POWR-GARD® Fuse Datasheet

SPF_CN Series Solar Fuses

1000 V dc • 1–30 A

Description

The SPF_CN 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_CN 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
- 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: 125004/125005

Web Resources

Download technical documents: **Littelfuse.com/Solar**

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	≤ 2 ms
Material	Body: melamine Caps: copper alloy
Approvals	UL listed US-CA (File: E339112) TUV (Cert: J 50494849)
Applicable Standards	UL 248-1, 248-19 IEC 60269-6
Environmental	RoHS Compliant REACH
Country of Origin	China

Part Numbering System

0SPF xxxx H XCN

Series

Amp Code
Refer to Ampere Code column in Ordering Information table

Package Quantity
T = 10 Fuses (ferrule style only)
H = 100 Fuses

Options
XCN = Ferrule
XRCN = PCB
XRTCN = Extended PCB

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.

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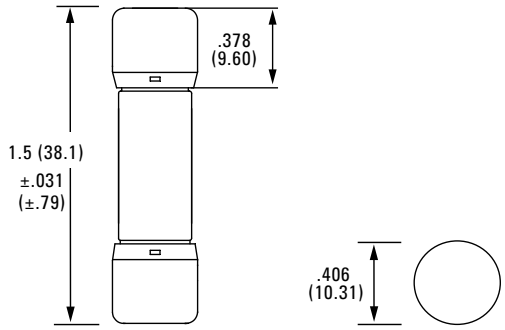
Revised: 06/29/2026

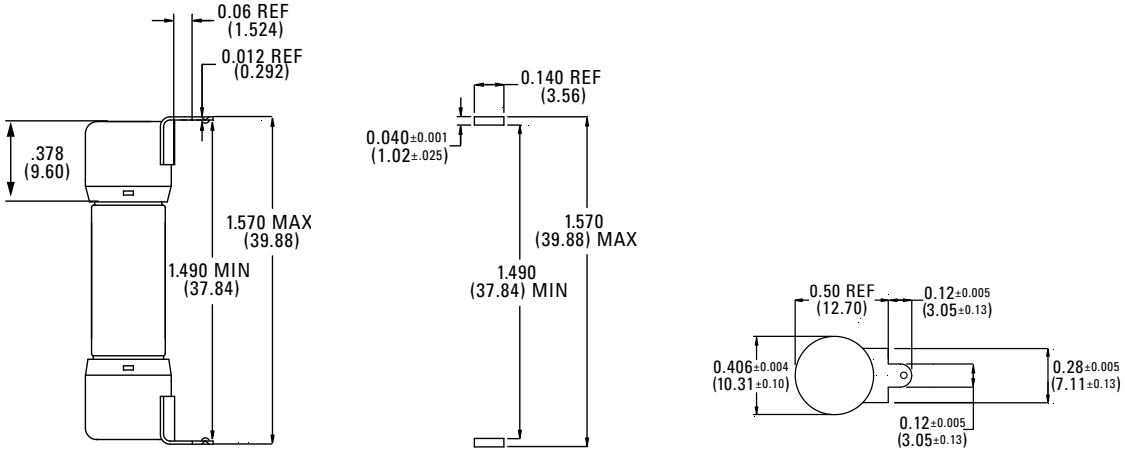
Dimensions Inches (Millimeters)

Ferrule Version



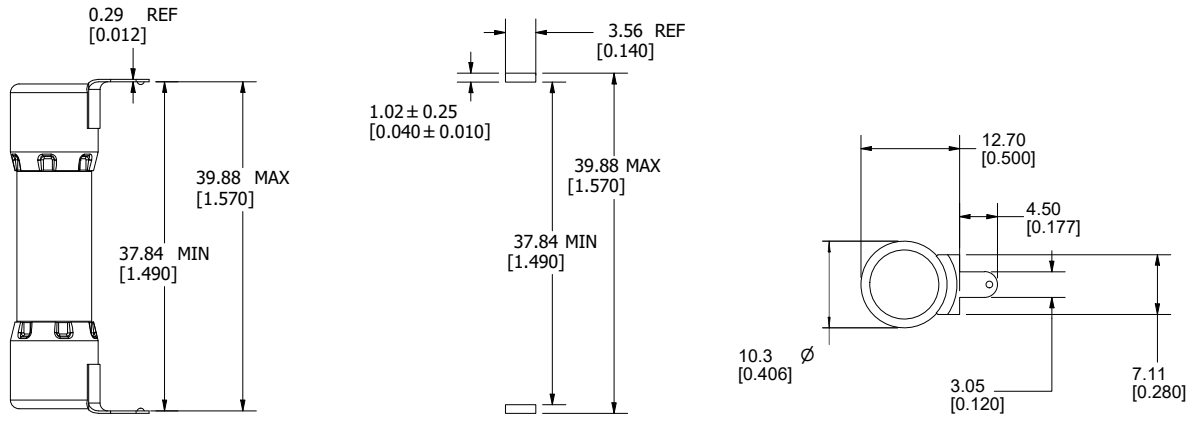
SIDE VIEW TOP VIEW

PCB Version



SIDE VIEW MOUNTING HOLE DETAIL TOP VIEW

Extended PCB Version



SIDE VIEW MOUNTING HOLE DETAIL TOP VIEW

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Ordering Information

Ferrule Versions

SERIES	AMPERAGE	AMPERE CODE	CATALOG NUMBER	PRODUCT MARKING	PACKING QUANTITY	ORDERING PART NUMBER	UPC CODE
SPF	1	001.	SPF001CN	SPF 1A-CN	10 100	0SPF001.TXCN 0SPF001.HXCN	07945826521 07945826535
SPF	2	002.	SPF002CN	SPF 2A-CN	10 100	0SPF002.TXCN 0SPF002.HXCN	07945826522 07945826536
SPF	3	003.	SPF003CN	SPF 3A-CN	10 100	0SPF003.TXCN 0SPF003.HXCN	07945826523 07945826537
SPF	3.5	03.5	SPF03.5CN	SPF 3-½A-CN	10 100	0SPF03.5TXCN 0SPF03.5HXCN	07945826524 07945826538
SPF	4	004.	SPF004CN	SPF 4A-CN	10 100	0SPF004.TXCN 0SPF004.HXCN	07945826525 07945826539
SPF	5	005.	SPF005CN	SPF 5A-CN	10 100	0SPF005.TXCN 0SPF005.HXCN	07945826526 07945826540
SPF	6	006.	SPF006CN	SPF 6A-CN	10 100	0SPF006.TXCN 0SPF006.HXCN	07945826527 07945826541
SPF	8	008.	SPF008CN	SPF 8A-CN	10 100	0SPF008.TXCN 0SPF008.HXCN	07945826528 07945826542
SPF	10	010.	SPF010CN	SPF 10A-CN	10 100	0SPF010.TXCN 0SPF010.HXCN	07945826529 07945826543
SPF	12	012.	SPF012CN	SPF 12A-CN	10 100	0SPF012.TXCN 0SPF012.HXCN	07945826530 07945826544
SPF	15	015.	SPF015CN	SPF 15A-CN	10 100	0SPF015.TXCN 0SPF015.HXCN	07945826531 07945826545
SPF	20	020.	SPF020CN	SPF 20A-CN	10 100	0SPF020.TXCN 0SPF020.HXCN	07945826532 07945826546
SPF	25	025.	SPF025CN	SPF 25A-CN	10 100	0SPF025.TXCN 0SPF025.HXCN	07945826533 07945826547
SPF	30	030.	SPF030CN	SPF 30A-CN	10 100	0SPF030.TXCN 0SPF030.HXCN	07945826534 07945826548

Ordering Information

PCB Versions

SERIES	AMPERAGE	AMPERE CODE	CATALOG NUMBER	PRODUCT MARKING	PACKING QUANTITY	ORDERING PART NUMBER	UPC CODE
SPF	1	001.	SPF001RCN	SPF 1A-RCN	100	0SPF001.HXRCN	07945827736
SPF	2	002.	SPF002RCN	SPF 2A-RCN	100	0SPF002.HXRCN	07945827737
SPF	3	003.	SPF003RCN	SPF 3A-RCN	100	0SPF003.HXRCN	07945827738
SPF	3.5	03.5	SPF03.5RCN	SPF 3-½A-RCN	100	0SPF03.5.HXRCN	07945827739
SPF	4	004.	SPF004RCN	SPF 4A-RCN	100	0SPF004.HXRCN	07945827740
SPF	5	005.	SPF005RCN	SPF 5A-RCN	100	0SPF005.HXRCN	07945827741
SPF	6	006.	SPF006RCN	SPF 6A-RCN	100	0SPF006.HXRCN	07945827742
SPF	8	008.	SPF008RCN	SPF 8A-RCN	100	0SPF008.HXRCN	07945827743
SPF	10	010.	SPF010RCN	SPF 10A-RCN	100	0SPF010.HXRCN	07945827744
SPF	12	012.	SPF012RCN	SPF 12A-RCN	100	0SPF012.HXRCN	07945827745
SPF	15	015.	SPF015RCN	SPF 15A-RCN	100	0SPF015.HXRCN	07945827746
SPF	20	020.	SPF020RCN	SPF 20A-RCN	100	0SPF020.HXRCN	07945827747
SPF	25	025.	SPF025RCN	SPF 25A-RCN	100	0SPF025.HXRCN	07945827748
SPF	30	030.	SPF030RCN	SPF 30A-RCN	100	0SPF030.HXRCN	07945827749

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Ordering Information

Extended PCB Versions

SERIES	AMPERAGE	AMPERE CODE	CATALOG NUMBER	PRODUCT MARKING	PACKING QUANTITY	ORDERING PART NUMBER	UPC CODE
SPF	1	001.	SPF001RTCN	SPF 1A-RTCN	100	0SPF001.HXRTCN	07945867145
SPF	2	002.	SPF002RTCN	SPF 2A-RTCN	100	0SPF002.HXRTCN	07945867146
SPF	3	003.	SPF003RTCN	SPF 3A-RTCN	100	0SPF003.HXRTCN	07945865983
SPF	3.5	03.5	SPF03.5RTCN	SPF 3.5A-RTCN	100	0SPF03.5HXRTCN	07945867148
SPF	4	004.	SPF004RTCN	SPF 4A-RTCN	100	0SPF004.HXRTCN	07945867149
SPF	5	005.	SPF005RTCN	SPF 5A-RTCN	100	0SPF005.HXRTCN	07945867150
SPF	6	006.	SPF006RTCN	SPF 6A-RTCN	100	0SPF006.HXRTCN	07945867151
SPF	8	008.	SPF0018RTCN	SPF 8A-RTCN	100	0SPF008.HXRTCN	07945867152
SPF	10	010.	SPF010RTCN	SPF 10A-RTCN	100	0SPF010.HXRTCN	07945867153
SPF	12	012.	SPF012RTCN	SPF 12A-RTCN	100	0SPF012.HXRTCN	07945867154
SPF	15	015.	SPF015RTCN	SPF 15A-RTCN	100	0SPF015.HXRTCN	07945867155
SPF	20	020.	SPF020RTCN	SPF 20A-RTCN	100	0SPF020.HXRTCN	07945867156
SPF	25	025.	SPF025RTCN	SPF 25A-RTCN	100	0SPF025.HXRTCN	07945867157
SPF	30	030.	SPF030RTCN	SPF 30A-RTCN	100	0SPF030.HXRTCN	07945831409

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^2t (A^2s) 20 kA	TOTAL CLEARING I^2t (A^2s) 50 kA	AGENCY APPROVALS	
	DC	DC						UL	TUV
1	1000	20	0.394	0.60	0.41	0.6	–	•	•
2	1000	20	0.154	1.59	0.85	4.8	–	•	•
3	1000	20	0.110	1.50	0.82	7.9	–	•	•
3.5	1000	20	0.078	1.37	0.78	11	–	•	•
4	1000	20	0.061	1.49	0.84	23	–	•	•
5	1000	20	0.041	1.47	0.86	43	–	•	•
6	1000	20	0.028	1.35	0.77	80	–	•	•
8	1000	20	0.018	1.61	0.91	199	–	•	•
10	1000	20	0.013	1.76	1.00	401	–	•	•
12	1000	20	0.010	1.97	1.11	642	–	•	•
15	1000	20	0.008	2.28	1.38	505	–	•	•
20	1000	20	0.005	2.81	1.57	1313	–	•	•
25	1000	50	0.004	3.33	1.88	2141	2433	•	•
30	1000	50	0.003	3.85	2.15	3290	3810	•	•

Electrical Specification – Agency Requirements

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

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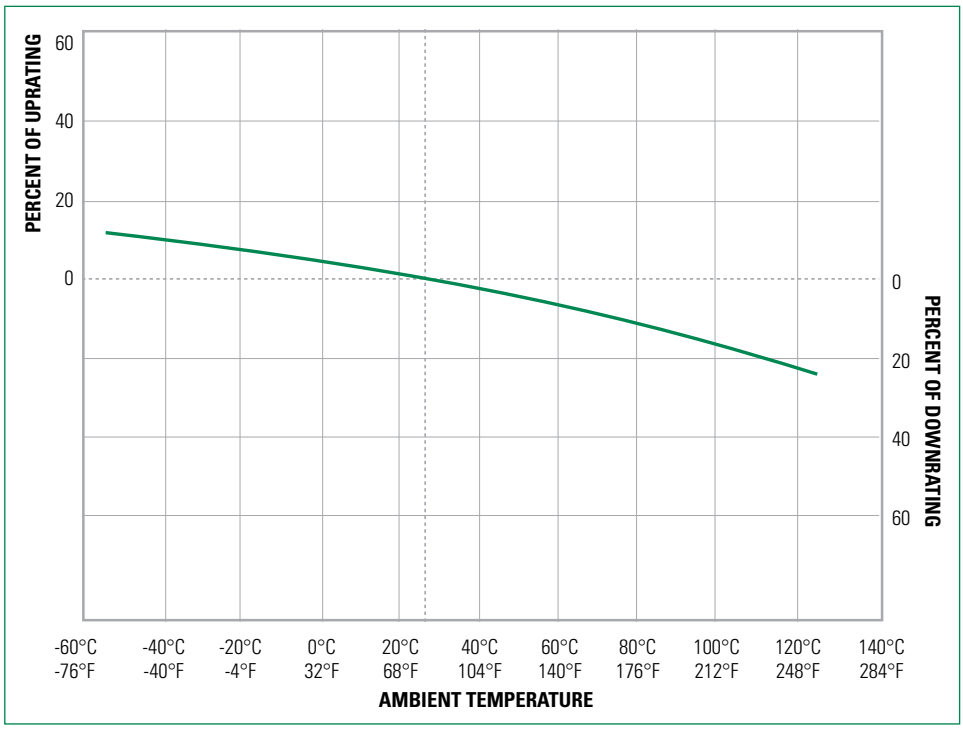
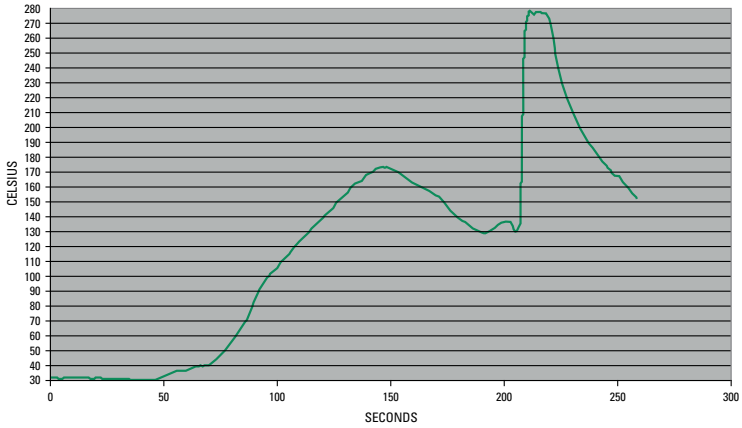
Temperature Derating Curve (temperature of air immediately surrounding fuse)



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



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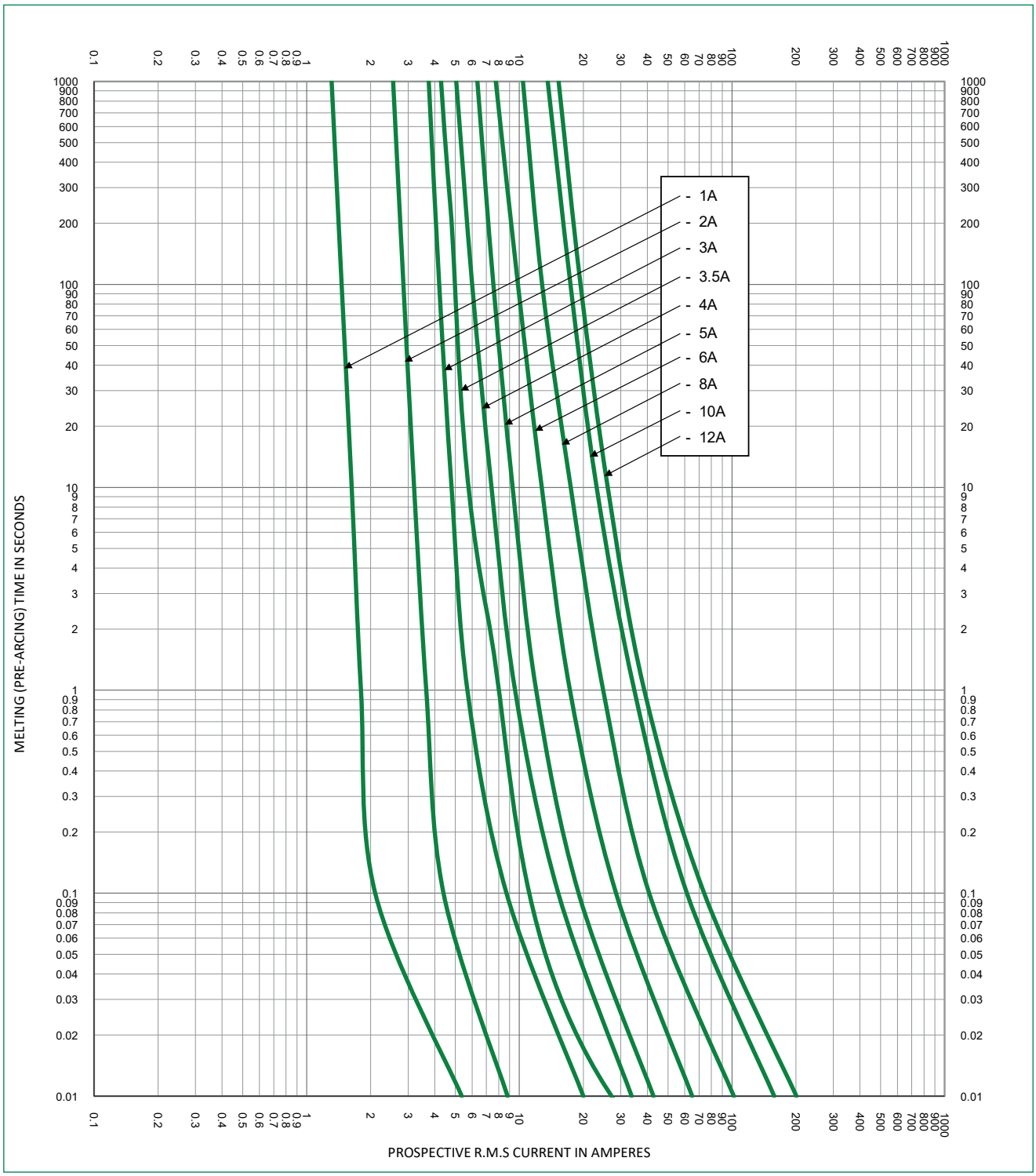
Time Current Curve (1–12 A)



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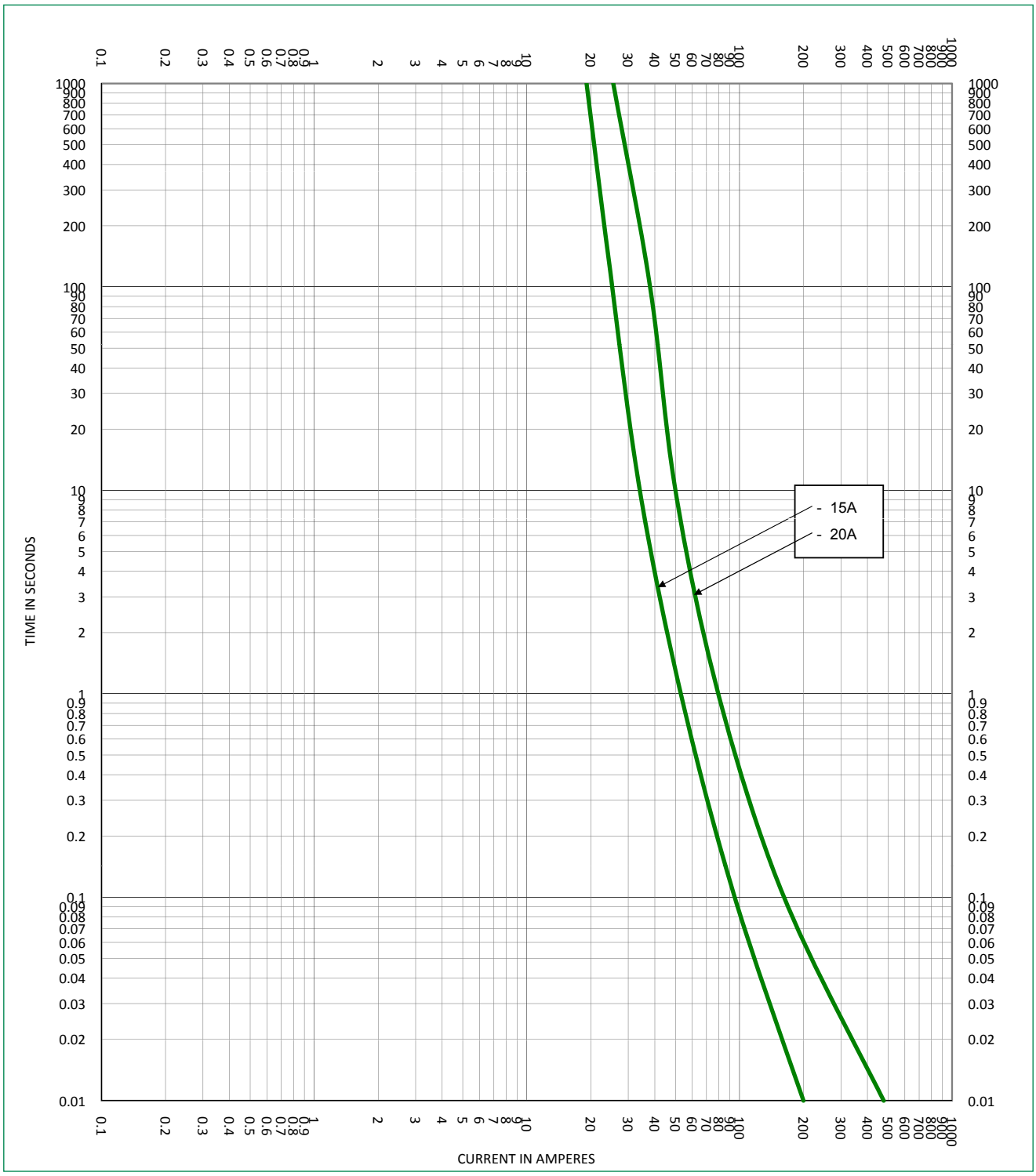
Time Current Curve (15–20 A)



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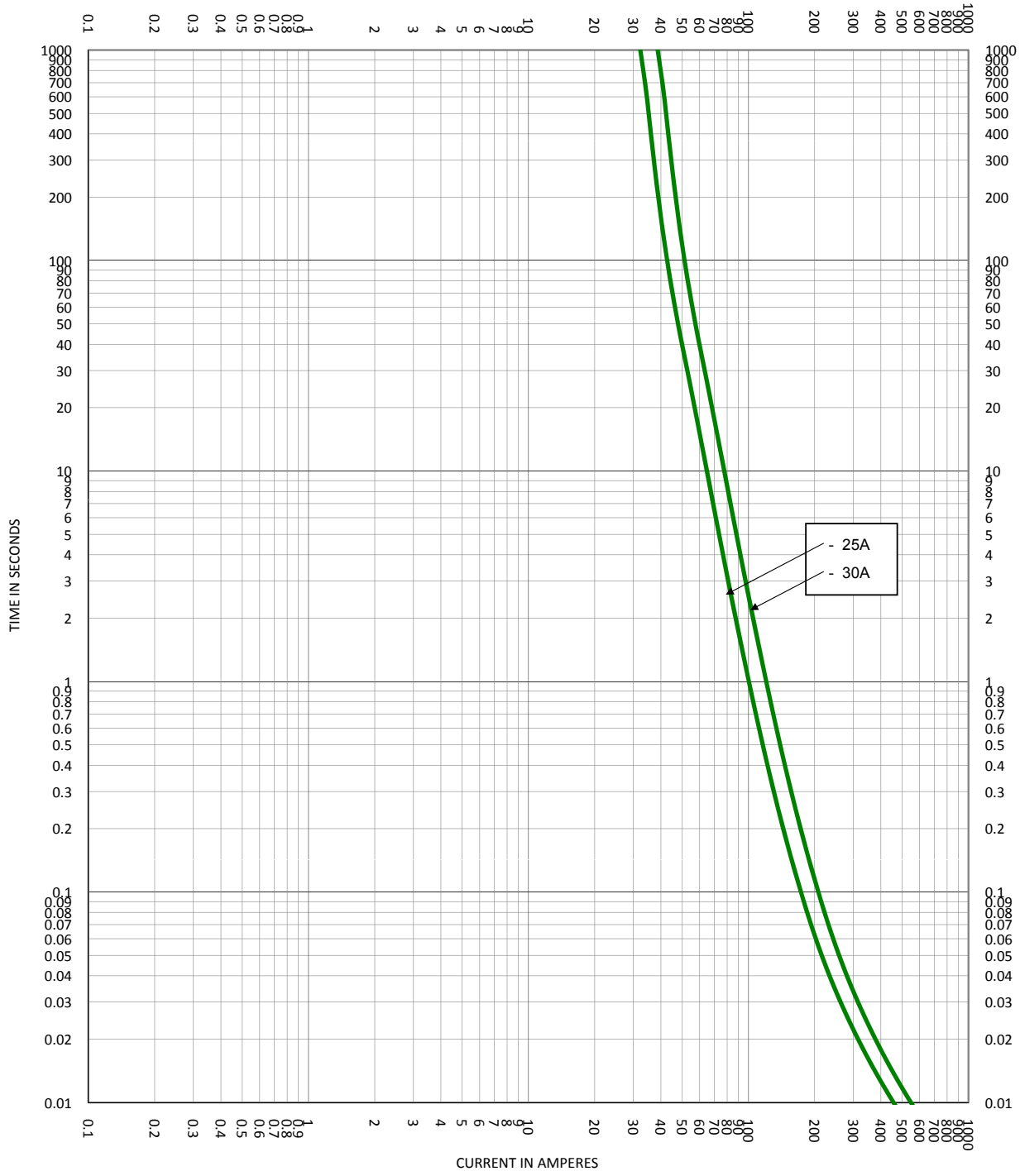
Time Current Curve (25–30 A)



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