



ANSI/EIA-540H000-1997

Approved: December 12, 1997

EIA SPECIFICATION

Sectional Specification for Burn-In Sockets Used with Ball Grid Array Devices for Use in Electronic Equipment

EIA-540H000

JANUARY 1998

ELECTRONIC INDUSTRIES ASSOCIATION
ENGINEERING DEPARTMENT



NOTICE

EIA Engineering Standards and Publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for his particular need. Existence of such Standards and Publications shall not in any respect preclude any member or non-member of EIA from manufacturing or selling products not conforming to such Standards and Publications, nor shall the existence of such Standards and Publications preclude their voluntary use by those other than EIA members, whether the standard is to be used either domestically or internationally.

Standards and Publications are adopted by EIA in accordance with the American National Standards Institute (ANSI) patent policy. By such action, EIA does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the Standard or Publication.

This EIA Specification is considered to have International Standardization implication, but the International Electrotechnical Commission activity has not progressed to the point where a valid comparison between the EIA Specification and the IEC document can be made.

This Specification does not purport to address all safety problems associated with its use or all applicable regulatory requirements. It is the responsibility of the user of this Specification to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before its use.

(From Standards Proposal No. 3641, formulated under the cognizance of the CE-3.0 Committee on Sockets.)

Published by

©ELECTRONIC INDUSTRIES ASSOCIATION 1998
Engineering Department
2500 Wilson Boulevard
Arlington, VA 22201

**PRICE: Please refer to the current
Catalog of EIA, JEDEC, and TIA STANDARDS and ENGINEERING PUBLICATIONS
or call Global Engineering Documents, USA and Canada (1-800-854-7179)
International (303-397-7956)**

All rights reserved
Printed in U.S.A.

**SECTIONAL SPECIFICATION
BURN-IN SOCKETS USED WITH BALL GRID ARRAY DEVICES
FOR USE IN ELECTRONIC EQUIPMENT**

CONTENTS

Clause	Page
1 Scope and object	1
1.1 Scope	1
1.2 Object	1
2 General	1
2.1 Related documents	1
2.2 Terminology	2
2.3 Marking	2
2.4 Information to be given in the Detail Specification	2
2.5 Standard values	2
3 Quality assessment procedures	3
3.1 Qualification approval procedures	3
3.2 Primary stage of manufacture	3
3.3 Structurally similar sockets	3
3.4 Quality conformance inspection	3
3.5 Alternative test methods	3
4 Test methods and procedures	4
4.1 Test conditions	4
4.2 Mechanical tests	4
4.3 Electrical tests	5
4.4 Environmental tests	6
5 Packaging requirements	7
5.1 Unit packing	7

EIA-540H000

CONTENTS (Concluded)

Clause	Page
Table	
1 Sequential qualification approval inspection tests	8
2 Lot-by-lot inspection tests	11
Annex	
A Typical LLCR setup	12
B Solder ball deformation	14
C Contact head coplanarity	15

**THIS SECTIONAL SPECIFICATION WAS PREPARED BY THE
ELECTRONIC INDUSTRIES ASSOCIATION'S
CE-3.0 COMMITTEE ON SOCKETS**

1 Scope and object

1.1 Scope

This sectional specification relates to the burn-in sockets for Ball Grid Array (BGA) devices of assessed quality. The purpose of this specification is to provide a means of interchangeability between qualified devices and compatibility between the board and the BGA device and to provide standard socket test methods, gauges and performance requirements.

1.2 Object

The object of this specification is to define:

- A unified numbering system to be used for BGA sockets standardized by the Electronic Industries Association (EIA).
- Functional levels and standard test methods and gauges for use in the examination of these sockets.
- Appropriate reference dimensions of the mating devices and board layout to establish intermateability and interchangeability criteria as specified in the detail.

Test severity and performance requirements prescribed in the detail specifications referring to this sectional specification shall be equal to or greater than those specified herein; degradation is not permitted.

2 General

2.1 Related documents

The following documents of the issue in effect form a part of this specification to the extent specified herein:

EIA-5400000-A Generic Specification for Sockets for Integrated Circuit (IC) Packages for Use in Electronic Equipment.

2.2 Terminology

Terminology shall be in accordance with the issue in effect of the following publications:

EIA-5400000 Generic Specification for Sockets for Integrated Circuit (IC) Packages for Use in Electronic Equipment.

2.3 Marking

The sockets shall be legibly marked with the following information:

- Terminal identification whenever specified by the detail specification.
- Manufacturer's name, trademark, or code identification number.
- Identifying number (EIA part number, manufacturer's part number).

Other markings may be applied to the sockets provided they do not interfere with, obscure, or confuse those markings specified above. Where size, surface conditions or other design considerations will not allow full marking on the part, the markings shall be in the order of preference shown above. Any required markings which cannot be applied to the sockets shall be applied to the package containing the sockets.

2.4 Information to be given in a detail specification

The Detail Specification, based on the relative Blank Detail Specification, shall contain the complete technical requirements for inspection and, if required, any additional quality conformance testing. If the technical requirements of the Generic and/or Sectional Specification relative to inspection are not entirely suitable (either for Technical reasons or for special applications) to the component described in the Detail Specification, the Detail Specification shall set out clearly the various amendments which are to be made in these requirements.

2.5 Standard values

The range for voltage shall not exceed 600 Vdc. The current rating shall not exceed 1 A. Specific voltage and current rating shall be as defined in the Detail Specification.

3 Quality assessment procedures

3.1 Qualification approval procedures

The qualification approval procedures shall be in accordance with 3.1 of EIA-5400000-A and with the following additional requirements:

3.1.1 Qualification inspection tests:

The qualification inspection tests are prescribed in table 1 herein. When additional Test Groups are prescribed by the detail specification, the identity of the test group, the sequence of tests, and the minimum sample quantity shall be in accordance with table 1. When the detail specification prescribes tests not in table 1, the detail specification shall include the additional tests either within an existing test group(s) or as an additional test group(s). No failures shall be permitted.

3.2 Primary stage of manufacture

The primary stage of manufacture is the first process subsequent to the manufacture of finished piece parts and subassemblies. A subassembly is defined as the permanent assembly of two or more piece parts.

3.3 Structurally similar sockets

Structurally similar sockets shall be as prescribed by EIA-5400000-A.

3.4 Quality conformance inspection

Quality conformance inspection shall be as prescribed by EIA-5400000-A.

3.4.1 Lot-by-Lot inspection tests:

The lot-by-lot inspection tests are prescribed in table 2 herein. The sequence of tests is optional unless otherwise specified by the detail specification.

3.4.2 Periodic inspection tests:

The periodic inspection tests shall be performed on groups I through VII every 36 months.

3.5 Alternative test methods

Alternative test methods shall be as described in EIA-5400000-A.