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

GB/T 25076-2018

Replacing GB/T 25076-2010

Monocrystalline silicon for solar cell

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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 25076-2010 "Silicon Single Crystal for Solar Cells". The main technical changes compared with GB/T 25076-2010 are as follows.

--- Change the standard name "Silicon Single Crystal for Solar Cells" to "Silicon Single Crystal for Solar Cells";

--- Revised the scope of application, and changed the "Si single crystal for surface space solar cells prepared by Czochralski doping" to "Applicable to straight-drawing

The prepared circular silicon single crystal is processed into a quasi-square or square silicon single crystal. The product is used for further production after cutting into silicon wafers.

Surface solar cells" (see Chapter 1, Chapter 1 of the.2010 edition);

--- Added reference files GB/T 1551, GB/T 14844, GB/T 26068, GB/T 32651 and YS/T 28, YS/T 679, deleted

Except GB/T 1552, GB/T 1553, SEMIMF1535 (see Chapter 2);

--- Increased the number of grades (see 4.1);

--- The 4.1 classification and 4.2 specifications in the technical classification of Chapter 4 of the.2010 edition are separately listed as a chapter, that is, the "Chapter 4 grade" is added.

And classification"; will be classified by shape from the original circular and quasi-square (2010 version 4.1) to quasi-square and square; deleted

The specification of the circular silicon single crystal increases the specification of the square silicon single crystal (see 4.1, 4.2);

--- Removed the size requirements for circular silicon single crystals (see 4.3.1 of.2010 edition), modified the end face size requirements for quasi-square silicon single crystals

(See Figure 1 and Table 1, Figure 1 and Table 2 of the.2010 edition), adding the end face size requirements for square silicon single crystals (see Figure 2 and Table 2);

--- List the verticality as a single item, and increase the requirement that "the squareness of the quasi-square or square silicon single crystal should be no more than 1mm"

(see 5.1.3);

--- The lower limit of the resistivity range is changed from 0.5 ohm.cm to P type 0.2 ohm.cm, and N type is 0.1 ohm.cm (see Table 3, Table 3 of the.2010 edition);

---Modified the interstitial oxygen content requirement of silicon single crystal, from less than 1.3×10^{18} atoms/cm³ to P type should be no more than $1.1 \times$

10^{18} atoms/cm³, N type should be no more than 1.0×10^{18} atoms/cm³, or negotiated between the supplier and the buyer (see 5.4,.2010 edition)

4.6);

--- Revised the substituting carbon content requirement of silicon single crystal, from no more than 1.0×10^{17} atoms/cm³ to P type should be no more than $1.0 \times$

10^{17} atoms/cm³, N type should be no more than 5.0×10^{16} atoms/cm³, or negotiated between the supplier and the buyer (see 5.5,.2010)

Version 4.7);

--- Increased the requirement for no slip dislocation in crystal integrity (see 5.6);

--- Increased the body metal content of silicon single crystals (see 5.7);

--- Increased surface quality requirements (see 5.8);

--- Increased the test methods, test items and test results of body metal and surface quality (see 6.10, 6.11, 7.3,

7.4, 7.5.3);

--- Combine sampling and sampling into a tabular form (see Table 4, 6.4 and 6.5 for.2010 edition).

This standard is supported by the National Semiconductor Equipment and Materials Standardization Technical Committee (SAC/TC203) and National Semiconductor Equipment and Materials Standards.

The Technical Subcommittee of the Technical Committee (SAC/TC203/SC2) jointly proposed and managed.

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1 Scope

This standard specifies the grade, classification, requirements, test methods, inspection rules and standards of silicon single crystals for solar cells (referred to as silicon single crystals).

Contents of packaging, packaging, transportation, storage, quality certificates and order forms (or contracts).

This standard is applicable to quasi-square or square silicon single crystals processed by circular silicon single crystal prepared by straight pull doping. The product is cut into silicon wafers

After further making solar cells.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 1550 Test method for conductivity type of extrinsic semiconductor materials

GB/T 1551 silicon single crystal resistivity determination method

GB/T 1554 silicon crystal integrity chemical selective corrosion test method

GB/T 1555 semiconductor single crystal orientation determination method

Method for measuring infrared absorption of interstitial oxygen content in GB/T 1557 silicon crystal

GB/T 1558 Silicon in situ carbon atom content infrared absorption measurement method

GB/T 6616 Semiconductor silicon wafer resistivity and silicon film sheet resistance test method Non-contact eddy current method

GB/T 11073 Silicon wafer radial resistivity change measurement method

GB/T 14140 silicon wafer diameter measurement method

GB/T 14264 semiconductor material terminology

GB/T 14844 semiconductor material grade representation

Non-contact microwave reflection photoconductivity attenuation test method for GB/T 26068 silicon carrier carrier composite lifetime

GB/T 32651 Test method for measuring trace elements in solar grade silicon by high quality resolution glow discharge mass spectrometry

YS/T 28 wafer packaging

YS/T 679 Steady-state surface photovoltage test method for minority carrier diffusion length in extrinsic semiconductors

3 Terms and definitions

The terms and definitions defined in GB/T 14264 apply to this document.

4.1 Brand

The grade of silicon single crystal is expressed in accordance with GB/T 14844.

4.2 Classification

4.2.1 Silicon single crystals are classified into P type and N type according to the conductivity type.