP12220N125	22 \pm 30%	100	125	110	220	120	8	400
FCP12350N265	35 \pm 30%	220	265	100	200	120	8	400
FCP12450N265	45 \pm 30%	220	265	85	170	120	8	
FCP12650N265	65 \pm 30%	220	265	80	160	120	8	
FCP12150N265	15 \pm 30%	220	265	140	280	120	8	
FCP12220N125	22 \pm 30%	100	125	120	240	120	8	
FCP12350N265	35 \pm 30%	220	265	100	200	120	8	

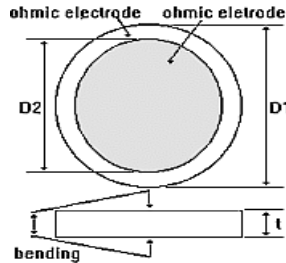
Curie Temp. (Tc) : 120

Model No.	Resistance at 25 (Ω)	Rated Voltage (Vrms)	Max. Voltage (Vrms)	Non - Operating Current (mA)	Switching Current (mA)	Curie Temp. (±10 °)	Switching Time (Max. : sec)	Withstand Voltage (Vrms)
FCP12100N265	10 ± 30%	220	265	200	400	120	8	450
FCP12150N265	15 ± 30%	220	265	150	300	120	8	
FCP12200N265	20 ± 30%	220	265	140	280	120	8	500
FCP12390N265	39 ± 30%	220	265	100	200	120	8	500
FCP12501N265	500 ± 30%	220	265	40	80	120	8	800
FCP12100N265	10 ± 30%	220	265	175	350	120	8	400
FCP12250N265	25 ± 30%	220	265	110	220	120	8	500
FCP12450N265	45 ± 30%	220	265	77	154	120	8	
FCP12250N265	25 ± 30%	220	265	140	280	120	8	
FCP12060N265	6 ± 30%	220	265	253	507	120	-	
FCP12100N265	10 ± 30%	220	265	157	313	120	8	400
FCP12060N125	6.8 ± 30%	100	125	280	560	120	30	300
FCP12100N250	10 ± 30%	220	250	220	440	120	8	400
FCP12060N125	6.8 ± 30%	100	125	300	600	120	30	400
FCP12060N125	6.8 ± 30%	100	125	330	660	120	30	400

PTC THERMISTORS FOR MOTOR STARTERS

The starting coils of motors in air-conditioners, refrigerators, and so on, require high current to obtain the necessary starting torque. When motors start running, the coils do not need current anymore. PTC thermistors can easily provide the necessary current for the starting coils.

SPECIFICATIONS



17x2.5t series

Model No.	Rated Resistance (Ω)	Max. Voltage (Vrms)	Max. Current (Arms)	Power Consumption (W)	Curie Temp. (±10 °C)	Withstand voltage (Min. Vrms)	Remarks
FCM1306R80JD17	6.8±25%	200	10	Max. 3.3	130	350	
FCM13220JD17	22±25%	300	7			660	
FCM13330JD17	33±25%	350	6			700	

20 x2.5t series

Model No.	Rated Resistance (Ω)	Max. Voltage (Vrms)	Max. Current (Arms)	Power Consumption (W)	Curie Temp. (±10 °C)	Withstand voltage (Min. Vrms)	Remarks
FCM1304R70JD20	4.7±25%	180	12	Max. 4.0	130	400	
FCM1306R80JD20	6.8±25%	200	10			450	
FCM13100JD20	10±25%	225	9			600	
FCM13150JD20	15±25%	250	8			800	
FCM13220JD20	22±25%	320	7			900	
FCM13330JD20	33±25%	355	6				
FCM13470JD20	47±25%	400	5				
FCM13680JD20	68±25%	430	4				

PTC Formulated Powder

Example P4 1 001 P41001 P4--(1) 1--(2) 001--(3)

Requirement (1)--P4 Switch Temperature is 40

(2)--1 Resistivity is 10-40 Ω.cm

(3)--001 Lot No. or other tiny differences in the same specification

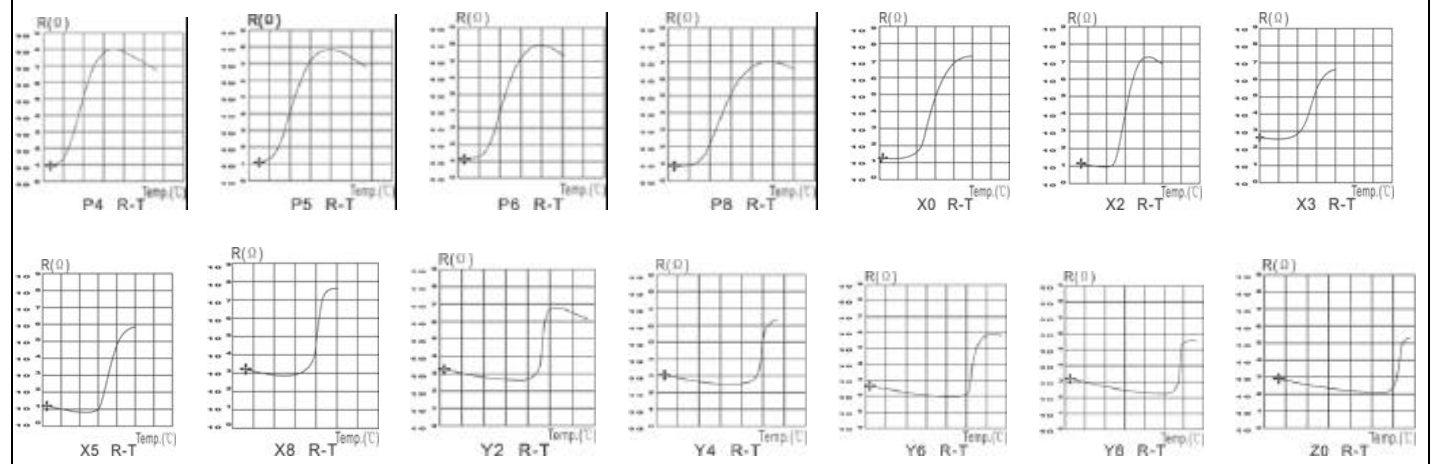


1	Switch Temperature (Curie Temperature) ()	N3: -30	P0: 0	X0: 100	Y0: 200	Z0: 300
		N2: -20	P1: 10	X1: 110	Y1: 210	
		N1: -10	P2: 20	X2: 120	Y2: 220	
			P3: 30	X3: 130	Y3: 230	
			P4: 40	X4: 140	Y4: 240	
			P5: 50	X5: 150	Y5: 250	
			P6: 60	X6: 160	Y6: 260	
			P7: 70	X7: 170	Y7: 270	
			P8: 80	X8: 180	Y8: 280	
			P9: 90	X9: 190	Y9: 290	
2	Receptivity 25 (Ω.cm)	0: 1-10 1: 10-40 2: 40-70 3: 70-100				
		4: 100-400 5: 400-700 6: 700-1K 7: 1K-4K				
		8: 4K-7K 9: =7K				
3	Development No.					
Switch Temperature Deviation : ± 5						

Forming Condition	Type: X0	Type: X2	Type: X3	Type: X5	Type: X8	Type: P4	Type: P5
Size of Formed Body (O \times T mm)	16.4 \times 2.85	16.4 \times 2.85	23.5 \times 2.97	16.4 \times 2.85	16.4 \times 2.85	16.4 \times 2.85	16.4 \times 2.85
Density of Formed Body (g/cm ³)	3.3	3.3	3.3	3.4	3.4	3.3	3.3
Ceramic Characteristics							
Sintering Condition(\times minute)	1350 \times (60-120)	1350 \times (60-120)	1330 \times (60-120)	1330 \times (60-120)	1320 \times (60-120)	1350 \times (60-120)	1350 \times (60-120)
Cooling Rate(/hr)	=200	=200	=200	=150	=150	=200	=220
Shrinkage (%)	15.5	15.4	15	15.5	13.3	15.6	15.0
PTC Characteristics							
Curie Point()	100 \pm 5	120 \pm 5	130 \pm 5	150 \pm 5	180 \pm 5	50 \pm 5	60 \pm 5
Receptivity (.cm)	100-400	50-200	100-400	50-1500	30-1500	30-80	30-80
Resistance Jump Ratio(max/min)	5E+06	5E+06	1E+06	1E+06	=1E+04	5E+06	5E+06
Temp. Coefficient(%/)	=15	=25	=25	24	=20	=12	=15
Break Down Voltage(V/mm)	=250	=280	=250	=250	=300	=250	=260

Forming Condition	Type: P6	Type: P8	Type: Y2	Type: Y4	Type: Y6	Type: Y8	Z0
Size of Formed Body (O \times T mm)	16.4 \times 2.85	16.4 \times 2.85	16.4 \times 2.85	16.4 \times 2.85	16.4 \times 2.85	16.4 \times 2.85	16.4 \times 2.85
Density of Formed Body(g/cm ³)	3.3	3.3	3.5	3.8	3.8	3.8	3.9
Ceramic Characteristics							
Sintering Condition(\times minute)	1350 \times (60-120)	1350 \times (60-120)	1265 \times (60-120)	1260 \times (60-120)	1250 \times (30-120)	1250 \times (30-120)	1350 \times (60-120)
Cooling Rate(/hr)	=180	=180	=200	=200	=200	=180	=180
Shrinkage (%)	15.0	14.7	15	15	15	15	14.7
PTC Characteristics							
Curie Point()	80 \pm 5	300 \pm 5	220 \pm 5	240 \pm 5	260 \pm 5	280 \pm 5	300 \pm 5
Receptivity (.cm)	25-80	500-1500	1400-4000	200-1600	400-3500	1500-4500	500-1500
Resistance Jump Ratio(max/min)	1E+06	1E+04	5E+04	=5E+04	5E+04	1E+04	1E+04
Temp. Coefficient(%/)	=15	=150	=20	=20	=20	=20	=150
Break Down Voltage (V/mm)	=250	=250	=250	=250	=250	=250	=250

Note: The above specifications and curves are only for reference,
and the user can put forward your own detailed requirements if possible



FRX Series

Application :

Wide variety of electronic equipment

Product Features :Low hold current, Solid state

Radial-leaded product ideal for up to 60V

Operation Current : 100mA~3.75A

Maximum Voltage : 60V

Temperature Range : -40 to 85

Electrical Characteristics(23)



Part No.	Hold Current	Trip Current	Max.Time to Trip	Maximum Current	Rated Voltage	Typical Power	Resistance Tolerance	
							Rmin	R1max
	IH,A	IT,A	At 5xIH	I _{max} ,A	V _{max} ,Vdc	Pd,W	O	O
FRX010-60	0.10	0.20	4.0	40	60	0.38	2.50	7.50
FRX017-60	0.17	0.34	3.0	40	60	0.48	2.00	7.00
FRX020-60	0.20	0.40	2.2	40	60	0.41	1.83	4.40
FRX025-60	0.25	0.50	2.5	40	60	0.45	1.25	3.00
FRX030-60	0.30	0.60	3.0	40	60	0.49	0.88	2.10
FRX040-60	0.40	0.80	3.8	40	60	0.56	0.55	1.29
FRX050-60	0.50	1.00	4.0	40	60	0.77	0.50	1.17
FRX065-60	0.65	1.30	5.3	40	60	0.88	0.31	0.72
FRX075-60	0.75	1.50	6.3	40	60	0.92	0.25	0.60
FRX090-60	0.90	1.80	7.2	40	60	0.99	0.20	0.47
FRX110-60	1.10	2.20	8.2	40	60	1.50	0.15	0.38
FRX135-60	1.35	2.70	9.6	40	60	1.70	0.12	0.30
FRX160-60	1.60	3.20	11.4	40	60	1.90	0.09	0.22
FRX185-60	1.85	3.70	12.6	40	60	2.10	0.08	0.19
FRX250-60	2.50	5.00	15.6	40	60	2.50	0.05	0.13
FRX300-60	3.00	6.00	19.8	40	60	2.80	0.04	0.10
FRX375-60	3.75	7.50	24.0	40	60	3.20	0.03	0.08

IH=Hold current-maximum current at which the device will not trip at 23 still air.

IT=Trip current-minimum current at which the device will always trip at 23 still air.

VMAX=Maximum voltage device can withstand without damage at its rated current.

I MAX= Maximum fault current device can withstand without damage at rated voltage (VMAX).

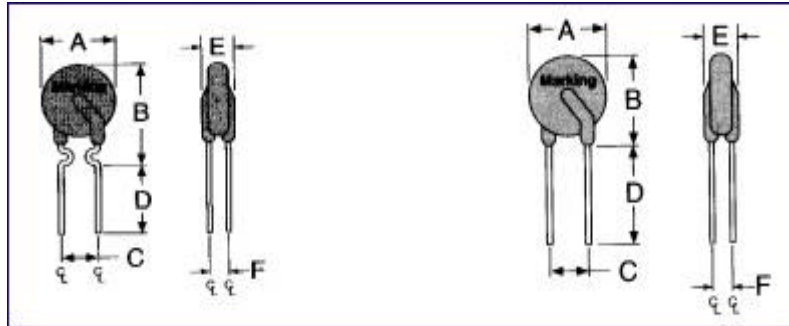
Pd=Typical power dissipated from device when in the tripped state in 23 still air environment.

RMIN=Minimum device resistance at 23 .

R1MAX=Maximum device resistance at 23 1 hour after tripping

FRX Series

FRX Product Dimensions (Millimeters)



FRX 010-60 ~ FRX 090-60

Lead Size :24AWG,

0.51 mm Diameter

FRX 110-60 ~ FRX 375-60

Lead Size : 20AWG,

0.81 mm Diameter

Part No.	A	B	C	D	E	F
	Maximum	Maximum	Typical	Minimum	Maximum	Typical
FRX010-60	7.4	12.7	5.1	7.6	3.1	1.1
FRX017-60	7.4	12.7	5.1	7.6	3.1	1.1
FRX020-60	7.4	12.7	5.1	7.6	3.1	1.1
FRX025-60	7.4	12.7	5.1	7.6	3.1	1.1
FRX030-60	7.4	13.0	5.1	7.6	3.1	1.1
FRX040-60	7.6	13.5	5.1	7.6	3.1	1.1
FRX050-60	7.9	13.7	5.1	7.6	3.1	1.1
FRX065-60	9.7	14.5	5.1	7.6	3.1	1.1
FRX075-60	10.4	15.2	5.1	7.6	3.1	1.1
FRX090-60	11.7	15.8	5.1	7.6	3.1	1.1
FRX110-60	13.0	18.0	5.1	7.6	3.1	1.4
FRX135-60	14.5	19.6	5.1	7.6	3.1	1.4
FRX160-60	16.3	21.3	5.1	7.6	3.1	1.4
FRX185-60	17.8	22.9	5.1	7.6	3.1	1.4
FRX250-60	21.3	26.4	10.2	7.6	3.1	1.4
FRX300-60	24.9	30.0	10.2	7.6	3.1	1.4
FRX375-60	28.5	33.5	10.2	7.6	3.1	1.4

FRU Series

Application :

Wide variety of electronic equipment

Product Features :

Low resistance, High hold current, Solid state

Radial-leaded product ideal for up to 30V

Operation Current : 900mA-9A

Maximum Voltage : 30V

Temperature Range : -40 to 85



Electrical Characteristics(23)

Part No.	Hold Current	Trip Current	Max.Time to Trip	Maximum Current	Rated Voltage	Typical Power	Resistance Tolerance	
							Rmin	R1max
	I _H ,A	I _T ,A	At 5xI _H	I _{max} ,A	V _{max} ,Vdc	P _d ,W	○	○
FRU-090-30	0.90	1.80	5.9	40	30	0.6	0.070	0.22
FRU-110-30	1.10	2.20	6.6	40	30	0.7	0.050	0.17
FRU-135-30	1.35	2.70	7.3	40	30	0.8	0.040	0.13
FRU-160-30	1.60	3.20	8.0	40	30	0.9	0.030	0.11
FRU-185-30	1.85	3.70	8.7	40	30	1.0	0.030	0.09
FRU-250-30	2.50	5.00	10.3	40	30	1.2	0.020	0.07
FRU-300-30	3.00	6.00	10.8	40	30	2.0	0.020	0.08
FRU-400-30	4.00	8.00	12.7	40	30	2.5	0.010	0.05
FRU-500-30	5.00	10.00	14.5	40	30	3.0	0.010	0.05
FRU-600-30	6.00	12.00	16.0	40	30	3.5	0.005	0.04
FRU-700-30	7.00	14.00	17.5	40	30	3.8	0.005	0.03
FRU-800-30	8.00	16.00	18.8	40	30	4.0	0.005	0.02
FRU-900-30	9.00	18.00	20.0	40	30	4.2	0.005	0.02

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

I_T=Trip current-minimum current at which the device will always trip at 23 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 the tripped state in 23 still air environment.

R_{MIN}=Minimum device resistance at 23 .

R_{1MAX}=Maximum device resistance at 23 1 hour after tripping

FRU Series

FRU Product Dimensions (Millimeters)



FRU 090-30 ~ FRU 250-30

Lead Size :24AWG,
0.51 mm Diameter

FRU 300-30 ~ FRU 900-30

Lead Size : 20AWG,
0.81 mm Diameter

Part No.	A	B	C	D	E	F
	Maximum	Maximum	Typical	Minimum	Maximum	Typical
FRU090-30	7.4	12.2	5.1	7.6	3.0	0.9
FRU110-30	7.4	14.2	5.1	7.6	3.0	0.9
FRU135-30	8.9	13.5	5.1	7.6	3.0	0.9
FRU160-30	8.9	15.2	5.1	7.6	3.0	0.9
FRU185-30	10.2	15.7	5.1	7.6	3.0	0.9
FRU250-30	11.4	18.3	5.1	7.6	3.0	0.9
FRU300-30	11.4	17.3	5.1	7.6	3.0	1.2
FRU400-30	14.0	20.1	5.1	7.6	3.0	1.2
FRU500-30	14.0	24.9	10.2	7.6	3.0	1.2
FRU600-30	16.5	24.9	10.2	7.6	3.0	1.2
FRU700-30	19.1	26.7	10.2	7.6	3.0	1.2
FRU800-30	21.6	29.2	10.2	7.6	3.0	1.2
FRU900-30	24.1	29.7	10.2	7.6	3.0	1.2

FUSB Series

Application :

Low voltage USB equipment

Product Features :

Low resistance, Fast trip time, Lower

Trip-to-hold Ratio

Operation Current : 750mA~2.5A

Maximum Voltage : 16V

Temperature Range : -40 to 85



Electrical Characteristics(23)

Part No.	Hold	Trip	Max.Time to Trip		Maximum	Rated	Typical	Resistance Tolerance	
	Current	Current			Current	Voltage	Power	Rmin	R1max
	I _H ,A	I _T ,A	At 8A	At 5xI _H	I _{max} ,A	V _{max} ,Vdc	P _d ,W	O	O
FUSB075	0.75	1.30	0.4	--	40	16/30	0.3	0.080	0.23
FUSB090	0.90	1.80	1.2	5.9	40	16/30	0.6	0.070	0.18
FUSB110	1.10	2.20	2.3	6.6	40	16/30	0.7	0.050	0.14
FUSB120	1.20	2.00	0.5	--	40	16/30	0.6	0.040	0.14
FUSB135	1.35	2.70	4.5	7.3	40	16/30	0.8	0.040	0.12
FUSB155	1.55	2.70	0.6	--	40	16/30	0.7	0.030	0.12
FUSB160	1.60	3.20	9.0	8.0	40	16/30	0.9	0.030	0.11
FUSB185	1.85	3.70	10.0	8.7	40	16/30	1.0	0.030	0.09
FRSUB250	2.50	5.00	40.0	10.3	40	16/30	1.2	0.020	0.07

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

I_T=Trip current-minimum current at which the device will always trip at 23 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 the tripped state in 23 still air environment.

R_{MIN}=Minimum device resistance at 23 .

R_{1MAX}=Maximum device resistance at 23 1 hour after tripping

FUSB Series

FUSB Product Dimensions (Millimeters)



Lead Size :24AWG,
0.51 mm Diameter

Lead Size : 24AWG
0.51 mm Diameter

Part No.	Fig	A	B	C	D	E	F
		Maximum	Maximum	Typical	Minimum	Maximum	Typical
FUSB075	2	6.9	11.4	5.1	7.6	3.0	0.8
FUSB090	1	7.4	12.2	5.1	7.6	3.0	0.8
FUSB110	1	7.7	14.2	5.1	7.6	3.0	0.8
FUSB120	2	6.9	11.7	5.1	7.6	3.0	0.8
FUSB135	1	8.9	13.5	5.1	7.6	3.0	0.8
FUSB155	2	6.9	11.7	5.1	7.6	3.0	0.8
FUSB160	1	8.9	15.2	5.1	7.6	3.0	0.8
FUSB185	1	10.2	15.7	5.1	7.6	3.0	0.8
FUSB250	1	11.4	18.3	5.1	7.6	3.0	0.8

FRG Series

Application :

Wide variety of electronic equipment

Product Features :

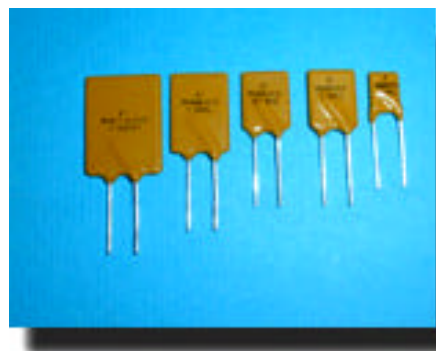
Very high hold current, Solid state

Radial-leaded product ideal for up to 16VDC

Operation Current : 3A-14A

Maximum Voltage : 16V

Temperature Range : -40 to 85



Electrical Characteristics(23)

Part No.	Hold Current	Trip Current	Max.Time to Trip	Maximum Current	Rated Voltage	Pd	Resistance Tolerance	
	I _H ,A	I _{MAX} ,A	At 5xI _H	I _{max} ,Amp	V _{max} ,Vdc	W	R _{min}	R _{1max}
							O	O
FRG300-16	3.0	5.1	2.0	100	16	2.3	0.034	0.105
FRG400-16	4.0	6.8	3.5	100	16	2.4	0.020	0.063
FRG500-16	5.0	8.5	3.6	100	16	2.6	0.010	0.044
FRG600-16	6.0	10.2	5.8	100	16	2.8	0.009	0.033
FRG700-16	7.0	11.9	8.0	100	16	3.0	0.006	0.021
FRG800-16	8.0	13.6	9.0	100	16	3.0	0.005	0.018
FRG900-16	9.0	15.3	12.0	100	16	3.3	0.004	0.015
FRG1000-16	10.0	17.0	12.5	100	16	3.3	0.003	0.012
FRG1100-16	11.0	18.7	13.5	100	16	3.7	0.003	0.010
FRG1200-16	12.0	20.4	16.0	100	16	4.2	0.002	0.009
FRG1400-16	14.0	23.8	20.0	100	16	4.6	0.002	0.008

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}).

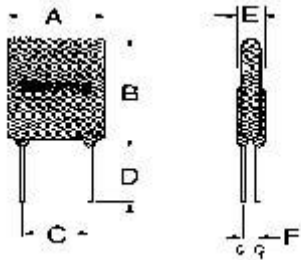
P_d=Typical power dissipated from device when in the tripped state in 23 °C still air environment.

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

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

FRG Series

FRG Product Dimensions (Millimeters)



Lead Size

FRG300-16~FRG1100-16

φ0.81

(0.032)

20AWG

Lead Size

FRG1200-16~FRG1400-16

φ1.0

(0.04)

18AWG

Part No.	A	B	C	D	E	F
	Maximum	Maximum	Typical	Minimum	Maximum	Typical
FRG300-16	7.1	11.0	5.1	7.6	3.0	1.2
FRG400-16	8.9	12.8	5.1	7.6	3.0	1.2
FRG500-16	10.4	14.3	5.1	7.6	3.0	1.2
FRG600-16	10.7	17.1	5.1	7.6	3.0	1.2
FRG700-16	11.2	19.7	5.1	7.6	3.0	1.2
FRG800-16	12.7	20.9	5.1	7.6	3.0	1.2
FRG900-16	14.0	21.7	5.1	7.6	3.0	1.2
FRG1000-16	16.5	24.1	5.1	7.6	3.0	1.2
FRG1100-16	17.5	26.0	5.1	7.6	3.0	1.2
FRG1200-16	17.5	28.0	10.2	7.6	3.6	1.4
FRG1400-16	27.9	27.9	10.2	7.6	3.4	1.4

FRH Series

Application :

Telecommunication and Data transmitting

Product Features :

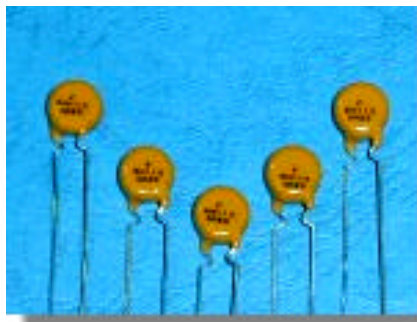
Low hold current, Solid state

Radial-leaded product ideal for up to 60V/600V

Operation Current : 0.08A-0.18A

Maximum Voltage : 60V / 250V / 600V

Temperature Range : -40 to 85



Electrical Characteristics(23)

Part No.	Hold Current	Maximum Current	Max Oper. Voltage	Max Int. Voltage	Resistance Tolerance	
					Rmin	R1max
	I _H ,A	I _{MAX} ,Amp	V _{O-MAX} , Vdc	V _{I-MAX} ,Vdc	O	O
FRH080-250U	0.08	3.0	60	250	14.0	33.0
FRH080-250	0.08	3.0	60	250	14.0	33.0
FRH110-250U	0.11	3.0	60	250	5.0	16.0
FRH110-250	0.11	3.0	60	250	5.0	16.0
FRH120-250U	0.12	3.0	60	250	6.0	16.0
FRH120-250	0.12	3.0	60	250	4.0	16.0
FRH145-250U	0.15	3.0	60	250	3.5	12.0
FRH145-250	0.15	3.0	60	250	3.0	12.0
FRH180-250U	0.18	10.0	60	250	0.8	4.0
FRH180-250	0.18	10.0	60	250	0.8	4.0
FRH150-600	0.15	3.0	60	250	6.0	22.0
FRH160-600	0.16	3.0	60	250	4.0	18.0

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

I_T=Trip current-minimum current at which the device will always trip at 23 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}).

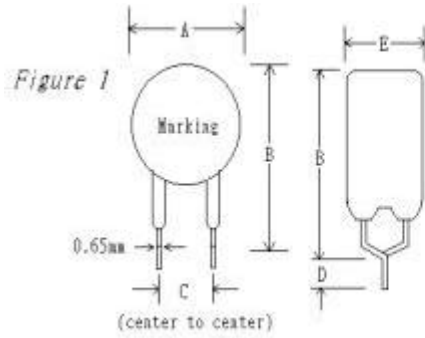
P_d=Typical power dissipated from device when in the tripped state in 23 still air environment.

R_{MIN}=Minimum device resistance at 23 .

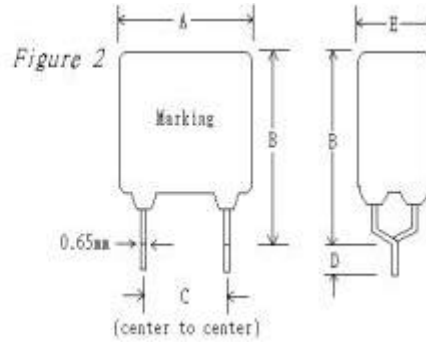
R_{1MAX}=Maximum device resistance at 23 1 hour after tripping

FRH Series

FRH Product Dimensions (Millimeters)



Lead Size :22AWG,
0.65 mm Diameter



Lead Size : 20AWG,
0.65 mm Diameter

Part No.	Fig	A	B	C	D	E
		Maximum	Maximum	Typical	Minimum	Maximum
FRH080-250U	1	4.8	9.1	5.0	4.7	3.8
FRH080-250	1	5.3	9.6	5.0	4.7	4.6
FRH110-250U	1	5.3	9.4	5.0	4.7	3.8
FRH110-250	1	5.8	9.9	5.0	4.7	4.6
FRH120-250U	2	6.0	10.0	5.0	4.7	3.8
FRH120-250	2	6.5	11.0	5.0	4.7	4.6
FRH145-250U	2	6.0	10.0	5.0	4.7	3.8
FRH145-250	2	6.5	11.0	5.0	4.7	4.6
FRH180-250U	2	10.4	12.6	5.0	4.7	3.8
FRH180-250	2	10.9	13.6	5.0	4.7	4.6
FRH150-600	2	13.5	12.6	5.0	4.7	6.0
FRH160-600	2	16.0	12.6	5.0	4.7	6.0

FRA Series

Application :

Wide variety of electronic equipment

Product Features :

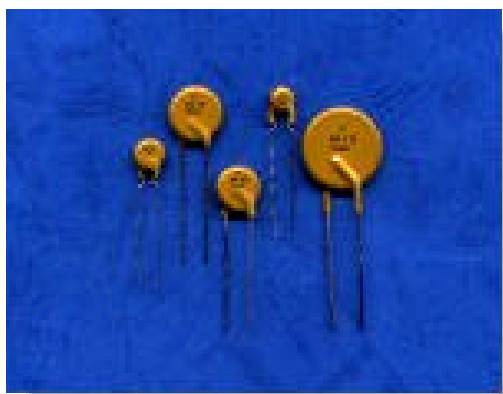
Low hold current, Solid state

Radial-leaded product ideal for up to 120V/120AC

Operation Current : 100mA~3.75A

Maximum Voltage : 120VAC

Temperature Range : -40 to 85



Electrical Characteristics(23)

Part No.	Hold Current	Trip Current	Max.Time to Trip	Maximum Current	Rated Voltage	Typical Power	Resistance Tolerance	
	IH,A						IT,A	Rmin
			At 5xIH	I _{max} ,A	V _{max} ,Vdc	Pd,W	○	○
FRA010-120	0.10	0.20	4.0	40	120	0.57	2.50	7.50
FRA017-120	0.17	0.34	3.0	40	120	0.59	2.00	7.00
FRA020-120	0.20	0.40	2.2	40	120	0.62	1.83	4.40
FRA025-120	0.25	0.50	2.5	40	120	0.68	1.25	3.00
FRA030-120	0.30	0.60	3.0	40	120	0.74	0.88	2.10
FRA040-120	0.40	0.80	3.8	40	120	0.84	0.55	1.29
FRA050-120	0.50	1.00	4.0	40	120	1.16	0.50	1.17
FRA065-120	0.65	1.30	5.3	40	120	1.32	0.31	0.72
FRA075-120	0.75	1.50	6.3	40	120	1.38	0.25	0.60
FRA090-120	0.90	1.80	7.2	40	120	1.49	0.20	0.47
FRA110-120	1.10	2.20	8.2	40	120	2.25	0.15	0.38
FRA135-120	1.35	2.70	9.6	40	120	2.55	0.12	0.30
FRA160-120	1.60	3.20	11.4	40	120	2.85	0.09	0.22
FRA185-120	1.85	3.70	12.6	40	120	3.15	0.08	0.19
FRA250-120	2.50	5.00	15.6	40	120	3.75	0.05	0.13
FRA300-120	3.00	6.00	19.8	40	120	4.20	0.04	0.10
FRA375-120	3.75	7.50	24.0	40	120	4.80	0.03	0.08

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

I_T=Trip current-minimum current at which the device will always trip at 23 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 the tripped state in 23 still air environment.

R_{MIN}=Minimum device resistance at 23 .

R_{1MAX}=Maximum device resistance at 23 1 hour after tripping

FRA Series

FRA Product Dimensions (Millimeters)



FRA 010-120 ~ FRA 090-120

Lead Size :22AWG,
0.65 mm Diameter

FRA 110-120 ~ FRA 375-120

Lead Size : 20AWG,
0.81 mm Diameter

Part No.	A	B	C	D	E	F
	Maximum	Maximum	Typical	Minimum	Maximum	Typical
FRA010-120	7.4	12.7	5.1	7.6	4.6	2.7
FRA017-120	7.4	12.7	5.1	7.6	4.6	2.7
FRA020-120	7.4	12.2	5.1	7.6	4.6	2.7
FRA025-120	7.4	12.7	5.1	7.6	4.6	2.7
FRA030-120	7.4	13.0	5.1	7.6	4.6	2.7
FRA040-120	8.2	14.2	5.1	7.6	4.6	2.7
FRA050-120	9.2	14.9	5.1	7.6	4.6	2.7
FRA065-120	9.7	14.9	5.1	7.6	4.6	2.7
FRA075-120	10.6	15.5	5.1	7.6	4.6	2.7
FRA090-120	11.9	15.9	5.1	7.6	4.6	2.7
FRA110-120	13.3	18.3	5.1	7.6	4.6	2.7
FRA135-120	15.5	20.6	5.1	7.6	4.6	2.7
FRA160-120	17.5	22.5	5.1	7.6	4.6	2.7
FRA185-120	19.9	24.9	5.1	7.6	4.6	2.7
FRA250-120	22.5	27.5	10.2	7.6	4.6	2.7
FRA300-120	25.5	30.0	10.2	7.6	4.6	2.7
FRA375-120	29.5	34.0	10.2	7.6	4.6	2.7

FSR Series

Application :

Rechargeable battery packs

Lithium cell and battery packs

Product Features :

Low profile, Solid state

Operation Current : 1.2A~4.2A

Maximum Voltage : 15V / 30V

Temperature Range : -40 to 85



Electrical Characteristics(23)

Part No.	Fig	Hold	Trip	Rated	Maximum	Typical	Resistance Tolerance		
		Current	Current	Voltage	Current	Power	RMIN	RMAX	R1MAX
		I _H ,A	I _T ,A	V _{MAX} ,Vdc	I _{MAX} ,A	P _d ,W	0	0	0
FSR120	1	1.2	2.7	15	100	1.2	0.085	0.160	0.220
FSR120S	2	1.2	2.7	15	100	1.2	0.085	0.160	0.220
FSR175	1	1.75	3.8	15	100	1.5	0.050	0.090	0.120
FSR175S	2	1.75	3.8	15	100	1.5	0.050	0.090	0.120
FSR200	1	2.0	4.4	30	100	1.9	0.030	0.060	0.100
FSR350	1	3.5	6.3	30	100	2.5	0.017	0.031	0.050
FSR420	1	4.2	7.6	30	100	2.9	0.012	0.024	0.040

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

I_T=Trip current-minimum current at which the device will always trip at 23 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}).

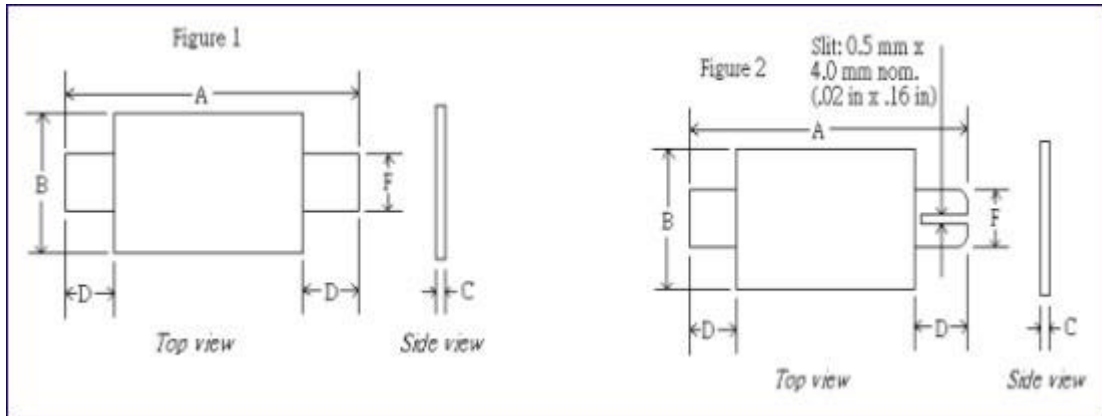
P_d=Typical power dissipated from device when in the tripped state in 23 still air environment.

R_{MIN}=Minimum device resistance at 23 .

R_{1MAX}=Maximum device resistance at 23 1 hour after tripping

FSR Series

FSR Product Dimensions (Millimeters)



Part No.	Fig	A		B		C		D		E	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FSR120	1	19.9	22.1	4.9	5.2	0.6	1.0	5.5	7.5	3.9	4.1
FSR120S	2	19.9	22.1	4.9	5.2	0.6	1.0	5.5	7.5	3.9	4.1
FSR175	1	20.9	23.1	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
FSR175S	2	20.9	23.1	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
FSR200	1	21.3	23.4	10.2	11.0	0.5	1.1	5.0	7.6	4.8	5.4
FSR350	1	28.4	31.8	13.0	13.5	0.5	1.1	6.3	8.9	6.0	6.6
FSR420	1	30.6	32.4	12.9	13.6	0.5	1.1	5.0	7.5	6.0	6.7

FLT Series

Application :

Rechargeable battery packs

Lithium cell and battery packs

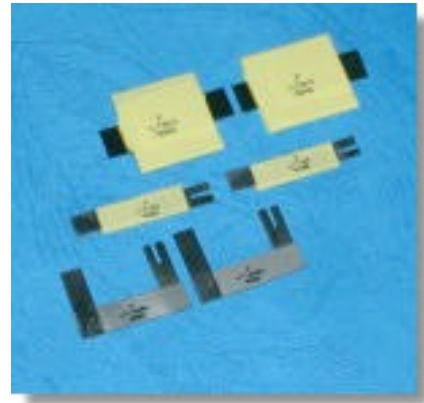
Product Features :

Low profile, Solid state

Operation Current : 0.7A~3.4A

Maximum Voltage : 24V

Temperature Range : -40 to 85



Electrical Characteristics(23)

Part No.	Hold	Trip	Rated	Maximum	Typical	Resistance Tolerance		
	Current	Current	Voltage	Current		RMIN	RMAX	R1MAX
	I _H ,A	I _T ,A	V _{MAX} ,Vdc	I _{MAX} ,A	P _d ,W	○	○	○
FLT070	0.7	1.5	15	100	1.1	0.100	0.200	0.340
FLT070S	0.7	1.5	15	100	1.1	0.100	0.200	0.340
FLT100	1.00	2.5	24	100	1.5	0.070	0.130	0.260
FLT100S	1.00	2.5	24	100	1.5	0.070	0.130	0.260
FLT180	1.8	3.8	24	100	2.0	0.040	0.068	0.120
FLT180S	1.8	3.8	24	100	2.0	0.040	0.068	0.120
FLT190	1.9	4.2	24	100	1.9	0.030	0.057	0.100
FLT190RU	1.9	4.2	15	100	2.0	0.030	0.057	0.100
FLT260	2.6	5.2	24	100	2.3	0.025	0.042	0.076
FLT300	3.0	6.3	24	100	2.0	0.015	0.031	0.055
FLT310	3.1	6.0	24	100	2.5	0.018	0.030	0.055
FLT340	3.4	6.8	24	100	2.7	0.016	0.027	0.050

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

I_T=Trip current-minimum current at which the device will always trip at 23 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}).

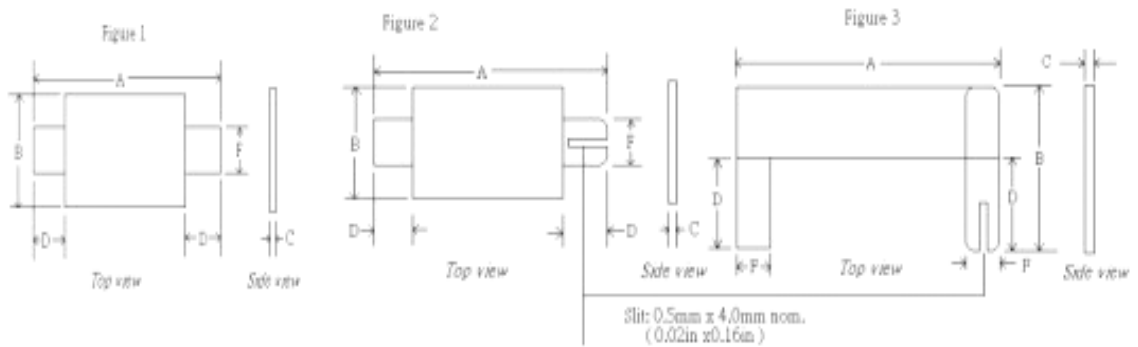
P_d=Typical power dissipated from device when in the tripped state in 23 still air environment.

R_{MIN}=Minimum device resistance at 23 .

R_{1MAX}=Maximum device resistance at 23 1 hour after tripping

FLT Series

FLT Product Dimensions (Millimeters)



Part.No	Fig	A		B		C		D		F	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FLT070	1	19.9	22.1	4.9	5.2	0.7	1.2	5.5	7.5	3.9	4.1
FLT070S	2	19.9	22.1	4.9	5.2	0.7	1.2	5.5	7.5	3.9	4.1
FLT100	1	20.9	23.1	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
FLT100S	2	20.9	23.1	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
FLT180	1	24.0	26.0	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
FLT180S	2	24.0	26.0	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
FLT190	1	21.3	23.4	10.2	11.0	0.5	1.1	5.0	7.6	4.8	5.4
FLT190RU	3	19.8	20.8	13.3	14.3	0.4	0.8	8.1	9.5	3.8	4.2
FLT260	1	24.0	26.0	10.8	11.9	0.6	1.0	5.0	7.0	5.9	6.1
FLT300	1	28.4	31.8	13.0	13.5	0.5	1.1	6.3	8.9	6.0	6.6
FLT310	1	24.0	26.0	14.8	15.9	0.6	1.0	5.0	7.0	5.9	6.1
FLT340	1	24.0	26.0	14.8	15.9	0.6	1.0	4.0	5.0	5.9	6.1

FLR Series

Application :

Rechargeable battery packs

Lithium cell and battery packs

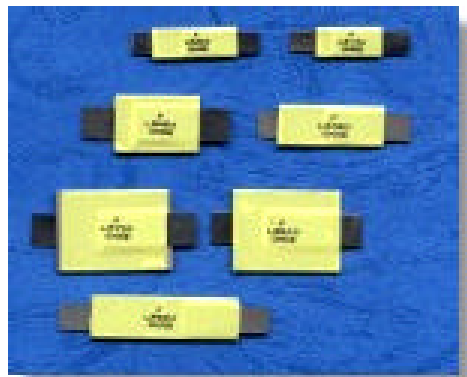
Product Features :

Low profile,Solid state

Operation Current : 1.9A~7.3A

Maximum Voltage : 15V / 20V

Temperature Range : -40 to 85



Electrical Characteristics(23)

Part No.	Hold Current	Trip Current	Rated Voltage	Maximum Current	Typical Power	Resistance Tolerance		
	I _H ,A	I _T ,A	V _{MAX} ,Vdc	I _{MAX} ,A	P _d ,W	R _{MIN}	R _{MAX}	R _{1MAX}
						○	○	○
FLR190	1.9	3.9	15	100	1.2	0.039	0.072	0.102
FLR190S	1.9	3.9	15	100	1.2	0.039	0.072	0.102
FLR260	2.6	5.8	15	100	2.5	0.020	0.042	0.063
FLR260S	2.6	5.8	15	100	2.5	0.020	0.042	0.063
FLR380	3.8	8.3	15	100	2.5	0.013	0.026	0.037
FLR450	4.5	8.3	20	100	2.5	0.011	0.020	0.028
FLR550	5.5	10.5	20	100	2.8	0.009	0.016	0.022
FLR660	6.0	11.7	20	100	2.8	0.007	0.014	0.019
FLR730	7.3	14.1	20	100	3.3	0.006	0.012	0.015

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

I_T=Trip current-minimum current at which the device will always trip at 23 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}).

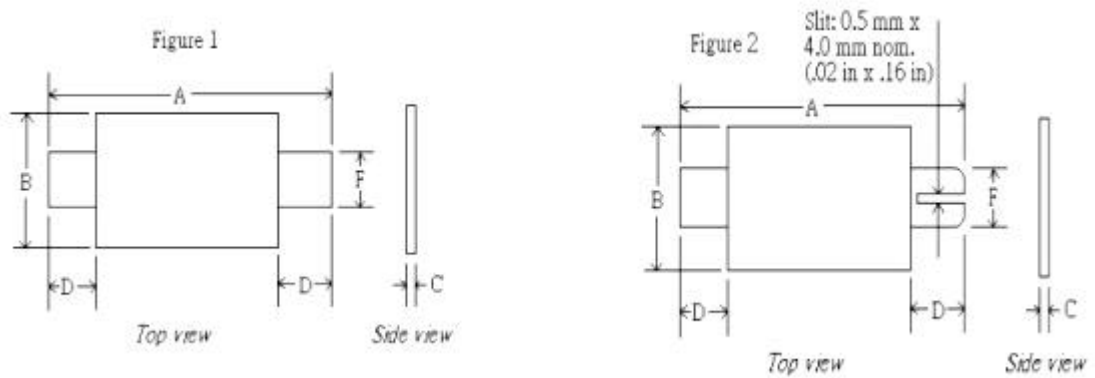
P_d=Typical power dissipated from device when in the tripped state in 23 still air environment.

R_{MIN}=Minimum device resistance at 23 .

R_{1MAX}=Maximum device resistance at 23 1 hour after tripping

FLR Series

FLR Product Dimensions (Millimeters)



Part.No	Fig	A		B		C		D		F	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FLR190	1	19.9	22.1	4.9	5.5	0.6	1.0	5.5	7.5	3.9	4.1
FLR190S	2	19.9	22.1	4.9	5.5	0.6	1.0	5.5	7.5	3.9	4.1
FLR260	1	20.9	23.1	4.9	5.5	0.6	1.0	4.1	5.5	3.9	4.1
FLR260S	2	20.9	23.1	4.9	5.5	0.6	1.0	4.1	5.5	3.9	4.1
FLR380	1	24.0	26.0	6.9	7.5	0.6	1.0	4.1	5.5	4.9	5.1
FLR450	1	24.0	26.0	9.9	10.5	0.6	1.0	5.3	6.7	5.9	6.1
FLR550	1	35.0	37.0	6.9	7.5	0.6	1.0	5.3	6.7	4.9	5.1
FLR600	1	24.0	26.0	13.9	14.5	0.6	1.0	4.1	5.5	5.9	6.1
FLR730	1	27.1	29.1	13.9	14.5	0.6	1.0	4.1	5.5	5.9	6.1

FSMD Series

Application :

All high-density boards

Product Features :

Small surface mount, Solid state

Faster time to trip than standard SMD devices

Lower resistance than standard SMD devices

Operation Current : 140mA~1.6A

Maximum Voltage : 6V / 60V

Temperature Range : -40 to 85



Electrical Characteristics(23)

Part No.	Hold Current	Trip Current	Rated Voltage	Maximum Current	Typical Power	Resistance Tolerance		Max Time To Trip	
						RMIN	RMIN	Amp	Sec
						0	0	0	0
FSMD014	0.14	0.30	60	10	0.8	1.50	1.50	8.0	<0.02
FSMD020	0.20	0.40	30	40	0.8	0.80	0.80	8.0	0.02
FSMD035	0.35	0.70	15	40	0.8	0.32	0.32	8.0	0.10
FSMD050	0.50	1.00	15	40	0.8	0.15	0.15	8.0	0.15
FSMD075	0.75	1.50	13	40	0.8	0.11	0.11	8.0	0.02
FSMD110	1.10	2.20	6	40	0.8	0.04	0.04	8.0	0.30
FSMD160	1.60	3.20	6	40	0.8	0.03	0.03	8.0	<0.5

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

I_T=Trip current-minimum current at which the device will always trip at 23 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}).

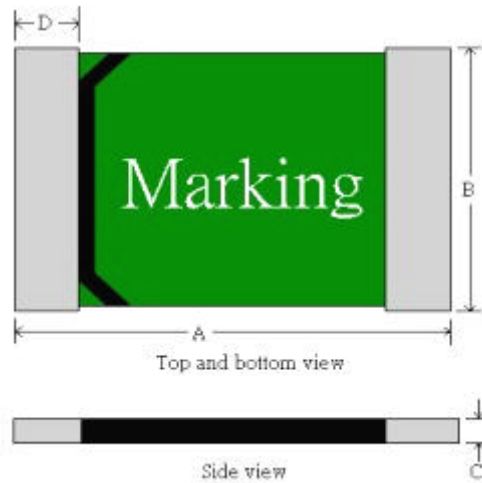
P_d=Typical power dissipated from device when in the tripped state in 23 still air environment.

R_{MIN}=Minimum device resistance at 23 .

R_{1MAX}=Maximum device resistance at 23 1 hour after tripping

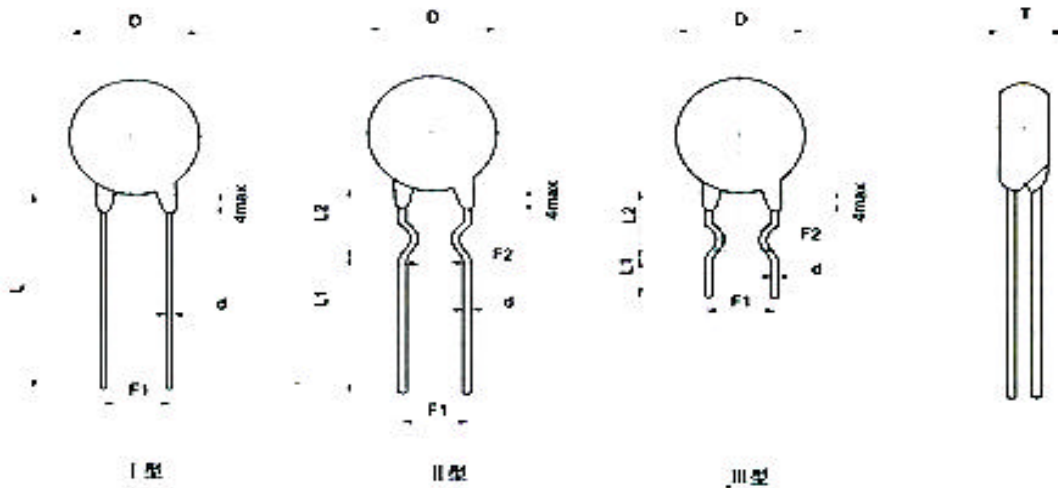
FSMD Series

FSMD Product Dimensions (Millimeters)



Part No.	A		B		C		D
	Min	Max	Min	Max	Min	Max	Min
FSMD014	4.37	4.73	3.07	3.41	0.7	1.0	0.35
FSMD020	4.37	4.73	3.07	3.41	0.4	0.7	0.35
FSMD035	4.37	4.73	3.07	3.41	0.4	0.7	0.35
FSMD050	4.37	4.73	3.07	3.41	0.4	0.7	0.35
FSMD075	4.37	4.73	3.07	3.41	0.4	0.7	0.35
FSMD110	4.37	4.73	3.07	3.41	0.4	0.7	0.35
FSMD160	4.37	4.73	3.07	3.41	0.4	0.7	0.35

Power NTC Thermistor

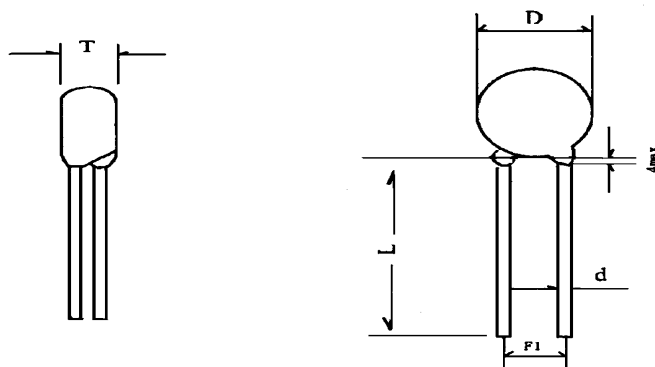


	D ⁺² -1	T max	d ± 0.05	F ₁ ±1	F ₂ ±1.5	ST	IT	
						L min	L ₁ min	L ₂ ±2
D5	6.5	5	0.6/0.45	5/2.5	3	25	17/5	8
D7	8.5	5	0.6	5	3	25	17/5	8
D9	10.5	5.5	0.8/0.6	7.5/5	5/3	25	17/5	8
D11	12.5	5.5	0.8/0.6	7.5/5	5/3	25	17/5	8
D13	14.5	6	0.8	7.5	5	25	17/5	8
D15	16.5	6	0.8	10/7.5	5	25	17/5	8
D20	21.5	7	1.0	10/7.5	/	25	/	/
D25	26.5	8	1.0	10	/	25	/	/

Model No	R ₂₅ Ω	Max .Steady Current A	Approx .R of Max .Cur Ω	Dissipation Constant mW/	Time Constant Sec	
5D5	5	1	0.353	6	20	-55 ° +200
10D5	10	0.7	0.771	6	20	
60D5	60	0.5	1.878	6	18	
200D5	200	0.1	6.259	6	18	
5D7	5	2	0.283	10	30	
8D7	8	1	0.539	9	28	
10D7	10	1	0.616	9	27	
12D7	12	1	0.816	9	27	
16D7	16	0.7	1.003	9	27	
22D7	22	0.6	1.108	9	27	
33D7	33	0.5	1.485	10	28	
200D7	200	0.2	6.233	11	28	
3D9	3	4	0.120	11	35	
4D9	4	3	0.190	11	35	
5D9	5	3	0.210	11	34	
6D9	6	2	0.315	11	34	
8D9	8	2	0.400	11	32	
10D9	10	2	0.458	11	32	
12D9	12	1	0.652	11	32	
16D9	16	1	0.802	11	31	
20D9	20	1	0.864	11	30	
22D9	22	1	0.950	11	30	
30D9	30	1	1.022	11	30	
33D9	33	1	1.124	11	30	
50D9	50	1	1.252	11	30	
60D9	60	0.8	1.502	11	30	
80D9	80	0.8	2.010	11	30	
120D9	120	0.8	3.015	11	30	
200D9	200	0.5	5.007	11	32	
2.5D11	2.5	5	0.095	13	43	
3D11	3	5	0.100	13	43	
4D11	4	4	0.150	13	44	
5D11	5	4	0.156	13	45	
6D11	6	3	0.240	13	45	
8D11	8	3	0.255	14	47	

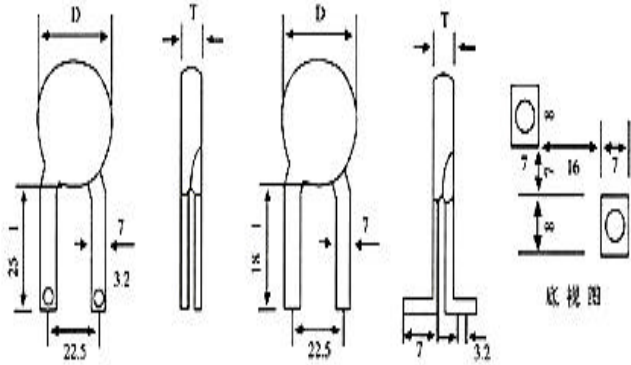
Model No	R ₂₅ Ω	Max .Steady Current A	Approx .R of Max .Cur Ω	Dissipation Constant mW/	Time Constant Sec	
10D11	10	3	0.275	14	47	-55 ° +200
12D11	12	2	0.462	14	48	
16D11	16	2	0.470	14	50	
20D11	20	2	0.512	15	52	
22D11	22	2	0.563	15	52	
30D11	30	1.5	0.667	15	52	
33D11	33	1.5	0.734	15	52	
50D11	50	1.5	1.021	15	52	
60D11	60	1.5	1.215	15	52	
80D11	80	1.2	1.656	15	52	
1.3D13	1.3	7	0.062	13	60	
1.5D13	1.5	7	0.073	13	60	
2.5D13	2.5	6	0.088	13	60	
3D13	3	6	0.092	14	60	
4D13	4	5	0.120	15	67	
5D13	5	5	0.125	15	68	
6D13	6	4	0.170	15	65	
7D13	7	4	0.188	15	65	
8D13	8	4	0.194	15	60	
10D13	10	4	0.206	15	65	
12D13	12	3	0.316	16	65	
15D13	15	3	0.335	16	60	
16D13	16	3	0.338	16	60	
20D13	20	3	0.372	16	65	
30D13	30	2.5	0.517	16	65	
47D13	47	2	0.810	17	65	
120D13	120	1.5	2.124	16	65	
1.3D15	1.3	8	0.048	18	68	
1.5D15	1.5	8	0.052	19	69	
3D15	3	7	0.075	18	76	
5D15	5	6	0.112	20	76	
6D15	6	5	0.155	20	80	
7D15	7	5	0.173	20	80	
8D15	9	5	0.178	20	80	
10D15	10	5	0.180	20	75	

Model No	$R_{25} \text{ } \Omega$	Max .Steady Current A	Approx .R of Max .Cur Ω	Dissipation Constant mW/	Time Constant Sec	
12D15	12	4	0.250	20	75	-55 ° +200
15D15	15	4	0.268	21	85	
16D15	16	4	0.276	21	70	
20D15	20	4	0.288	17	86	
30D15	30	3.5	0.438	18	75	
47D15	47	3	0.680	21	86	
120D15	120	2.5	1.652	22	87	
0.7D20	0.7	12	0.018	25	89	
1.3D20	1.3	9	0.037	24	88	
3D20	3	8	0.055	24	88	
5D20	5	7	0.087	23	87	
6D20	6	6	0.113	25	103	
8D20	8	6	0.142	25	105	
10D20	10	6	0.162	24	102	
12D20	12	5	0.195	24	100	
16D20	16	5	0.212	25	100	
0.7D25	0.7	13	0.014	30	120	
1.5D25	1.5	10	0.027	30	121	
3D25	3	9	0.044	32	124	
5D25	5	8	0.070	32	125	
8D25	8	7	0.114	33	125	
10D25	10	7	0.130	32	127	
12D25	12	6	0.156	32	126	
16D25	16	6	0.160	35	126	



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Chip Diameter± (mm)	30	35	45	60
Format Diameter (D) max	35	40	50	65
Thickness (T) max	10	12	12	12



Chip	Model No	R ₂₅ (Ω)	Max.Steady State Current (A)	Approx. R of Max .Cur. at 25 (Ω)	Dissi. Coef. (mW/)	Thermal time Constant (S)	Operating Temp ()
30	0.7/14	0.7	14	0.061	45	140	-55 ° +200
	1/11	1	11	0.089	45	140	
	1.5/11	1.5	11	0.099	43	139	
	2/10	2	10	0.117	43	139	
	3/10	3	10	0.120	43	139	
	5/9	5	9	0.148	41	137	
	8/8	8	8	0.179	45	140	
	10/8	10	8	0.188	43	139	
	16/7	16	7	0.232	45	140	
	20/7	20	7	0.245	45	140	
35	30/6	30	6	0.333	54	140	
	0.7/15	0.7	15	0.064	50	152	
	1/12	1	12	0.093	50	152	
	1.2/12	1.5	12	0.101	47	151	
	2/11	2	11	0.115	47	151	
	3/11	3	11	0.120	47	151	
	5/10	5	10	0.145	45	149	
	8/9	8	9	.0173	50	152	
	10/9	10	9	0.179	47	151	
	16/8	16	8	0.217	50	152	
20/8	20	8	0.226	50	152		
30/7	30	7	0.296	50	152		

Chip	Model No	R ₂₅ (Ω)	Max.Steady State Current (A)	Approx. R of Max .Cur. at 25 (Ω)	Dissi. Coef. (mW/)	Thermal time Constant (S)	Operating Temp ()
45	0.7/17	0.7	17	0.059	66	201	-55 ° +200
	1/14	1	14	0.078	66	201	
	1.5/14	1.5	14	0.087	62	200	
	2/13	2	13	0.096	62	200	
	3/13	3	13	0.101	62	200	
	5/12	5	12	0.118	60	197	
	8/11	8	11	0.134	66	201	
	10/11	10	11	0.140	62	200	
	16/10	16	10	0.163	60	201	
	20/10	20	10	0.170	60	201	
30/9	30	9	0.210	60	201		
60	0.5/25	0.5	25	0.032	94	285	
	0.7/20	0.7	20	0.050	94	285	
	1/17	1	17	0.060	94	285	
	1.5/17	1.5	17	0.069	88	284	
	2/16	2	16	0.075	88	284	
	3/16	3	16	0.078	88	284	
	5/15	5	15	0.089	85	280	
	8/14	8	14	0.098	94	285	
	10/14	10	14	0.102	88	284	
	16/13	16	13	0.113	85	280	
	20/13	20	13	0.118	85	280	
30/12	30	12	0.138	85	280		

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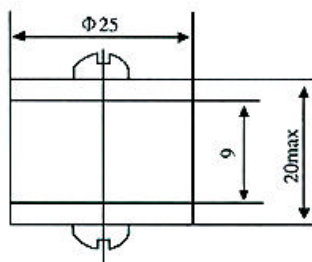
Part No	R ₂₅ Ω	Max. Steady State Current A	Approx R of Max. Current At 25 °C	Dissi. Coef. mW/	Thermal time Constant S	Operating Temp
74-05/40	0.5	40	0.00875	118	340	-55 ° +200
74-0.7/36	0.7	36	0.0110	118	340	
74-1/32	1	32	0.0137	118	340	
74-1.3/27	1.3	27	0.0192	118	340	
74-1.5/27	1.5	27	0.0206	118	340	
74-2/25	2	25	0.0240	120	340	
74-2.5/25	2.5	25	0.0252	120	350	
74-3/23	3	23	0.0293	123	350	
74-4/21	4	21	0.0340	123	350	
74-5/21	5	21	0.0364	123	350	
74-6/18	6	18	0.0494	123	355	
74-8/18	8	18	0.0525	125	360	
74-10/18	10	18	0.0555	125	360	
74-12/15	12	15	0.0622	125	345	
74-16/15	16	15	0.0688	125	345	
74-20/15	20	15	0.0745	125	345	
74-25/15	25	15	0.0857	125	345	
74-30/12	30	12	0.1170	125	350	

Applications:

Applicable to the surge current suppression of the conversion power supply, switching power supply, UPS power supply, large power lights and electric heaters.

Features:

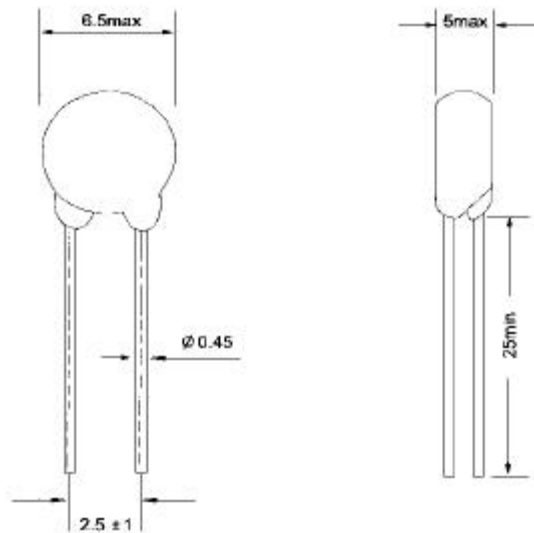
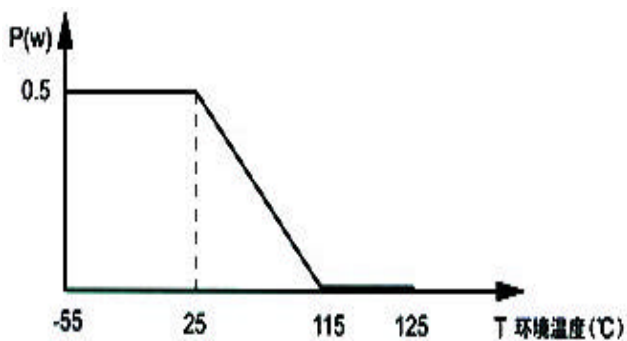
The large power NTC thermistor is processed with high purity materials and special techniques. It adopts the overheat resistant installation, and can work continuously under 12A - 40A steady current. It is one of the power NTC thermostats that have the best surge current suppression capability and the highest workable steady current.



MF11/12 Compensation NTC Thermistor


Model No	B Value 25/50		Rated zero-power resistance at 25	
	Rated Value K	Allowable Tolerance	Resistance range Ω	Allowable Tolerance
MF11	2700	±5	3.3 ° 33	±5 ±10 ±20
	2830		6.8 ° 68	
	2950		15 ° 150	
	3100		33 ° 330	
	3250		68 ° 680	
	3400		150 ° 1500	
	3570		330 ° 3300	
	3740		680 ° 6800	
	3900		1500 ° 15000	
	4050		3300 ° 33000	
MF12	4250	±5	6800 ° 68000	±5 ±10 ±20
	4450		15000 ° 150000	
	4670		33000 ° 330000	
	4800		68000 ° 680000	
	5050		150000 ° 5000000	

Power-Consumption curve



Remark: Our corporation can offer the thermistor of corresponding parameter according to the special requirement of customer's.

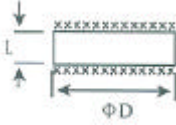
Chip in Glass NTC Thermistor

	Model	D max	L ₁ max	L ₂ min	d±0.05
	51-A	2.5	4	60	0.3
	51-B	1.5	3	60	0.2
	51-C	0.9	2	60	0.15

Model	Dissi.Coef. mW/		Thermal time Constant S
	In still air	In still air	
51-A	1.2 ° 1.3	10 ° 11	0.9 ° 1.1
51-B	0.7 ° 0.8	4 ° 5	0.3 ° .4
51-C	0.4 ° 0.58	2 ° 3	0.18 ° .0.24

Model	Rated Resistance R ₂₅		B Value 25/80		Operating Temp In stirred oil
	KO	Tolerance	K	Tolerance	
51 [[[3450	2 ° 10	±1	3450	±1	-20 ° 130
51 [[[3750	8 ° 10		3750		-10 ° 200
51 [[[4150	100 ° 350	±2	4150	±2	0 ° 300
51 [[[4350	870 ° 980	±3	4350		0 ° 300
51 [[[4450	1000 ° 1500	±5	4450		0 ° 300

Cycle Chip NTC Thermister

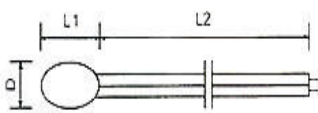
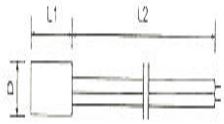
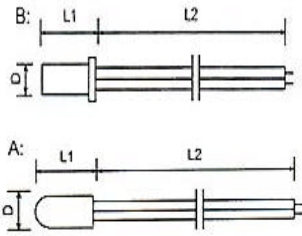
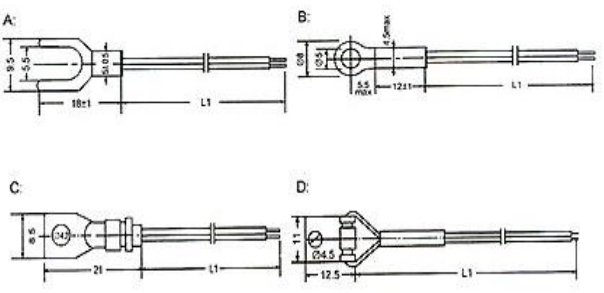
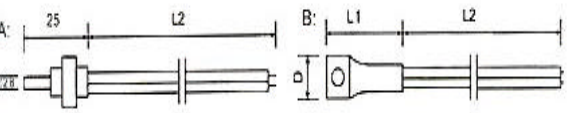
 <p>xxxxSilver Pole F D 5.0 ° 10.0 ±0.5 L 1.2 ° 3.0 ±0.2(mm)</p>	Part No	Rated Resistance R ₂₅		B Value (25/50)		Rated Power (W)	Measuring Power (mW)	Thermal time Constant (S)	Dissi.Coet. (mW/)	Operating Temp ()
		Range ()	Allowable Tolerance (%)	Rated Value ()	Allowable Tolerance (%)					
	57-1	220-630		2700		0.3 0.5	=0.15	=60	6 ° 13	-55 ° +125
	57-2	220-5.1K		3000						
	57-3	270-5.1K		3300						
	57-4	270-5.1K	±3 ±5	3600	±3 ±5					
	57-5	270-5.1K		3900						
	57-6	270-6.3K		4100						
	57-7	330-6.8K		4300						
	57-8	330-6.8K		4700						
	330-10K									

Remark: Our corporation can offer the thermistor of corresponding parameter according to the type of automobile ordered by users.

Pearl-Shape Precision NTC Thermistor

	Code	Dmax	L ₁ max	L ₂ min	L ₃ min	d±0.05	F±0.05
Tin.Ag.Nickle plated cu wire							
	A1	2	3	25		0.3	2
	A2	3	4	25		0.45	2
Enamelled cu wire							
	B1	2	3	by user determine		5	0.2
	B2	3	4	by user determine		5	0.3
High temp fluorin-plastic wire							
	C1	2	3	by user determine	5	0.4	
	C2	3	4	by user determine	5	0.5	
PVC wire							
	D1	2	3	by user determine	5	0.26	
	D2	3	4	by user determine	5	0.32	
Lead and head are all special specification							
	E1	by user determine	by user determine	by user determine	5	by user determine	2.5
	E2	by user determine	by user determine	by user determine	5	by user determine	2.5

CFW Precision NTC Thermistors

	Code	A	B	C	D	E	F	G	
 <p>Ethoxyline Resin Enveloped</p>	D	3	5	6	7				
	L1	5	10	15	15				
	L2	According to the order of the user							
	<p>CWF1 (packed with ethoxyline resin)</p> <p>Characteristic: Moisture protection, Good insulation, High reliability, Little time constant, Sensitive responses.</p> <p>Application: Household air-condition, Refrigeratory and so on</p>								
 <p>Packaged with Shell of Aluminium, Copper, Stainless Steel</p>	D	3	5	5	5	6	6	6	
	L1	20	20	25	30	20	25	30	
	L2	According to the order of the user							
	<p>CWF2 (Packaged with shell of aluminium, copper, stainless steel and so on)</p> <p>Characteristic: High stability in the thermal concussion, Moisture protection, Strong and secure structure, Large dissipation coefficient, The test current can be larger than that of the ethoxyline resin-package in general conditions.</p> <p>Application: All kinds of refries geratory, Air-condition, Water heater, Drinking trough, Constant temperature box and so on.</p>								
	D	2	3	4	5				
	L1	8	15	15	15				
	L2	According to the order of the user							
	<p>CWF3 (Packed with plastic)</p> <p>Characteristic: Good coherence of formal dimensions, Good heat resistance and moisture protection, High voltage resistance.</p> <p>Application: All kinds of Air-condition, refrigeratory and so on.</p>								
	<p>CWF4 (fixed sheet metal added)</p> <p>Characteristic: Flexible formal structure, Satisfying installing demands in all kinds of conditions.</p> <p>Application: Fanner control, Industrial temperature instruments and so on.</p> <p>Others</p> <p>Characteristic: Flexible formal structure, Satisfying installing demands in all kinds of conditions.</p> <p>Application: Fanner control, Industrial temperature instrument and so on.</p>								
	<p>CWF5 (special packed shape)</p> <p>C : Others</p> <p>Characteristic: Little time constant, Fast responses, Flexible and secure in using</p> <p>Application: Water heater, Electronic thermometer and so on.</p>								
									

Part No.	Rated Resistance R ₂₅		B Value 25/50		Dissi. Coef. mW/	Thermal time Constant S	Operating Temp.
	Range K	Allowable Tolerance	K	Allowable Tolerance			
CWF [[[3100	0.1 ° 20		3100				
CWF [[[3270	0.2 ° 20		3270				
CWF [[[3380	0.5 ° 50		3380				
CWF [[[3470	0.5 ° 50	1	3470		To type 1 package? 2.0	To type 1 package? 15	
CWF [[[3600	1 ° 100	2	3600	1			
CWF [[[3950	5 ° 100	3	3950	2			
CWF [[[4000	5 ° 100	5	4000		To type 2 package? 4.0	To type 2 package? 70	
CWF [[[4050	5 ° 200		4050				
CWF [[[4150	10 ° 250		4150				
CWF [[[4300	20 ° 1000		4300				
CWF [[[4500	20 ° 1000		4500				

REMARK:

·The first pane fills with the package-style symbol and dimensions of the sensors, the second fills with rated resistance and the third fills with the precision symbol of the rated resistance.

·The corresponding error is ±1% for the precision is ±1% of the rated resistance, others is ±2%.

·Besides, our corporation can supply the products according to the demands of users.



Resistance-Temp Characteristic Table Of Common Spec A

$\frac{R_t}{R_{25}}$ T	3KO	5KO	5KO	5KO	10KO	10KO	10KO
$R_{25/50}$	3270	3270	3470	6950	3380	3470	3600
-30	31.70	52.84	63.73	90.83	111.3	127.5	132.4
-25	24.75	41.19	48.60	66.65	86.39	97.10	100.7
-20	19.46	32.44	37.40	49.44	67.74	74.80	77.30
-15	15.41	25.65	29.03	37.05	53.39	58.08	59.85
-10	12.29	20.48	22.72	28.03	42.45	45.44	46.70
-5	9.864	16.43	17.91	21.40	33.89	35.82	36.72
0	7.974	13.29	14.23	16.48	27.28	28.46	29.08
5	6.486	10.80	11.39	12.79	22.05	22.78	23.20
10	5.303	8.839	9.181	9.998	17.96	18.36	18.62
15	4.362	7.266	7.451	7.879	14.68	14.90	15.05
20	3.608	6.013	6.085	6.255	12.09	12.17	12.23
25	3.000	5.000	5.000	5.000	10.00	10.00	10.00
30	2.507	4.179	4.132	4.024	8.313	8.264	8.000
35	2.106	3.508	3.434	3.259	6.941	6.890	6.797
40	1.777	2.962	2.869	2.656	5.828	5.738	5.646
45	1.507	2.510	2.407	2.177	4.912	4.810	4.715
50	1.283	2.138	2.032	1.794	4.161	4.064	3.954
55	1.096	1.826	1.723	1.487	3.537	3.448	3.333
60	0.9408	1.568	1.467	1.238	3.021	2.934	2.821
65	0.8106	1.351	1.253	1.036	2.589	2.504	2.437
70	0.7014	1.169	1.073	0.8717	2.229	2.146	2.046
75	0.6090	1.014	0.9225	0.7364	1.924	1.845	1.752
80	0.5303	0.8838	0.7959	0.6248	1.669	1.592	1.507
85	0.4634	0.7725	0.6887	0.5324	1.451	1.378	1.301
90	0.4064	0.6774	0.5975	0.4555	1.226	1.195	1.126
95	0.3578	0.5963	0.5196	0.3912	1.108	1.039	0.9790
100	0.3160	0.5267	0.4533	0.3372	0.9735	0.966	0.8535
105	0.2798	0.4656	0.3974	0.2918	0.8574	0.7949	0.7465
110	0.2478	0.4130	0.3514	0.2533	0.7579	0.7028	0.6549

Resistance-Temp Characteristic Table Of Common Spec B


$\frac{R_t}{R_{25}}$ T	3KO	5KO	5KO	5KO	10KO	10KO	10KO
$\beta_{25/50}$	3950	3950	4000	4050	4150	4150	4300
-30	181.7	908.3	1790				
-25	133.5	677.6	1321				
-20	98.99	494.4	984.7				
-15	74.06	370.3	740.8				
-10	56.06	280.3	562.3				
-5	42.81	214.1	430.5				
0	32.96	164.8	332.3	168.8	172.0	344.1	352.4
5	25.57	127.9	257.5	131.1	132.2	264.3	270.0
10	20.00	99.98	201.1	101.0	102.4	204.8	208.3
15	15.76	78.79	158.2	79.28	80.03	160.1	161.9
20	12.51	62.55	125.4	62.78	63.00	126.0	126.7
25	10.00	50.00	100.0	50.00	50.00	100.0	100.0
30	8.048	40.24	80.29	39.98	39.76	79.51	78.35
35	6.517	32.58	64.87	32.16	31.89	63.77	62.37
40	5.321	26.56	57.72	26.10	25.73	51.45	49.94
45	4.356	21.78	43.10	21.35	20.88	41.76	40.22
50	3.588	17.94	35.42	17.72	17.04	34.08	32.56
55	2.972	14.86	29.26	14.36	13.99	27.97	26.40
60	2.467	12.38	24.30	11.92	11.53	23.06	21.53
65	2.073	10.36	20.27	9.938	9.541	19.8	17.69
70	1.734	8.717	16.99	8.317	7.929	15.86	14.62
75	1.473	7.364	14.31	6.991	6.621	13.24	12.10
80	1.250	6.248	12.10	5.906	5.552	11.10	10.05
85	1.065	5.324	10.27	5.012	4.674	9.348	8.376
90	0.9110	4.555	8.758	4.271	3.950	7.900	7.004
95	0.7824	3.912	7.459	3.654	3.349	6.698	5.894
100	0.6744	3.372	6.438	3.136	2.849	5.698	4.978
105	0.5834	2.917	5.550	2.701	2.438	4.875	4.215
110	0.5066	2.533	4.801	2.336	2.093	4.186	3.580

BaBy Nurse Family


Baby nipple Thermometer

<p>EBT-1</p>		<p>The baby nipple thermometer was designed and made according to the baby's physical characters. All the components of this thermometer are smoothness and fit for baby's mouth. It is no harm to the baby's tender skin, and the silica gel nipple has a sensor, it can not only measure the temperature but also train baby's tooth. Compared with the traditional mercuric temperature, more safety, more convenient. Both baby and mother are love the baby nipple thermometer very much</p>	<p>Temperature range: 32 ~42 Display L : temperature below 32 Display H : temperature above 42 Accuracy : ± 0.1 (35 ~39) ± 0.2 . 35 and 39 . Display mode: LCD (three and a half) Power: 0.15mW(working) Battery: AG3 1.5V Sound Tip: the beeper sound will be appear within 5 seconds after measurement</p>
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The mike bottle thermometer




<p>ENT-1</p>		<p>The milk bottle thermometer is our company according to the latest electronic sense and liquid crystal technology to develop. The temperature was showing at the liquid crystal display accurate by the temperature sensor that special design and through the electronic circuit feeling bottle temperature. It is convenient to mother to master the best temperature! Applicable to any type feeding bottle, it is ocular and convenient to be novel and practical!</p>	<p>Temperature range: 32 ~42 Display L : temperature below 32 Display H : temperature above 42 Accuracy : ± 0.1 Display mode: LCD (three and a half) Battery: AG3 1.5V Ordinary button battery</p>
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Spoon Thermometer

<p>EST-1</p>		<p>What temperature of food is suitable for your baby? Spoon thermometer will tell you ! Readable LCD display</p>	<p>EST-1: -50 ~125 Resolution: 0.1 Battery: use 1.5v AG3 battery</p>
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Digital Clinical Thermometer Family

Model: XXX-XX C = XXX-XX F = XXX-XX2X= 0.00







EET-1			<p>The ear thermometer adopts the latest infrared ray technology to develop .it can use to test the SARS, take and can measure the correct body temperature only one second, no wait. And Can measure continuously, the number of times is not limited. It is convenient to weak and sickly old man that lie in bed, cry or sleeping child carry on body temperature measure at any time. The working technique is simple, put the thermometer into your ear then press the button gently, after 0.1 seconds you can draw the correct temperature</p>	<p>Temperature range: 32 ~42 Temperature range of environment : 12 ~38 Temperature range of storage: -20 ~50 Measure time:Within 1 second The scale choosing : Display mode: LCD Memory function: 10 group</p>
ECT-1				
		<p>The digital thermometer can test the temperature quickly and accurately. Compared with traditional mercury glass clinical thermometer, it has so many advantages, for example, have reading to be convenient, high to measure precision, can remember and have a sound tip Especially it is no harm to the human body and environment, and suitable for occasion use, such as the family, the hospital, etc.</p>	<p>Temperature range: 32 ~42 Display L : temperature below 32 Display H : temperature above 42 Accuracy : ±0.1 Display mode: LCD (three and a half) Power: 0.15mW(working) Battery: AG3 1.5V Ordinary button battery Sound Tip: the beeper sound will be appeared after measurement</p>	
ECT-1/12- C	32.0 41.9 0.1			
ECT-1/12- F	86.9 107.4 0.1			
ECT-2			<p>The digital thermometer can test the temperature quickly and accurately. Compared with traditional mercury glass clinical thermometer, it has so many advantages, for example, have reading to be convenient, high to measure precision, can remember and have a sound tip Especially it is no harm to the human body and environment, and suitable for occasion use, such as the family, the hospital, etc.</p>	<p>Temperature range: 32 ~42 Display L : temperature below 32 Display H : temperature above 42 Accuracy : ±0.1 Display mode: LCD (three and a half) Power: 0.15mW(working) Battery: AG3 1.5V Sound Tip: the beeper sound will be appeared after measurement</p>
ECT-2/22- C	32.0 41.9 0.1			
ECT-2/22- F	86.9 107.4 0.1			


ECT-3			<p>This digital thermometer can test the temperature quickly and accurately. Compared with traditional mercury glass clinical thermometer, it has so many advantages, for example, have reading to be convenient, soft and can be bended, waterproof very, High to measure precision, can remember and have a sound tip Especially it is no harm to the human body and environment, and suitable for occasion use, such as the family, the hospital, etc.</p>	<p>Temperature range: 32 ~42 Display L : temperature below 32 Display H : temperature above 42 Accuracy : ± 0.1 Display mode: LCD (three and a half) Power: 0.15mW(working) Battery: AG3 1.5V Sound Tip: the beeper sound will be appeared after measurement</p>
ECT-3/32- C	32.0 41.9 0.1			
ECT-3/32- F	86.9 107.4 0.1			
ECT-3A			<p>The digital thermometer can test the temperature quickly and accurately. Compared with traditional mercury glass clinical thermometer, it has so many advantages, for example, have reading to be convenient, high to measure precision, can remember and have a sound tip Especially it is no harm to the human body and environment, and suitable for occasion use, such as the family, the hospital, etc.</p>	<p>Temperature range: 32 ~42 Display L : temperature below 32 Display H : temperature above 42 Accuracy : ± 0.1 Display mode: LCD (three and a half) Power: 0.15mW(working) Battery: AG3 1.5V Sound Tip: the beeper sound will be appeared after measurement</p>
ECT-3A/3A2- C	32.0 41.9 0.1			
ECT-3A/3A2- F	86.9 107.4 0.1			

Other

MOIST-SURE ALARM BIRD		
EDB-1		Are your soil-grown plants receiving enough water? Grow healthy and thriving plants by maintaining correct soil moisture. Easy-to-use precision instrument shows moisture status instantly. It will sing when your plants need water.
MOIST-SURE METER		
ESM-1		Are your soil-grown plants receiving enough water? Grow healthy and thriving plants by maintaining correct soil moisture. Easy-to-use precision instrument shows moisture status instantly. No battery required, permanently calibrated, and comprehensive guidebook lists over 150 plants.
FUNCTIONS		
ESD601		TIME CALORIES SPEED (PULSE) DISTANCE
ESD901		SCAN SIZE 170mmX148mm / 126mmX198mm
ESD701X		
Multi-function Digital thermometer Module		
EDT-3		LCD display Two choice between C/F. Used for refrigerators , fish bowlless . 1.5V Ag13 battery Temperature range: -50 ~70 Accuracy : ±0.1 (10 ~50) ±0.2 。 10 and 50 . Result : 0.1 Display mode: LCD Display choice: / Can be used in the refrigerator, the goldfish jar, the freezer ,etc
EDT-3A		Can be used in the refrigerator, the goldfish jar, the freezer , etc Battery:1.5V Temperature range: -50 ~70 Accuracy : ±0.1 (10 ~50) ±0.2 。 10 and 50 . Result : 0.1 Display mode: LCD Display choice: /


THERMO-HYGROMETER

Digital In-outdoor Thermometer		
EDT-1		<p>can measure and display 2 group temperatures</p> <p>Temperature range: a. -50 ° 70 b. -50 ° 70</p> <p>Accuracy : ±0.1 (10 ° 50) ±0.2 。 10 and 70 .</p> <p>Result : 0.1 Display mode: LCD Display choice: / Battrey:1.5V</p>
EDT-1A		<p>can measure and display 2 group temperature</p> <p>Temperature range : a. -50 ° 70 b. -50 ° 70</p> <p>Accuracy : ±0.1 (10 ° 50) ±0.2 。 10 and 50 .</p> <p>Result : 0.1</p> <p>Display mode: LCD Display choice: / Battrey:1.5V</p>
EDT-2		<p>Max-Min temperature memory function.</p> <p>Measure range:-50~110 C (-58~199.9F)</p> <p>Resolution:0.1C(0.2F) Accuracy: Between 10~70C:±/-1C</p> <p>Under 10C or over 70C:±/-2C Temperature display can be in C or F Use 1.5V AAA Battery</p>
Digital Thermometer Hygrometer		
ETH-1		<p>Can measure and display 1 group temperature and 1 group hygrometer</p> <p>Temperature range: -40 ° 70 Hygrometer range:20%RH ° 90%RH</p> <p>Temperature accuracy : ± Hygrometer accuracy: ±5%RH</p> <p>Temperature result:0.1 Hygrometer result: 1%RH</p> <p>LCD display</p> <p>Have record the maximal and minimum function clocks and alarm clock function</p> <p>Display mode: / Battery:1.5V</p>
Digital Thermometer Hygrometer with alarm clock		
ETH-2		<p>Temperature range: -40 ° 70 Hygrometer range:20%RH ° 90%RH</p> <p>Temperature accuracy : ± Hygrometer accuracy: ±5%RH</p> <p>Temperature result:0.1 Hygrometer result: 1%RH LCD display</p> <p>Have record the maximal and minimum function clocks and alarm clock function</p> <p>Display mode: / Battery:1.5V</p>
Humidor Hygrometer		
ETH-109		<p>Used to cigar humidor , convenient for measuring hygrometer . LCD display.</p> <p>Remember function for Max & Min. Two Model chosen between C/F</p> <p>1.5V battery power Can measure and display 1 group temperature and 1 group hygrometer</p> <p>Temperature range: -40 ° 70 Hygrometer range:20%RH ° 90%RH</p> <p>Temperature accuracy : ± Hygrometer accuracy: ±5%RH</p> <p>Temperature result:0.1 Hygrometer result: 1%RH LCD display</p>

Digital Thermometer & Clock		
EWB-X		<p>Used for freezes , fish tanks , swimming pools , bath tubs , water tanks , sitting room , car , etc.</p> <p>Shows in C or F , with clock .</p> <p>Measuring range: -50C(-58F)-70C(158F)</p>

Cooking Instrument

LCD Display Thermometer Fork		
EFT-1		<p>*Easy to read LCD display.</p> <p>*Multiple choice options for meat type and taste level selection.</p> <p>*Anti-slip rubber finish handle.</p> <p>*Sound will be given out.</p> <p>*Showing between C & F.</p> <p>*Automatic shut down</p> <p>*Temperature range: 0 ~70</p> <p>*Accuracy : ± 0.1 (10 ~70)</p> <p>± 0.2 (< 10 and > 70)</p> <p>*Result : 1</p> <p>*Display mode: LCD</p> <p>*Display choice: /</p> <p>*Have meat choice and ripe or unripe display function</p> <p>* Battery:1.5V*2 AAA</p>
Thermometer Fork		
EFT-2		<p>*LED temperature/ripe display function</p> <p>*Battery:1.5V*2AA</p>
Mult-function Digital Thermometer		
EFT-3		<p>Used for cooking ,barbecue , milk , drink , water , Air - conation , refrigerators .</p> <p>Auto shut-off function</p> <p>Data keeping function</p> <p>Showing in C & F.</p> <p>Measuring Range:-50 ~125</p> <p>Resolution:0.1</p> <p>Accuracy:+/-1</p> <p>Battery:AG3 cell battery.</p>

Digital Meat Thermometer		
EKT-1		<p>*Temperature Range::0 110</p> <p>*Accuracy:</p> <p>*Between 10 to 70 :+/- 1</p> <p>*Under 10 or over 70 :+/- 2</p> <p>*LCD digital display</p> <p>*Temperature display can be in or</p> <p>*Use 1*1.5V AG3 Battery</p>
Digital Cooking Thermometer With Timer		
EMT-1		<p>-50-260 (-58-500)</p> <p>Count down time:</p> <p>99 : 59 59 "</p> <p>Used for cooking</p> <p>Air-condition</p>
EMT-2		<p>Baby milk</p> <p>Drinks</p> <p>oven</p> <p>stove</p> <p>microwave or barbecue etc.</p>
EMT-3		<p>0-120 (32-248)</p> <p>Count down time:</p> <p>59 : 59 00 "</p>

