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

GB/T 11297.8-2015

Replacing GB 11297.8-1989

**Test method for pyroelectric coefficient of pyroelectric
materials**

热释电材料热释电系数的测试方法

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Foreword

This section drafted in accordance with GB/T 1.1-2009 given rules. This Part replaces GB/T 11297.8-1989 "Test Method pyroelectric coefficient of pyroelectric material." This portion of the GB/T 11297.8- Compared to 1989, the main technical changes are as follows:

- Modify the minimum measurable scope and pyroelectric coefficient (see Chapter 1);
- Remove the ice-water mixture as the reference point (see the 1989 version of the test diagram);
- Modify the sample size requirements (see Chapter 5, 1989 Version 3.1.4);
- Modify the voltage measuring instrument (see Chapter 6, 1989 Version 4.2.2);
- Modify the LCR meter measuring the maximum permissible error (see Chapter 6, 1989 Version 4.2.3);
- Modify the thermometer (see Chapter 6, 1989 Version 4.2.4);
- Modify the temperature of the sample interval (see Chapter 7, 1989 edition 4.3);
- Deleted XY recorder (see 1989 edition 4.2.5);
- Remove the test accuracy (see Chapter 5, 1989 edition). 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. Cao Fei, Yao Chunhua, Dong Xianlin, Wang root water, Wang age. This part of the standard replaces the previous editions are.
- GB/T 11297.8-1989. Pyroelectric material testing methods of pyroelectric coefficient

1 Scope

GB/T 11297.8-2015 is the Chinese national standard on test method for pyroelectric coefficient 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 measurement methods of pyroelectric material intrinsic pyroelectric coefficient. This section applies to the measurement of lithium tantalate, lead titanate, lead zirconate titanate, and lead magnesium niobate pyroelectric coefficient of pyroelectric material. This section is also applicable For pyroelectric coefficient measured at $1 \times 10^{-11} \text{C}/(\text{cm}^2 \cdot ^\circ\text{C})$ orders of magnitude above other ceramics, and organic single crystal pyroelectric material and the like. This It does not apply to barium strontium titanate, tantalum scandium acid lead field pyroelectric material pyroelectric coefficient measurements.

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

This part of the charge integration method for measuring pyroelectric coefficient of pyroelectric material. The method by measuring the pyroelectric charge accumulated in the integrating capacitor, measuring the residual polarization changes with temperature. Electrostatic measurement The amount of the voltage across the integrating capacitor, recording the measured voltage value due to the capacitance value of the integrating capacitor is much larger than the capacitance value of the sample, both ends The change in specimen remanent polarization is proportional to the voltage change. At the same time, record the temperature change of the measured values obtained pyroelectric

charge (Q) with temperature (T) curve changes, the differential curve can be obtained pyroelectric coefficient at different temperatures. Test shown in Figure 1. Pyroelectric coefficient according to equation (1). $\Delta V_0 = \Delta P_r \cdot A \cdot C_1$ (1) Where. ΔV_0

--- change in output voltage in volts (V); Change $[\Delta] P_r$

--- remanent polarization, in units of coulombs per square centimeter (C/cm²); Sample A

--- electrode area, in units of square cm (cm² for); The capacitance value of the integrating capacitor C₁

--- farads (F). Measurement was V₀-T curve, find the temperature (T) at a slope that was pyroelectric coefficient, see formula (2). $p_T = \frac{dP_r}{dT} C_1 \frac{dV_0}{dT}$ (2) Or, to be separately measured temperature (T) of the center (ΔT) and the corresponding (ΔV_0) values obtained pyroelectric coefficient, see equation (3).