IEC 61189-2-720

Edition 1.0 2024-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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Test methods for electrical materials, circuit boards and other interconnection structures and assemblies – Part 2-720: Detection of defects in interconnection structures by measurement of capacitance

Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles – Partie 2-720 : Détection de défauts présents dans les structures d'interconnexion par mesurage de la capacité



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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TEST METHODS FOR ELECTRICAL MATERIALS, CIRCUIT BOARDS AND OTHER INTERCONNECTION STRUCTURES AND ASSEMBLIES –

Part 2-720: Detection of defects in interconnection structures by measurement of capacitance

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IEC 61189-2-720 has been prepared by IEC technical committee 91: Electronics assembly technology. It is an International Standard.

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

Draft	Report on voting
91/1923/FDIS	91/1934/RVD

Full information on the voting for the approval of this International Standard 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.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2 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.

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Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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TEST METHODS FOR ELECTRICAL MATERIALS, CIRCUIT BOARD AND OTHER INTERCONNECTION STRUCTURES AND ASSEMBLIES –

Part 2-720: Detection of defects in interconnection structures by measurement of capacitance

1 Scope

This part of IEC 61189 provides a method to evaluate specific characteristics of circuit boards by measuring the capacitance between conductor traces and a ground plane and can be used for qualitative comparison of a test specimen to a reference board. This method is not intended for quantitative measurements and for assessment of conformity to a specification.

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 60194-2, *Printed boards design, manufacture and assembly – Vocabulary – Part 2: Common usage in electronic technologies as well as printed board and electronic assembly technologies*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60194-2 apply. No terms and definitions are listed in this document.

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4 Objective

For testing electrical characteristics of circuit board, generally an electrical open/short test that shall measure the resistance between nets is the main test method. This open/short test is possible only to look at the pass/the fail of circuits and not to look for any reliability issues of circuit board like as mouse bite, delamination, void, and crack. Therefore, the general electrical test has a limitation. Along with the capacitance test method, the electrical test method shall check the existing reliability issues of circuit boards and this standardization of the additional electrical test is necessary from the development stage. It is possible to accurately measure the differences in the capacitance values of circuit boards before and after the reliability test. This is sufficient for the development stage and reliability testing rather than in-production testing because of the long test time of electrical test. Other than the probing contact issues, there is no problem with the measurement uncertainty. It is possible to look for defects such as open/short, mouse bite, delamination, void, and so on by analysing the test defect nets. In looking for the capacitance test method, it shows the capacitance difference depending on the pad width, pad length, and pad distance as shown in Figure 1. Figure 1 shows the defect of mouse bite.