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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 11297.11-2015

Replacing GB 11297.11-1989

Test method for dielectric constant of pyroelectric materials

热释电材料介电常数的测试方法

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Foreword

This section drafted in accordance with GB/T 1.1-2009 given rules. This Part replaces GB/T 11297.11-1989 "Test methods of pyroelectric material dielectric constant." This portion of the GB/T 11297.11-1989 Compared to the main technical changes are as follows:

--- Modify the applicable frequency range (see Chapter 1);

--- Modify the test atmospheric conditions (see 51, 1989 Version 3.1.1 ~ 3.1.3.);

--- Modify the sample size (see Chapter 6, 1989 Version 3.2.1);

--- Modify the sample requirements (see Chapter 6, 1989 Version 3.2.2);

--- Modify the capacitance measurement accuracy (see Chapter 7, 1989 edition 4.3);

--- Modify the sample processing (see 81, 1989 Version 5.1.);

--- Added "first sample cartridge into the thermostat, then the sample holder access sample box" and by open and short correction instrument Accurate, direct measurement of the sample capacitance [see 8.2d) ~ f)]. Please note that some of the content of this document may involve patents. Release mechanism of the present document does not assume responsibility for the identification of these patents. This part is proposed by the Ministry of Industry and Information Technology of the People's Republic of China. This part of the jurisdiction of the Ministry of Industry and Information Technology Institute of Electronics Standardization. This section is drafted. Shanghai Institute of Ceramics. The main drafters of this section. Yao Chunhua, Cao Fei, Dong Xianlin, Wang root water, Wang age. This part of the standard replaces the previous editions are.

--- GB/T 11297.11-1989. Test methods of pyroelectric material dielectric constant

1 Scope

GB/T 11297.11-2015 is the Chinese national standard on test method for dielectric constant of pyroelectric materials, in the field of electronics. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a

contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 31 December 2015 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 July 2016. Classification: ICS 31.020, CCS L90. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This section provides pyroelectric ceramics, crystal and organic materials testing methods in 100Hz ~ 100kHz range of dielectric constant. This section applies to the measurement of lead titanate, lead zirconate titanate, barium strontium titanate, tantalum scandium acid pyroelectric ceramic material such as lead and lead magnesium niobate, lithium tantalate, Permittivity three glycine sulfate group, etc., pyroelectric crystal material is also applicable to other similar measure ceramics, crystal and organic pyroelectric material Dielectric constant.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document. SJ/T 11067 infrared detecting material semiconductor optoelectronic materials and pyroelectric materials commonly used terminology

3 Terms and Definitions

Terms and definitions SJ/T 11067 apply to this document defined.

4 Measuring principle

For infinite and between the electrode plates with the medium without gaps parallel plate capacitor dielectric, capacitance (C) according to formula (1). C = epsilonepsilon0 (1) Where. C

--- capacitance in farads (F); permittivity epsilon

--- perpendicular to the direction of the plate, is no unit quantities; epsilon0

--- vacuum permittivity, epsilon0 \u200b\u200b= 8.854 x 10-14F/cm; A

--- electrode area, in units of square cm (cm2 for); d

--- plate spacing that the thickness of the sample medium in centimeters (cm). If pyroelectric material such capacitors, the dielectric constant according to equation (2). epsilon = epsilon0A C (2) Using a precision LCR meter measured capacitance (C),

according to formula (2) to calculate the pyroelectric material permittivity (epsilon). In measuring the capacitance (C), the sample holder and sensing lead capacitance exists a constant (the C0), with the capacitance (C) in a parallel state. therefore Measured capacitance (Cce) according to equation (3) Calculated. Cce = C C0 (3) Substituted into the formula (2), the dielectric constant of the final expression (3) capacitance (C) of formula (4). epsilon = epsilon0A Cce (-C0) (4) Permittivity any pyroelectric materials are anisotropic, and according to the principle of a parallel plate capacitor dielectric constant should be measured perpendicular