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GB/T 12631-2017

Replacing GB/T 12631-1990

Test Method for Resistance of Conductors of Printed Boards

印制板导线电阻测试方法

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Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of the People's Republic of China.

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB/T 12631-1990, *Test Method for Resistance of Conductors of Printed Boards*.

Compared with GB/T 12631-1990, the major changes of this Standard are as follows:

-- it changes the standard name into "*Test Method for Resistance of Conductors of Printed Boards*";

-- it divides the atmospheric conditions for tests into the atmospheric conditions for normal tests and the atmospheric conditions for arbitration tests (see Article 4);

-- the final test result is the mean value of three measurements (see 7.2).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuer of this document shall not be held responsible for identifying any or all such patent rights.

This Standard was proposed by the Ministry of Industry and Information Technology of the People's Republic of China.

This Standard shall be under the jurisdiction of the National Standardization Technical Committee on Printed Circuits (SAC/TC 47).

The drafting organizations of this Standard: Information Industry Quality Supervision and Inspection Centre of Printed Circuit Boards and China Electronics Standardization Institute.

The main drafters of this Standard: Zhu Lifang, Guo Xiaoyu, Cao Yi.

The previous editions of the standard replaced by this Standard is as follows:

-- GB/T 12631-1990.

Test Method for Resistance of Conductors of Printed Boards

1 Application Scope

This Standard specifies the test method for the resistance of conductors of printed boards.

This Standard applies to the test of the resistance of conductors of single-sided, double-sided and multilayer printed boards.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition dated applies to this document. For undated references, the latest edition of the referenced documents (including all amendments) applies to this Standard.

GB/T 2421.1-2008, *Environmental Testing for Electric and Electronic Products – General and Guidance*

GB/T 4677-2002, *Test Methods of Printed Boards*

3 Principle

Input a sufficiently small constant current (*I*) to the DC stabilized power supply to make current pass through printed conductors through current probe; read the voltage (*U*) from the voltage probe; then obtain the resistance of conductors (*R*) according to Ohm's law. The principle for testing is as shown in Figure 1.

The four-probe method can be used for testing in case of any dispute, as specified in Test 3a of GB/T 4677-2002.

a) constant current DC power supply: measuring range 1 A, stability ≤ ± 0.01%

b) digital voltmeter: resolving ability 10 μV, measuring range 0 ~ 200 mV, intrinsic error 0.5%;

c) DC ammeter: measuring range 0 ~ 150 mA, accuracy grade 0.5;

d) test probe.

In addition to the testing apparatus for the above four-probe method, low-resistance testers which are capable of achieving such accuracy grade may also be used.

6 Sample

6.1 Sample requirements

Samples shall be finished boards. The conductors to be tested shall be as long as possible. If necessary, samples may also be the test boards which are manufactured in accordance with the manufacturing process of finished boards. See Annex A for the recommended test charts.

6.2 Sample quantity

The quantity of samples for testing shall not be less than 3.

7 Testing Method

7.1 Sample pretreatment

Sample shall be stored at environmental temperature; sample shall be stored for more than 24 h under the atmospheric conditions for normal tests before testing.

7.2 Testing procedure

The testing procedure of this Standard is as follows:

a) calibrate digital voltmeter;

b) connect testing circuit in accordance with Figure A.2;

c) adjust constant current DC power supply until the readings of ammeter are not greater than 0.1 A, and record the value of current;

d) test and record the value of voltage;

e) at least repeat testing for 3 times and take the arithmetic mean value.

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