POWR-*SPEED*® Fuse
ESR Series High-Speed Square Body

Battery Protection Fuses • 1500 V Dc • Class aBat • 125 - 630 A



Description

The Littelfuse Energy Storage Rack (ESR) series of fuses is designed specifically to protect battery racks in energy storage systems, inverters, and many other dc applications. The 1500 V dc high-speed square body fuse is extremely fast-acting to respond quickly to a range of fault currents to safeguard the battery module or other devices.

This Class aBat partial range fuse has superior short circuit protection and a low minimum breaking capacity (MBC)—from 300 % or 3 times the fuse's rated current to 250 kA—to cover a range of over currents that traditional high-speed partial range fuses do not protect against.

The ESR fuse safely interrupts most faults in a battery storage system to avoid catastrophic failures and costly shutdowns.

The ESR fuse also offers a visual blown-fuse internal indicator version. This product has an optional microswitch accessory to provide external indication.

For additional product information, contact Littelfuse Technical Support at 1-800-TEC-FUSE or techline@littelfuse.com

Features & Benefits

FEATURES	BENEFITS
High dc interrupting rating	Provides superior short-circuit protection and the ability to scale-up systems without the need to redesign the existing circuit protection, saving time and costs
Low minimum breaking current	Offers easy coordination with battery modules and reduces size and rating of dc contactors to save space and costs
Extremely fast acting	Delivers high-speed performance
Low watt loss	Maximizes efficiency by preventing energy loss and minimizing the wasted power of components
Conforms to the IEC 60269-7 battery standard	Specifically design to safeguard evolving battery technologies with fuse circuit protection
Compact NH 1XL and 3XL size	Saves space and offers design flexibility
Optional blown-fuse indicator and external microswitch	Indication features reduce downtime and increase safety

Applications

- Battery energy storage systems (BESSs)
  – Battery Protection Unit (BPU) and battery racks
- Power conversion systems
- Dc common bus systems
- Hybrid PV-BESS inverters

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Specifications

Voltage Rating	1500 V dc
Ampere Rating	125 - 630 A
Interrupting Rating	250 kA
Time Constant	</= 3 ms
Mounting	Bolted-blade style, DIN-blade style
Material	Body: ceramic Contacts: plated copper (bladed)
Applicable Standards	UL 248-13, IEC 60269-7
Environmental	RoHS Compliant, REACH, Halogen Free (for non-indicator versions only)
Operating Temperature	-55 °C to +125 °C (-67 °F to +257 °F)
Storage Temperature	Up to +35 °C (+95 °F) with relative humidity < 65 %
Country of Origin	Mexico

Certification & Compliance

cURus	cURus Recognized (File: E71611)
CE	EU_DOC-ESR_DB_UB_240201
RoHS	RoHS 2 Directive 2011/65/EU/ Directive (EU) 2015/863
REACH	Regulation (EC) 1907/2006
Halogen Free	Yes (for non-indicator versions only)

Recommended Accessories

Microswitch: MSXL2000C (indicator version only)

Fuse block: LSCR series

Electrical Specifications

CASE SIZE	AMPERE RATING (A)	VOLTAGE RATING (V)	INTERRUPTING RATING	MINIMUM BREAKING CAPACITY (A)	MELTING (PRE-ARC) I^2T (A^2S)	TOTAL CLEARING I^2T (A^2S) AT RATED VOLTAGE	WATTS LOSS AT 100 % RATED CURRENT (W)	AGENCY CERTIFICATION
		DC	DC					cURus
NH 1XL	125	1500	250 kA	375	1850	30700	53	•
NH 1XL	160	1500	250 kA	480	3400	48400	50	•
NH 1XL	200	1500	250 kA	600	5100	62800	89	•
NH 1XL	250	1500	250 kA	750	9000	95300	107	•
NH 3XL	250	1500	250 kA	750	9500	143400	96	•
NH 3XL	315	1500	250 kA	945	17500	232400	102	•
NH 3XL	350	1500	250 kA	1050	23000	279500	133	•
NH 3XL	400	1500	250 kA	1200	29000	324700	158	•
NH 3XL	450	1500	250 kA	1350	42000	581800	156	•
NH 3XL	500	1500	250 kA	1500	60000	843000	164	•
NH 3XL	550	1500	250 kA	1650	85000	1207000	164	•
NH 3XL	630	1500	250 kA	1890	124800	1402000	191	•

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Ordering Information - DIN Blade

CASE SIZE	AMPERE RATING (A)	DIN BLADE (DB) WITHOUT INDICATOR			DIN BLADE (DB) WITH INDICATOR			BOX QUANTITY	WEIGHT
		CATALOG NUMBER	ORDERING NUMBER	UPC	CATALOG NUMBER	ORDERING NUMBER	UPC		
NH 1XL	125	ESR1XLDB0125	ESR1XLDB0125X	07945830630	ESR1XLDB0125I	ESR1XLDB0125XI	07945864819	1 PC/BOX	2.2 lbs. (998 g.)
NH 1XL	160	ESR1XLDB0160	ESR1XLDB0160X	07945837030	ESR1XLDB0160I	ESR1XLDB0160XI	07945864820	1 PC/BOX	2.2 lbs. (998 g.)
NH 1XL	200	ESR1XLDB0200	ESR1XLDB0200X	07945837032	ESR1XLDB0200I	ESR1XLDB0200XI	07945864821	1 PC/BOX	2.2 lbs. (998 g.)
NH 1XL	250	ESR1XLDB0250	ESR1XLDB0250X	07945837782	ESR1XLDB0250I	ESR1XLDB0250XI	07945864822	1 PC/BOX	2.2 lbs. (998 g.)
NH 3XL	250	ESR3XLDB0250	ESR3XLDB0250X	07945837033	ESR3XLDB0250I	ESR3XLDB0250XI	07945838146	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	315	ESR3XLDB0315	ESR3XLDB0315X	07945837034	ESR3XLDB0315I	ESR3XLDB0315XI	07945838147	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	350	ESR3XLDB0350	ESR3XLDB0350X	07945837035	ESR3XLDB0350I	ESR3XLDB0350XI	07945838148	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	400	ESR3XLDB0400	ESR3XLDB0400X	07945837036	ESR3XLDB0400I	ESR3XLDB0400XI	07945838149	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	450	ESR3XLDB0450	ESR3XLDB0450X	07945837037	ESR3XLDB0450I	ESR3XLDB0450XI	07945838150	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	500	ESR3XLDB0500	ESR3XLDB0500X	07945837038	ESR3XLDB0500I	ESR3XLDB0500XI	07945838151	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	550	ESR3XLDB0550	ESR3XLDB0550X	07945837780	ESR3XLDB0550I	ESR3XLDB0550XI	07945838152	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	630	ESR3XLDB0630	ESR3XLDB0630X	07945837778	ESR3XLDB0630I	ESR3XLDB0630XI	07945838153	1 PC/BOX	4.4 lbs. (1996 g.)

Ordering Information - Bolted Blade

CASE SIZE	AMPERE RATING (A)	BOLTED BLADE (UB) WITHOUT INDICATOR			BOLTED BLADE (UB) WITH INDICATOR			BOX QUANTITY	WEIGHT
		CATALOG NUMBER	ORDERING NUMBER	UPC	CATALOG NUMBER	ORDERING NUMBER	UPC		
NH 1XL	125	ESR1XLUB0125	ESR1XLUB0125X	07945830629	ESR1XLUB0125I	ESR1XLUB0125XI	07945864815	1 PC/BOX	2.2 lbs. (998 g.)
NH 1XL	160	ESR1XLUB0160	ESR1XLUB0160X	07945837039	ESR1XLUB0160I	ESR1XLUB0160XI	07945864816	1 PC/BOX	2.2 lbs. (998 g.)
NH 1XL	200	ESR1XLUB0200	ESR1XLUB0200X	07945837040	ESR1XLUB0200I	ESR1XLUB0200XI	07945864817	1 PC/BOX	2.2 lbs. (998 g.)
NH 1XL	250	ESR1XLUB0250	ESR1XLUB0250X	07945837781	ESR1XLUB0250I	ESR1XLUB0250XI	07945864818	1 PC/BOX	2.2 lbs. (998 g.)
NH 3XL	250	ESR3XLUB0250	ESR3XLUB0250X	07945837042	ESR3XLUB0250I	ESR3XLUB0250XI	07945838154	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	315	ESR3XLUB0315	ESR3XLUB0315X	07945837043	ESR3XLUB0315I	ESR3XLUB0315XI	07945838155	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	350	ESR3XLUB0350	ESR3XLUB0350X	07945837044	ESR3XLUB0350I	ESR3XLUB0350XI	07945838156	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	400	ESR3XLUB0400	ESR3XLUB0400X	07945837045	ESR3XLUB0400I	ESR3XLUB0400XI	07945838157	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	450	ESR3XLUB0450	ESR3XLUB0450X	07945837046	ESR3XLUB0450I	ESR3XLUB0450XI	07945838158	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	500	ESR3XLUB0500	ESR3XLUB0500X	07945837048	ESR3XLUB0500I	ESR3XLUB0500XI	07945838159	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	550	ESR3XLUB0550	ESR3XLUB0550X	07945837779	ESR3XLUB0550I	ESR3XLUB0550XI	07945838160	1 PC/BOX	4.4 lbs. (1996 g.)
NH 3XL	630	ESR3XLUB0630	ESR3XLUB0630X	07945837777	ESR3XLUB0630I	ESR3XLUB0630XI	07945838143	1 PC/BOX	4.4 lbs. (1996 g.)

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Dimensions

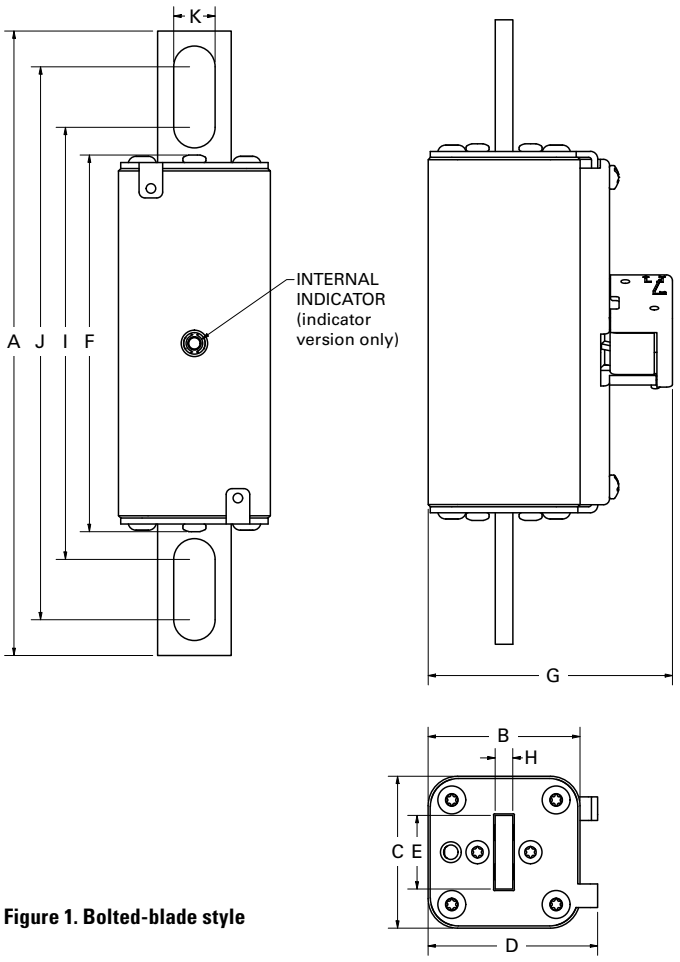


Figure 1. Bolted-blade style

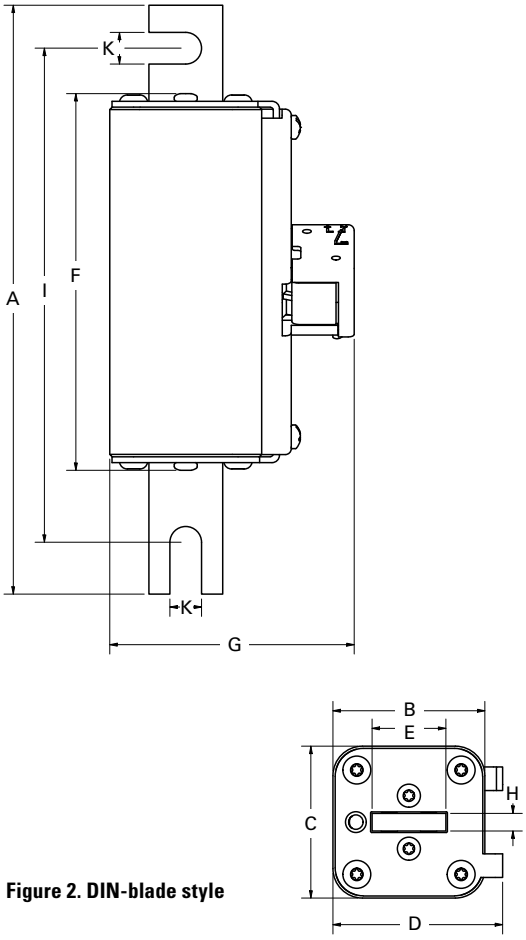


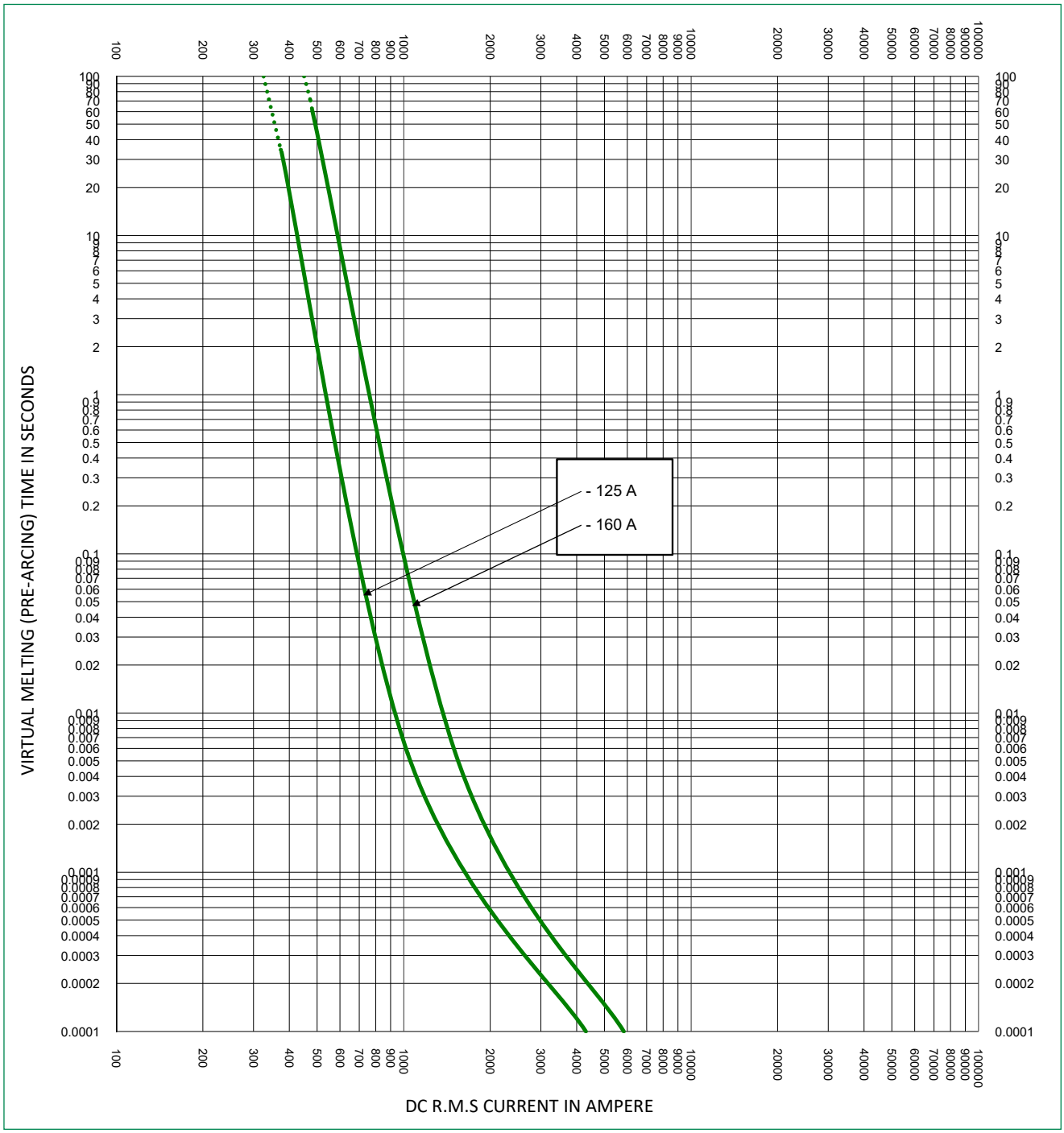
Figure 2. DIN-blade style

DIMENSIONS MM (IN)															
CASE SIZE	MOUNTING STYLE	FIGURE	A	B	C	D	E	F	G*	H	I	J	K	RECOMMENDED FASTENER	RECOMMENDED TORQUE
NH 1XL	BOLTED BLADE (UB)	1	211.7 (8.33)	51.5 (2.03)	51.5 (2.03)	57.5 (2.26)	25.0 (0.98)	127.7 (5.03)	86.4 (3.40)	6.0 (0.24)	146.5 (5.77)	187.5 (7.38)	14.0 (0.55)	12 mm (1/2")	64 Nm
NH 1XL	DIN BLADE (DB)	2	199.7 (7.86)	51.5 (2.03)	51.5 (2.03)	57.5 (2.26)	25.0 (0.98)	127.7 (5.03)	86.4 (3.40)	6.0 (0.24)	167.5 (6.59)	-	10.5-11.0 (0.41-0.43)	10 mm (3/8")	26 Nm
NH 3XL	BOLTED BLADE (UB)	1	213.9 (8.42)	73.5 (2.89)	73.5 (2.89)	79.5 (3.13)	36.0 (1.42)	128.7 (5.07)	108.4 (4.27)	6.0 (0.24)	153.5 (6.04)	186.5 (7.34)	16.0 (0.63)	14 mm (9/16")	92 Nm
NH 3XL	DIN BLADE (DB)	2	199.7 (7.86)	73.5 (2.89)	73.5 (2.89)	79.5 (3.13)	36.0 (1.42)	128.7 (5.07)	108.4 (4.27)	6.0 (0.24)	167.5 (6.59)	-	10.5-11.0 (0.41-0.43)	10 mm (3/8")	26 Nm

*These dimensions include the optional bolt-on microswitch compatible with the indicator version only.

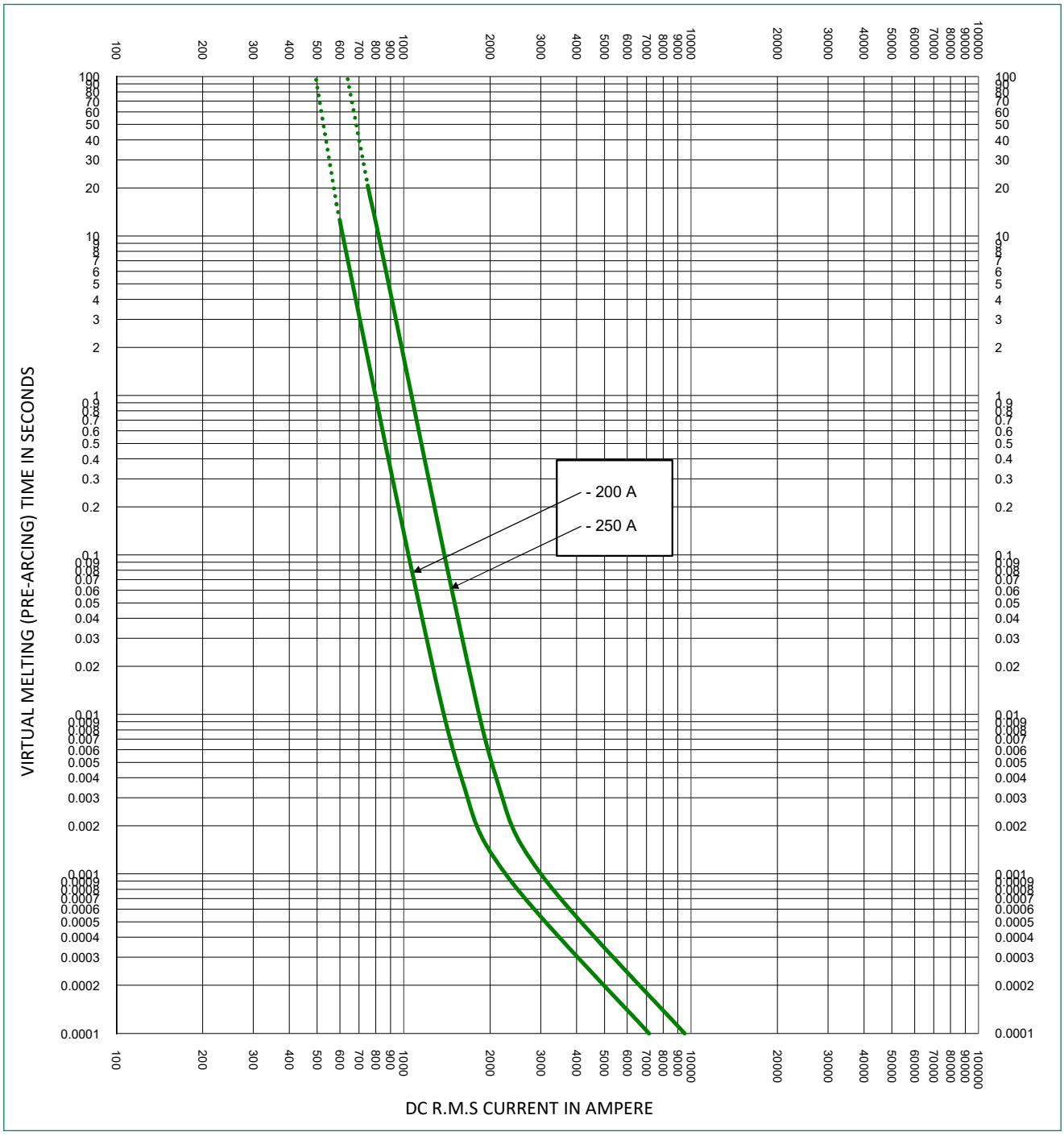
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Time Current Curve (1XL Case Size)



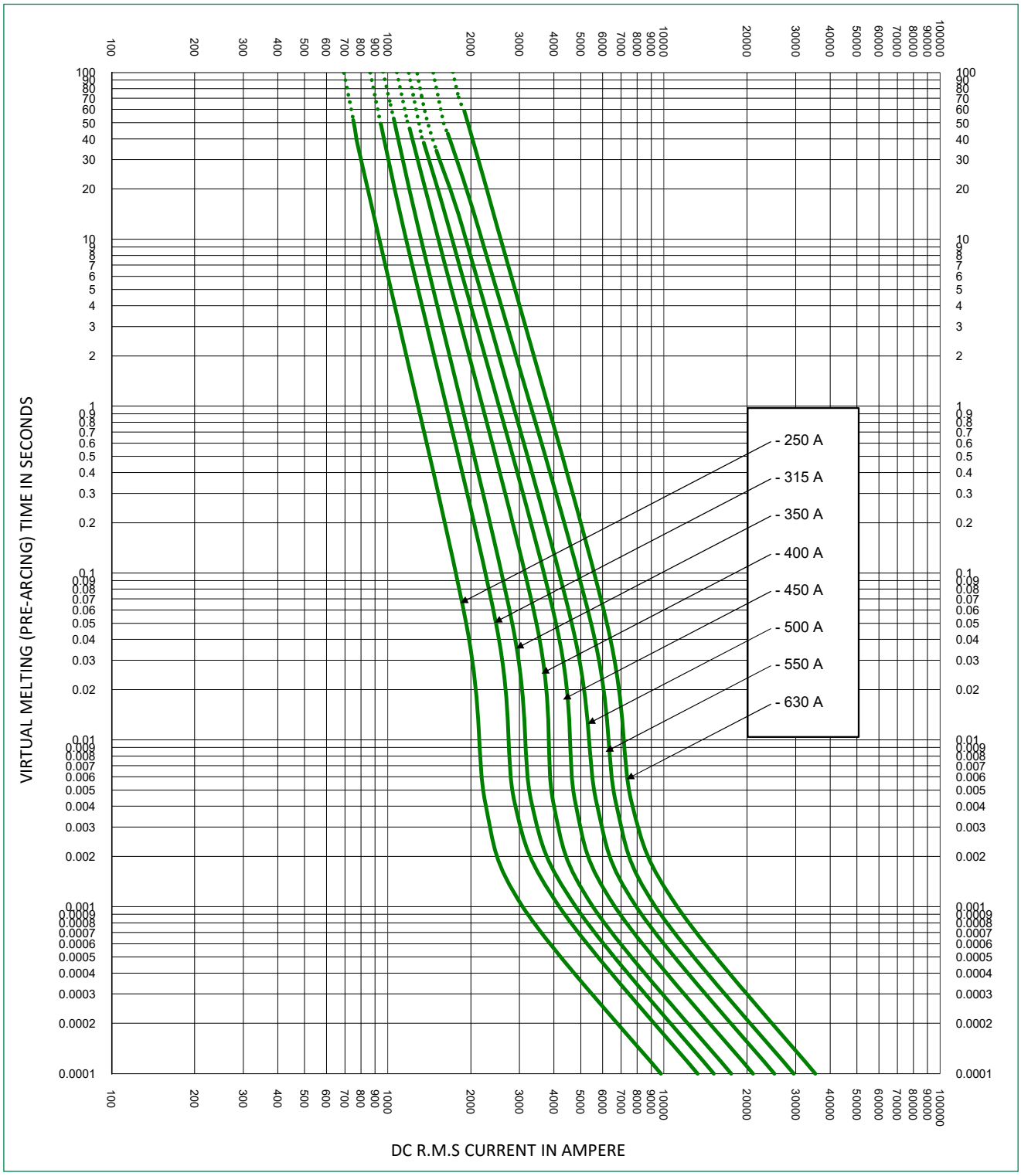
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Time Current Curve (1XL Case Size)



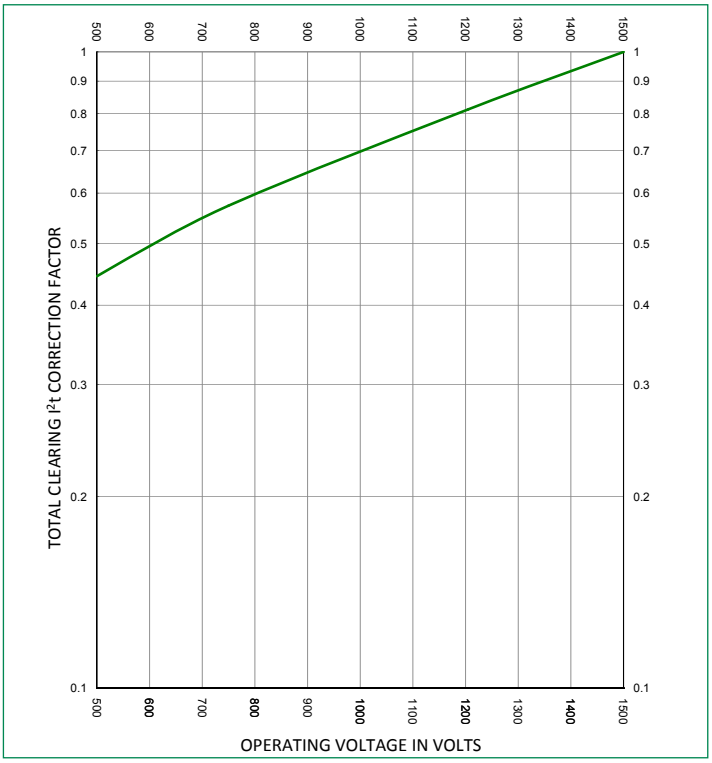
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Time Current Curve (3XL Case Size)



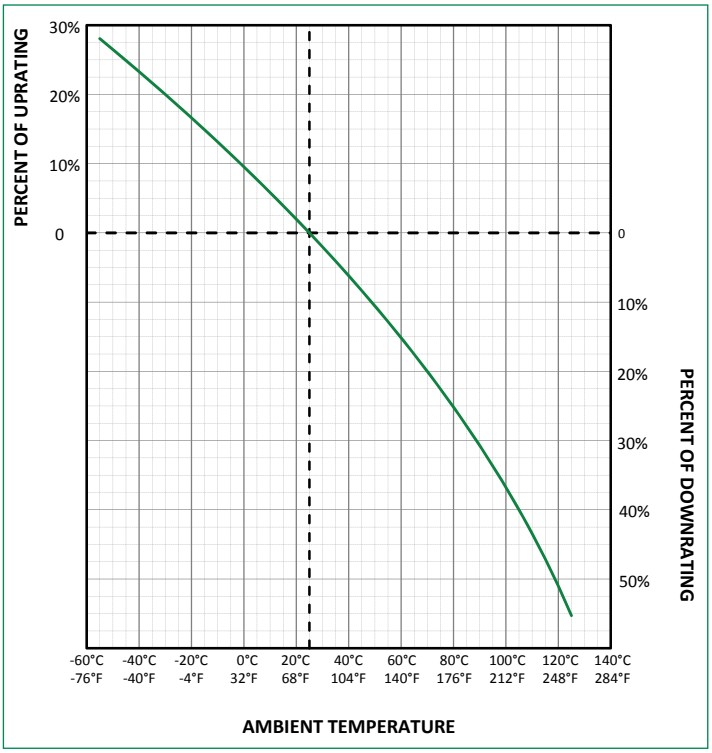
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Total Clearing I^2T Correction Factor Curve (1XL and 3XL)



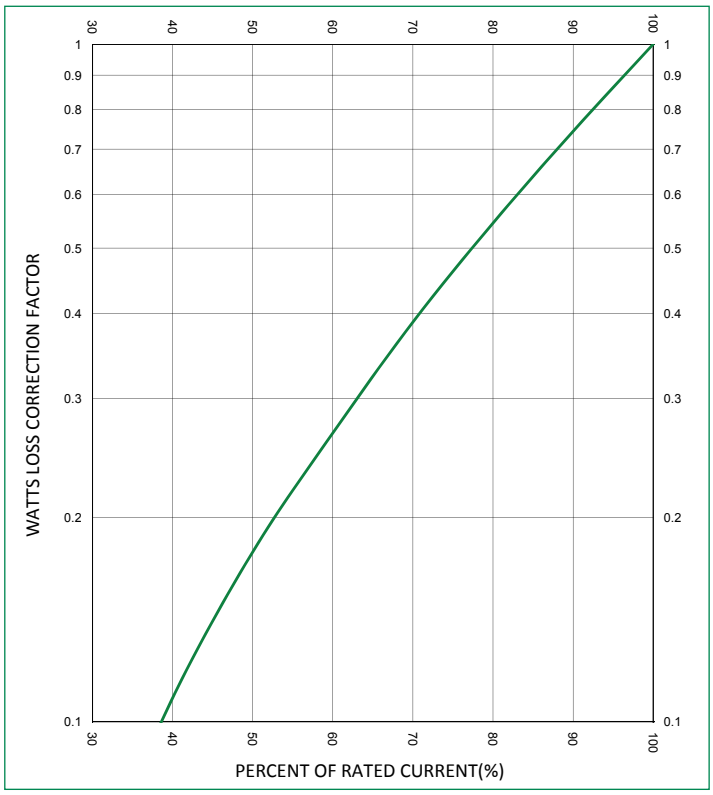
Temperature Derating Curve

Ambient temperature: temperature of air immediately surrounding fuse



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Watts Loss Correction Factor Curve



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