SLOVENSKI STANDARD
oSIST prEN IEC 60127-4:2024

01-december-2024

Miniaturne varovalke – 4. del: Univerzalni modularni taljivi vložki – Skoznji vložki in vložki za površinsko montažo

Miniature fuses - Part 4: Universal modular fuse-links (UMF) - Through-hole and surface mount types

Geräteschutzsicherungen - Teil 4: Welteinheitliche modulare Sicherungseinsätze (UMF) - Bauarten für Steck- und Oberflächenmontage

Coupe-circuit miniatures - Partie 4: Eléments de remplacement modulaires universels (UMF) - Types de montage en surface et montage par trous

Ta slovenski standard je istoveten z: **prEN IEC 60127-4:2024**

ICS:

29.120.50	Varovalke in druga nadtokovna zaščita	Fuses and other overcurrent protection devices

oSIST prEN IEC 60127-4:2024 **en,fr,de**

IEC

32C/646/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 60127-4 ED4**	
DATE OF CIRCULATION: **2024-10-18**	CLOSING DATE FOR VOTING: **2025-01-10**
SUPERSEDES DOCUMENTS: **32C/629/CD, 32C/640A/CC**	

IEC SC 32C : MINIATURE FUSES	
SECRETARIAT: China	SECRETARY: Mr Jun Cai
OF INTEREST TO THE FOLLOWING COMMITTEES:	HORIZONTAL FUNCTION(S):
ASPECTS CONCERNED: Safety	
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TITLE:

Miniature fuses - Part 4: Universal modular fuse-links (UMF) - Through-hole and surface mount types

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MINIATURE FUSES –

Part 4: Universal modular fuse-links (UMF) – Through-hole and surface mount types

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This XXX edition cancels and replaces the XXX edition published in [publication_date], Amendment 1:[publication_date] and Amendment 2:[publication_date]. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) ...;
b)

The text of this International Standard is based on the following documents:

Draft	Report on voting
32C/XX/FDIS	32C/XX/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English [change language if necessary].

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

MINIATURE FUSES –

Part 4: Universal modular fuse-links (UMF) – Through-hole and surface mount types

1 Scope and object

This part of IEC 60127 relates to universal modular fuse-links (UMF) for printed circuits and other substrate systems, used for the protection of electric appliances, electronic equipment, and component parts thereof, normally intended to be used indoors.

It does not apply to fuse-links for appliances intended to be used under special conditions, such as in a corrosive or explosive atmosphere.

These fuses are normally intended to be mounted or replaced only by appropriately skilled persons using specialized equipment.

This standard applies in addition to the requirements of IEC 60127-1.

The objectives of this part of IEC 60127 are as given in IEC 60127-1, with the additional requirement of a degree of non-interchangeability.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-2-21:2021, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-58:2015+AMD1:2017, *Environmental testing – Part 2-58: Tests – Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)*

IEC 60127-1:2023, *Miniature fuses – Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*

IEC 60194:2021, *Printed board design, manufacture and assembly – Terms and definitions*

IEC 60216-1: 2013, *Electrical insulating materials – Thermal endurance properties – Part 1: Ageing procedures and evaluation of test results*

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 61249-2-7:2002, *Materials for printed boards and other interconnecting structures – Part 2-7: Reinforced base materials clad and unclad – Epoxide woven E-glass laminated sheet of defined flammability (vertical burning test), copper-clad*

IPC 7351B:2010, *Generic requirements for surface mount design and land pattern standard*

ISO 3:1973, *Preferred numbers – Series of preferred numbers*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in Clause 3 of IEC 60127-1, together with the following definitions, apply.

3.1
through-hole fuse-link
UMF designed for soldering directly into a printed wiring board, with insertion of its leads in suitably designed holes

3.2
surface mount fuse-link
UMF designed for direct conductive attachment by solder or other means on to the surface of a substrate, without insertion of its leads in suitably designed holes or sockets

3.3
land
portion of a conductive pattern usually but not exclusively used for the connection and/or attachment of components (see IEC 60194)

Note 1 to entry: Further definitions which may be useful in the application of surface mount fuse-links may be found in IEC 60115-1 and IEC 60115-8[1].

4 General requirements

See IEC 60127-1.

5 Standard ratings

5.1 Rated voltage

See standard sheets.

5.2 Rated current

See Table 1 for preferred ratings.

5.3 Rated breaking capacity

See standard sheets.

6 Marking

In addition to the requirements of Clause 6 in IEC 60127-1, the following criteria concerning UMF shall be observed and marked:

[1] This standard has been withdrawn.

6.1 *Addition:*

e) For fuse-links rated at 250 V, a symbol denoting the breaking capacity. This symbol shall be placed between the marking for rated current and the marking for rated voltage.

These symbols are as follows:

H: denoting high-breaking capacity;

I: denoting intermediate-breaking capacity;

L: denoting low-breaking capacity.

f) The distinctive symbol shown in Figure 1.

g) The letters a.c. before the voltage for devices designed solely for alternating current application.

6.4 Colour coding for universal modular fuse-links

Under consideration.

6.5 Where marking is impractical due to space limitations, the relevant information should appear on the smallest package and in the manufacturer's technical literature.

7 General notes on tests

In addition to the requirements of Clause 7 in IEC 60127-1, the following criteria shall be observed:

7.2 *Addition:*

7.2.1 For testing of individual fuse ratings according to standard sheets 1 and 2, see Table 2. For fuse-links designed and rated both for a.c. and d.c., the number of fuse-links required is 63. For fuse-links designed only for a.c., the number of fuse-links required is 48. There are nine spares.

For the maximum ampere rating of a homogeneous series according to standard sheets 1 and 2, see Table 3. For fuse-links designed and rated both for a.c. and d.c., the number of fuse-links required is 53. For fuse-links designed only for a.c., the number of fuse-links required is 48. There are 19 spares.

For the minimum ampere rating of a homogeneous series according to standard sheets 1 and 2, see Table 4. For fuse-links designed and rated both for a.c. and d.c., the number of fuse links required is 38. For fuse-links designed only for a.c., the number of fuse-links required is 33. There are 16 spares.

7.3 Fuse-bases for tests

7.3.1 General requirements

Fuse-links shall be mounted upon the appropriate test board (see 7.3.2 or 7.3.3 as appropriate) by soldering.

The test board shall be made of epoxide woven glass fabric copper-clad laminated sheet, as defined in IEC 61249-2-7:

– the nominal sheet thickness shall be 1,6 mm;

– the nominal thickness of copper layer shall be in accordance with Table 6.

The manufacturer must declare the PCBparameters listed in Table 6 and provide assembled PCBs for the tests.

This test board shall then be mounted on the test fuse-base (Figure 4). Metal parts of the fuse-base shall be made of brass with a copper content between 58 % and 70 %. Contact parts shall be silver-plated.

When two or more fuse-links are tested in series, the test fuse-bases shall be located so that there will be a spacing of not less than 50 mm between any two fuse-links under test. The conductor connecting the test fuse-bases together, and connecting the test fuse-bases to the ammeter and the source of supply shall be insulated copper wire. The length of each conductor shall be 250 mm, and the cross-sectional area of the wire shall be approximately 1 mm².

For rated currents above 5 A the length of each conductor shall be at least 500 mm, and the cross-sectional area of the wire shall be according to Table 17.

Table 17 – Cross-sections of conductors

Rated current A	Copper conductor cross section mm^2
Up to and including 5	1
More than 5, and up to and including 10	1.5
More than 10, and up to and including 16	2.5
More than 16, and up to and including 25	4
More than 25, and up to and including 35	6
More than 35, and up to and including 60	35
More than 60, and up to and including 100	50

7.3.2 Through-hole fuse-links (standard sheet 1)

For electrical tests upon fuse-links covered by standard sheet 1, the fuse-link shall be mounted on the test board, as shown in Figure 2 in the pair of holes appropriate to the spacing of the terminations.

7.3.3 Surface mount fuse-links (standard sheet 2)

For electrical tests upon fuse-links covered by standard sheet 2, the fuse-link shall be mounted on the test board, as shown in Figure 3. See Annex A for guidance.

8 Dimensions and construction

8.1 Dimensions

The dimensions of the UMFs shall comply with the relevant standard sheets.

Compliance is checked by measurement of length, width and height.

For fuse-links to standard sheet 1, the termination spacing is checked. The termination shall also pass through a 1 mm hole. The length of the termination is not specified as this is subject to the method of packaging.

8.2 Construction

The fuse-element shall be completely enclosed.

The UMF shall withstand the heat and chemical exposure of a printed circuit board or other substrate assembly operations with its performance unimpaired.