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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 45723-2025

**Test method for printed board - Monitoring of single
plated-through hole (PTH)resistance change during
temperature cycling**

印制电路板测试方法 温度循环状态下镀覆孔单孔电阻的变化

(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document modifies the IEC 61189-3-719:2016 Test methods for electronic materials, printed boards and other interconnect structures and assemblies Part 1 Part 3-719. Test method for interconnect structures (printed boards) to determine the change in resistance of a single plated hole under temperature cycling conditions.

This document has made the following structural adjustments compared to IEC 61189-3-719:2016.

---5.3.1~5.3.3 correspond to 5.3 in IEC 61189-3-719:2016, and 5.3.4 is added;

---6.2.1~6.2.8 correspond to 6.2 in IEC 61189-3-719:2016;

---8.1 corresponds to the second paragraph of 5.3 in IEC 61189-3-719:2016;

---8.2 corresponds to Chapter 8 of IEC 61189-3-719:2016.

The technical differences between this document and IEC 61189-3-719:2016 and their reasons are as follows.

--- The normative reference documents have been adjusted to adapt to my country's technical conditions. The specific adjustments are as follows.

- GB/T 2036 replaced IEC 60194 (see Chapter 3);
- GB/T 2423.22 replaces IEC 60068-2-14 (see 5.2);
- The contents of IEC 60068-2-58:2015 shall be directly specified in the relevant specifications (see 6.1).
- Added 4-terminal wiring requirements (see Chapter 4), and clarified that the wiring of the measurement wires must comply with the 4-terminal resistance measurement requirements.
- Added low resistance tester (see 5.3.2), which can be used to replace constant current source and voltmeter for 4-terminal resistance test Measurement.
- Added high temperature resistant wire (see 5.3.4) and high temperature resistant wire welding steps (see 6.2.1). High temperature resistant wire is required in the test. Make electrical connections.
- The calculation formula for measuring current has been changed (see Chapter 8), and the calculation formula has been converted to the international system of units to comply with GB/T 1.1-2020 requirements. The following editorial changes were made to this document.
- The standard name has been changed in accordance with my country's printed circuit board professional standard system.

1 Scope

This document describes the test method for the resistance of plated-through holes in printed boards under temperature cycling conditions. Durability of plated-through holes under thermo-mechanical stress.

This document applies to plated-through holes in printed boards and printed board assemblies.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version

(including all amendments) applies to This document.

GB/T 2036 Terminology for printed circuits

GB/T 2423.22 Environmental testing Part 2: Test method Test N. Temperature change
(GB/T 2423.22-2012, IEC 60068-2-14:2009, IDT)

3 Terms and definitions

The terms and definitions defined in GB/T 2036 apply to this document.

The test sample is a double-sided or multi-layer printed circuit board containing a test pattern. Figure 1 is an example of a local test pattern of a 6-layer printed circuit board.

If there are no special provisions in the relevant specifications, a specimen shall have the following characteristics.

a) There are 4 single plated-through holes connecting the top layer to the bottom layer (L1~LN) of the printed board, and the corresponding markings are on the drawing.

4 Samples

Note 1: Hole 1 on the left connects the top layer to the bottom layer (L1 to L6 for a 6-layer board).

Note 2: Hole 2 on the left connects the inner layers (L2~L3).

Note 3: The middle figure is a reference figure.

Note 4: The right side is the measurement wire connection hole, which is connected to the external measurement equipment.