

## SPF-S SILVER PLATED 10X38mm SOLAR FUSES

1000 Vdc • 1-30 A



## Description

The SPF Solar Protection Fuse series has been specifically designed for the protection of photovoltaic (PV) systems. This family of Midget style fuses (10 x 38 mm) can safely protect PV modules and conductors from reverse-overcurrent conditions.

As PV systems have grown in size, so have the corresponding voltage requirements. This increase in system voltage has typically been intended to minimize power loss associated with long conductor runs. Standard circuit protection devices are not designed to completely protect photovoltaic panels. However, the SPF series is UL Listed to safely interrupt faulted circuits up to this demanding voltage level.

## Features/Benefits

- UL 248-19 Listed
- Meets IEC 60269-6 performance requirements
- 1-30 A ratings available
- 20,000 A Interrupting Rating: 1A - 20A
- 50,000 A Interrupting Rating: 25A - 30A

## Applications

- Inverters
- Combiner boxes
- Battery charge controllers

## Recommended Fuse Holders

LPHV Series 1000 Vdc Dead-Front

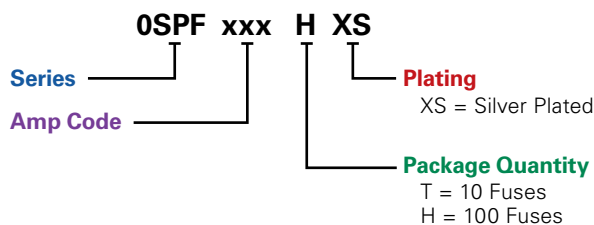
## Web Resources

Download technical documents: [littelfuse.com/spfs](http://littelfuse.com/spfs)

## Specifications

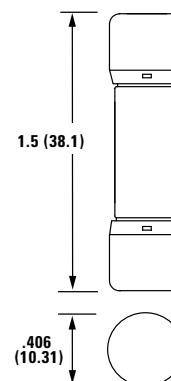
|                            |                                                                        |
|----------------------------|------------------------------------------------------------------------|
| <b>Voltage Rating</b>      | 1000 VDC                                                               |
| <b>Amperage Rating</b>     | 1, 2, 3, 3.5, 4, 5, 6, 8, 10, 12, 15, 20, 25, 30                       |
| <b>Interrupting Rating</b> | 20 kA: 1A - 20A<br>50 kA: 25A - 30A                                    |
| <b>Time Constant</b>       | ≤ 2ms                                                                  |
| <b>Material</b>            | Body: Melamine<br>Caps: Copper Alloy (Silver Plated)                   |
| <b>Approvals</b>           | UL 248-19 Listed (File: E339112)<br>CSA Certified (File: 029862_0_000) |
| <b>Environmental</b>       | RoHS Compliant                                                         |
| <b>Country of Origin</b>   | Mexico                                                                 |

## Part Numbering System



| SERIES | AMP | PACKAGE QUANTITY | MOUNTING METHOD | CATALOG NUMBER | ORDERING NUMBER |
|--------|-----|------------------|-----------------|----------------|-----------------|
| SPF-S  | 2   | 10               | FERRULE         | SPF002-S       | 0SPF002.TXS     |
| SPF-S  | 3.5 | 10               | FERRULE         | SPF03.5-S      | 0SPF03.5.TXS    |

## Dimensions Inches (mm)



Look for this logo to indicate products that are used in solar applications. Visit our website [littelfuse.com/solar](http://littelfuse.com/solar) for the latest updates on approvals, certifications, and new products.

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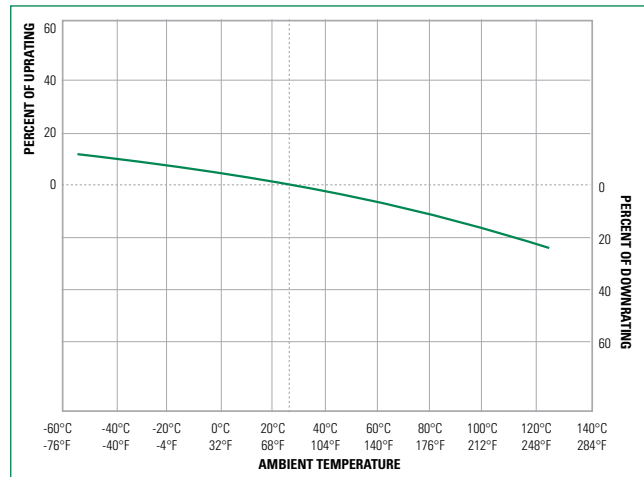
## Ordering Information

| SERIES | AMPERAGE | AMP CODE | CATALOG NUMBER | PRODUCT MARKING | PACK QUANTITY | ORDERING NUMBER | UPC         |
|--------|----------|----------|----------------|-----------------|---------------|-----------------|-------------|
| SPF-S  | 1        | 001.     | SPF001-S       | SPF 1A-S        | 10            | OSPF001.TXS     | 07945884195 |
|        |          |          |                |                 | 100           | OSPF001.HXS     | 07945884194 |
| SPF-S  | 2        | 002.     | SPF002-S       | SPF 2A-S        | 10            | OSPF002.TXS     | 07945884197 |
|        |          |          |                |                 | 100           | OSPF002.HXS     | 07945884196 |
| SPF-S  | 3        | 003.     | SPF003-S       | SPF 3A-S        | 10            | OSPF003.TXS     | 07945884199 |
|        |          |          |                |                 | 100           | OSPF003.HXS     | 07945884198 |
| SPF-S  | 3.5      | 03.5     | SPF03.5-S      | SPF 3 ½A-S      | 10            | OSPF03.5TXS     | 07945884219 |
|        |          |          |                |                 | 100           | OSPF03.5HXS     | 07945884218 |
| SPF-S  | 4        | 004.     | SPF004-S       | SPF 4A-S        | 10            | OSPF004.TXS     | 07945884201 |
|        |          |          |                |                 | 100           | OSPF004.HXS     | 07945884298 |
| SPF-S  | 5        | 005.     | SPF005-S       | SPF 5A-S        | 10            | OSPF005.TXS     | 07945884203 |
|        |          |          |                |                 | 100           | OSPF005.HXS     | 07945884202 |
| SPF-S  | 6        | 006.     | SPF006-S       | SPF 6A-S        | 10            | OSPF006.TXS     | 07945884205 |
|        |          |          |                |                 | 100           | OSPF006.HXS     | 07945884204 |
| SPF-S  | 8        | 008.     | SPF008-S       | SPF 8A-S        | 10            | OSPF008.TXS     | 07945884207 |
|        |          |          |                |                 | 100           | OSPF008.HXS     | 07945884206 |
| SPF-S  | 10       | 010.     | SPF010-S       | SPF 10A-S       | 10            | OSPF010.TXS     | 07945884209 |
|        |          |          |                |                 | 100           | OSPF010.HXS     | 07945884208 |
| SPF-S  | 12       | 012.     | SPF012-S       | SPF 12A-S       | 10            | OSPF012.TXS     | 07945884211 |
|        |          |          |                |                 | 100           | OSPF012.HXS     | 07945884210 |
| SPF-S  | 15       | 015.     | SPF015-S       | SPF 15A-S       | 10            | OSPF015.TXS     | 07945884213 |
|        |          |          |                |                 | 100           | OSPF015.HXS     | 07945884212 |
| SPF-S  | 20       | 020.     | SPF020-S       | SPF 20A-S       | 10            | OSPF020.TXS     | 07945884215 |
|        |          |          |                |                 | 100           | OSPF020.HXS     | 07945884214 |
| SPF-S  | 25       | 025.     | SPF025-S       | SPF 25A-S       | 10            | OSPF025.TXS     | 07945884217 |
|        |          |          |                |                 | 100           | OSPF025.HXS     | 07945884216 |
| SPF-S  | 30       | 030.     | SPF030-S       | SPF 30A-S       | 10            | OSPF030.TXS     | 07945884221 |
|        |          |          |                |                 | 100           | OSPF030.HXS     | 07945884220 |

## Electrical Specification — Agency Requirements

| AMPERAGE RATING | OPENING TIME (MINUTES)    |                            |                           |                            |                           |
|-----------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
|                 | 100% of Amp Rating per UL | 113% of Amp Rating per IEC | 135% of Amp Rating per UL | 145% of Amp Rating per IEC | 200% of Amp Rating per UL |
| 1-30            | Temperature Stabilization | 60 Min                     | 60 Max                    | 60 Max                     | 4 Max                     |

## Temperature Derating Curve (Temperature of Air Immediately Surrounding Fuse)

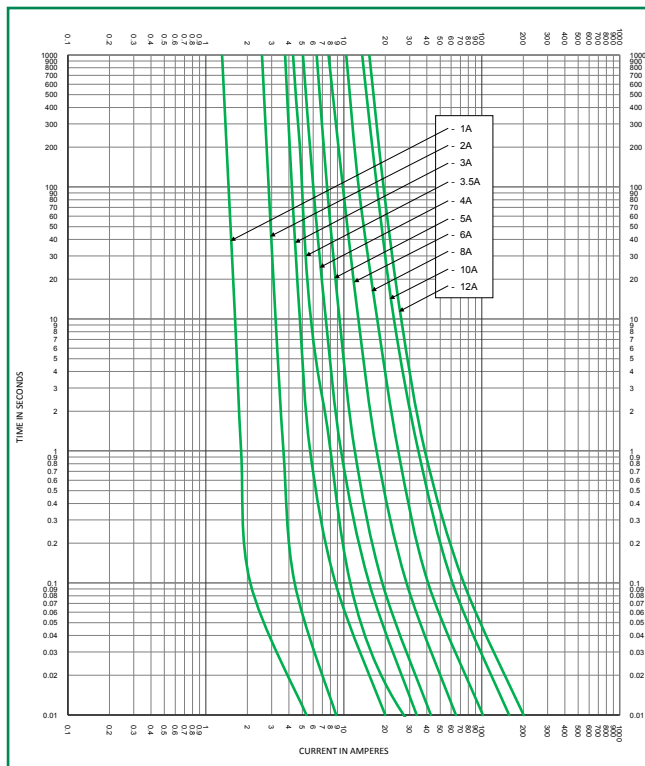


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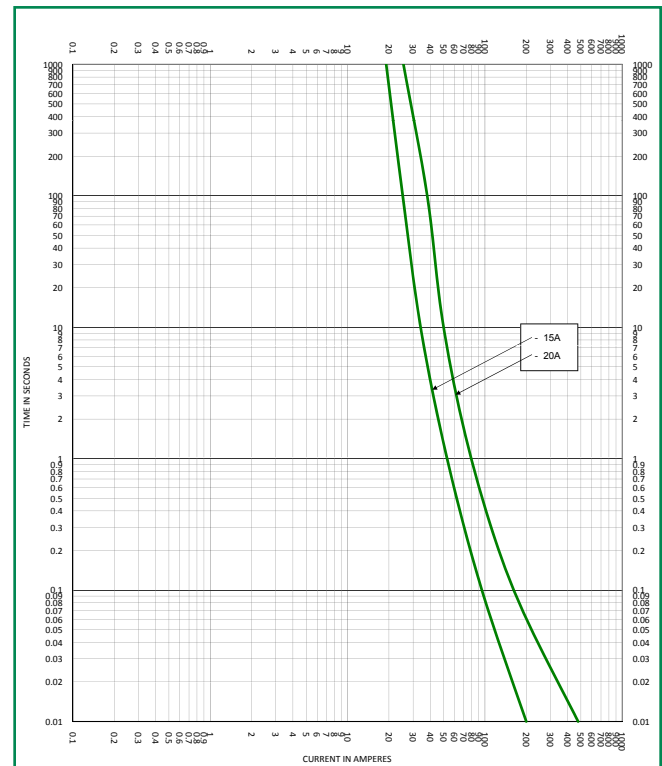
### Electrical Specifications

| AMPERAGE | VOLTAGE | INTERRUPTING RATING (kA) | NOM COLD RESISTANCE (ohm) | WATTS LOSS AT 100% RATED CURRENT (W) | WATTS LOSS AT 80% RATED CURRENT (W) | TOTAL CLEARING I <sup>2</sup> t (A <sup>2</sup> s) 20 kA | TOTAL CLEARING I <sup>2</sup> t (A <sup>2</sup> s) 50 kA |
|----------|---------|--------------------------|---------------------------|--------------------------------------|-------------------------------------|----------------------------------------------------------|----------------------------------------------------------|
|          | DC      | DC                       |                           |                                      |                                     |                                                          |                                                          |
| 1        | 1000    | 20kA DC                  | 0.394                     | 0.60                                 | 0.41                                | 0.6                                                      | —                                                        |
| 2        | 1000    | 20kA DC                  | 0.237                     | 1.59                                 | 0.85                                | 5                                                        | —                                                        |
| 3        | 1000    | 20kA DC                  | 0.11                      | 1.50                                 | 0.82                                | 7.9                                                      | —                                                        |
| 3.5      | 1000    | 20kA DC                  | 0.07787                   | 1.37                                 | 0.78                                | 11                                                       | —                                                        |
| 4        | 1000    | 20kA DC                  | 0.06127                   | 1.49                                 | 0.84                                | 23                                                       | —                                                        |
| 5        | 1000    | 20kA DC                  | 0.04086                   | 1.47                                 | 0.86                                | 43                                                       | —                                                        |
| 6        | 1000    | 20kA DC                  | 0.0281                    | 1.35                                 | 0.77                                | 80                                                       | —                                                        |
| 8        | 1000    | 20kA DC                  | 0.0178                    | 1.61                                 | 0.91                                | 199                                                      | —                                                        |
| 10       | 1000    | 20kA DC                  | 0.0125                    | 1.76                                 | 1.00                                | 401                                                      | —                                                        |
| 12       | 1000    | 20kA DC                  | 0.00993                   | 1.97                                 | 1.11                                | 642                                                      | —                                                        |
| 15       | 1000    | 20kA DC                  | .007855                   | 2.28                                 | 1.38                                | 505                                                      | —                                                        |
| 20       | 1000    | 20kA DC                  | 0.0045                    | 2.81                                 | 1.57                                | 1313                                                     | —                                                        |
| 25       | 1000    | 50kA DC                  | 0.00370                   | 3.331                                | 1.878                               | 2141                                                     | 2433                                                     |
| 30       | 1000    | 50kA DC                  | 0.00299                   | 3.845                                | 2.147                               | 3290                                                     | 3810                                                     |

### Time Current Curve (1-12 A)



### Time Current Curve (15-20 A)



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## Time Current Curve (25-30 A)

