SPECIFICATION SHEET

MINIATURE FUSES CARTRIDGE FUSE-LINKS SCF520(P) SERIES

SPECIFICATION SHEET NO.	S0128 – SCF520F4A500VN	
ORIGINAL MFG/PART NO.	SET Fuse/SCF520F4A500V	
NEXTGEN PART CODE	SCF520F4A500VN	Indicate This Code For RFQ Order
DATE	Jan. 28, 2025	
REVISION	A2	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	Miniature Fuses Cartridge Fuse-links (CFL) SCF520 (P) Series Fast-Acting, Ceramic Tube, Dimension Φ5.0 X L20.0 mm Rated Current (In) 4A Rated Voltage (Un) 500V Package in Bulk, 1000pcs/Bag REACH/RoHS III Complaint and Lead-Free	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE
Issued/Checked/Approved NextGen Components, Inc. Mandy Xu NextGen Components, Inc. Ruby Zhang NextGen Components, Inc. Jack Zhang
Effective Date: Jan. 28, 2025

CUSTOMER APPROVE
Date:

DESCRIPTION

Image shown is a representation only. Exact specifications should be obtained from the product dimension.

Miniature Fuses is an Over Current Protection device. Its resistance is very low. When the circuit works normally, it is equivalent to a wire, which can conduct the circuit continuously and stably. When the current fluctuates due to circuit instability or external interference, it should also be able to withstand a certain range of overload. Only when overload or short circuit happens, *Miniature Fuses* can blow fast to protect the circuit. *Miniature Fuses* is widely used in all kinds of electrical equipment. It has a variety of mounting modes, compact structure, reliable and stable performance. Its rated current ranges from 0.1 A to 40 A, rated voltage ranges from 125 VAC to 500 VAC, and from 24 VDC to 600 VDC.

MAIN FEATURE

- Size Φ5.0x20.0mm, Ceramic Tube, Nickel-plated Brass End Cap Construction
- Fast- Acting, High Breaking Capacity
- Holder, Clip, Board Mount Style and Termination Style Clip/Axial
- Designed to UL248-14 / IEC 60127-7 / GB/T 9364.7
- VDE, cURus, PSE, CCC, CQC, KC, TUV, UL Approved
- REACH/RoHS III Complaint and Lead-Free
- Cross Main Competitor Parts in Market

APPLICATION

- Power Supply, Household Appliance, General Lighting, Smart Home
- Office Equipment, Electric Tool, Medical Equipment Instruments
- BS Plug, BS Socket, Cable

ELECTRICAL CHARACTERISTICS

- See Page 5~ Page 10
- All Products Parameters are Subject To NextGen Components' Final Confirmation.

HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate NextGen Part Code SCF520F4A500VN For RFQ and Order.

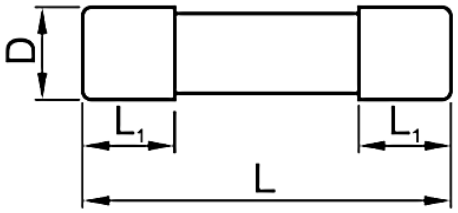
PART CODE GUIDE

RFQ
Request For Quotation

CODE	NAME	KEY SPECIFICATION OPTION
SCF520	Series Code	SCF520: Miniature Fuses Cartridge Type, Fast-Acting, Ceramic Tube Dimension Φ5.0 X L20.0 mm SCF520P: Miniature Fuses Axial Lead Type, Fast-Acting, Ceramic Tube Dimension Φ5.0 X L20.0 mm
F4A	Rated Current	F4A: 4A; Please specify Rated Current Value from 0.1 A to 25 A
500V	Rated Voltage	500V: 500V; Please specify Rated Voltage Value 125 VAC to 500 VAC and from 24 VDC to 600 VDC.
N	Internal Control Code	Blank: N/A; N: Letter A~Z, a~z or digits (0~9)
XX	Special/Custom Parameters	Blank: N/A; XX: Letter A~Z, a~z or digits (0~9) for Special/Custom Parameters

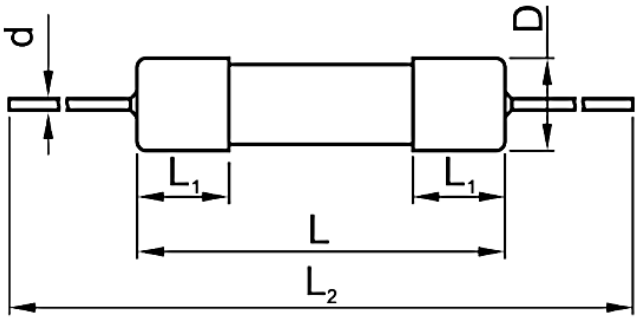
DIMENSION - Unit (mm)

SPC520 Series Outline



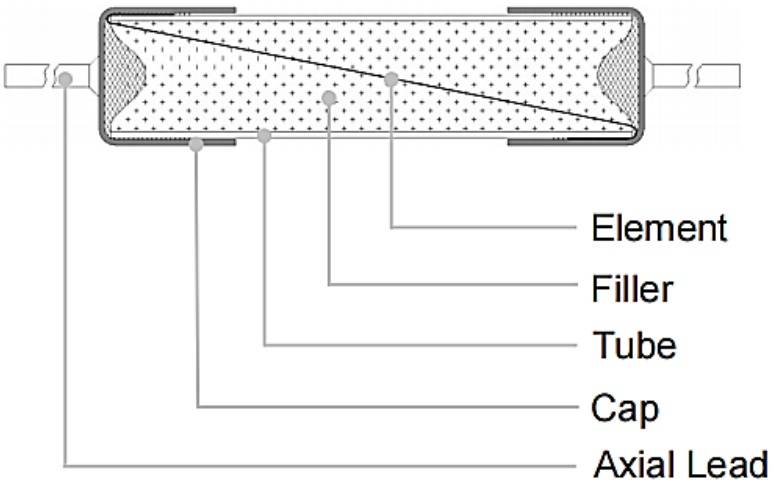
SYMBOL	L	L1	D
Dimension	20.0 ± 0.5	5.1 ± 0.3	Φ5.2 +0.1/-0.2

SPC520P Series Outline



SYMBOL	L	L1	L2	D	D
Dimension	20.0 ± 0.5	5.1 ± 0.3	96 ± 2	Φ5.2 +0.1/-0.2	≤6.3 A: Φ(0.65 ± 0.05); >6.3 A to 10 A: Φ(0.80 ± 0.05); >10 A to 20 A: Φ(1.00 ± 0.05); 25 A : Φ(1.20 ± 0.05)

STRUCTURE



TIME/CURRENT CHARACTERISTIC

% OF AMPERE ,RATING	AMPERE RATING	OPENING TIME
210%	0.4 A ~ 25 A	30 minutes, Max.
275%	0.4 A ~ 25 A	0.04 s ~ 20 s
400%	0.4 A ~ 25 A	0.01 s ~ 10 s
1000%	0.4 A ~ 10 A	0.03 s, Max.
	12 A ~ 25 A	0.08 s, Max.

STANDARD AND AGENCY APPROVALS

AGENCY SYMBOL	THE FILE NO. AND CERTIFICATION NO.	STANDARDS	AMPERE RANG
cURus	E345932	UL 248	0.5 A ~ 25 A
CQC	CQC21012316337 CQC21012316630	GB/T 9364	0.4 A ~ 20 A
TUV	R50538205 R50538319	IEC 60127	1 A ~ 20 A
UL	E345932	UL 248	0.4 ~ 30 A

Note:

The above-mentioned certificates are only used for browsing on the web to prove the product has been certified.

If you need original MFG's full version certificate, Please contact us by e-mail: sales@nextgncomponent.com

ELECTRICAL CHARACTERISTICS - SCF520P Series

SERIES NO.	RATED CURRENT	RATED BREAKING CAPACITY	AVERAGE TYPICAL MELTING I^2t^a	AGENCY APPROVALS		
	A		A^2sec	CQC	TUV	cURus
SCF520F400MA	0.4	UL (0.5A-10A): 1500A@300 VAC 300A@500 VAC / DC UL (12A-25A): 1500A@300 VAC 300A@500 VAC 30 A@420 VDC	0.06	●	O	O
SCF520F500MA	0.5		0.14	●	O	●
SCF520F630MA	0.63		0.23	●	O	●
SCF520F800MA	0.8		0.4	●	O	●
SCF520F1A	1		0.6	●	●	●
SCF520F1.25A	1.25		1	●	●	●
SCF520F1.6A	1.6		1.4	●	●	●
SCF520F2A	2		3.8	●	●	●
SCF520F2.5A	2.5		4.8	●	●	●
SCF520F3.15A	3.15		8.5	●	●	●
SCF520F4A	4		17	●	●	●
SCF520F5A	5		34	●	●	●
SCF520F6.3A	6.3		65	●	●	●
SCF520F8A	8		114	●	●	●
SCF520F10A	10		240	●	●	●
SCF520F12.5A	12.5		310	●	●	●
SCF520F15A	15		320	O	O	●
SCF520F16A	16		480	●	●	●
SCF520F20A	20		1250	●	●	●
SCF520F25A	25		2000	O	O	●

ELECTRICAL CHARACTERISTICS - SCF520P Series

SERIES NO.	RATED CURRENT	RATED BREAKING CAPACITY	AVERAGE TYPICAL MELTING I^2t^a	AGENCY APPROVALS		
	A		A^2sec	CQC	TUV	cURus
SCF520PF400MA	0.4	UL (0.5A-10A): 1500A@300 VAC 300A@500 VAC / DC UL (12A-25A): 1500A@300 VAC 300A@500 VAC 30 A@420 VDC	0.06	●	O	O
SCF52P0F500MA	0.5		0.14	●	O	●
SCF520PF630MA	0.63		0.23	●	O	●
SCF520PF800MA	0.8		0.4	●	O	●
SCF520PF1A	1		0.6	●	●	●
SCF520PF1.25A	1.25		1	●	●	●
SCF520PF1.6A	1.6		1.4	●	●	●
SCF520PF2A	2		3.8	●	●	●
SCF520PF2.5A	2.5		4.8	●	●	●
SCF520PF3.15A	3.15		8.5	●	●	●
SCF520PF4A	4		17	●	●	●
SCF520PF5A	5		34	●	●	●
SCF520PF6.3A	6.3		65	●	●	●
SCF520PF8A	8		114	●	●	●
SCF520PF10A	10		240	●	●	●
SCF520PF12.5A	12.5		310	●	●	●
SCF520PF15A	15		320	O	O	●
SCF520PF16A	16		480	●	●	●
SCF520PF20A	20		1250	●	●	●
SCF520PF25A	25		2000	O	O	●

REMARK

- a: I^2t value is measured at 10 I_n.
- o: Pending
- Breaking Capacity (CQC/TUV):
- SCF520 (0.4 A / 0.5 A / 0.63 A / 1 A / 1.6 A / 2 A / 2.5 A / 3.15 A / 5 A): 5000 A@250 VAC /DC, 300 A@600 VAC / DC, 3000 A@300 VAC
- SCF520 (0.8 A / 1.25 A / 4 A / 6.3 A / 12.5 A / 16 A): 5000 A@250 VAC / DC, 300 A@600 VDC, 3000 A@300 VAC, 200 A@500 VAC
- SCF520 (10 A): 5000 A@250 VAC / DC, 300 A@500 VAC / DC, 3000 A@300 VAC
- SCF520 (20 A): 5000 A@250 VDC, 200 A@350VAC
- SCF520P (0.4 A / 0.8 A / 1 A / 4 A / 5 A / 6.3 A / 8 A / 10 A): 5000 A@250 VAC / DC, 300 A@600 VDC, 3000 A@300 VAC, 300 A@500 VAC
- SCF520P (0.5 A / 0.63 A / 1.25 A / 1.6 A / 2 A / 2.5 A / 3.15 A): 5000 A@250 VAC / DC, 300 A@600 VAC / DC, 3000 A@300 VAC
- SCF520P (12.5 A / 16 A): 5000 A@250 VAC / DC, 300 A@600 VDC, 3000 A@300 VAC, 200 A@420 VAC
- SCF520P (20 A): 5000 A@250 VDC, 200 A@350VAC

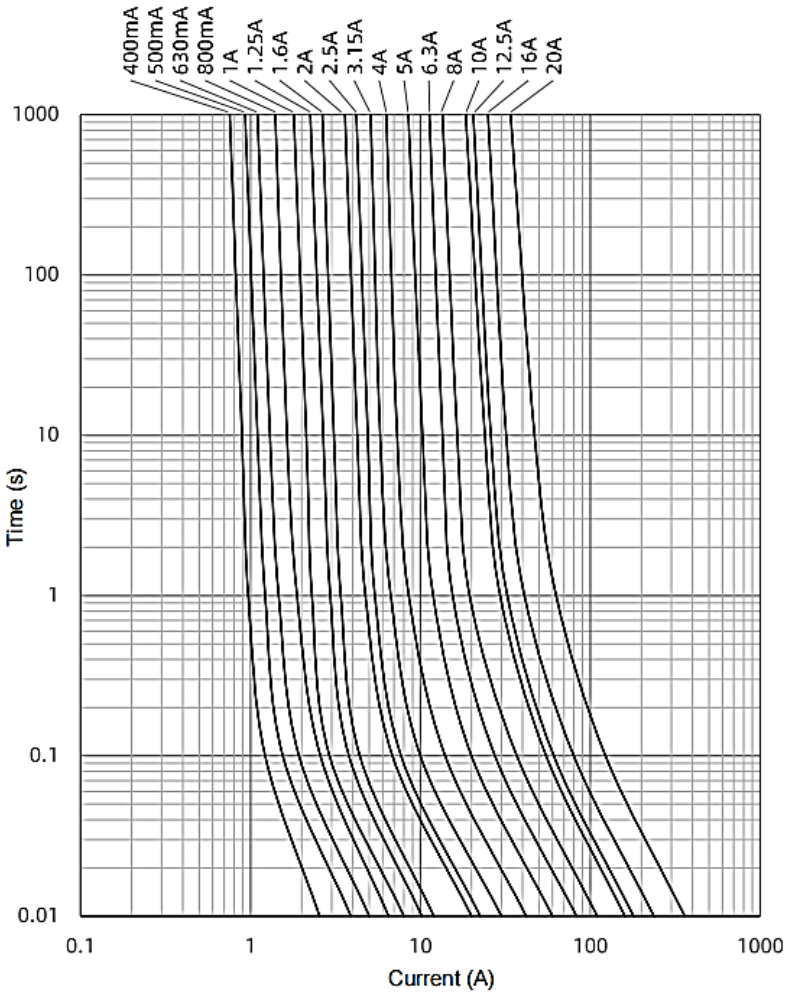
CARTRIDGE FUSE-LINK (CFL) FEATURESS & MODEL LIST OVERVEW

Rated Current I_n (A)	Model			
50.00	○	○	○	○
40.00	○	○	○	○
30.00	○	○	SCT520T30A	SCT520PT30A
25.00	SCF520F25A	SCF520PF25A	SCT520T25A	SCT520PT25A
21.00	○	○	○	○
20.00	SCF520F20A	SCF520PF20A	SCT520T20A	SCT520PT20A
16.00	SCF520F16A	SCF520PF16A	SCT520T16A	SCT520PT16A
15.00	SCF520F15A	SCF520PF15A	SCT520T15A	SCT520PT15A
13.00	○	○	○	○
12.50	SCF520F12.5A	SCF520PF12.5A	SCT520T12.5A	SCT520PT12.5A
12.00	SCF520F12A	SCF520PF12A	SCT520T12A	SCT520PT12A
10.00	SCF520F10A	SCF520PF10A	SCT520T10A	SCT520PT10A
8.00	SCF520F8A	SCF520PF8A	SCT520T8A	SCT520PT8A
7.00	○	○	○	○
6.30	SCF520F6.3A	SCF520PF6.3A	SCT520T6.3A	SCT520PT6.3A
6.00	○	○	○	○
5.00	SCF520F5A	SCF520PF5A	SCT520T5A	SCT520PT5A
4.00	SCF520F4A	SCF520PF4A	SCT520T4A	SCT520PT4A
3.15	SCF520F3.15A	SCF520PF3.15A	SCT520T3.15A	SCT520PT3.15A
3.00	SCF520F3A	SCF520PF3A	SCT520T3A	SCT520PT3A
2.50	SCF520F2.5A	SCF520PF2.5A	SCT520T2.5A	SCT520PT2.5A
2.00	SCF520F2A	SCF520PF2A	SCT520T2A	SCT520PT2A
1.60	SCF520F1.6A	SCF520PF1.6A	SCT520T1.6A	SCT520PT1.6A
1.25	SCF520F1.25A	SCF520PF1.25A	SCT520T1.25A	SCT520PT1.25A
1.00	SCF520F1A	SCF520PF1A	SCT520T1A	SCT520PT1A
0.80	SCF520F800mA	SCF520PF800mA	SCT520T800mA	SCT520PT800mA
0.63	SCF520F630mA	SCF520PF630mA	SCT520T630mA	SCT520PT630mA
0.50	SCF520F500mA	SCF520PF500mA	SCT520T500mA	SCT520PT500mA
0.40	SCF520F400mA	SCF520PF400mA	SCT520T400mA	SCT520PT400mA
0.315	○	○	○	○
0.25	○	○	○	○
0.20	○	○	○	○
0.16	○	○	○	○
0.125	○	○	○	○
0.10	○	○	○	○

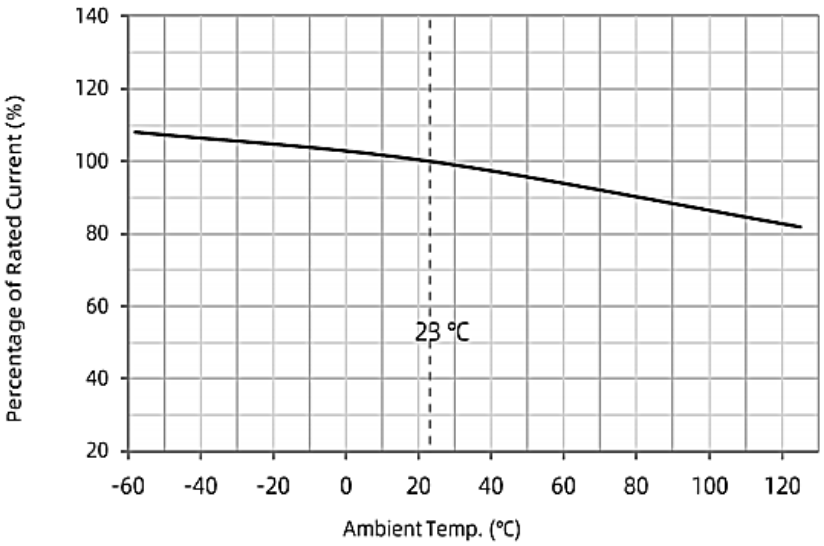
Remark: Please refer to each product series specification page for complete models

U_r Rated Voltage	(VAC) (VDC)	(125 ~ 600) VAC (125 ~ 600) VDC	(125 ~ 500) VAC (125 ~ 500) VDC
Time Feature		Fast Acting	Time-Lag
Tube Material		Ceramic	
Standards		IEC / UL	
Breaking Capacity		200 A ~ 5 kA	200 A ~ 10 kA
Physical Size (mm)		Φ5 × 20	
Product Structure			

TIME CURRENT CURVE – FOR REFERENCE ONLY



RATED CURRENT DERATING CURVE – FOR REFERENCE ONLY



QUALITY ASSURANCE – PART I

RAW-MATERIALS SUPPLIER

Select critical raw materials: Must be from a manufacturer with quality management system (ISO9001, IATF16949) certification. Annual or Quarterly Audits.

IQC (INCOMING QUALITY CHECK)

AQL(MIL-STD-105E), Dimensions, Function, Visual Inspection, RoHS & REACH Test.

DOCUMENT

Formulate corresponding incoming inspection specifications (01-QA-06-xxx) for each key material according to design data such as material technical indicators.

TESTING EQUIPMENT AND TOOLS

Projector, Tool Microscope, Salt Spray Tester, Universal Material Testing Machine, Spectrum Analyzer, etc

MANUFACTURING PROCESS

Online Inspection and Testing (Function 100% Automatic Testing).

DOCUMENT

1) Process Flow Chart.
2) Failure Mode and Effects Analysis (FMEA).
3) Quality Control Flow Chart (QCFC).
4) Standard Inspection Procedure (SIP).
5) Work Instruction (WI).

ONLINE TESTING AND INSPECTION

1) Resistance test system (100% Automatic Testing).
2) 100% Visual inspection, CCD, SMD Product 100% AI system.

IPQC (IN PROCESS QUALITY CONTROL) INSPECTION

AQL(MIL-STD-105E), Dimensions Inspection, Function Test, Visual Inspection.

FQC (FINAL QUALITY CONTROL)

AQL (MIL-STD-105E), Dimensions Inspection, Function Test, Visual Inspection, RoHS & REACH Test.

QUALITY ASSURANCE – PART II

RELIABILITY TEST

1) Test specification (01-TE-01-3001-xxx).
2) Including 23 items of appearance requirements, Electrical Performance, Mechanical Performance, Soldering Performance, Environmental Test and Life Test. e.g.
3) Voltage Drop Test.
4) Time-Current Characteristic Test.
5) Breaking Capacity Test.
6) High Temperature Test.
7) Cold Resistance Test.
8) Temperature Rise Test.
9) Surge Test.
10) etc.

OQC (OUTGOING QUALITY CONTROL)

AQL(MIL-STD-105E), Packaging, Labeling, Quantity Inspection.

AGENCY

Agency (Safety Certificate) Annual, Quarterly Audits.

MANAGEMENT SYSTEM

ISO9001, (TUV approved and issued certificate).

ISO14001, ISO45001, etc.

ATTENTION

INSPECTION

Cold Resistance Test:

a) Applied current shall be less than 10% of rated current, at ambient Temp. of (23±2) °C.

b) 4-Wire Resistance Measurement.

USAGE

a) Do not touch the fuse body or lead wire when power on, avoiding scald or electric shock.

b) The air pressure is 80 kPa to 106 kPa, corresponding to the altitude of +2000 m to -500 m.

REPLACEMENT

For safety reasons, the Fuse is a non-resettable product, please ensure that the alternative Fuse is the same type when replace it.

STORAGE

Fuse storage should avoid high temperature, high humidity, direct sunlight, and corrosive gases, so as not to affect the solderability of the lead wire. Please use them up within 1 year after receiving the goods.

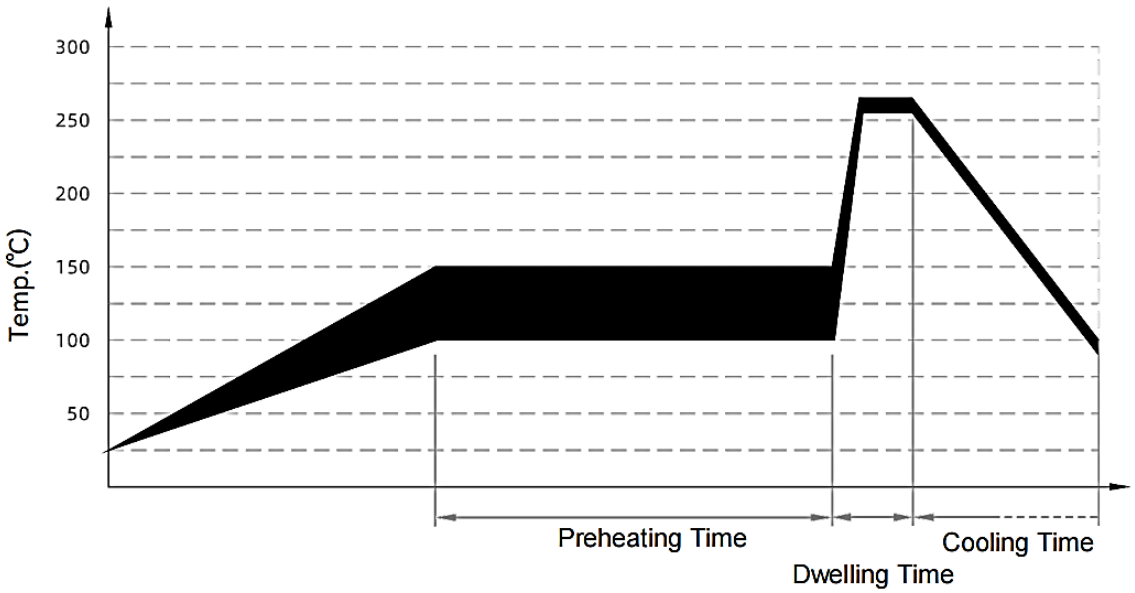
INSTALLATION

Do not apply mechanical stress to the fuse body during or after the installation.

INSTALLATION POSITION

Do not install the fuse on an assembly that may often subject to severe continuous vibration or with corrosive gases (NH3, SO2, Cl2 etc.).

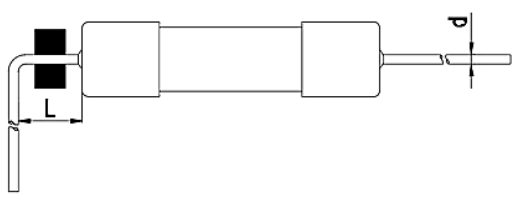
RECOMMENDED SOLDERING PARAMETERS - Wave soldering Parameters For Reference Only



ITEM	TEMPATURE RANGE (°C)	TIME (SECOND)
Preheating	100 ~ 150	60 ~ 180
Dwelling	255 ~ 265	4 ~ 8

LEAD WIRE BENDING

If the lead wire has to be bent, please pay attention to the distance between body and the bending point. Refer to the following table.

AXIAL TYPE (SCF520P SERIES)			
d	≤ Φ 1.0 mm	> Φ 1.0 mm	
L	≥ 3.0 mm	≥ 5.0 mm	

GLOSSARY – PART I

ITEM	DESCRIPTION	STANDARDS
Fuse	A device, by the fusing of one or more of its specially designed and proportioned components, opens, the circuit in which it is inserted by breaking the current when this exceeds a given value for a sufficient time.	IEC 60127
Fast-Acting Fuse	A fuse which opens on overload and short circuits very quickly. This type of fuse is not designed to withstand temporary overload currents associated with some electrical load. UL listed or recognized fast acting fuses would typically open within 5 s when subjected to 200% to 250% of its rated current. IEC has two categories of fast acting fuses: • F = Fast acting, opens on 10 times rated current within 0.001 s to 0.01 s. • FF = Very fast acting, opens on 10 times rated current within less than 0.001 s.	UL 248
Time-Lag Fuse	A fuse with a built-in delay that allows temporary and harmless inrush currents to pass without operating. In design, the breaking time under the condition of continuous overload and short-circuit current shall be: UL listed or recognized time delay fuses typically open in 2 minutes Max. when subjected to 200% to 250% of rated current. IEC has two categories of time delay fuses: • T = Time-Lag, opens on 10 times rated current within 0.01 s to 0.3 s. • TT = Long Time-Lag, opens on 10 times rated current within 0. 1 s to 1 s.	UL 248
Rated Current	The rated current of a fuse identifies its current-carrying capacity based on a controllable set of test conditions. Each fuse is marked with its rated current, this rating can be identified with a numeric, alpha, or color code mark.	IEC 60127
Rated Voltage	A Max. open circuit voltage in which a fuse can be used, yet safely interrupt an overcurrent. Exceeding the voltage rating of a fuse impairs its ability to clear an overload or short circuit safely.	IEC 60127
RMS Current	The R.M.S. (root mean square) value of any periodic current is equal to the value of the direct current, which flowing through a resistance, produces the same heating effect in the resistance as the periodic current does.	IEC 60127

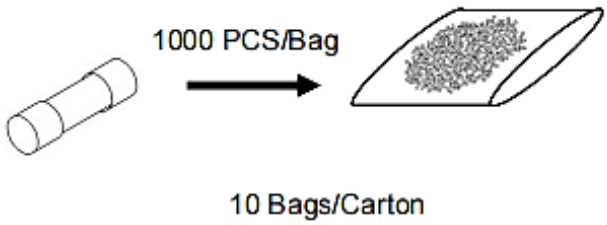
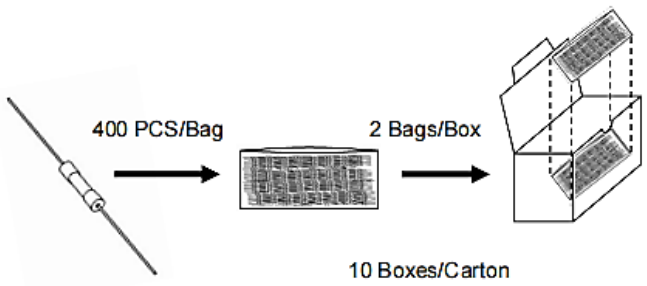
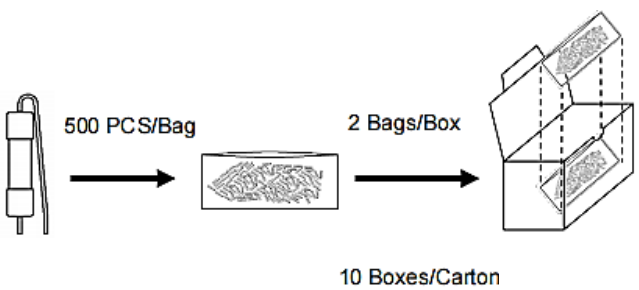
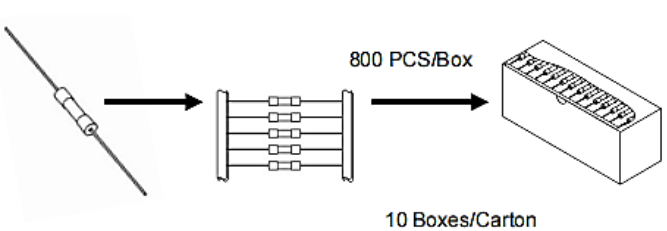
GLOSSARY – PART I

ITEM	DESCRIPTION	STANDARDS
Normal Operating Current	The normal operating current of a circuit is the level of current drawn (in RMS or dc amperes) after it has been energized and is operating under normal conditions. An operating current of 80% or less of rated current is recommended for operation at 25 °C to avoid nuisance openings. For example, a fuse with a Rated Current of 1 A is usually not recommended in circuits with normal operating currents of more than 800 mA. Further derating is required at elevated ambient Temp..	UL 248
Ampere Squared Seconds I2t	The melting, arcing, or clearing integral of a fuse, termed I^2t, is the thermal energy required to melt, arc, or clear a specific current. It can be expressed as melting I^2t, arcing I^2t or the sum of them, clearing I^2t.	IEC 60127
Overload	Can be classified as an overcurrent which exceeds the normal full load current of a circuit by 2 to 5 times its magnitude and stays within the normal current path.	UL 248
Over current	A condition which exists in an electrical circuit when the normal load current is exceeded. Overcurrent take on two separate characteristics- overloads and short circuits.	UL 248
Short Circuit	An overcurrent that leaves the normal current path and greatly exceeds the normal full load current of the circuit by a factor of tens, hundreds, or thousands times.	UL 248
Arcing Time	The amount of time from the instant the fuse link has melted until the overcurrent is interrupted, or cleared.	IEC 60127
Clearing Time	The total time between the beginning of the overcurrent and the final opening of the circuit at rated voltage by an overcurrent protective device. Clearing time is the total of the melting time and the arcing time.	IEC 60127
Breaking Capacity of a Fuse-link	Value (r.m.s. for AC) of prospective current that a fuse-link is capable of breaking at a stated voltage under prescribed conditions of use and behavior.	IEC 60127

RELIABILITY TEST

ITEMS	INSPECTION STANDARDS	STANDARDS
High Temp. Test	Test Condition: Temperature: (105 ± 2) °C Time: 1000 hours Test Requirement: After the test, the voltage drop shall not have changed by more than 10% of the value measured before the test. The clearing time of the fuse shall be in range.	MIL-STD-202 (Test Method108), GJB360B (Test Method 108)
High Humidity Test	Test Condition: Temperature: (40 ± 2) °C Humidity: 90% to 95% Time: 96 hours Test Requirement: After the test, the voltage drop shall not have changed by more than 10 % of the value measured before the test. The clearing time of the fuse shall be in range.	MIL-STD-202 (Test Method 103) GJB360B (Test Method 103)
Thermal Shock Test	Test Condition: Per Cycle: -55 ° C / 30 minutes, 125 ° C / 30 minutes Time: 100 Cycles Test Requirement: After the test, the voltage drop shall not have changed by more than 10 % of the value measured before the test. The clearing time of the fuse shall be in range.	MIL-STD-202 (Test Method 107) GJB360B (Test Method 107)

PACKAGING INFORMATION – FOR REFERENCE ONLY

ITEMS	PACKAGING INFORMATION	PACKAGE QTY.
Cartridge Type		1000pcs/PE Bag, 10000pcs/Carton G.W.: 13.5Kgs/Carton
Axial Lead Type		400pcs/PE Bag 800pcs/Box 8000pcs/Carton G.W.: 15.5Kgs/Carton
Bending Molding Type (Vertical or Horizontal)		500pcs/PE Bag 1000pcs/Box 10000pcs/Carton G.W.: 14.8Kgs/Carton
Taping Type		800pcs/Box 8000pcs/Carton G.W.: 14.5Kgs/Carton

IMPORTANT NOTES AND DISCLAIMER

1. ROHS COMPLIANCE: The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained can be obtained at Download Center.
2. REACH COMPLIANCE: REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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