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

GB/T 16935.5-2008

**Insulation coordination for equipment within low-voltage
systems -- Part 5: Comprehensive method for determining
clearances and creepage distances equal to or less than 2mm
(English Translation)**

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Foreword

GB/T 16935 "Insulation coordination for equipment within low-voltage systems"

consists of 5 parts.

- Part 1.Principles, requirements and tests;
- Part 2.Application guide;
- Part 3.Use of coating, potting or moulding for protection against pollution;
- Part 4.Consideration of high-frequency voltage stress;

- Part 5. Comprehensive method for determining clearances and creepage distances equal to or less than 2 mm.

This Part is Part 5 of GB/T 16935.

This Part is identical to IEC 60664-5:2007 "Insulation coordination for equipment within low-voltage systems - Part 5. Comprehensive method for determining clearances and creepage distances equal to or less than 2 mm" (English version).

For ease of use, this Part has made the following editorial modifications.

- a) DELETE the foreword of the international standard;
- b) SUPPLEMENT GB/T 17045-2006, GB/T 17627.1-1998, GB/T 17627.2-1998, IEC 60068, IEC 60364-5-51:2005 and IEC 60664-4:1997 (because they are referenced in the article) in Clause 2 "Normative references".

In this Part, Annex B is normative, Annex A, Annex C and Annex D are informative.

This Part is proposed by China Electrical Equipment Industry Association.

This Part is under the jurisdiction of National Technical Committee on Low Voltage Equipment Insulation Coordination of Standardization Administration of China (SAC/TC 417).

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1 Scope and object

This Part of GB/T 16935 specifies the dimensioning of clearances and creepage distances for spacings equal to or less than 2 mm for printed wiring board and equivalent constructions, where the clearance and the creepage distance are identical and are along the surface of solid insulation, such as the paths described in 6.2 of Part 12) (Examples 1, 5 and 11).

2 Normative references

The following referenced documents are indispensable for the application 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.

Clause 2 of Part 1 is applicable, as well as the following.

GB/T 4798.3-2007 Environmental conditions existing in the application of electric and electronic products - Section 3. Stationary use at weather-protected locations (IEC 60721-3-3:2002, MOD)

3 Terms and definitions

For the purposes of this document, the following terms and definitions, in addition to those given in GB/T 16935.1-2008, apply.

Value of the relative humidity when the impulse withstand voltage of a creepage distance has dropped to 95 % of the value that was measured at 70 % relative humidity.

4 Fundamentals of clearance and creepage distance dimensioning

The micro-environmental conditions for the insulation shall be taken into account. They depend primarily on the macro-environmental conditions in which the equipment is located and, in many cases, the environments are identical.

5 Requirements and dimensioning procedures

Values for clearances in Table 2 for case B are only applicable for homogeneous fields. They can only be used where the shape and arrangement of the conductive parts is designed to achieve an electric field having an essentially constant voltage gradient. Subclause 5.3.3.7 of Part 1 is applicable.

6 Tests and measurements

If the withstand against steady-state voltages, recurring peak voltages or temporary overvoltages according to 5.2 is decisive for the dimensioning of clearances, and if those clearances are smaller than the case A values of Table 3, an a.c. voltage test

according to the test in 6.1.2.2.2.2 of Part 1 is required.

For the test conditions, technical committees shall specify temperature and humidity values.

Annex A

(informative)

Dimensioning to maintain minimum insulation resistance

This annex gives information on the dimensioning of creepage distances in order to maintain adequate insulation resistance for r.m.s. voltages up to 10 000 V, which relate to creepage distances up to 250 mm.

Annex B

(normative)

|Water adsorption test

For the dimensioning of creepage distances with respect to flashover, the water adsorption characteristics of the insulating material are relevant. According to the impulse withstand capability of the surfaces of the various insulating materials under humidity, the water adsorption groups WAG1, WAG2, WAG3 and WAG4 have been established.

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