Australian Standard®

Printed board assemblies

Part 1: Preparation, handling and assembly

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This Australian Standard was prepared by Committee TE/6, Printed Circuits. It was approved on behalf of the Council of Standards Australia on 16 December 1988 and published on 13 October 1989.

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Australian Electrical and Electronic Manufacturers Association

Australian Tin Information Centre

Civil Aviation Authority

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Department of Defence

Department of Industry, Technology and Commerce

Institution of Radio and Electronics Engineers, Au[illegible]

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PREFACE

This Standard was prepared by the Organization's Committee on Printed Board Assemblies. During its preparation attention was given to BS 6221.20 *Printed Wiring Boards: Part 20—Guide for the assembly of printed wiring boards,* for which assistance due acknowledgment is given.

It covers handling of components, preparation of the base board, insertion of components, soldering, inspection and specialized subjects such as cleaning and conformal coating as part of a series of Standards on printed board assemblies.

Subjects such as assembly of surface mounted components are treated only briefly, as it is the subject of more recent treatment in Standards on various aspects of that subject and on surface mount land patterns based on preferred components. Also in course of preparation are Standards on cleanliness and applicable cleaning procedures; and the repair of printed circuits, which provide much greater detail than the brief items contained in this Standard.

Subjects which are covered in some detail include solder, soldering and solderability, all of which are inherent to the preparation of quality printed board assemblies. Attention is drawn to the discussion on solder and soldering methods of producing printed board assemblies. Solder flux and the properties of solder and soldering which require attention are also discussed.

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STANDARDS AUSTRALIA

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Part 1: Preparation, handling and assembly

1 SCOPE. This Standard sets out guidelines and recommends principles and practices to be applied to the assembly of components on printed board assemblies irrespective of the method of manufacture of the printed board.

2 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS
1057 Quality assurance and quality control—Glossary of terms
1099 Basic environmental testing procedures for electrotechnology
1099.2T Part 2: Tests—Test T: Soldering
1560 Recommendations for the design and use of components intended for mounting on printed circuit boards
1834 Material for soldering
1834.1 Part 1: Solder alloys
1834.2 Part 2: Flux cored solders
2508 Safe storage and handling information cards for hazardous materials
2546 Printed boards
2546.0 Part 0: Terms and definitions
2546.1 Part 1: General requirements and test methods
2546.3 Part 3: Design and use
2547 Semi-conductor devices
2547.1.1 Part 1.1: Discrete devices—General
3508 Printed board assemblies
3508.4 Part 4: Acceptability of printed board and solder joints—Pictorial representation

BS
5917 Specification for conformal coating material for use on printed circuit assemblies

US Federal QQ-S-571—Solder, tin alloy: Tin-lead alloy; and Lead alloy Standard

3 DEFINITIONS.

For the purpose of this Standard the definitions given in AS 2546.0 and AS 1057 apply.

4 STORAGE.

4.1 Conditions. Components, printed boards and printed board assemblies should be stored in an area free from dust-generating surfaces and materials, and in a non-corrosive atmosphere to prevent deterioration.

To prevent or retard loss of solderability of boards or assemblies, the ambient temperature of dedicated storage areas should be within the range 15°C to 30°C, the relative humidity within the range 25% to 60%, and as constant as possible. This may require the atmosphere to be conditioned for optimum results to be attained.

4.2 General. The use of sealed containers, including plastics bags, containing a desiccant is recommended. Bags or containers should not be contaminated by silicones, sulphur compounds or other detrimental residues.

Usage of printed board components, on a 'first in first out' basis should be strictly observed. Items which have been stored for periods in excess of their recommended storage life, should be tested for solderability before use.

Printed boards should be stored flat, either enclosed in bags as above or interleaved with suitable tissue paper, in suitable, well ventilated containers or racks. The extra precautions listed in Clause 5.2 as necessary for electrostatic-sensitive devices and assemblies containing such devices, should be strictly observed.

5 HANDLING OF COMPONENTS PRIOR TO ASSEMBLY.

5.1 General.

5.1.1 *Housekeeping.* Work areas shall be maintained in a clean and orderly condition. All dirt, grease, flux, solder spatter, chips and other contaminating foreign material shall be promptly removed. Eating, smoking or drinking at the work-station shall not be permitted, and precautions shall be taken to preclude contamination by prohibiting products of such activities from the work area.

Surfaces of component leads and printed boards which are to be soldered shall not be handled with bare hands. If the part cannot be handled without touching the surface to be soldered, protective devices such as clean nylon or cotton gloves, finger cots, or special tooling shall be used.

5.1.2 *Temperature and humidity.* The temperature of the work area should be maintained at 24 ± 5 °C, and the relative humidity should not exceed 65%, in order to maintain acceptable moisture content.

5.1.3 *Vapour control.* Areas used for cleaning parts and assemblies where toxic vapours are generated shall employ a local exhaust system for removing the air contaminants.

5.2 Electrostatic sensitive devices.

5.2.1 *General.* It is recommended that safeguards should be taken with respect to semi-conductor components and devices against possible degradation or failure which can be caused by an electrostatic discharge.

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