SLOVENSKI STANDARD
oSIST prEN IEC 62024-1:2023

01-september-2023

Visokofrekvenčne induktivne komponente - Električne karakteristike in merilne metode - 1. del: Čipni induktor v območju nanohenrijev

High frequency inductive components - Electrical characteristics and measuring methods - Part 1: Nanohenry range chip inductor

Induktive Hochfrequenz-Bauelemente - Elektrische Eigenschaften und Messmethoden - Teil 1: Chipinduktivitäten im Nanohenry-Bereich

Composants inductifs à haute fréquence - Caractéristiques électriques et méthodes de mesure - Partie 1: Inductance à puce de l'ordre du nanohenry

Ta slovenski standard je istoveten z: **prEN IEC 62024-1:2023**

ICS:

29.100.10	Magnetne komponente	Magnetic components

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51/1441/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 62024-1 ED4	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
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51/1415/CD, 51/1424/CC	

IEC TC 51 : MAGNETIC COMPONENTS, FERRITE AND MAGNETIC POWDER MATERIALS	
SECRETARIAT: Japan	SECRETARY: Mr Takeshi Abe
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
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TITLE:

High frequency inductive components - Electrical characteristics and measuring methods - Part 1: Nanohenry range chip inductor

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

CONTENTS

92 INTERNATIONAL ELECTROTECHNICAL COMMISSION

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94

95 # HIGH FREQUENCY INDUCTIVE COMPONENTS –
96 # ELECTRICAL CHARACTERISTICS AND MEASURING METHODS –

97

98 ## Part 1: Nanohenry range chip inductor

99

100 ## FOREWORD

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132 IEC 62024-1 has been prepared by IEC technical committee 51: Magnetic components, ferrite
133 and magnetic powder materials. It is an international standard.

134 This fourth edition cancels and replaces the third edition published in 2017. This edition
135 constitutes a technical revision.

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

138 a) addition of S parameter measuring;

139 b) addition of the inductance, Q-factor and impedance of an inductor is measured by the
140 reflection coefficient method with network analyzer.

141 c) addition of the resonance frequency of an inductor is measured by 2 port network analyzer

142 d) addition of the mounting method for a surface mounting inductor with Pb-free solder

143

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

CDV	Report on voting
51/xxxx/FDIS	51/xxxx/RVD

145
146 Full information on the voting for its approval can be found in the report on voting indicated in
147 the above table.

148 The language used for the development of this International Standard is English.

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

153 A list of all parts of the IEC 62024 series, published under the general title *High frequency*
154 *inductive components – Electrical characteristics and measuring methods,* can be found on the
155 IEC website.

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

159 • reconfirmed,
160 • withdrawn,
161 • replaced by a revised edition, or
162 • amended.

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HIGH FREQUENCY INDUCTIVE COMPONENTS – ELECTRICAL CHARACTERISTICS AND MEASURING METHODS –

Part 1: Nanohenry range chip inductor

1 Scope

This part of IEC 62024 specifies electrical characteristics and measuring methods for the nanohenry range chip inductor that is normally used in high frequency (over 100 kHz) range.

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 61249-2-7, *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*

IEC 62025-1, *High frequency inductive components – Non-electrical characteristics and measuring methods – Part 1: Fixed, surface mounted inductors for use in electronic and telecommunication equipment*

IEC 62674-1, *High frequency inductive components - Part 1: Fixed surface mount inductors for use in electronic and telecommunication equipment*

ISO 6353-3, *Reagents for chemical analysis – Part 3: Specifications – Second series*

ISO 9453, *Soft solder alloys – Chemical compositions and forms*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Inductance, Q-factor and impedance

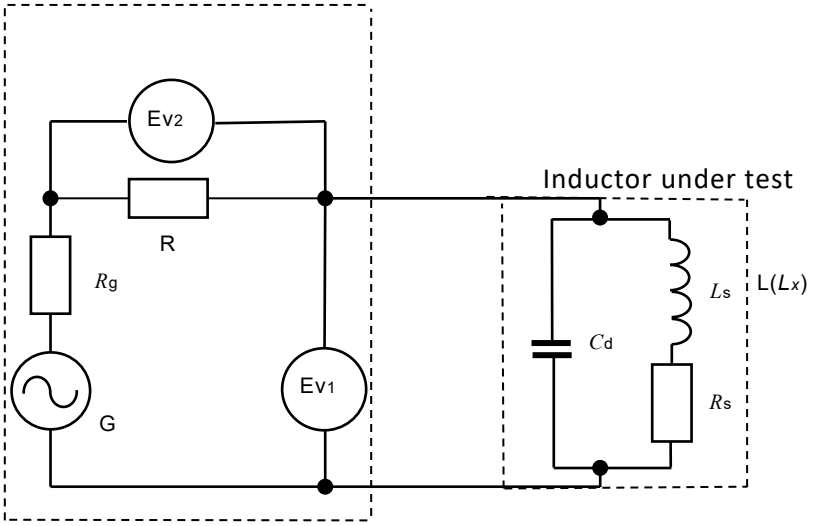
4.1 Inductance

4.1.1 Measuring method

The inductance of an inductor is measured by either the vector voltage/current method (impedance analyzer) or the reflection coefficient method (network analyzer).

4.1.2 Measuring circuit

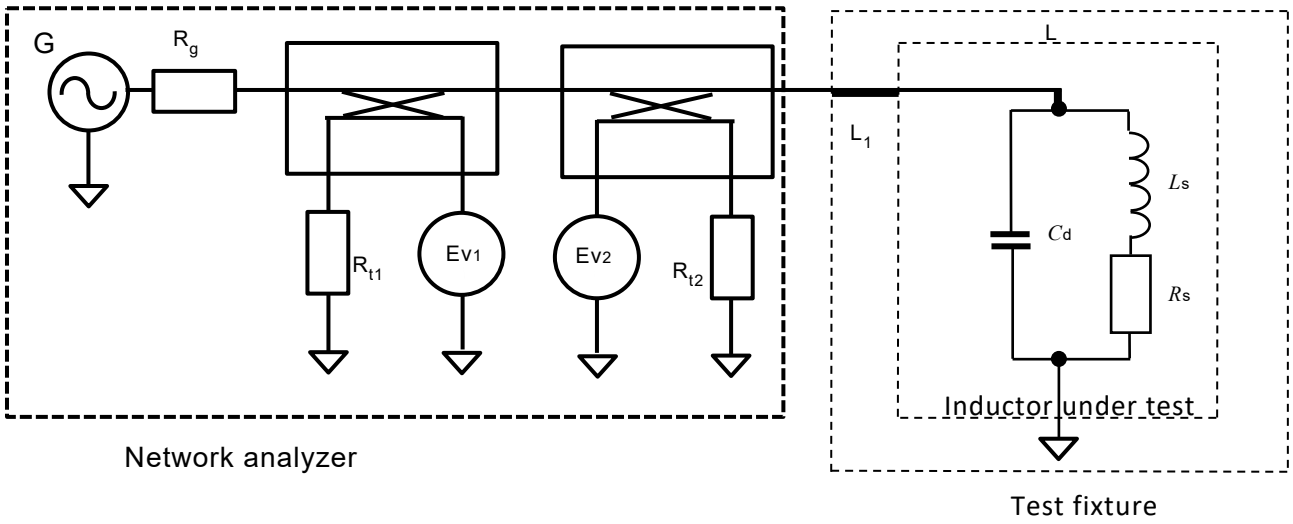
An example of the circuit for the vector voltage/current method is shown in Figure 1 and an example of the circuit for the reflection coefficient method is shown in Figure 2.



Key

R_g	source resistance (50 Ω)
R	resistor
L	inductor under test
L_x	inductance of inductor under test
C_d	parallel capacitance of inductor under test
L_s	series inductance of inductor under test
R_s	series resistance of inductor under test
Ev_1, Ev_2	vector voltmeter
G	signal generator

Figure 1 – Example of circuit for vector voltage/current method



Key

R_g	source resistance (50 Ω)
R_{t1}, R_{t2}	termination resistor (50 Ω)
L	inductor under test
C_d	parallel capacitance of inductor under test
L_s	series inductance of inductor under test
R_s	series resistance of inductor under test
Ev_1, Ev_2	vector voltmeter
G	signal generator
L_1	50 Ω micro-strip line or equivalent transmission line

Figure 2 – Example of circuit for reflection coefficient method

4.1.3 Mounting the inductor for the test

4.1.3.1 General

The inductor shall be mounted in a test fixture as specified in the relevant standard. If no fixture is specified, one of the following test fixtures A, B or C shall be used. The fixture used shall be reported.

4.1.3.2 Fixture A

The shape and dimensions of fixture A shall be as shown in Figure 3 and Table 1.