

POWR-GARD® Fuse Datasheet

SPFI SERIES IN-LINE SOLAR FUSE

1000 V dc • 2–30 A



Description

The Littelfuse SPFI solar fuse is designed to integrate into an in-line assembly within a wire harness. The fuse provides photovoltaic (PV) protection that meets UL 248-19 for photovoltaic applications. The SPFI can be electrically insulated by either overmolding or using heat-shrink.

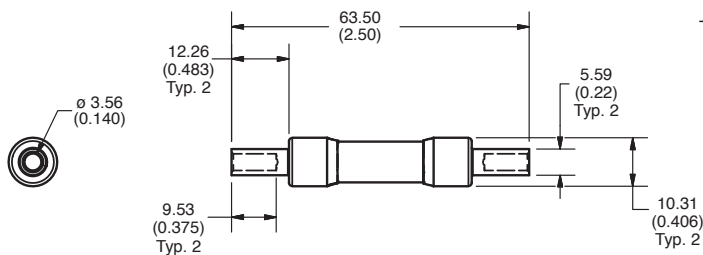
Features/Benefits

- One-piece cap design, without joints, offers easier wire crimping and more streamlined molding
- No fuse holder required helps save space, time, and money
- 20,000 A Interrupting Rating

Applications

- Photovoltaic wire harness

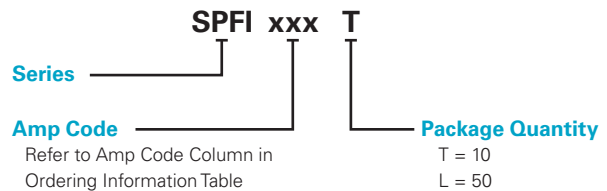
Dimensions mm (in)



Specifications

Voltage Rating	1000 V dc
Amperage Rating	2, 2.5, 3, 3.5, 4, 5, 6, 8, 10, 12, 15, 20, 25, 30 A
Interrupting Rating	20 kA
Time Constant	≤ 1ms
Material	Body: Melamine Caps: Copper Alloy (Nickel Plated)
Approvals	UL 248-19 Recognized (File: E339112)
Applicable Standards	UL 248-1, 248-19 IEC 60269-6 (electrically only)
Environmental	RoHS Compliant REACH
Country of Origin	Mexico
US Patent	9,564,281

Part Numbering System



Web Resources

Downloadable CAD drawings and other technical information: littelfuse.com/spfi

Recommended Crimping Tool

T&B Sta-Kon ERG4002

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Ordering Information

SERIES	AMPERAGE	AMP CODE	CATALOG NUMBER	PRODUCT MARKING	PACK QUANTITY	ORDERING NUMBER	UPC
SPFI	2	002.	SPFI002	SPFI 2A	10	SPFI002.T	07945880898
					50	SPFI002.L	07945880899
SPFI	2.5	02.5	SPFI02.5	SPFI 2 ½A	10	SPFI02.5T	07945882604
					50	SPFI02.5L	07945882605
SPFI	3	003.	SPFI003	SPFI 3A	10	SPFI003.T	07945880853
					50	SPFI003.L	07945880854
SPFI	3.5	03.5	SPFI03.5	SPFI 3 ½A	10	SPFI03.5T	07945879544
					50	SPFI03.5L	07945879545
SPFI	4	004.	SPFI004	SPFI 4A	10	SPFI004.T	07945880900
					50	SPFI004.L	07945880901
SPFI	5	005.	SPFI005	SPFI 5A	10	SPFI005.T	07945880902
					50	SPFI005.L	07945880903
SPFI	6	006.	SPFI006	SPFI 6A	10	SPFI006.T	07945880855
					50	SPFI006.L	07945880856
SPFI	8	008.	SPFI008	SPFI 8A	10	SPFI008.T	07945880857
					50	SPFI008.L	07945880858
SPFI	10	010.	SPFI010	SPFI 10A	10	SPFI010.T	07945880859
					50	SPFI010.L	07945880860
SPFI	12	012.	SPFI012	SPFI 12A	10	SPFI012.T	07945880861
					50	SPFI012.L	07945880862
SPFI	15	015.	SPFI015	SPFI 15A	10	SPFI015.T	07945880863
					50	SPFI015.L	07945880864
SPFI	20	020.	SPFI020	SPFI 20A	10	SPFI020.T	07945880865
					50	SPFI020.L	07945880866
SPFI	25	025.	SPFI025	SPFI 25A	10	SPFI025.T	07945882668
					50	SPFI025.L	07945882669
SPFI	30	030.	SPFI030	SPFI 30A	10	SPFI030.T	07945882670
					50	SPFI030.L	07945882671

Electrical Specifications

AMPERAGE	VOLTAGE	INTERRUPTING RATING	WIRE RANGE CU Only (Solid/Stranded)	NOM COLD RESISTANCE (ohm)	WATTS LOSS AT 100% RATED CURRENT (W)	WATTS LOSS AT 80% RATED CURRENT (W)	TOTAL CLEARING I ² t (A ² s) 20 kA
	DC	DC					
2	1000	20 kA	10-12 AWG (6-4 mm ²)	0.237	1.59	0.85	5
2.5	1000	20 kA	10-12 AWG (6-4 mm ²)	0.185	1.84	1.24	7.5
3	1000	20 kA	10-12 AWG (6-4 mm ²)	0.11	1.50	0.82	7.9
3.5	1000	20 kA	10-12 AWG (6-4 mm ²)	0.581	1.17	0.61	26
4	1000	20 kA	10-12 AWG (6-4 mm ²)	0.0519	1.49	0.84	23
5	1000	20 kA	10-12 AWG (6-4 mm ²)	0.04086	1.47	0.86	43
6	1000	20 kA	10-12 AWG (6-4 mm ²)	0.0281	1.35	0.77	80
8	1000	20 kA	10-12 AWG (6-4 mm ²)	0.0178	1.61	0.91	199
10	1000	20 kA	10-12 AWG (6-4 mm ²)	0.0125	1.76	1.00	401
12	1000	20 kA	10-12 AWG (6-4 mm ²)	0.00993	1.97	1.11	642
15	1000	20 kA	10-12 AWG (6-4 mm ²)	0.00799	2.28	1.38	505
20	1000	20 kA	10-12 AWG (6-4 mm ²)	0.0045	2.81	1.57	1313
25	1000	20 kA	10-12 AWG (6-4 mm ²)	0.00353	2.98	1.75	2371
30	1000	20 kA	10-12 AWG (6-4 mm ²)	0.00284	3.92	2.13	2679

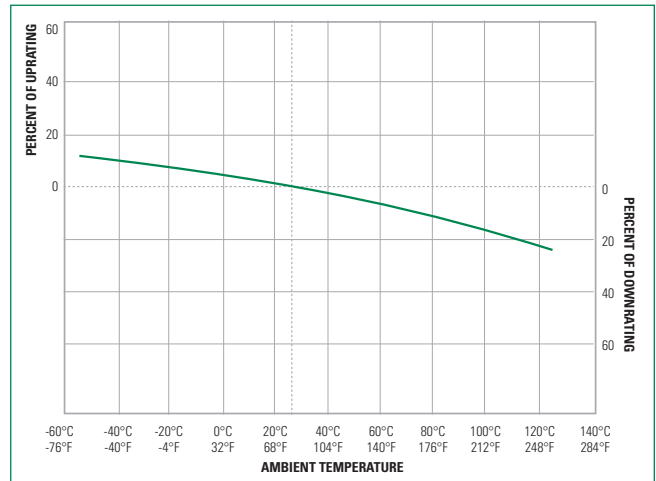
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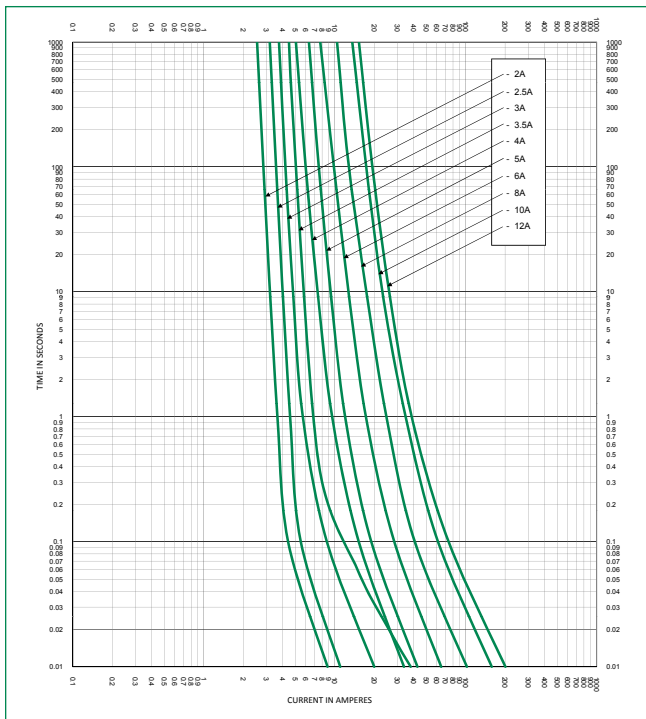
Electrical Specification — Agency Requirements

AMPERE 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
2-30	Temperature Stabilization	60 Min	60 Max	60 Max	4 Max

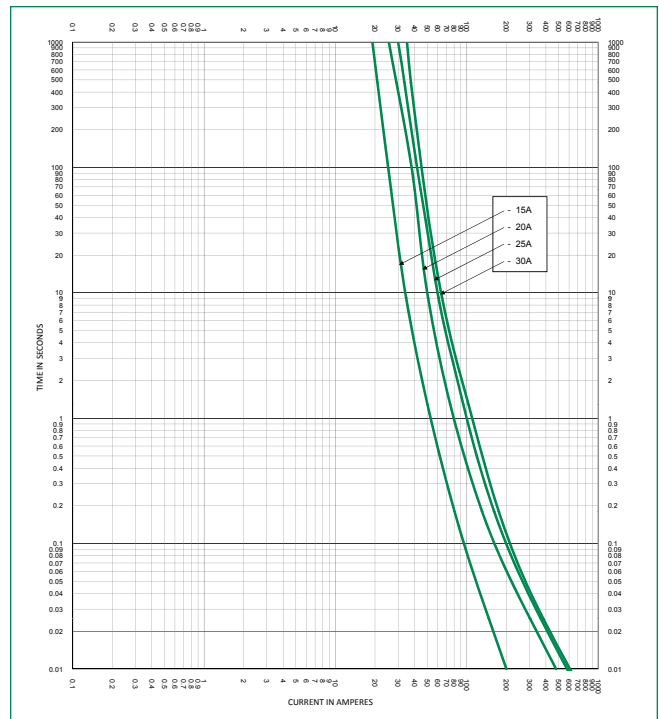
Temperature Derating Curve (Temperature of Air Immediately Surrounding Fuse)



Time Current Curve (2–12 A)



Time Current Curve (15–30 A)



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Electrical Characteristics

CASE SIZE	CATALOG NUMBER	AMPERAGE RATING (A)	VOLTAGE RATING (V)			INTERRUPTING RATING		MELTING (PRE-ARC) I ² T (A ² S)	TOTAL CLEARING I ² T (A ² S) AT RATED VOLTAGE		WATT LOSS AT 100 % RATED CURRENT (W)	AGENCY CERTIFICATION
			AC		DC	AC	DC		AC	DC		
			IEC*	UL								
70	PSR070UL0050	50	1250	1300	1000	100 kA	150 kA	177	2050	400	21	•
	PSR070UL0063	63	1250	1300	1000	100 kA	150 kA	273	3399	900	24	•
	PSR070UL0080	80	1250	1300	1000	100 kA	150 kA	583	6732	2200	25	•
	PSR070UL0100	100	1250	1300	1000	100 kA	150 kA	974	10996	3750	30	•
	PSR070UL0125	125	1250	1300	1000	100 kA	150 kA	1352	13011	5150	44	•
	PSR070UL0160	160	1250	1300	1000	100 kA	150 kA	2377	25662	8950	53	•
	PSR070UL0200	200	1250	1300	1000	100 kA	150 kA	4177	39087	17267	62	•
	PSR070UL0250	250	1250	1300	1000	100 kA	150 kA	8629	89790	36750	73	•
	PSR070UL0280	280	1250	1300	1000	100 kA	150 kA	11844	113201	46750	77	•
PSR070UL0315	315	1250	1300	1000	100 kA	150 kA	18162	142051	66833	80	•	
73	PSR073UL0315	315	1250	1300	1000	100 kA	150 kA	10245	106600	38650	100	•
	PSR073UL0350	350	1250	1300	1000	100 kA	150 kA	13586	159627	57467	100	•
	PSR073UL0400	400	1250	1300	1000	100 kA	150 kA	19797	211273	86800	124	•
	PSR073UL0450	450	1250	1300	1000	100 kA	150 kA	29834	279073	114333	122	•
	PSR073UL0500	500	1250	1300	1000	100 kA	150 kA	42751	416437	184500	121	•
	PSR073UL0550	550	1250	1300	1000	100 kA	150 kA	55513	491713	224500	130	•
	PSR073UL0630	630	1250	1300	1000	100 kA	150 kA	94649	804338	377500	136	•
	PSR073UL0700	700	1250	1300	1000	100 kA	150 kA	158097	1170960	575667	135	•

* electrical compliance to IEC 60269-4

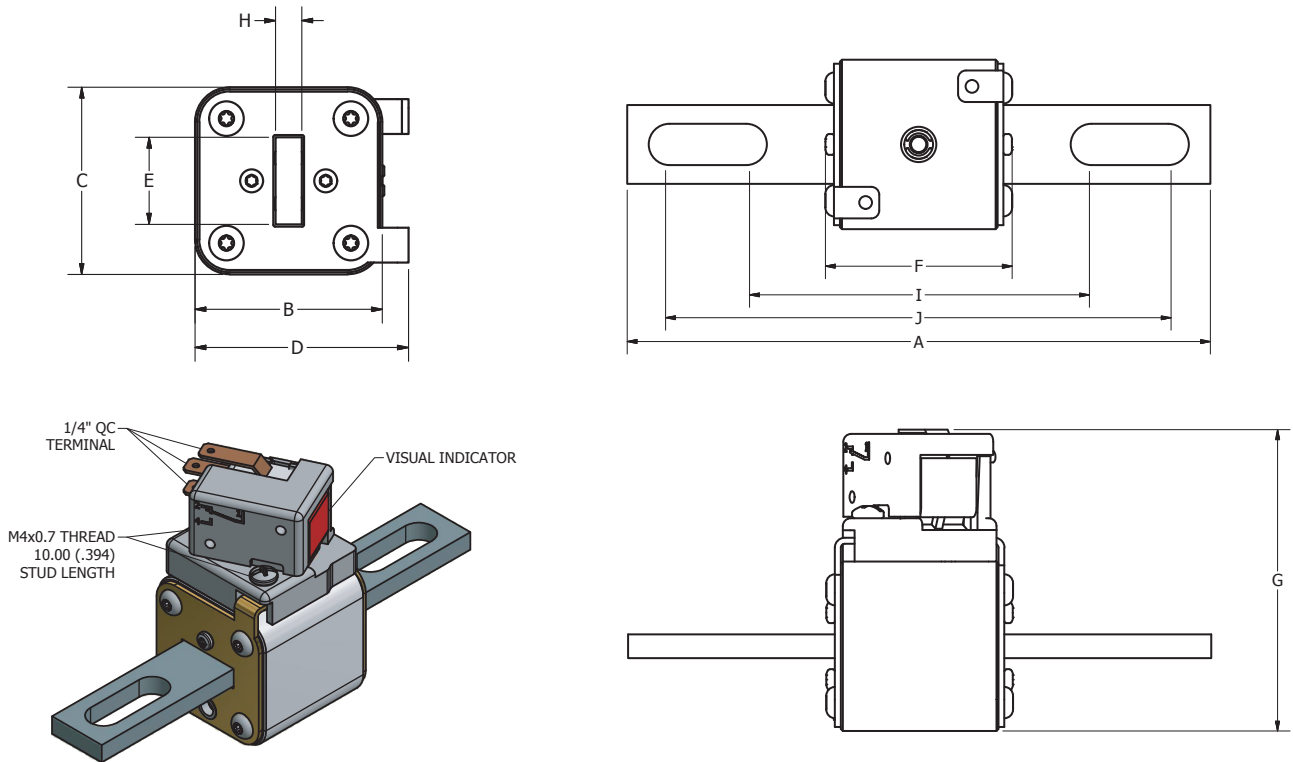
Ordering Information

CASE SIZE	BOLTED LONG BLADE (UL)			BOX QUANTITY
	CATALOG NUMBER	ORDERING PART NUMBER	UPC	
70	PSR070UL0050	PSR070UL0050Z	07945825297	3 pcs/box
	PSR070UL0063	PSR070UL0063Z	07945825298	3 pcs/box
	PSR070UL0080	PSR070UL0080Z	07945825299	3 pcs/box
	PSR070UL0100	PSR070UL0100Z	07945825300	3 pcs/box
	PSR070UL0125	PSR070UL0125Z	07945825301	3 pcs/box
	PSR070UL0160	PSR070UL0160Z	07945825302	3 pcs/box
	PSR070UL0200	PSR070UL0200Z	07945825303	3 pcs/box
	PSR070UL0250	PSR070UL0250Z	07945825304	3 pcs/box
	PSR070UL0280	PSR070UL0280Z	07945825305	3 pcs/box
PSR070UL0315	PSR070UL0315Z	07945825306	3 pcs/box	
73	PSR073UL0315	PSR073UL0315X	07945825324	1 pcs/box
	PSR073UL0350	PSR073UL0350X	07945825325	1 pcs/box
	PSR073UL0400	PSR073UL0400X	07945825326	1 pcs/box
	PSR073UL0450	PSR073UL0450X	07945825327	1 pcs/box
	PSR073UL0500	PSR073UL0500X	07945825328	1 pcs/box
	PSR073UL0550	PSR073UL0550X	07945825329	1 pcs/box
	PSR073UL0630	PSR073UL0630X	07945825330	1 pcs/box
	PSR073UL0700	PSR073UL0700X	07945825331	1 pcs/box

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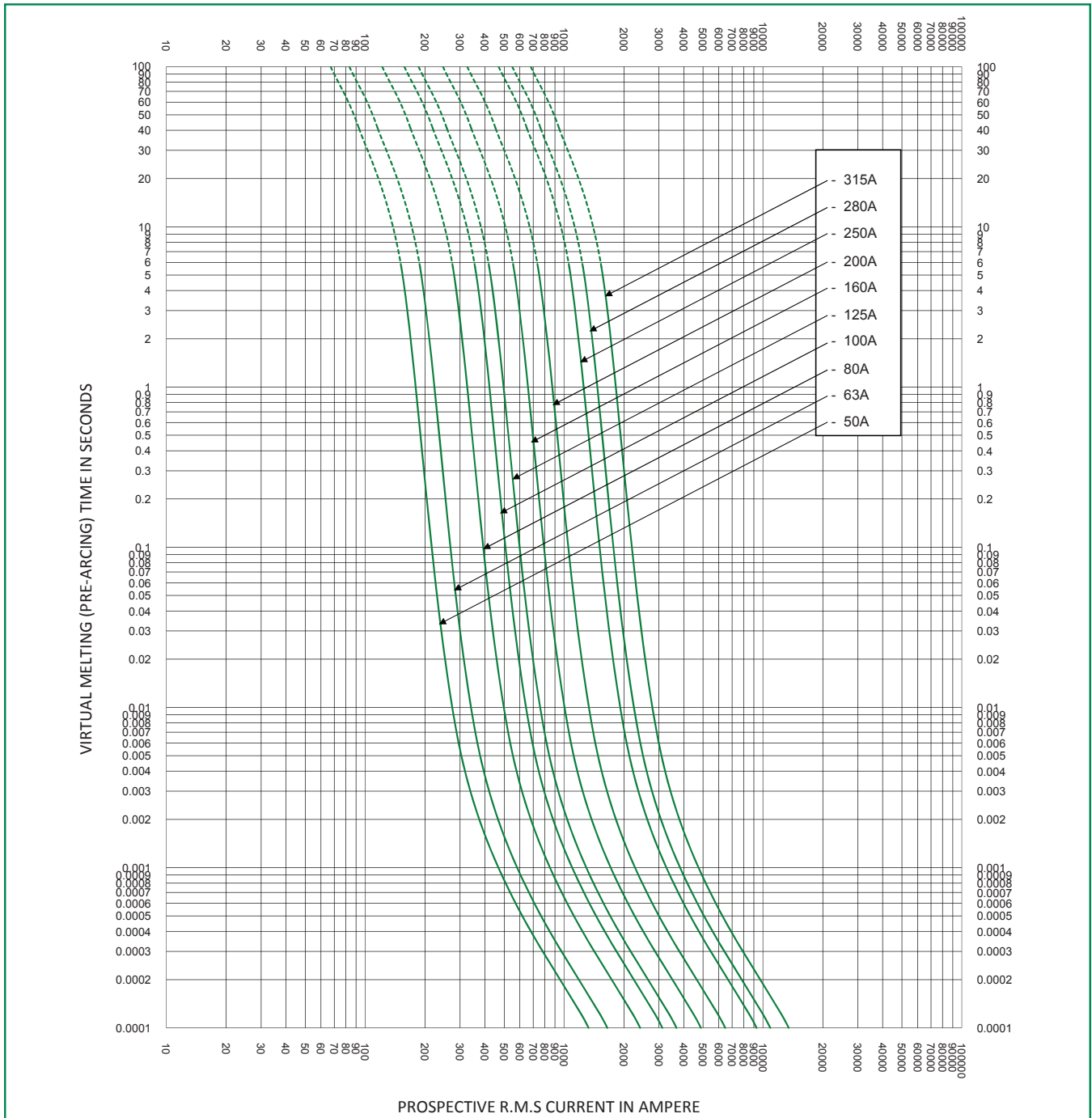
SPFI SERIES IN-LINE SOLAR FUSE

Dimensions (US and UL)



DIMENSIONS MM (IN)													
CASE SIZE	MOUNTING STYLE	A	B	C	D	E	F	G	H	I	J	RECOMMENDED FASTENER	TIGHTENING TORQUE (REFERENCE ONLY)
70	Long [UL]	151.2 (5.95)	43.0 (1.69)	43.0 (1.69)	49.0 (1.93)	20.0 (0.79)	71.7 (2.82)	76.4 (3.01)	6.0 (0.24)	92.8 (3.65)	130.3 (5.13)	10 mm (3/8)	26 Nm
73	Long [UL]	159.4 (6.28)	73.5 (2.89)	73.5 (2.89)	79.5 (3.13)	36.0 (1.41)	74.2 (2.92)	106.9 (4.21)	6.0 (0.24)	99.8 (3.93)	131.3 (5.17)	14 mm (9/16)	92 Nm

Time Current Curve (70 Case Size)

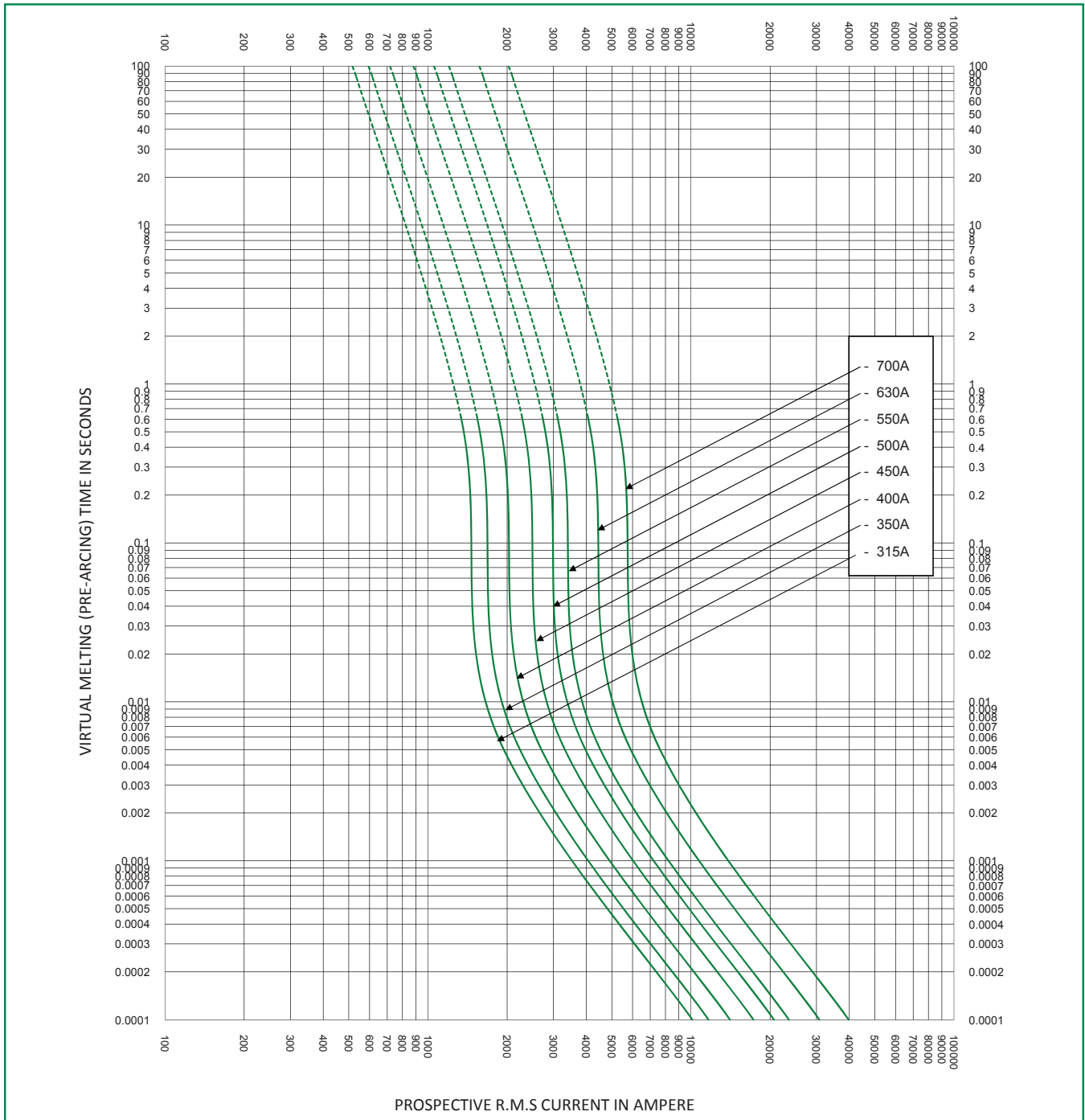


* Dc minimum breaking capacity = 9 x In

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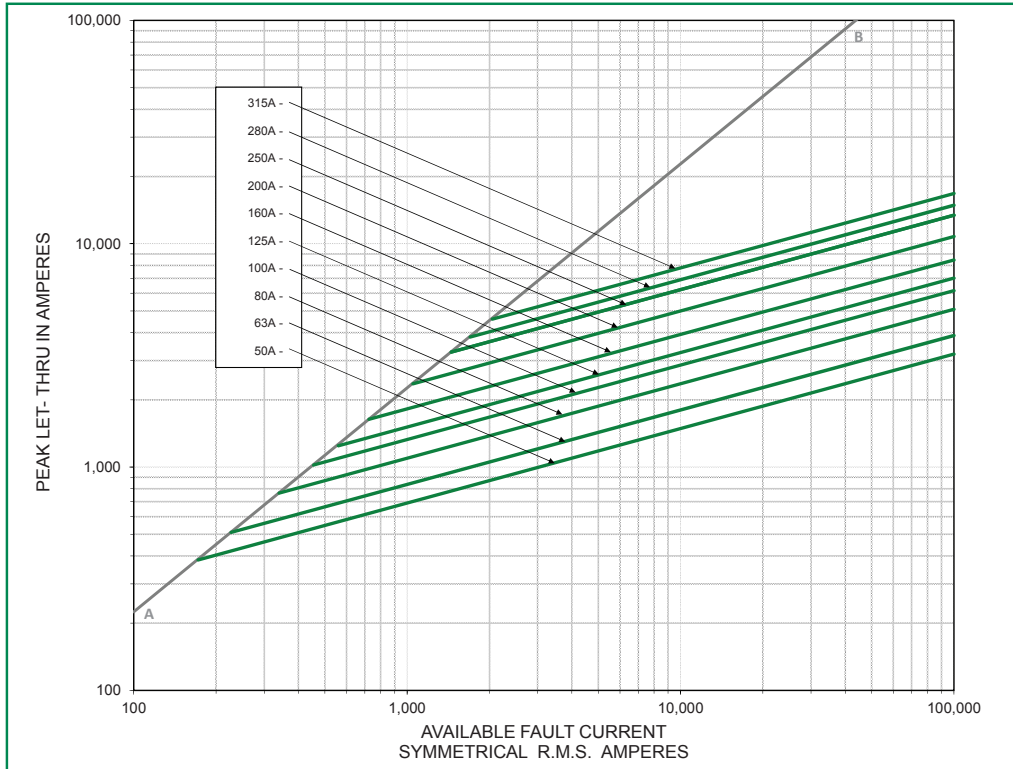
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Time Current Curve (73 Case Size)

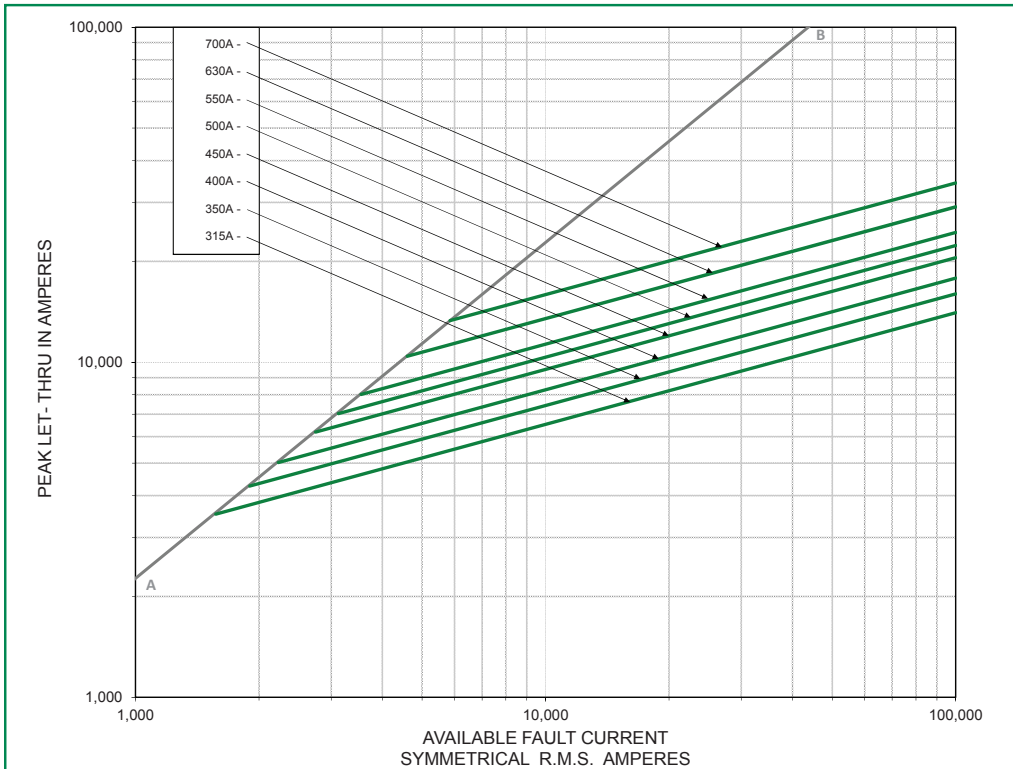


* Dc minimum breaking capacity = 9 x In

Peak Let-Thru Curve (70 Case Size)

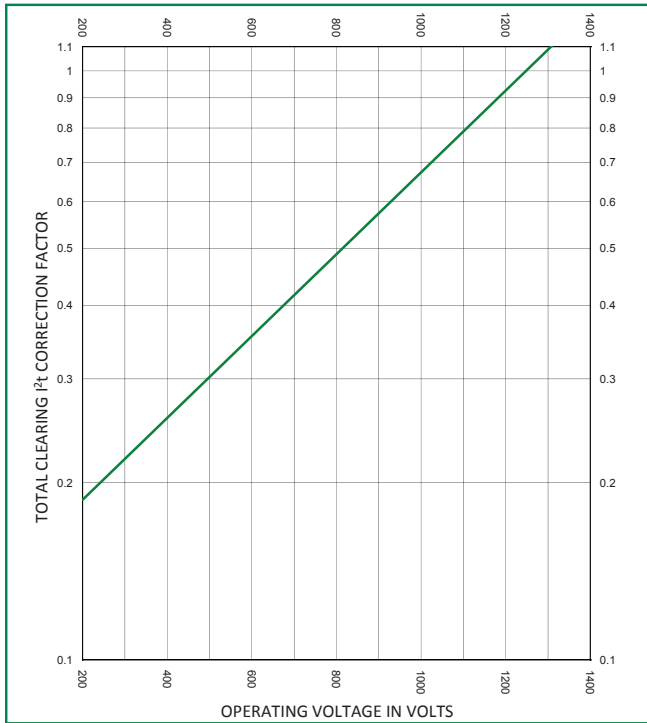


Peak Let-Thru Curve (73 Case Size)



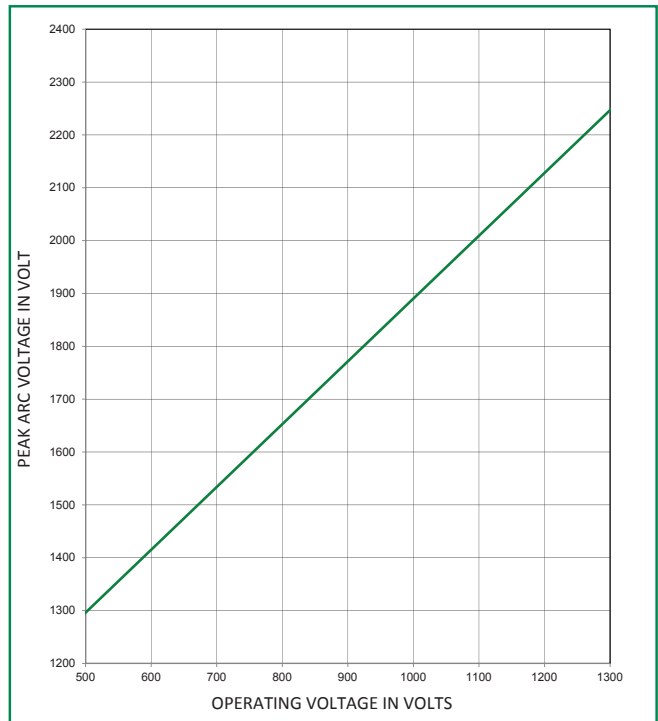
Total Clearing I²t Correction Factor Curve

Case Size (70 and 73)



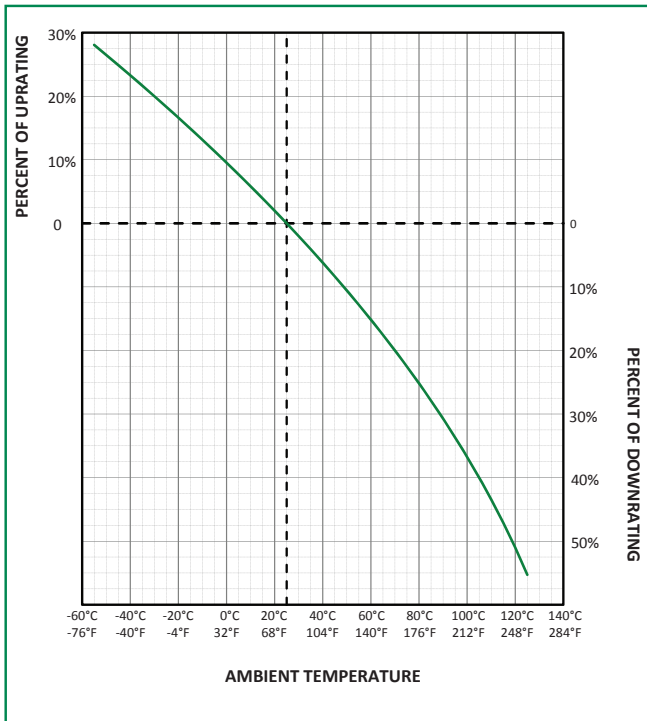
Peak Arc Voltage Curve

Case Size (70 and 73)

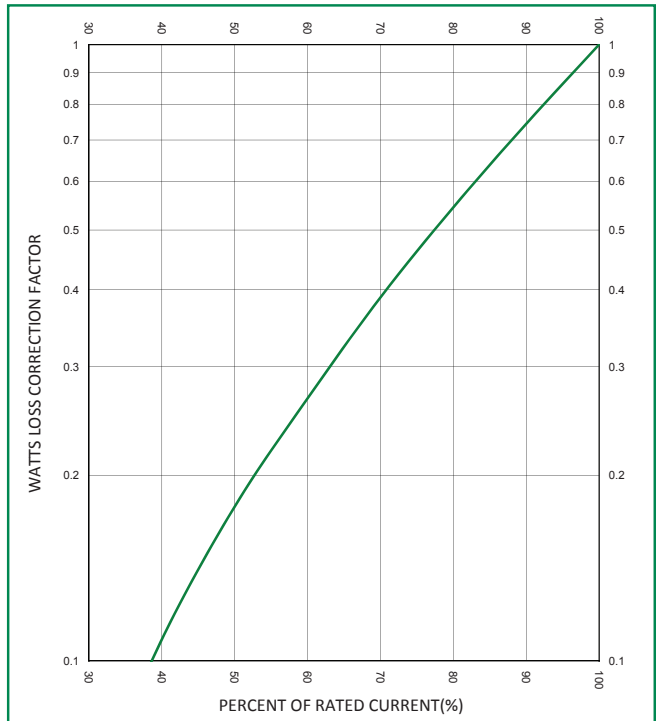


Temperature Derating Curve

(temperature of air immediately surrounding fuse)



Watts Loss Correction Factor Curve



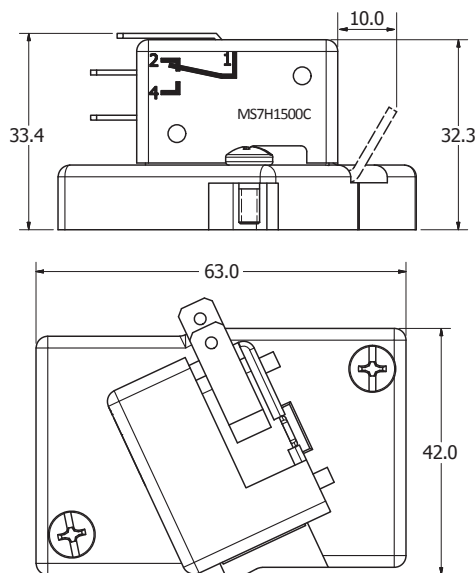
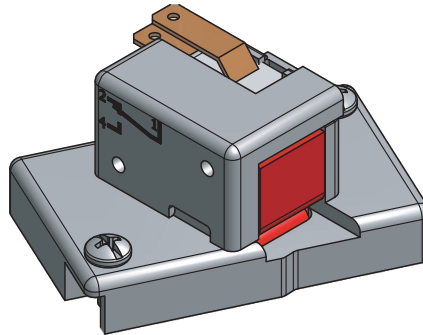
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SPFI SERIES IN-LINE SOLAR FUSE

Microswitch

Dimensions in millimeters

MS7H1500C



Electrical Characteristics

CATALOG NUMBER/ ORDERING NUMBER	INDICATING STYLE	INSULATION VOLTAGE RATING (V AC)	FUSE CASE SIZE	POSITIVE OPERATING MIN VOLTAGE/ MIN CURRENT	INTERRUPTING RATING						OPERATING TEMPERATURE	RELATIVE HUMIDITY	PACK QUANTITY	
					CURRENT	NON-INDUCTIVE LOAD			INDUCTIVE LOAD (DC L/R=25 ms)					
						30 V	110 V	250 V	30 V	110 V				250 V
MS7H1500C*	Standard NO-NC	1500	70, 73	4 V / 1mA	Ac (50/60 Hz)	5 A	5 A	5 A	5 A	5 A	4 A	-60 °C to +125 °C	95 %	3 pcs/bag
					Dc	5 A	0.6 A	0.3 A	3 A	0.2 A	0.1 A			

* Contains internal microswitch (Part Number: U83161.8), listed under UL File: E42016.

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