

# SPF SERIES 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.

Littelfuse offers 13 ampere ratings to match specific requirements in a variety of applications.

## Features/Benefits

- Meets UL, IEC and VDE photovoltaic standards
- UL 2579 Listed 1000 VDC maximum
- 1-30 A ratings available
- 20,000 A Interrupting Rating
- Both PCB mount and dead-front holder options available

## Applications

- Combiner boxes
- Inverters
- Battery charge controllers

## Specifications

<b>Voltage Rating</b>	1000 VDC
<b>Amperage Rating</b>	1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 25, 30
<b>Max. Interrupting Rating</b>	20 kA
<b>Time Constant</b>	≤ 2ms
<b>Material</b>	Body: Melamine Caps: Copper Alloy
<b>Approvals</b>	UL 2579 Listed (File: E339112) IEC 60269-6 (1-25 A) VDE Certified (No. 40033098) CSA Certified (File: 029862_0_000)
<b>Environmental</b>	RoHS Compliant
<b>Country of Origin</b>	Mexico

## Ordering Information

SERIES	AMP	MOUNTING METHOD	CATALOG NUMBER	ORDERING NUMBER
SPF	2	FERRULE	SPF002	OSPF002.T
SPF	8	FERRULE	SPF008	OSPF008.T
SPF	30	FERRULE	SPF030	OSPF030.T
SPF	30	PCB TABS	SPF030R	OSPF030.HXR

## Recommended Fuse Holders

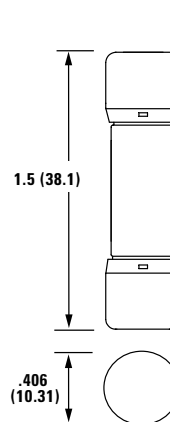
LFPHV Indication Series

## Web Resources

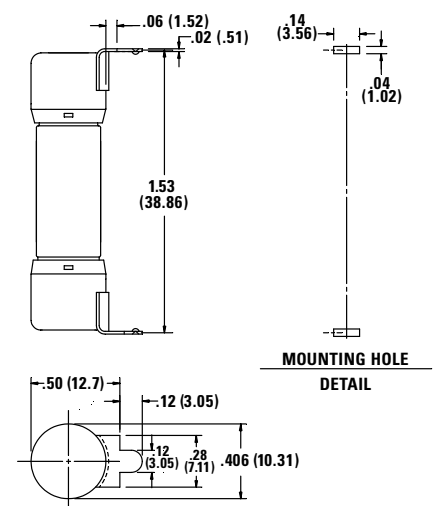
Downloadable CAD drawings and other technical information: [Littelfuse.com/spf](http://Littelfuse.com/spf)

## Dimensions Inches (mm)

### Ferrule Version



### PCB Version



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.

# SPF SERIES SOLAR FUSES

## Electrical Specifications Ferrule Version

ORDERING NUMBER	AMP RATING	DC-RATED VOLTAGE	INTERRUPTING RATING		UPC	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) 10 kA	TOTAL CLEARING I <sup>2</sup> t (A <sup>2</sup> s) 20 kA	AGENCY APPROVALS		
			DC	AC							DC	UL	VDE
OSPF001.T	1	1000	-	20 kA	07945816907	0.394	0.602	0.410	0.554	0.554	•	•	•
OSPF002.T	2	1000	-	20 kA	07945816910	0.237	1.586	0.851	1.175	4.755	•	•	•
OSPF003.T	3	1000	-	20 kA	07945816913	0.11	1.504	0.824	5.007	7.882	•	•	•
OSPF004.T	4	1000	-	20 kA	07945816916	0.06127	1.491	0.839	23.031	23.031	•	•	•
OSPF005.T	5	1000	-	20 kA	07945816919	0.04086	1.465	0.859	42.600	42.600	•	•	•
OSPF006.T	6	1000	-	20 kA	07945816922	0.0281	1.348	0.769	76.270	80.254	•	•	•
OSPF008.T	8	1000	-	20 kA	07945816925	0.0178	1.610	0.914	193.323	198.960	•	•	•
OSPF010.T	10	1000	-	20 kA	07945816928	0.0125	1.760	1.000	395.556	401.208	•	•	•
OSPF012.T	12	1000	-	20 kA	07945816931	0.00993	1.965	1.109	599.198	641.940	•	•	•
OSPF015.T	15	1000	-	20 kA	07945816934	0.00799	2.282	1.382	457.740	504.770	•	•	•
OSPF020.T	20	1000	-	20 kA	07945816937	0.0045	2.810	1.574	1173.990	1312.850	•	•	•
OSPF025.T	25	1000	-	20 kA	07945817595	0.00353	2.981	1.745	1937.430	2371.140	•	•	•
OSPF030.T	30	1000	-	20 kA	07945817598	0.00284	3.923	2.125	2209.480	2678.750	•	•	•

## Electrical Specifications PCB Version

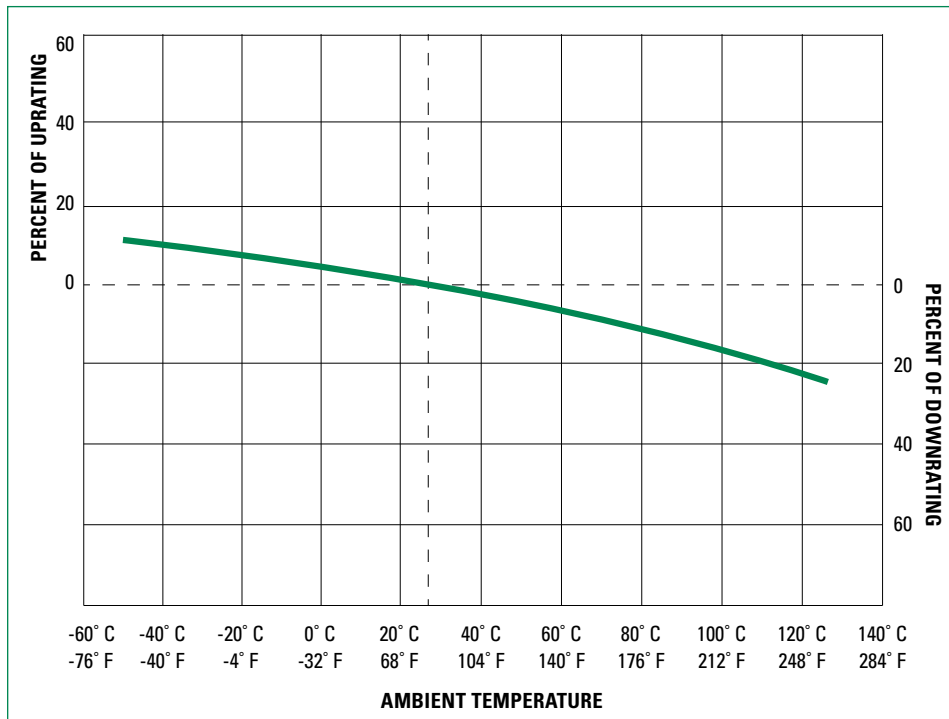
ORDERING NUMBER	AMP RATING	DC-RATED VOLTAGE	INTERRUPTING RATING		UPC	NOM COLD RESISTANCE (ohm)	WATTS LOSS AT 100% RATED CURRENT (W)	WATTS LOSS AT 80% RATED CURRENT (W)	TOTAL CLEARING I <sup>2</sup> t (A <sup>2</sup> s) 10 kA	TOTAL CLEARING I <sup>2</sup> t (A <sup>2</sup> s) 20 kA	AGENCY APPROVALS	
			DC	AC							DC	UL
OSPF001.HXR	1	1000	-	20 kA	07945816909	0.394	0.602	0.410	0.554	0.554	•	•
OSPF002.HXR	2	1000	-	20 kA	07945816912	0.237	1.586	0.851	1.175	4.755	•	•
OSPF003.HXR	3	1000	-	20 kA	07945816915	0.11	1.504	0.824	5.007	7.882	•	•
OSPF004.HXR	4	1000	-	20 kA	07945816918	0.06127	1.491	0.839	23.031	23.031	•	•
OSPF005.HXR	5	1000	-	20 kA	07945816921	0.04086	1.465	0.859	42.600	42.600	•	•
OSPF006.HXR	6	1000	-	20 kA	07945816924	0.0281	1.348	0.769	76.270	80.254	•	•
OSPF008.HXR	8	1000	-	20 kA	07945816927	0.0178	1.610	0.914	193.323	198.960	•	•
OSPF010.HXR	10	1000	-	20 kA	07945816930	0.0125	1.760	1.000	395.556	401.208	•	•
OSPF012.HXR	12	1000	-	20 kA	07945816933	0.00993	1.965	1.109	599.198	641.940	•	•
OSPF015.HXR	15	1000	-	20 kA	07945816936	0.00799	2.282	1.382	457.740	504.770	•	•
OSPF020.HXR	20	1000	-	20 kA	07945817594	0.0045	2.810	1.574	1173.990	1312.850	•	•
OSPF025.HXR	25	1000	-	20 kA	07945817597	0.00353	2.981	1.745	1937.430	2371.140	•	•
OSPF030.HXR	30	1000	-	20 kA	07945817600	0.00284	3.923	2.125	2209.480	2678.750	•	•

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## Electrical Specification – Agency Requirements

AMPERAGE RATING	OPENING TIME (MINUTES)				
	100% of Amp Rating per UL	113% of Amp Rating per UL & 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

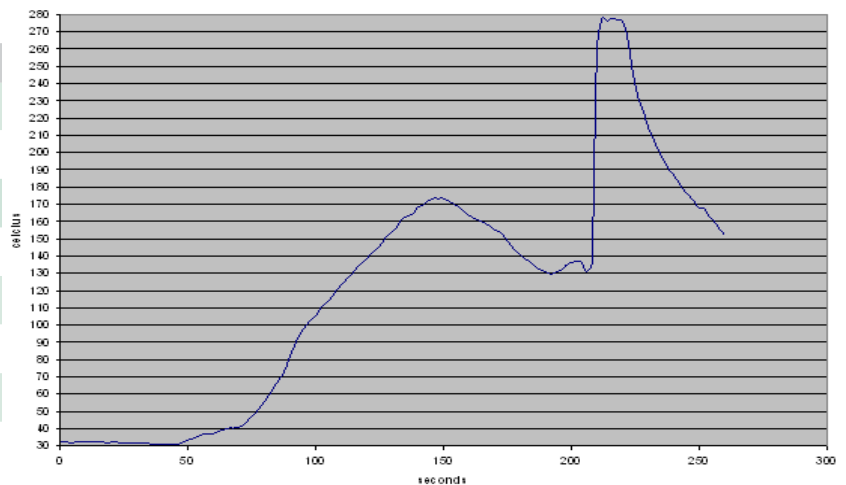
## Temperature Derating Curve (Temperature of Air Immediately Surrounding Fuse)



## Recommended Process Parameters

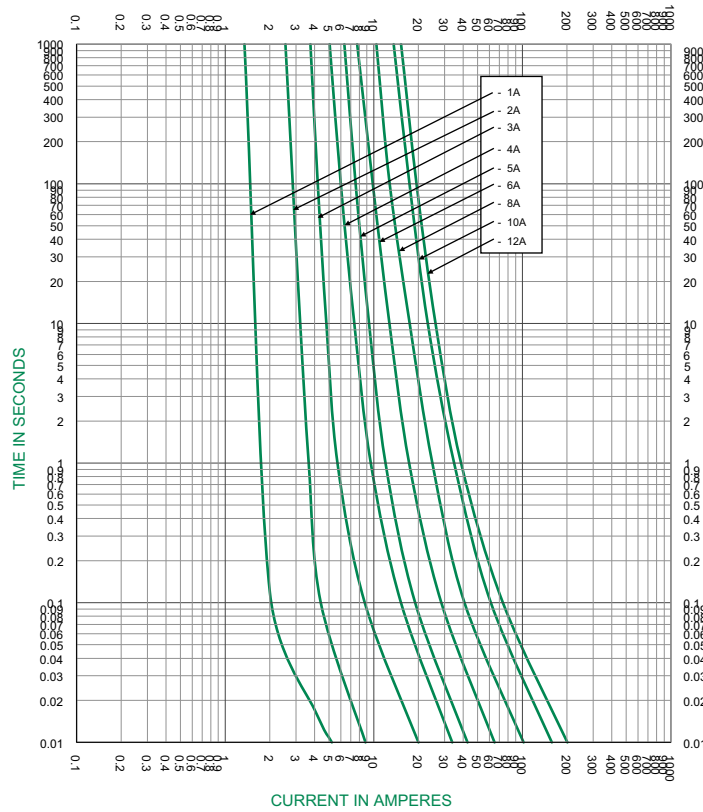
## Soldering Parameters

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



# SPF SERIES SOLAR FUSES

## Time Current Curve (1-12 A)



## Time Current Curve (15-30 A)

