

Thermal Fuses

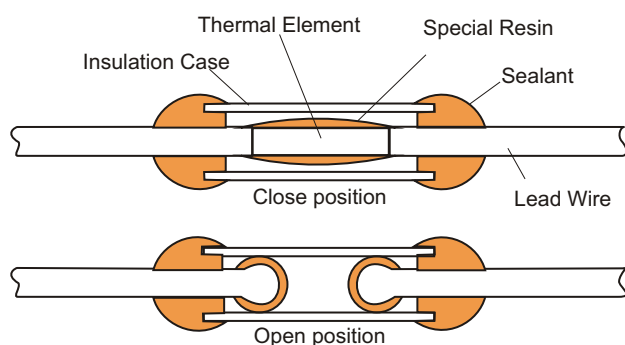
These fuses are used to prevent fires caused by abnormal heat generation from electrical circuits and other heat producing electrical products. Thermal fuses prevent these accidents and ensure safety of the equipment and the user. They are non-resettable thermal protectors attached to the heat generating section of electronic equipment and circuits. The thermal element senses temperature change and breaks the electrical circuit when the cutoff temperature is reached.

Types

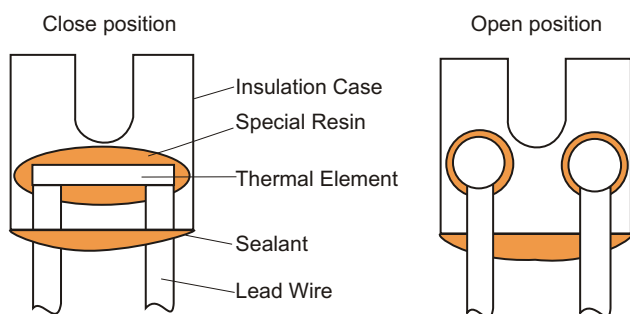
- ◆ Element type
- ◆ Pellet type

Constructions / Operational Principles

Thermal Element Type - FTF - 1, 2, 3, 4



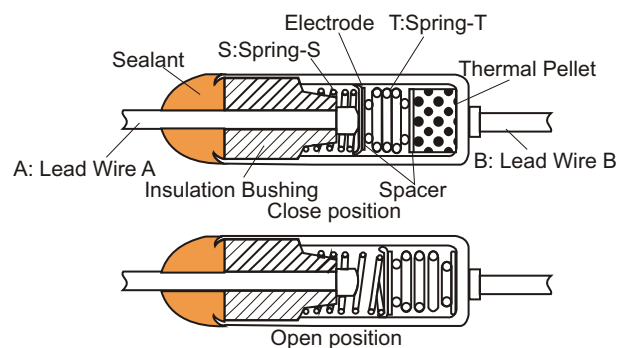
Thermal Element Type - FTF - R - U



Thermal element senses the rise of the ambient temperature. When the temperature rises to the cutoff value, the surface tension of the special resin instantly cuts off the circuit.



Thermal Pellet Type - FTF - S



These FTF-S series fuses are approved by UL & CSA. (UL 10A only for S071)

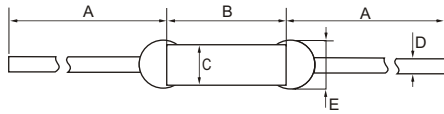
Transmission of heat to the thermal pellet due to dangerous rise in temperature (opening temperature), causes melting/liquefaction of the thermal pellet, thereby cutting off and opening the contact of lead wire A and the electrode due to extension of spring -S which pushes the electrode away.

- ◆ T_f : Functioning Temperature. The temperature at which a thermal fuse changes its state of conductivity to open circuit with detection current of 10mA or less as the only load. The temperature tolerance for UL, CSA & VDE standards is +0, -10°C.
- ◆ T_h : Holding Temperature. The maximum temperature at which a thermal fuse can be maintained while conducting rated current for 168 hours from state of conductivity to open circuit.
- ◆ T_m : Maximum Temperature. The maximum temperature at which a thermal fuse which has changed its state of conductivity can be maintained for 10 minutes during which time its mechanical and electrical properties will not be impaired.

FTF1, FTF2, FTF3 & FTF4 Series

These thermal element type fuses are designed to be compact and can be easily wound in generating portions of motors, transformers, etc. The FTF-1 & 2 series are approved by UL, CSA, VDE. The FTF 3 & 4 series have MITI approvals.

DIMENSIONS



Lead wire 'A' can also be supplied with 68mm length. Please specify while ordering

	FTF-1/3	FTF-2/4
A	49.0 ± 2	48.0 ± 2
B	6.4 ± 0.5	10.0 ± 0.5
C	∅2.0 ± 0.1	∅3.0 ± 0.1
D	∅0.6 ± 0.05	∅0.6 ± 0.05
E	Within 2.3	Within 3.3

All dimensions are in mm



RATINGS

Applicable for FTF1, FTF2, FTF3 & FTF 4 Series. UL File No. E100690, CSA File No.LR84758

FTF-1

Type No.	Tf °C	Th °C	Tm °C	Opening Temp. °C	Rating Current A	Rating Voltage V	MITI Approval No	Marking
198	102	70	UL:200	98 ± 2	1	250	33-430	Red
112	115	85	CSA:155	112 ± 2				Green
126	131	100	VDE:200	126 ± 2				Blue
146	150	120		146 ± 2				Purple

FTF-2

Type No.	Tf °C	Th °C	Tm °C	Opening Temp. °C	Rating Current A	Rating Voltage V	MITI Approval No	Marking
298	102	70	UL:200	98 ± 2	2	250	33-430	Red
212	115	85	CSA:155	112 ± 2				Green
226	131	100	VDE:200	126 ± 2				Blue
246	150	120		146 ± 2				Purple



FTF-3

Type No.	Nominal Opening Temperature °C	Opening Accuracy °C	Rating Current A	Rating Voltage V	MITI Approval No	Marking
379	79	±2	3	250	33-752	Brown
398	98					Red
312	112					Green
326	126					Blue
339	139					Grey
346	146					Purple



FTF-4

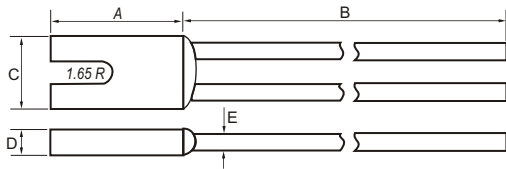
Type No.	Nominal Opening Temperature °C	Opening Accuracy °C	Rating Current A	Rating Voltage V	MITI Approval No	Marking
479	79	±2	5	250	33-752	Brown
498	98					Red
412	112					Green
426	126					Blue
439	139					Grey
446	146					Purple



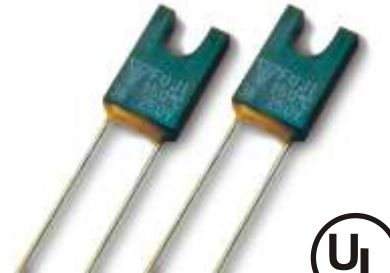
FTF - R - U Series

FTF-R-U series thermal element type fuses are with radial lead wires. The upper part of the case is U-shaped and is designed so that it can be fixed by a screw directly to the heat generating portion like heat sink. FTF-R-U series fuses are very sensitive because their contact surfaces is stable and large enough to stick to the heat generating portion. These fuses are approved by UL, CSA and MITI

DIMENSIONS



FTF-R-U	
A	11.0 ± 0.2
B	44.5 ± 0.3
C	7.4 ± 0.2
D	2.3 ± 0.2
E	ø0.6 ± 0.05



RATINGS

UL File No.E100690, CSA File No.91268

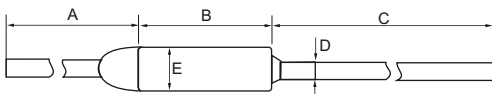
Type No.	T _f °C	T _h °C	T _m °C	Opening Temp.°C	Rating Current A	Rating Voltage V	MITI Approval No	Marking
U098	102	76	UL:200	98 ± 2	2	250	33-690	Red
U110	114	82		110 ± 2			33-690	Orange
U124	128	97		124 ± 2			33-691	Green
U127	130	104	127 ± 2	33-691			Blue	
U140	144	112	140 ± 2	33-692			Purple	
U146	150	123	146 ± 2	33-692			White	



FTF - S Series

These FTF - S series fuses are approved by UL & CSA. (UL 10A only for S071)
FTF-S 10A and FTF-S 15A series fuses are approved by MITI

DIMENSIONS



	FTF-S & FTF-S 10A	FTF-S 15A
A	19.0 ± 1.0	35.0 ± 1.0
B	10.0 ± 0.5	10.0 ± 0.5
C	35.0 ± 1.0	35.0 ± 1.0
D	ø1.0 ± 0.05	ø1.5 ± 0.05
E	ø4.0 ± 0.1	ø4.0 ± 0.1

Lead wire A can also be made with 35 mm length



RATINGS

UL File No.E100690, CSA File No.LR84758, LR93634

Type No.	T _f °C	T _h °C	T _m °C	Opening Temp.°C	Rating Current A	Rating Voltage V	Marking
S071	75	50	105	70 + 3,-1	10(UL)	250	Yellow
S083	87	52	117	82 + 3,-1	15		Brown
S099	103	68	133	99 ± 2			Dark Blue
S112	116	81	146	109 + 4, -0			Orange
S117	121	86	151	119 + 0, -5			Dark Green
S127	131	96	161	126 ± 2			Blue
S132	136	101	166	132 ± 2			Grey
S143	147	112	177	142 ± 2			Purple
S154	158	123	188	154 + 1, -3			Black
S181	185	150	215	182 + 1, -3			Light Green
S215	219	174	249	214 ± 2			Dark Green
S229	233	188	263	229 + 1, -3			Dark Blue



FTF - S 10A Series

These thermal pellet type fuses are approved by MITI.

RATINGS

Type No.	Nominal Opening Temperature °C	Opening Accuracy °C	Rating Current A	Rating Voltage V	MITI Approval No	Marking
S070J	70	+3, -1			33-684	Yellow
S076J	76	+1, -3			33-684	Green
S082J	82	+3, -1			33-658	Brown
S091J	91	±2			33-658	Black
S096J	96	±2			33-658	Light Green
S099J	99	±2			33-658	Dark Blue
S109J	109	+4, -0			33-659	Orange
S119J	119	+0, -5			33-659	Dark Green
S126J	126	±2			33-660	Blue
S132J	132	±2			33-660	Grey
S139J	139	±2	10	250	33-660	Red
S142J	142	±2			33-661	Purple
S154J	154	+1, -3			33-661	Black
S169J	169	+0, -4			33-662	Pink
S182J	182	+1, -3			33-693	Light Green
S192J	192	+1, -3			33-693	Light Blue
S214J	214	±2			33-683	Dark Green
S226J	226	±2			33-682	Green
S229J	229	+1, -3			33-682	Dark Blue



FTF - S 15A Series

These large capacity (250V-15A) thermal pellet type fuses are provided with big diameter lead wires. The fuses are approved by MITI.

RATINGS

Type No.	Nominal Opening Temperature °C	Opening Accuracy °C	Rating Current A	Rating Voltage V	MITI Approval No	Marking
S070J	70	+3, -1			33-684	Yellow
S076J	76	+1, -3			33-684	Green
S082J	82	+3, -1			33-658	Brown
S091J	91	±2			33-658	Black
S096J	96	±2			33-658	Light Green
S099J	99	±2			33-658	Dark Blue
S109J	109	+4, -0			33-659	Orange
S119J	119	+0, -5			33-659	Dark Green
S126J	126	±2			33-660	Blue
S132J	132	±2			33-660	Grey
S139J	139	±2	15	250	33-660	Red
S142J	142	±2			33-661	Purple
S154J	154	+1, -3			33-661	Black
S169J	169	+0, -4			33-662	Pink
S182J	182	+1, -3			33-693	Light Green
S192J	192	+1, -3			33-693	Light Blue
S214J	214	±2			33-683	Dark Green
S226J	226	±2			33-682	Green
S229J	229	+1, -3			33-682	Dark Blue

