



THE DATASHEET OF SPNH125.XXDEMS



POWR-GARD® Fuse Datasheet

SPF SERIES SOLAR FUSES

1000 V dc • 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.

Littelfuse offers multiple ampere ratings to match specific requirements in a variety of applications.

Features/Benefits

- Full range, fast-acting fuse helps eliminate common low-overload faults
- Prevents power generation losses due to nuisance tripping from changes in temperature
- Both PCB mount and dead-front holder options available

Applications

- Inverters
- Combiner boxes
- Battery charge controllers

Recommended Accessories

Fuse Holder: LPHV 1000 V dc POWR-Safe Series
 Fuse Clips: 125003

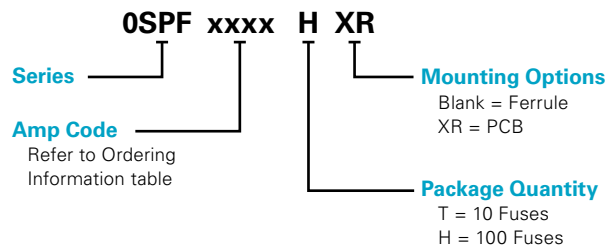
Web Resources

Download technical documents: Littelfuse.com/SPF

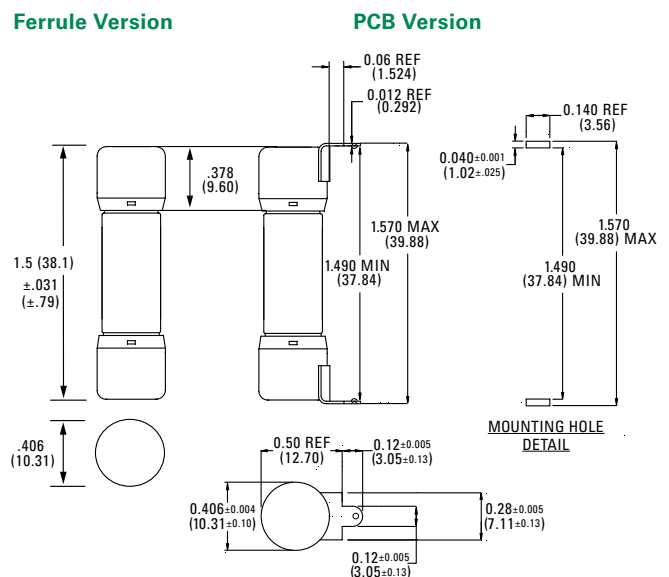
Specifications

| | |
|---------------------------------|---|
| Voltage Rating | 1000 V dc |
| Amperage Rating | 1, 2, 3, 3.5, 4, 5, 6, 8, 10, 12, 15, 20, 25, 30 |
| Max. Interrupting Rating | 20 kA - 1 A - 20 A 50 kA - 25 A - 30 A |
| Time Constant | ≤ 2ms |
| Material | Body: Melamine Caps: Copper Alloy |
| Approvals | UL Listed (File: E339112) CSA Certified (File: 029862_0_000) TUV (Cert: J 50494849) |
| Applicable Standards | UL 248-1, 248-19 IEC 60269-6 |
| Environmental | RoHS Compliant |
| Country of Origin | Mexico |

Part Numbering System



Dimensions Inches (mm)



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

POWR-GARD® Fuse Datasheet

SPF SERIES SOLAR FUSES

Ordering Information

Ferrule Version

| SERIES | AMPERAGE | AMPERE CODE | CATALOG NUMBER | PRODUCT MARKING | PACKING QUANTITY | ORDERING NUMBER | UPC CODE |
|--------|----------|-------------|----------------|-----------------|------------------|-----------------|-------------|
| SPF | 1 | 001. | SPF001 | SPF 1A | 10 | OSPF001.T | 07945816907 |
| | | | | | 100 | OSPF001.H | 07945816908 |
| SPF | 2 | 002. | SPF002 | SPF 2A | 10 | OSPF002.T | 07945816910 |
| | | | | | 100 | OSPF002.H | 07945816911 |
| SPF | 3 | 003. | SPF003 | SPF 3A | 10 | OSPF003.T | 07945816913 |
| | | | | | 100 | OSPF003.H | 07945816914 |
| SPF | 3.5 | 03.5 | SPF03.5 | SPF 3-½A | 10 | OSPF03.5T | 07945880087 |
| | | | | | 100 | OSPF03.5H | 07945880088 |
| SPF | 4 | 004. | SPF004 | SPF 4A | 10 | OSPF004.T | 07945816916 |
| | | | | | 100 | OSPF004.H | 07945816917 |
| SPF | 5 | 005. | SPF005 | SPF 5A | 10 | OSPF005.T | 07945816919 |
| | | | | | 100 | OSPF005.H | 07945816920 |
| SPF | 6 | 006. | SPF006 | SPF 6A | 10 | OSPF006.T | 07945816922 |
| | | | | | 100 | OSPF006.H | 07945816923 |
| SPF | 8 | 008. | SPF008 | SPF 8A | 10 | OSPF008.T | 07945816925 |
| | | | | | 100 | OSPF008.H | 07945816926 |
| SPF | 10 | 010. | SPF010 | SPF 10A | 10 | OSPF010.T | 07945816928 |
| | | | | | 100 | OSPF010.H | 07945816929 |
| SPF | 12 | 012. | SPF012 | SPF 12A | 10 | OSPF012.T | 07945816931 |
| | | | | | 100 | OSPF012.H | 07945816932 |
| SPF | 15 | 015. | SPF015 | SPF 15A | 10 | OSPF015.T | 07945816934 |
| | | | | | 100 | OSPF015.H | 07945816935 |
| SPF | 20 | 020. | SPF020 | SPF 20A | 10 | OSPF020.T | 07945816937 |
| | | | | | 100 | OSPF020.H | 07945816938 |
| SPF | 25 | 025. | SPF025 | SPF 25A | 10 | OSPF025.T | 07945817595 |
| | | | | | 100 | OSPF025.H | 07945817596 |
| SPF | 30 | 030. | SPF030 | SPF 30A | 10 | OSPF030.T | 07945817598 |
| | | | | | 100 | OSPF030.H | 07945817599 |

POWR-GARD® Fuse Datasheet

SPF SERIES SOLAR FUSES

Ordering Information

PCB Version

| SERIES | AMPERAGE | AMPERE CODE | CATALOG NUMBER | PRODUCT MARKING | PACKING QUANTITY | ORDERING NUMBER | UPC CODE |
|--------|----------|-------------|----------------|-----------------|------------------|-----------------|-------------|
| SPF | 1 | 001. | SPF001R | SPF 1A-R | 100 | OSPF001.HXR | 07945816909 |
| SPF | 2 | 002. | SPF002R | SPF 2A-R | 100 | OSPF002.HXR | 07945816912 |
| SPF | 3 | 003. | SPF003R | SPF 3A-R | 100 | OSPF003.HXR | 07945816915 |
| SPF | 3.5 | 03.5 | SPF03.5R | SPF 3-½A-R | 100 | OSPF03.5.HXR | 07945880089 |
| SPF | 4 | 004. | SPF004R | SPF 4A-R | 100 | OSPF004.HXR | 07945816918 |
| SPF | 5 | 005. | SPF005R | SPF 5A-R | 100 | OSPF005.HXR | 07945816921 |
| SPF | 6 | 006. | SPF006R | SPF 6A-R | 100 | OSPF006.HXR | 07945816924 |
| SPF | 8 | 008. | SPF008R | SPF 8A-R | 100 | OSPF008.HXR | 07945816927 |
| SPF | 10 | 010. | SPF010R | SPF 10A-R | 100 | OSPF010.HXR | 07945816930 |
| SPF | 12 | 012. | SPF012R | SPF 12A-R | 100 | OSPF012.HXR | 07945816933 |
| SPF | 15 | 015. | SPF015R | SPF 15A-R | 100 | OSPF015.HXR | 07945816936 |
| SPF | 20 | 020. | SPF020R | SPF 20A-R | 100 | OSPF020.HXR | 07945817594 |
| SPF | 25 | 025. | SPF025R | SPF 25A-R | 100 | OSPF025.HXR | 07945817597 |
| SPF | 30 | 030. | SPF030R | SPF 30A-R | 100 | OSPF030.HXR | 07945817600 |

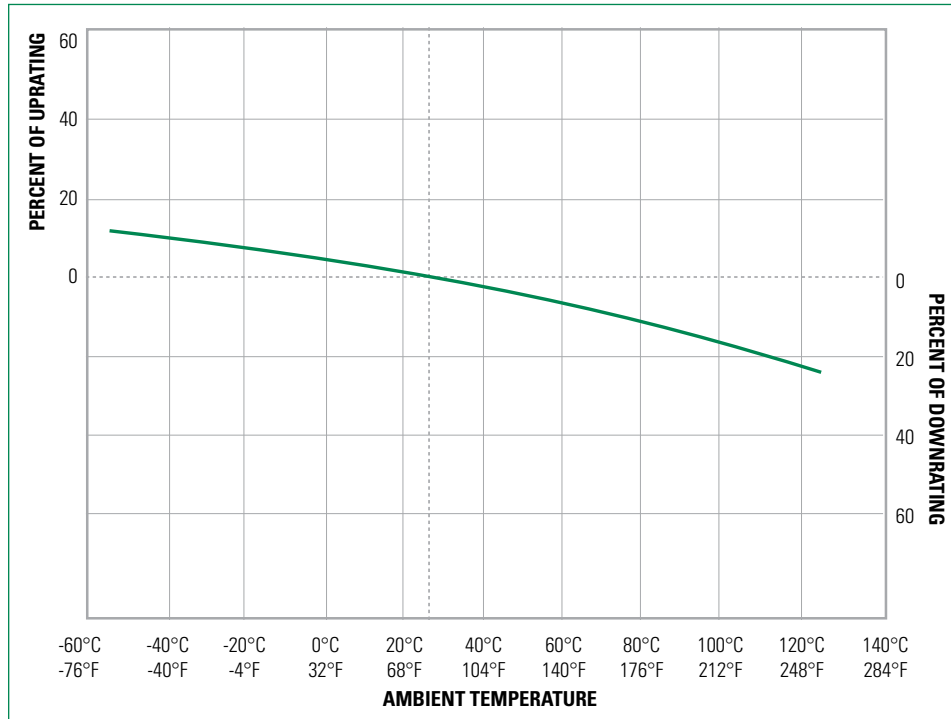
Electrical Specifications

| AMPERAGE | AMPERE CODE | CATALOG NUMBER (FERRULE) | CATALOG NUMBER (PCB) | VOLTAGE | | NOM COLD RESISTANCE (OHM) | WATTS LOSS AT 100 % RATED CURRENT (W) | WATTS LOSS AT 80 % RATED CURRENT (W) | TOTAL CLEARING I²T (A2S) 20 KA | TOTAL CLEARING I²T (A2S) 50 KA | AGENCY APPROVALS | | |
|----------|-------------|--------------------------|----------------------|---------|--------------------------|---------------------------|---------------------------------------|--------------------------------------|--------------------------------|--------------------------------|------------------|-----|-----|
| | | | | DC | INTERRUPTING RATING (KA) | | | | | | UL | CSA | TUV |
| 1 | 001. | SPF001 | SPF001R | 1000 | 20 | 0.394 | 0.60 | 0.41 | 0.6 | – | • | • | • |
| 2 | 002. | SPF002 | SPF002R | 1000 | 20 | 0.154 | 1.59 | 0.85 | 4.8 | – | • | • | • |
| 3 | 003. | SPF003 | SPF003R | 1000 | 20 | 0.110 | 1.50 | 0.82 | 7.9 | – | • | • | • |
| 3.5 | 03.5 | SPF03.5 | SPF03.5R | 1000 | 20 | 0.078 | 1.37 | 0.78 | 11 | – | • | • | • |
| 4 | 004. | SPF004 | SPF004R | 1000 | 20 | 0.061 | 1.49 | 0.84 | 23 | – | • | • | • |
| 5 | 005. | SPF005 | SPF005R | 1000 | 20 | 0.041 | 1.47 | 0.86 | 43 | – | • | • | • |
| 6 | 006. | SPF006 | SPF006R | 1000 | 20 | 0.028 | 1.35 | 0.77 | 80 | – | • | • | • |
| 8 | 008. | SPF008 | SPF008R | 1000 | 20 | 0.018 | 1.61 | 0.91 | 199 | – | • | • | • |
| 10 | 010. | SPF010 | SPF010R | 1000 | 20 | 0.013 | 1.76 | 1.00 | 401 | – | • | • | • |
| 12 | 012. | SPF012 | SPF012R | 1000 | 20 | 0.010 | 1.97 | 1.11 | 642 | – | • | • | • |
| 15 | 015. | SPF015 | SPF015R | 1000 | 20 | 0.008 | 2.28 | 1.38 | 505 | – | • | • | • |
| 20 | 020. | SPF020 | SPF020R | 1000 | 20 | 0.005 | 2.81 | 1.57 | 1313 | – | • | • | • |
| 25 | 025. | SPF025 | SPF025R | 1000 | 20 | 0.004 | 3.33 | 1.88 | 2141 | 2433 | • | • | • |
| 30 | 030. | SPF030 | SPF030R | 1000 | 20 | 0.003 | 3.85 | 2.15 | 3290 | 3810 | • | • | • |

Electrical Specification – Agency Requirements

| AMPERAGE RATING | OPENING TIME (MINUTES) | | | |
|-----------------|----------------------------|-----------------------------|----------------------------|----------------------------|
| | 100 % of Amp Rating per UL | 105 % of Amp Rating per IEC | 135 % of Amp Rating per UL | 200 % of Amp Rating per UL |
| 1–30 | Temperature Stabilization | 60 Min | 60 Max | 4 Max |

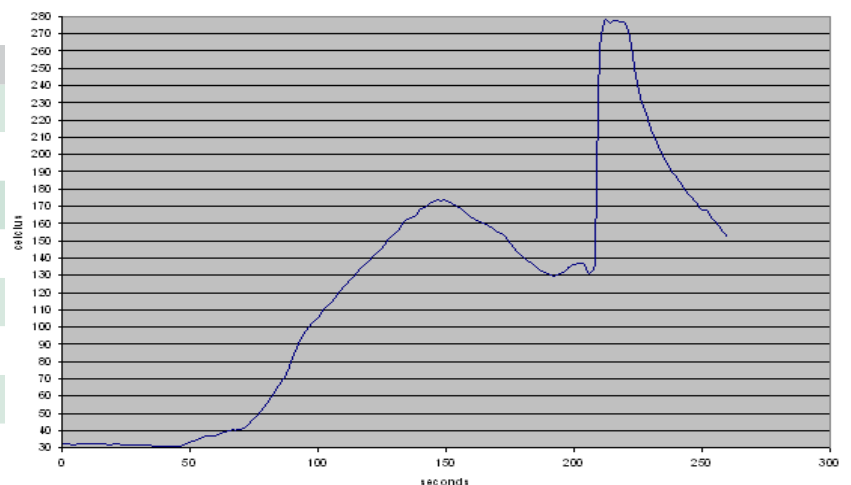
Temperature Derating Curve (temperature of air immediately surrounding fuse)



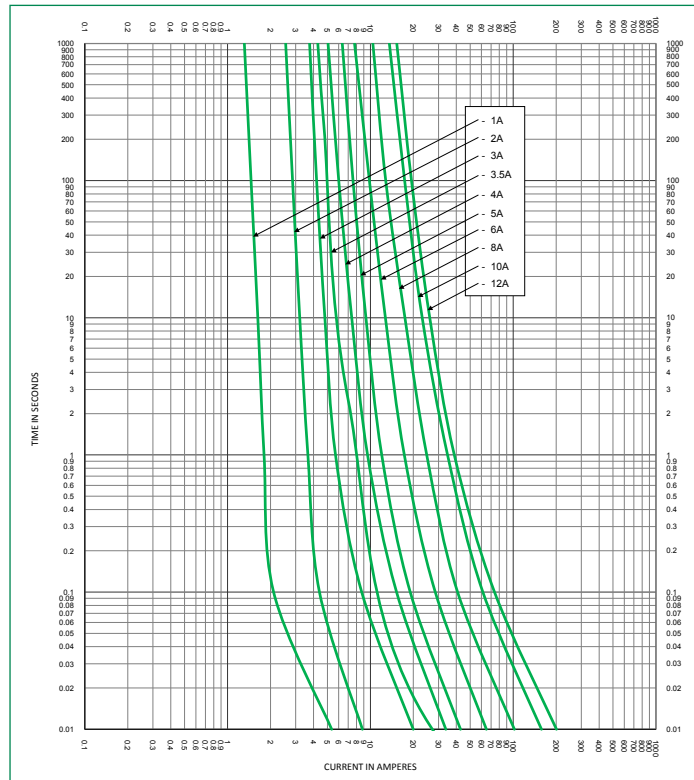
Recommended Process Parameters

| WAVE PARAMETER | LEAD FREE RECOMMENDATION |
|------------------------|-----------------------------------|
| Preheat: | (Typical industry recommendation) |
| Temperature minimum: | 130 °C |
| Temperature maximum: | — |
| Pre-heat time | 75 seconds maximum |
| Solder pot temperature | 280 °C maximum |
| Solder dwell time | 270 °C for 8 seconds maximum |
| Complete cycle time | 250 seconds maximum |

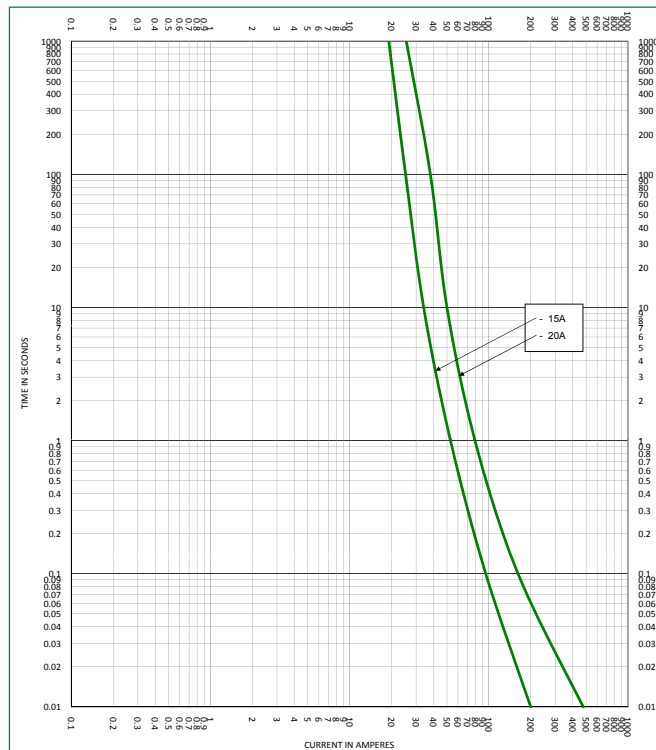
Soldering Parameters



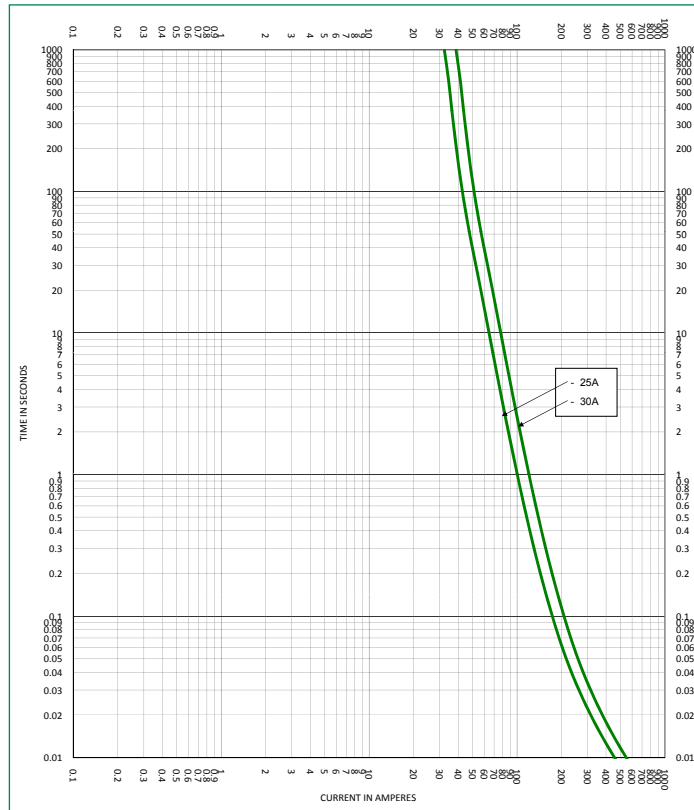
Time Current Curve (1–12 A)



Time Current Curve (15–20 A)



Time Current Curve (25–30 A)



Disclaimer Notice - Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable Littelfuse product documentation. Warranties granted by Littelfuse shall be deemed void for products used for any purpose not expressly set forth in applicable Littelfuse documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation. The sale and use of Littelfuse products is subject to Littelfuse Terms and Conditions of Sale, unless otherwise agreed by Littelfuse.

Littelfuse.com/Product-Disclaimer

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View SPNH125.XXDEMS on WIN SOURCE](#)

 [Littelfuse Inc. Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management