NEC/Schott SEFUSE thermal cutoffs

Limitor GmbH
Components for temperature, current & time

Dieselstr. 22
73660 Urbach
Germany
Tel.: ++49/7181/ 48390-0
Fax: ++49/7181/ 48390-10
www.limitor.de

SF/E series



RoHS*-compliant since april 2003

SF/E series measures 4.2mm in body diameter and is VDE approved 10A + 15A at AC250V

part no.	Tf / TF	opening-temp.	Th / TH	Tmax
SF70E	73C	70+-2C	58C	150C
SF76E	77C	76+0/-4C	62C	150C
SF91E	94C	91+3/-1C	79C	150C
SF96E	99C	96+-2C	84C	150C
SF113E	113C	110+-2C	98C	160C
SF119E	121C	119+-2C	106C	150C
SF129E	133C	129+-2C	118C	159C
SF139E	142C	139+-2C	127C	159C
SF152E	157C	152+-2C	142C	172C
SF169E	172C	169+1/-3C	157C	189C
SF184E	184C	184+0/-4C	174C	210C
SF188E	192C	188+3/-1C	177C	375C
SF214E	216C	214+1/-3C	200C	375C
SF226E	227C	226+1/-3C	200C	300C
SF240E	240C	237+-2C	200C	375C

approval ratings:
VDE: AC250V 10A + 15A resistive load
UL: AC120V 20A resistive & 15A inductive load and AC250V 17A & 277V 15A resistive load
CSA: AC250V 15A resistive load and inductive load

note: types SF169E, SF188E, SF214E, SF226E, SF240E are approved UL Conductive Heat Aging Test (CHAT).

Thermal cutoffs are required by safety agencies where a nonresettable fuse (one shot) MUST open the electrical circuit in the event of of failure or overheating.

The SF/E series carries worldwide approvals such as VDE, UL, CSA, BEAB, PSE (Japan) and is produced in ISO 9001 certified facilities in Japan and Thailand.

Contact material inside all SF series of thermal cutoffs is AgCuO. This material AgCuO is patented wordwide for use in thermal cutoffs and provides superior performance and prevents sticking together of contacts. This is an important safety and reliability issue for customers using DC current in automotive applications and AC current in the electrical appliance industry.

lead wire length:
SF/E: 20/35mm
SF/E-1: 35/35mm

tape & reel version available.

lead wire forming and cutting available.

SF/K series



RoHS-compliant since start of massproduction in 2003

SF/K series measures 3.0mm in body diameter and is VDE approved 6A + 10A at AC250V

part no.	Tf / TF	opening-temp.	Th / TH	Tmax
SF70K	73C	70+-2C	45C	150C
SF76K	77C	76+0/-4C	51C	150C
SF91K	94C	91+3-1C	66C	150C
SF96K	99C	96+-2C	71C	150C
SF119K	121C	119+-2C	94C	150C
SF188K	192C	188+3/-1C	164C	300C
SF214K	216C	214+1/-3C	200C	300C

approval ratings:
VDE: AC250V 6A + 10A resistive load
UL: AC250V 6A + 10A resistive load
c-UL: AC250V 6A + 10A resistive load
note: type SF188K is approved **UL Conductive Heat Aging Test (CHAT).**

definition of terms, according to IEC691, VDE0821, EN60691 norm for thermal cutoffs:

- Tf/TF = functioning, opening temperature
- opening temperature with tolerance, given by the manufacturer
- Th/TH = holding temperature, max. continuous exposure temperature (in actual application at point of installation of thermal cutoff). Tested for 168h.
- Tmax (or Tm/TM) = maximum overshoot temp., up to which the function of the thermal cutoff will not be impaired or altered. No reconduction to occur.

typical applications for SF/E & SF/K series:
coffeemakers, irons, large and small electrical appliances and heating elements. transformers, motors, heaterblowers and airconditioners in cars. Transistors of electronic circuits and so on.

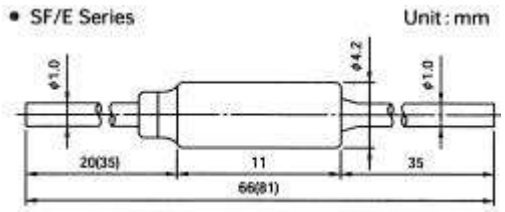
Thermal cutoffs are required by safety agencies were a nonresettable fuse (one shot) MUST open the electrical circuit in the event of of failure or overheating.

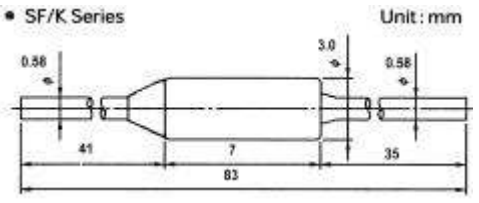
The SF/K series carries worldwide approvals such as VDE, UL, c-UL, CSA, BEAB, PSE (Japan) and is produced in ISO 9001 certified facilities.

*WEEE waste electronical electronic equipment. RoHS: restriction on the use of certain hazardous chemical substances. Target substances are: lead (PB), mercury (Hg), cadmium (Cd), chromium <VI>, PBB and PBDE.

Contact material inside all SF series of thermal cutoffs is AgCuO. This material is patented wordwide for use in thermal cutoffs and provides superior performance and prevents sticking together of contacts. This is an important safety and reliability issue for customers using DC current in automotive applications and AC current in the electrical appliance industry.

lead wire length:
SF/K: 41/35mm
tape & reel version





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SM/A series



SM/A series measures 2.5mm in body diameter and is VDE approved 2A at AC250V

SM/B series



SM/B series measures 2.0mm in body diameter and is VDE approved 1A at AC250V

SM/G series



SM/G series measures 1.6mm in body diameter and is VDE approved 0.5A at AC250V

SM/A 2A	SM/B 1A	SM/G 0.5A	Tf / TF	opening-temp.	Th / TH	Tmax
SM072A0 2A***	----	----	76C	72+3/-2C	46C	100C
SM082A0 2A***	SM082B0 1A***	----	87C	82+3/-2C	52C	200C
SM092A0 2A***	SM092B0 1A***	----	97C	92+3/-2C	62C	200C
SM095A0 2A	SM095B0 1A	SM095G0 0.5A	100C	95+0/-5C	65C	115C
SM110A0 2A***	SM110B0 1A***	SM110G0 0.5A***	115C	110+-2C	80C	125C
SM125A0 2A***	SM125B0 1A***	SM125G0 0.5A***	131C	126+3/-2C	96C	200C
SM126A0 2A	SM126B0 1A	SM126G0 0.5A	131C	126+-2C	96C	140C
SM130A0 2A	SM130B0 1A	SM130G0 0.5A	135C	130+-2C	100C	145C
SM137A0 2A***	SM137B0 1A***	SM137G0 0.5A***	142C	137+3/-2C	107C	200C
SM145A0 2A	SM145B0 1A	SM145G0 0.5A	150C	145+-2C	115C	160C
SM146A0 2A***	SM146B0 1A***	SM146G0 0.5A***	151C	146+3/-2C	116C	200C
SM164A0 2A	----	----	169C	164+3/-2C	133C	180C
SM182A0 2A	----	----	187C	182+-2C	152C	195C

***ROHS-conform, contains no lead (Pb). Cadmium is not contained in any type of SM series.

SM/A/B/G series has all international safety approvals such as VDE, UL, CSA, BEAB, PSE (Miti) and is produced in ISO 9001 certified production facilities in Japan and Thailand.

SM/A series:

our SM/A series is suitable and required by safety agencies such as VDE & UL for applications where a nonresettable fuse (one shot) MUST open the electrical circuit in the event of of failure or overheating.

approval rating:
VDE, UL, CSA, BEAB, PSE (Japan):
AC250V 2A resistive load
DC approved at VDE & UL:
- SM072A0 DC50V 3A (4A at VDE)
- SM082A0, SM095A0 DC50V 4A
- SM110A0….SM182A0 DC50V 7A

SM/B series:

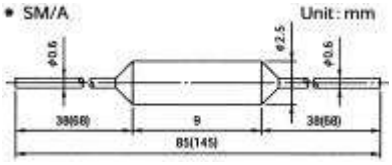
our SM/B series is suitable and required by safety agencies such as VDE & UL for applications where a nonresettable fuse (one shot) MUST open the electrical circuit in the event of of failure or overheating.

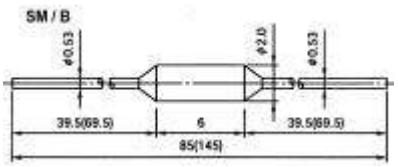
approval ratings:
VDE, UL, CSA, BEAB, PSE (Japan):
AC250V 1A resistive load
DC approved at VDE & UL:
- SM082B0 DC50V 3A
- SM095B0 DC50V 3.5A
- SM110B0….SM146B0 DC50V 6A

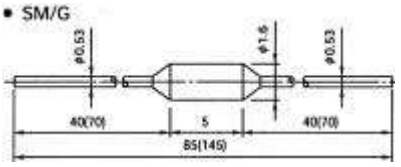
SM/G series:

our SM/G series is suitable and required by safety agencies such as VDE & UL for applications where a nonresettable fuse (one shot) MUST open the electrical circuit in the event of of failure or overheating.

approval ratings:
VDE, UL, CSA, BEAB, PSE (Japan):
AC250V 0.5A resistive load
DC approved at VDE & UL
- SM095G0 DC50V 3A
- SM110G0….SM145G0 DC50V 5A







definition of terms used in the table above, according to IEC691 VDE0821, EN60691 norm for thermal cutoffs:

- Tf/TF = functioning, opening temperature
- opening temperature with tolerance, given by the manufacturer
- Th/TH = holding temperature, maximum continuous exposure temperature (in actual application at point of installation of thermal cutoff). Tested for 168h.
- Tmax (or Tm/TM) = maximum overshoot temperature, up to which the function of the thermal cutoff will not be impaired or altered. No reconduction to occur.

the European Community has issued directives to restrict the use of hazardous materials.
in effect for the automotive industry from june 2003 and for the electronic industry from july 2006 according to norm WEEE ELV end of life vehicle and RoHS restriction of certain hazardous chemical substances.
target substances are lead (PB), mercury (Hg), cadmium (Cd), chromium <VI>, PBB, PBDE.

thermal cutoffs and accessories

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clip for SF/E



Mounting clip to fit thermal cutoff NEC/Schott SF/E series 4.2mm with PTFE Teflon insulation tube. Ideal for mounting on a flat surface.

Polyimide sleeve

insulation sleeve made of Polyimide for SF/E, SFH/E, SFH/F series. Wall: 0.05mm service temperatur 10.000 hours at 220C. melting temp. 400C high mechanical and chemical strength and fast response time. UL approved.



SF169 MO



thermal cutoff NEC/Schott SEFUSE Tf 172C. Epoxy seal packaged with male tabs and mounting flange. UL approved.

Other temperatures available on request.

D6X, D6Y

thermal cutoff NEC/Schott SEFUSE cutoff temp. 136+-3C for PCB mounting. 4x5x1.7mm (LxWxT), Pins 0.7mm. Seriel heater 50Ohm for current sensitiveness. UL, VDE: DC32V 12A

