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Semiconductor devices – Micro-electromechanical devices – Part 38: Test method for adhesion strength of metal powder paste in MEMS interconnection

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SEMICONDUCTOR DEVICES – MICRO-ELECTROMECHANICAL DEVICES –

Part 38: Test method for adhesion strength of metal powder paste in MEMS interconnection

FOREWORD

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IEC 62047-38 has been prepared by subcommittee 47F: Micro-electromechanical systems, of IEC technical committee 47: Semiconductor devices. It is an International Standard.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
47F/378/FDIS	47F/382/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 62047 series, published under the general title *Semiconductor devices – Micro-electromechanical devices*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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SEMICONDUCTOR DEVICES – MICRO-ELECTROMECHANICAL DEVICES –

Part 38: Test method for adhesion strength of metal powder paste in MEMS interconnection

1 Scope

This part of IEC 62047 specifies a test method for measuring the adhesion strength of metal powder paste in the electrical interconnection between micro-electromechanical systems (MEMS) and a circuit board. The typical examples of metal powder paste are anisotropic conductive paste, solder paste, and nanoscale metallic inks. This testing method is valid for metal powder diameters from 10 μm and 500 μm.

In this test method, a uniaxial compression load is applied to metal powder paste using a glass lens simulating an actual MEMS device; then, the adhesion strength is measured by retracting the lens. This test method is proper when the adhesion strength should be analyzed by considering the actual contact area between the MEMS device and metal powder particles.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at http://www.iso.org/obp
- IEC Electropedia: available at http://www.electropedia.org/

3.1
contact load
P_L
predetermined force when the lens is contacted with metal powder paste

Note 1 to entry: Contact load is expressed in N.

3.2
maximum pulling force
P_C
maximum of pulling force endurable for a test piece

Note 1 to entry: Maximum pulling force is expressed in N.

3.3
contact area only with metal powder
A_{MP}
contact area made with metal powder only when the contact load(P_L) is applied

Note 1 to entry: Contact area only with metal powder is expressed in m^2.