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Handbook for Press-fit Standard for Automotive Requirements and other High-Reliability Applications

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Handbook for Press-fit Standard for Automotive Requirements and other High-Reliability Applications

Developed by the Cold Joining Press-fit Handbook Task Group (5-21n) of the Assembly & Joining Committee (5-20) of IPC

Users of this publication are encouraged to participate in the development of future revisions.

Contact:

IPC
3000 Lakeside Drive, Suite 105 N
Bannockburn, Illinois
60015-1219
Tel 847 615.7100
Fax 847 615.7105

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Assembly & Joining Committee

Chair
Daniel Foster
Missile Defense Agency (MDA)

Vice Chair
Udo Welzel
Robert Bosch GmbH

Cold Joining Press-fit Handbook Task Group

Co-Chairs
Udo Welzel
Robert Bosch GmbH

Hans-Peter Tranitz
Continental Automotive GmbH

Technical Liaisons of the IPC Board of Directors

Bob Neves
Microtek (Changzhou) Laboratories

Cold Joining Press-fit Handbook Task Group

Thomas Ahrens
Trainalytics GmbH

Travis Anthony
Axiom Electronics, LLC

Piotr Armata
Murata Power Solutions

Bobby Bean
Collins Aerospace

Joerg Bornemann
Trainalytics GmbH

Lars Bruno
Ericsson AB

Zhiman Chen
ZhuZhou CRRC Times Electric Co., Ltd.

Erika Crandall
TE Connectivity

Clement Dehaye
Alstom Transport SA (Livraison)

Todd M Downing
Raytheon

Hermann Eicher
EPT Guglhoer GmbH

Constantino Jose Gonzalez
ACM Training & Consulting

Thomas Gottwald
Schweizer Electronic AG

Joe Jeery
TTM Technologies, Inc.

Gaston Hidalgo
Toyota Motor North America

Nancy Hisge
Leopold Kostal GmbH & Co KG

Philippe Jaeckle
Robert Bosch GmbH

Michael Jezierski
Trainalytics GmbH

Daniel Koss
TTM Technologies, Inc.

Dietmar Kurzeja
Possehl Electronics

Francois Le-Rest
Continental Automotive France SAS

Ismael Lopez Garcia
Continental Automotive

Anthony Martinelli
Raytheon Company

Patrick May
Ametek Aerospace Ltd

Michael Meckl
Interplex Industries, Inc

Werner Moritz
iwis smart connect GmbH

Jason Nipper
Collins Aerospace

Timothy John Pearson
Collins Aerospace

Jan Pedersen
Elmatica AS

Ramon Cortina-Lopez
Continental Automotive

Ralf-Michael Sander
Eberspaecher St. Georgen GmbH & Co. KG

Karl A. Sauter
Oracle America, Inc.

Robert Schirmacher
ERSA GmbH

Michael Schleicher
Semikron Elektronik GmbH Co. KG

Nikhil Shinde
Molex, LLC

Pawel Slusarczyk
APTIV

Bhanu Sood
NASA Goddard Space Flight Center

Toshiyasu Takei
Japan Unix Co., Ltd.

Marius Tarnovetchi
Vitesco Technologies Engineering Romania SRL

Hans-Peter Tranitz
Continental Automotive GmbH

Frank Uibel
Uibel Consulting

Udo Welzel
Robert Bosch GmbH

Heike Woldt
Diehl Metal Applications GmbH

Fonda B. Wu
Raytheon Company

Robert Zauter
Wieland-Werke AG

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Handbook for Press-fit Standard for Automotive Requirements and other High-Reliability Applications

1 SCOPE

This document provides guidelines and supporting information for manufacturing electronic assemblies using compliant press-fit technology. The intent is to explain the ''how-to'' and ''why'' information, and fundamentals for these processes.

Additional detailed information can be found in documents referenced within each individual section. Users are encouraged to use those referenced documents to better understand the applicable subject areas.

This handbook is supporting the IPC-9797 standard.

1.1 Applicability This handbook is for guidance only. The design concepts, guidelines, and procedures presented in this document are not requirements, and this document is not binding, unless separately and specifically included by the applicable contract, approved drawing(s), or purchase order.

1.2 Measurement Units This standard uses International System of Units (SI units) per ASTM SI10, IEEE/ASTM SI 10, Section 3 [Imperial English equivalent units are in brackets for convenience]. The SI units used in this standard are millimeters (mm) [in] for dimensions and dimensional tolerances, Celsius (°C) [°F] for temperature and temperature tolerances, grams (g) [oz] for weight, and lux (lx) [footcandles] for illuminance.

Note: This standard uses other SI prefixes (ASTM SI10, Section 3.2) to eliminate leading zeros (for example, 0.0012 mm becomes 1.2 µm) or as an alternative to powers-of-ten (3.6×10^3 mm becomes 3.6 m).

1.2.1 Verification of Dimensions When an inspection is done on an assembly, measuring dimensions and determining percentages listed in the standard are not required unless there is a doubt or a question is raised about the acceptance of the product. When there is a doubt or a question is raised, then a referee determination should be implemented, at which time measurements should be made or percentages calculated using the referee magnifications defined in the standard. For determining conformance to the specifications in this standard, round all observed or calculated values "to the nearest unit" in the last right-hand digit used in expressing the specification limit, in accordance with the rounding method of ASTM Practice E29. For example, specifications of 2.5 mm max, 2.50 mm max, or 2.500 mm max, round the measured value to the nearest 0.1 mm, 0.01 mm, or 0.001 mm, respectively, and then compare to the specification number cited.

1.3 Use of "Lead" For readability and translation, this document uses the noun "lead" only to describe leads of a component. The metallic element "lead" is always written as Pb.

1.4 Abbreviations and Acronyms Periodic table elements are abbreviated in the standard. See Appendix A for abbreviations, including elements and acronyms used in this standard.

1.5 Terms and Definitions Other than those terms listed in IPC-9797, the definitions of terms used in this handbook are in accordance with IPC-T-50.

2 APPLICABLE DOCUMENTS

2.1 IPC Documents[1]

IPC-T-50 Terms and Definitions for Interconnecting and Packaging Electronic Circuits

IPC-6012 Qualification and Performance Specification for Rigid Printed Boards

IPC-6012EA Automotive Applications Addendum to IPC-6012E, Qualification and Performance Specification for Rigid Printed Boards

IPC-9797 Press-fit Standard for Automotive Requirements and other High-Reliability Applications

IPC-A-600 Acceptability of Printed Boards

IPC-4552 Specification for Electroless Nickel/Immersion Gold (ENIG) Plating for Printed Boards

IPC-4553 Specification for Immersion Silver Plating for Printed Boards

1 www.ipc.org
2 www.iec.ch
3 www.astm.org