UL 248-15

STANDARD FOR SAFETY

Low-Voltage Fuses - Part 15: Class T Fuses

UL Standard for Safety for Low-Voltage Fuses - Part 15: Class T Fuses, UL 248-15

Third Edition, Dated March 9, 2018

Summary of Topics

The third edition of the Standard for Safety for Low-Voltage Fuses - Part 15: Class T Fuses, UL 248-15, has been issued to reflect the latest ANSI approval date, and to incorporate the following proposals:

- ***Corrections in the Table Included as Part of Figure B***

The revised requirements are substantially in accordance with Proposal(s) on this subject dated August 25, 2017.

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NMX-J-009/248/15-ANCE
Third Edition

CSA Group
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Low-Voltage Fuses - Part 15: Class T Fuses

March 9, 2018

ANSI/UL 248-15-2018

Commitment for Amendments

This standard is issued jointly by the Association of Standardization and Certification (ANCE), the Canadian Standards Association (operating as "CSA Group"), and Underwriters Laboratories Inc. (UL). Comments or proposals for revisions on any part of the standard may be submitted to ANCE, CSA Group, or UL at anytime. Revisions to this standard will be made only after processing according to the standards development procedures of ANCE, CSA Group, and UL. CSA Group and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue. ANCE will incorporate the same revisions into a new edition of the standard bearing the same date of issue as the CSA Group and UL pages.

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This Standard is subject to review within five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquires@csagroup.org and include "Proposal for change" in the subject line: Standard designation (number); relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

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This ANSI/UL Standard for Safety consists of the Third Edition. The most recent designation of ANSI/UL 248-15 as an American National Standard (ANSI) occurred on March 9, 2018. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface. The National Difference Page and IEC Foreword are also excluded from the ANSI approval of IEC-based standards.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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PREFACE

This is the harmonized ANCE, CSA Group, and UL standard for Low-Voltage Fuses - Part 15: Class T Fuses. It is the third edition of NMX-J-009/248/15-ANCE, the third edition of CAN/CSA-C22.2 No. 248.15, and the third edition of UL 248-15. This edition of NMX-J-009/248/15-ANCE supersedes the previous edition published on August 1, 2000. This edition of CAN/CSA-C22.2 No. 248.15 supersedes the previous edition published on August 1, 2000. This edition of UL 248-15 supersedes the previous edition published on August 1, 2000.

This harmonized standard was prepared by the Association of Standardization and Certification, (ANCE), CSA Group, and Underwriters Laboratories Inc. (UL). The efforts and support of the Technical Harmonization Subcommittee, CANENA THC 32, Low Voltage Fuses and Fuseholders on the Harmonization of Electrotechnical Standards of the Nations of the Americas (CANENA), are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

The present Mexican standard was developed by the CT 32 from the Comite de Normalizacion de la Asociacion de Normalizacion y Certificacion, A.C., CONANCE, with the collaboration of the fuse manufacturers and users.

This standard was reviewed by the CSA Subcommittee on Fuses and Fuseholders, under the jurisdiction of the CSA Technical Committee on Industrial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee. This standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

This standard has been approved by the American National Standards Institute (ANSI) as an American National Standard.

Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

Level of Harmonization

This standard is published as an identical standard for ANCE, CSA Group, and UL.

An identical standard is a standard that is exactly the same in technical content except for national differences resulting from conflicts in codes and governmental regulations. Presentation is word for word except for editorial changes.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

The following revisions have been formally approved:

- Figure B Dimension of knife blade type Class T fuses in mm (in)[a] - Table B.

Low-Voltage Fuses - Part 15: Class T Fuses

1 General

NOTE –

This Part is intended to be read together with the Standard for Low-Voltage Fuses – Part 1: General Requirements, hereafter referred to as Part 1. The numbering of the Clauses in this Part corresponds to like numbered Clauses in Part 1. The requirements of Part 1 apply unless modified by this Part. For Clauses not shown below, refer to the Standard for Low-Voltage Fuses – Part 1: General Requirements, NMX-J-009/248/1-ANCE ♦ CSA C22.2 No. 248.1 ♦ UL 248-1.

1.1 Scope

This Part applies to Class T fuses rated 1200 A or less and 300 or 600 V ac. DC ratings are optional.

4 Classification

Class T fuses are non-renewable and current limiting with an interrupting rating of 200,000 A. Each of the voltage ratings, 300 and 600 V ac, is divided into eight body sizes. The maximum current rating I_n for each size is specified in this Part. Time-delay ratings are optional.

5 Characteristics

5.2 Voltage rating

For AC, the rating shall be 300 V ac or 600 V ac in accordance with dimensions shown in Figures A and B.

The DC voltage rating may be different from the AC rating.

5.3 Current rating

Refer to Figures A and B for range of current ratings in each body size for each voltage rating.

5.5 Interrupting rating

For AC – 200,000 A

For DC, the preferred ratings are 10,000, 20,000, 50,000, 100,000, 150,000, or 200,000 A

5.6 Peak let through current and clearing I^2t characteristics

Maximum values of peak let-through current and clearing I^2t for 300 V ac fuses are given in Table A and for 600 V ac fuses are given in Table B.

Table A – Maximum peak let-through current and clearing I^2t for 300 V ac Class T fuses

Current rating I_n, A	Between threshold and 50 KA		At 100 kA		At 200 kA	
	Peak let-through current, A	I^2t, ampere-squared seconds	Peak let-through current, A	I^2t, ampere-squared seconds	Peak let-through current, A	I^2t, ampere-squared seconds
1			800	400		
3			1300	600		
6			2000	1000		
10			3000	1500		
15			4000	2000		
20			4500	2500		
25			5500	2700		
30	5,000	3,500	7000	3500	9,000	3500
35			7000	6000		
40			7200	8500		
45			7600	9000		
50			8000	11,000		
60	7,000	15,000	9000	15,000	12,000	15,000
70			10,000	25,000		
80			10,700	30,000		
90			11,600	38,000		
100	9,000	40,000	12,000	40,000	15,000	40,000
110			12,000	50,000		
125			13,000	75,000		
150			14,000	88,000		
175			15,000	115,000		
200	13,000	150,000	16,000	150,000	20,000	150,000
225			21,000	175,000		
250			22,000	225,000		
300			24,000	300,000		
350			27,000	400,000		
400	22,000	550,000	28,000	550,000	35,000	550,000
450			32,000	600,000		
500			37,000	800,000		
600	29,000	1,000,000	37,000	1,000,000	46,000	1,000,000
700			45,000	1,250,000		
800	37,000	1,500,000	50,000	1,500,000	65,000	1,500,000
1000			65,000	3,500,000		
1200	50,000	3,500,000	65,000	3,500,000	80,000	4,000,000

Table B – Maximum peak let-through current and clearing I^2t for 600 V ac Class T fuses

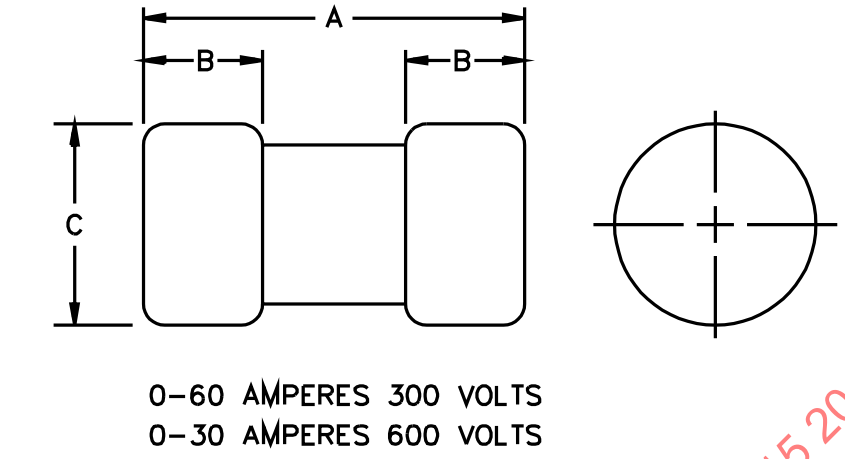
Current rating I_n, A	Between threshold and 50 KA		At 100 kA		At 200 kA	
	Peak let-through current, A	I^2t, ampere-squared seconds	Peak let-through current, A	I^2t, ampere-squared seconds	Peak let-through current, A	I^2t, ampere-squared seconds
1			1000	800		
3			1500	1200		
6			2300	2000		
10			3300	3000		
15			4000	4000		
20			5000	5000		
25			6000	5500		
30	6,000	7,000	7500	7000	12,000	7000
35			7500	12,000		
40			8000	17,000		
45			8500	18,000		
50			9000	22,000		
60	8,000	30,000	10,000	30,000	16,000	30,000
70			11,500	50,000		
80			12,500	60,000		
90			13,500	75,000		
100	12,000	60,000	14,000	80,000	20,000	80,000
110			14,500	100,000		
125			15,500	150,000		
150			17,000	175,000		
175			18,500	225,000		
200	16,000	200,000	20,000	300,000	30,000	300,000
225			22,500	350,000		
250			24,000	450,000		
300			26,000	600,000		
350			29,000	800,000		
400	25,000	1,000,000	30,000	1,100,000	45,000	1,100,000
450			36,000	1,500,000		
500			42,000	2,000,000		
600	35,000	2,500,000	45,000	2,500,000	70,000	2,500,000
700			50,000	3,500,000		
800	50,000	4,000,000	55,000	4,000,000	75,000	4,000,000
1000			65,000	8,000,000		
1200	55,500	10,000,000	70,000	10,000,000	88,000	10,000,000

7 Construction

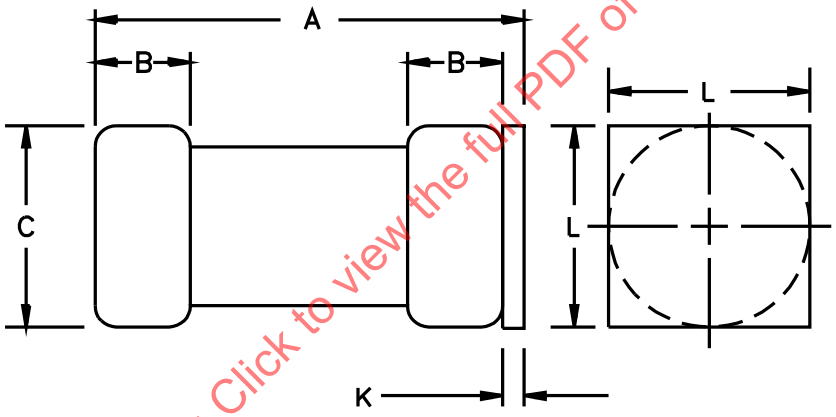
7.1 Dimensions

Fuse dimensions are shown in Figures A and B.

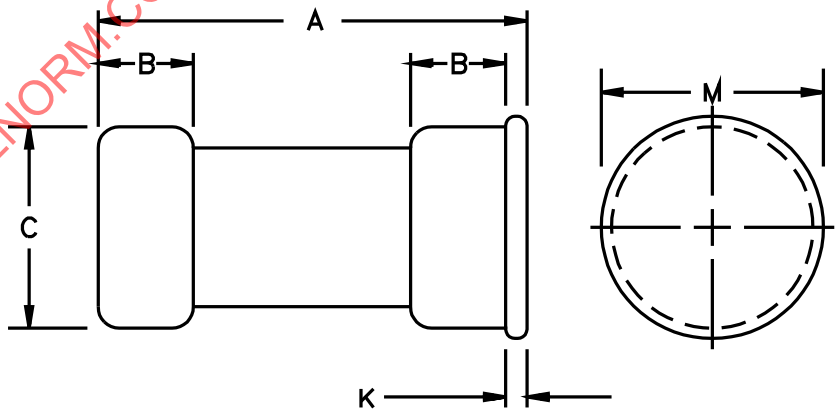
Figure A – Dimensions of ferrule type Class T fuses in mm (in)[a]



0–60 AMPERES 300 VOLTS
0–30 AMPERES 600 VOLTS



OR



31–60 AMPERES 600 VOLTS

SC1285–1A

Rating		Overall length of fuse	Length of ferrule	Outside diameter of ferrule	Thickness of rejection feature	Width of rejection feature[b]	Diameter of rejection feature[b]
Volts	Current I_n, A	A[a]	B[a]	C[a]	K[a]	L[a]	M[a]
300	0 – 30	22.35 (.880)	7.11 (.280)	10.31 (.406)			
	31 – 60	22.35 (.880)	7.11 (.280)	14.30 (.563)			
600	0 – 30	38.10 (1.500)	7.11 (.280)	14.30 (.563)			
	31 – 60	39.62 (1.560)	10.41 (.410)	20.62 (.812)	1.57 (.062)	20.62 (.812)	25.25 (.994)

[a]Tolerances:

a) Column A:

0 – 60 A, 300 V ac, ±0.51 mm (±0.020 in); and

0 – 60 A, 600 V ac, ±1.02 mm (±0.040 in);

b) Column B: ±0.51 mm (±0.020 in);

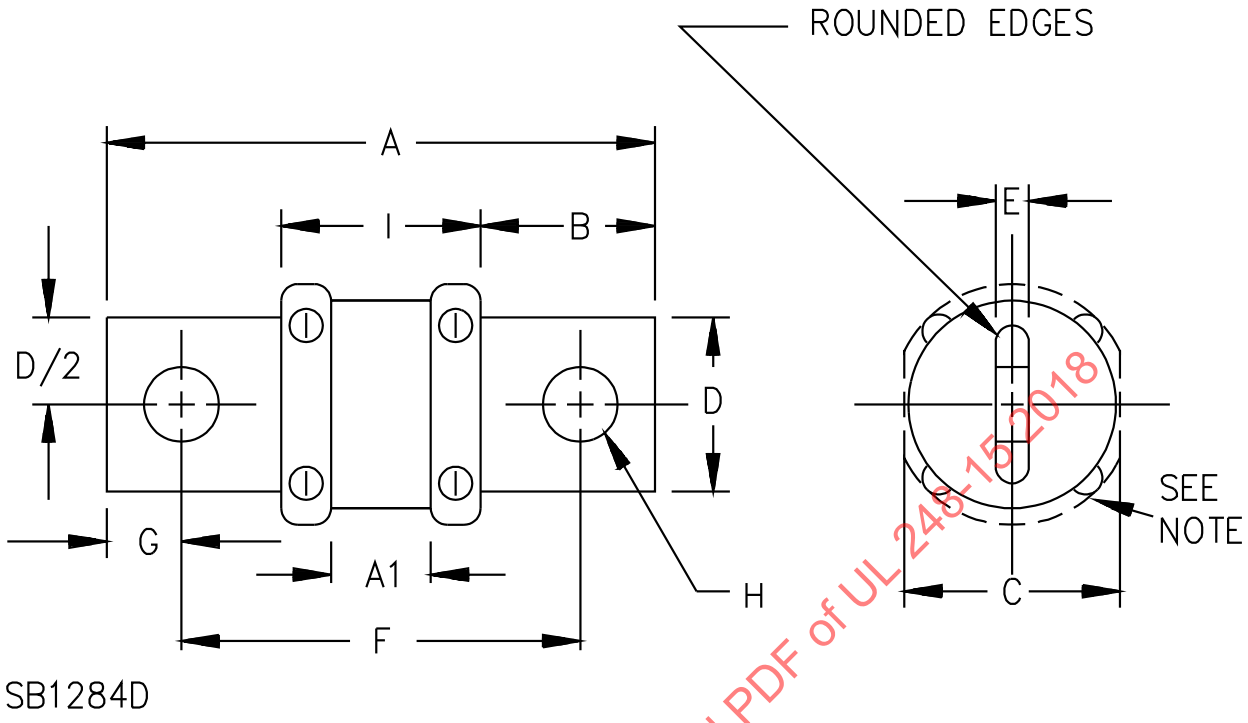
c) Column C: ±0.15 mm (±0.006 in). Diameter of body is less than ferrules.

d) Column K and L: ±0.15 (±0.006 in); and

e) Column M: -0.15 mm, +0.41 mm (-0.006 in, +0.015 in).

[b]Rejection feature may be square or round.

Figure B – Dimensions of knife blade type Class T fuses in mm (in)[a]



Note: The dashed line represents the limit of the maximum 1.58 mm (0.063 in) projection of the screw, rivet head, or the like.

The effective length, B, of the blade is measured from the blade end to the fuse body or other acceptable interference means in the blade, such as pins through the blades, a collar, or the like.

See Table B.

	Rating, Current I_n, A					
	300V					
	61 – 100	101 – 200	201 – 400	401 – 600	601 – 800	801 – 1200
Overall length of fuse, A[a]	54.76 (2.156)	61.93 (2.438)	69.85 (2.750)	77.80 (3.063)	85.73 (3.375)	101.6 (4.000)
Minimum length of insulated body, A1	6.35 (0.25)	6.35 (0.25)	6.35 (0.25)	6.35 (0.25)	6.35 (0.25)	6.35 (0.25)
Minimum length of blade, B	16.4 (0.646)	19.99 (0.787)	23.52 (0.926)	27.28 (1.074)	31.04 (1.222)	36.60 (1.441)
Maximum diameter of fuses, C	21.03 (0.250)	27.38 (1.078)	34.14 (1.344)	41.28 (1.625)	52.78 (2.078)	63.90 (2.516)
Width of blade, D	19.05 (0.750)	22.22 (0.875)	25.40 (1.000)	31.75 (1.250)	44.45 (1.750)	50.80 (2.000)
Thickness of blade, E[a]	3.18 (0.125)	4.78 (0.188)	6.35 (0.250)	7.92 (0.312)	9.53 (0.375)	11.11 (0.438)
Distance between mounting centers, F[a]	39.52 (1.556)	43.05 (1.695)	46.84 (1.844)	51.59 (2.031)	55.36 (2.219)	64.29 (2.531)
Distance of mounting hole from end, G[a]	7.62 (03.00)	9.45 (0.372)	11.51 (.0453)	13.11 (0.516)	14.68 (0.578)	18.67 (0.735)
Diameter of mounting holes, H[a]	7.14 (0.281)	8.74 (0.344)	10.31 (0.406)	12.29 (0.484)	13.89 (0.547)	15.48 (06.09)
Maximum length of body, I	21.59 (0.850)	21.59 (0.850)	21.84 (0.860)	22.35 (0.880)	22.63 (0.891)	27.38 (1.078)
	600 V					
	61 – 100	101 – 200	201 – 400	401 – 600	601 – 800	801 – 1200
Overall length of fuse, A[a]	75.01 (2.953)	82.55 (3.250)	92.08 (3.625)	101.19 (3.984)	109.93 (4.328)	133.66 (5.271)
Minimum length of insulated body, A1	12.7 (0.5)	12.7 (0.5)	12.7 (0.5)	12.7 (0.5)	12.7 (0.5)	12.7 (0.5)
Minimum length of blade, B	16.41 (0.646)	19.99 (0.787)	23.52 (0.926)	27.28 (1.074)	30.66 (1.207)	37.57 (1.473)
Maximum diameter of fuses, C	21.03 (0.828)	27.38 (1.078)	41.28 (1.625)	53.19 (2.094)	63.91 (2.516)	66.68 (2.625)
Width of blade, D	19.05 (0.750)	22.22 (0.875)	25.40 (1.000)	31.75 (1.250)	44.45 (1.750)	50.8 (2.0)
Thickness of blade, E[a]	3.18 (0.125)	4.78 (0.188)	6.35 (0.250)	7.92 (0.312)	9.53 (0.375)	11 (0.438)
Distance between mounting centers, F[a]	59.74 (2.352)	63.67 (2.507)	69.06 (2.719)	75.01 (2.953)	80.57 (3.172)	96.55 (3.801)
Distance of mounting hole from end, G[a]	7.62 (0.300)	9.45 (0.372)	11.51 (0.453)	13.11 (0.516)	14.68 (0.578)	18.67 (0.735)
Diameter of mounting holes, H[a]	7.14 (0.281)	8.74 (0.344)	10.31 (0.406)	12.29 (0.484)	13.89 (0.547)	15.47 (0.609)
Maximum length of body, I	41.66 (1.640)	42.16 (1.660)	43.94 (1.730)	45.21 (1.780)	47.63 (1.875)	58.72 (2.312)

[a] Tolerances:

a) Dimension A:

61 – 200 A, 300 V ac, ±0.51 mm (±0.020 in);

201 – 1200 A, 300 V ac; and

61 – 800 A, 600 V ac, ±1.02 mm (±0.040 in);

b) Dimension D: ±0.51 mm (±0.020 in);

c) Dimension E: ±0.15 mm (±0.006 in);

d) Dimension F: ±1.02 mm (±0.040 in);

Table Continued on Next Page