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

GB/T 25121.1-2018

Replacing GB/T 25121-2010

**Railway applications -- Rolling stock equipment -- Capacitors
for power electronics -- Part 1: Paper/plastic film capacitors**

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Foreword

9.11 of the.2010 edition);

40 ° C, in line with the actual situation in China;

1 Scope

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Foreword

GB/T 25121 "Railway Locomotive Vehicle Equipment Power Electronic Capacitor" is divided into three parts.

--- Part 1. Paper/plastic film capacitors;

---Part 2. Non-solid electrolyte aluminum electrolytic capacitors;

--- Part 3. Electric double layer capacitors.

This part is the first part of GB/T 25121.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 25121-2010 "railway locomotive vehicle equipment power electronic capacitor", and GB/T 25121-

Compared with.2010, the main technical changes except editorial changes are as follows.

--- Revised the scope of the standard (see Chapter 1, Chapter 1 of the.2010 edition);

---Modified the contents of the normative reference documents (see Chapter 2, Chapter 2 of the.2010 edition);

--- Added "Isolation Metallization Design" "Special Non-Isolated Metallization Design" "Series Resistance" "Equivalent Series Inductance" "Heat Balance" "Hot

Terms and definitions of time constants (see Chapter 3);

--- Removed the term and definition of "continuous duty cycle" and "shell temperature rise" (see Chapter 3 of the.2010 edition);

--- Revised "the altitude does not exceed 1400m" as "the altitude does not exceed 2500m" (see 4.1.1, 4.1.1 of the.2010 edition);

---Modified ambient temperature requirements (see 4.1.2,.2010 version 4.1.2);

--- Added details of special use conditions (see 4.2);

--- Revised the type test content, supplemented with the factory test content and also the type test project (see 5.2.5, Table 2,.2010 edition)

5.1.2, Table 2);

--- Increased partial discharge measurement requirements (see 5.2.3 and 5.2.5);

--- Increased the measurement of capacitance and tan delta in the factory inspection "For capacitors in the millimeter range, the accuracy can be negotiated between the supplier and the buyer.

Determine" (see 5.3);

--- Revised the allowable deviation range of capacitance "+/-10%" to "+/-5%" (see 5.3.2, 5.3.2 of.2010 edition);

--- Modified the terminal test voltage AC capacitor, unified test voltage of self-healing and non-self-healing capacitors (see 5.5.1,.2010)

Version 5.5.1);

--- Removed the description of "If the voltage is increased by 10% and the duration can be reduced to 2s" (see 5.5.1 of the.2010 edition);

--- Removed the description of "capacitor at the highest case temperature" (see 5.5.3 of the.2010 edition);

--- Added a description of "If the voltage is increased by 10% and the duration can be reduced to 2s" (see 5.6.1);

---Modified terminal and enclosure test voltage requirements (see 5.6.1, 5.6.1 of the.2010 edition);

--- Modified the limit for the maximum inrush current, from the original " $I_{test}=1.4I_S$ " to " $I_{test}=1.1I_S$ " (see 5.9,.2010 edition)

5.9);

--- Revised the "thermal stability test" as "thermal stability test" (see 5.10, 5.10 of the.2010 edition);

--- Increased capacitor performance measurement criteria after thermal stability test (see 5.10.2);

--- Added test requirements for AC filter capacitors (see 5.10.2, Note 3);

--- Revised the content of the routine test voltage and self-healing test of the self-healing test (see 5.11, 5.11 of the.2010 edition);

- Modified the self-healing test method (see 5.11, 5.11 of the.2010 edition);
- Increased requirements for environmental testing (see 5.13.1);
- Revised the content of the voltage test after the constant damp heat test (see 5.13.2, 5.13.2 of the.2010 edition);
- Modified "visual inspection" to "general inspection" and increased weighing requirements (see 5.14.2,.2010 edition 5.14.2);
- Increased the durability test 5.15.1 "Overview", the subsequent sub-segment number is postponed (see 5.15);
- Removed the contents described in Table 6 (see 5.14 of the.2010 edition);
- Increased test conditions for capacitors with special requirements and no corresponding standards (see 5.14.3);
- Revised the durability test content (see 5.15, 5.15 of the.2010 edition);
- Revised the initial capacitance and loss tangent in the durability test (see 5.15.3,.2010 edition 5.15.2);
- Modified the peak current of 1000 charge and discharge (see 5.15.3, 5.15.3 of the.2010 edition);
- Modified the test procedure for the AC capacitor test voltage 1.25UN (see 5.16.2, 5.16 of the.2010 edition);
- Modified the destructive test, increased the performance relationship between the damage test and the system safety type, and the test of the DC capacitor test program Method, removing destructive test requirements (see Table 7 of 5.16.1);
- Increased the determination of the isolation metallization design and the special non-isolated metallization design capacitance (see 5.16.2);
- Modified the "maximum allowable voltage" to "overload" (see Chapter 6, Chapter 6 of the.2010 edition);
- Increased the requirements for marking in environmental protection (see 7.3);
- Increased test requirements for flame retardant properties (see 7.4);
- Added the nameplate, the capacitor with protection device can be marked (see 8.1);
- Modified the way in which measures may be taken during installation (see 9.3.2, version 9.3.2 of.2010);
- Modified the selection of creepage distance and clearance, refer to GB/T 32350.1 (see 9.8,.2010 edition)

9.8);

--- Modified "the insulation voltage of the unit should be suitable for series arrangement" as "the insulation voltage of the unit should be considered in the series arrangement" (see 9.11,

9.11 of the.2010 edition);

--- Added guidelines for unprotected capacitors (see 9.14);

--- Removed Appendix A, and the other appendixes were adjusted in order (see Appendix A of the.2010 edition).

This part adopts the redrafting method to modify the use of IEC 61881-1.2010 "railway rolling stock equipment power electronic capacitors

Part 1. Paper/plastic film capacitors.

This section has structural differences compared to IEC 61881-1.2010, an increase of 3.36, 3.37, 3.38, an increase of 5.2.1 overview,

5.15.1 Overview, 9.3.1 overview, subsequent clauses are postponed; 3.7, 3.8, 3.26.1, 3.29, 3.30.1, 3.30.2, 8.1 are deleted, and 8.1.1 is adjusted

8.1, 8.1.2 is 8.2.

This section has technical differences compared to IEC 61881-1.2010, and the terms involved in these differences have been passed on the outside margins.

The vertical single line (-) of the position is marked. The main technical differences and their reasons are as follows.

--- Revised the scope and increased the specific content of the standard. According to GB/T 3984, change "40Hz~24000Hz" to

"Operation at 50 kHz and below", it is clear that power electronic capacitors other than rail transit specified in GB/T 17702 are not applicable;

--- Deleted the description of the capacitors specified in Part 2 and Part 3 in this part of the scope, as the standard name is clear;

---About the normative reference documents, this part has made technical adjustments to adapt to China's technical conditions, adjustments

The situation is reflected in Chapter 2, "Regulatory Citations", and the specific adjustments are as follows.

* Replace IEC 62498-1 with GB/T 32347.1-2015 modified with international standards (see 4.1.1);