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Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for thermal fatigue of fine ceramics substrate

Céramiques techniques — Méthode d'essai de la fatigue thermique des substrats des céramiques techniques

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Foreword

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The committee responsible for this document is ISO/TC 206, *Fine ceramics*.

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Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for thermal fatigue of fine ceramics substrate

1 Scope

This International Standard describes the test methods for determining thermal fatigue property of fine ceramic substrates applied to power modules, electronic control unit and similar devices.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4287, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters*

ISO 3611, *Geometrical product specifications (GPS) — Dimensional measuring equipment: Micrometers for external measurements — Design and metrological characteristics*

ISO 13385-1, *Geometrical product specifications (GPS) — Dimensional measuring equipment — Part 1: Callipers; Design and metrological characteristics*

ISO 80000-1, *Quantities and units — Part 1: General*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
ceramic substrate
electrical circuits substrate which joined the metal plate to ceramics, applied to power modules and similar devices

3.2
thermal cycling
temperature which is simply and cyclically repeated between a specific high value and a specific low value

3.3
four-point bending strength
maximum value of stress generated in a test specimen obtained by a four-point bending test

3.4
residual strength ratio
value ($\sigma_b / \overline{\sigma_{b0}}$) of four-point bending strength of a test specimen exposed to thermal cycling (σ_b) divided by the mean four-point bending strength of test specimens not exposed to thermal cycling ($N = 0$) ($\overline{\sigma_{b0}}$)

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