



EIA STANDARD

ANSI/EIA-540B0AA-A-2001
Approved: October 8, 2001

**Detail Specification for
Production Ball Grid Array
(BGA), High Pin Count (1089
Pins and Greater) Socket for Use
in Electronic Equipment**

EIA-540B0AA-A
(Revision of EIA-540-B0AA)

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(From Standards Proposal No. 5328.11, formulated under the cognizance of the CE-2.0 Committee on EIA National Connector and Socket Standards).

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Systems Standard Organization ELECTRONICS INDUSTRIES ALLIANCE	DETAIL SPECIFICATION NUMBER EIA-540B0AA-A
GENERIC SPECIFICATION NUMBER EIA-5400000-A	SECTIONAL SPECIFICATION NUMBER EIA-540B000
	BLANK DETAIL SPECIFICATION NUMBER None
Socket Outline Drawing See figures 1 and 2 for dimensional information. Tolerances: ± 0.13 mm (± 0.005 in) on all figures except where noted.	Product Description This specification is for use with BGA devices described in Annex F.
	Product Requirements The complete requirements for the interconnect system shall consist of this Detail Specification and where applicable the latest issue of EIA-540B000.
	TYPICAL CONSTRUCTION Contact Material : Copper alloy Outermost Contact Finish: Tin-lead Termination Finish : Tin-lead Insulator Material : High temperature thermoplastic
	APPLICATION/ASSESSMENT LEVEL For use in commercial, computer, and communications equipment.

1 Scope and purpose

This specification covers interconnect systems typically used for production ball grid array (BGA) devices with pin counts of 1089 and greater.

1.2 Purpose

The purpose of this detail specification is to provide all information required for the identification and assessment of the BGA socket described herein. The information, contained herein or by reference, is complete and sufficient for inspection purposes.

2 Normative references

The following standards contain provisions that, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

- a) EIA-364-C, Electrical Connector Test Procedures Including Environmental Classifications (December, 1994).
- b) EIA-5400000-A , Generic Specification (August, 1996).
- c) EIA-540B000, Sectional Specification (November, 1997).

3 Socket details

3.1 Contact plating

The outermost plating of the contact area shall be tin-lead or tin-lead compatible and shall satisfy the requirements specified in the qualification test sequence. The contact plating systems utilized shall be compatible to the systems they are mated to, such as:

- a) Tin-lead
- b) Other

NOTE: Gold-plated contact surfaces mated to tin-lead plated contact surfaces are not an acceptable plating combination.

3.2 Contact finish at termination area

Contact finish at the termination area shall be as indicated in Table 1.

Table 1 Contact finish at termination area

Contact finish
Tin-lead
Other

3.3 Actuation method

The actuation of the socket shall be as indicated in table 2.

Table 2 Actuation type

Actuation method
ZIF with Lever Actuation
ZIF with Slot Actuation
Other

3.4 Mounting Method

The mounting of the socket shall be as indicated in table 3.

Table 3 Mounting method

Mounting method
Surface Mount
Through Hole
Other

3.5 Socket dimensions

The configuration of the BGA socket is optional within the limits of the dimensions within figure 1 and the mounting dimensions within figure 2.

3.6 Contact spacing

The contact spacing shall be as indicated in table 4.

Table 4 Contact spacing

Contact spacing
1.27 (0.050)
1.00 (0.039)
0.80 (0.030)
0.50 (0.020)
Other

4 Mating devices

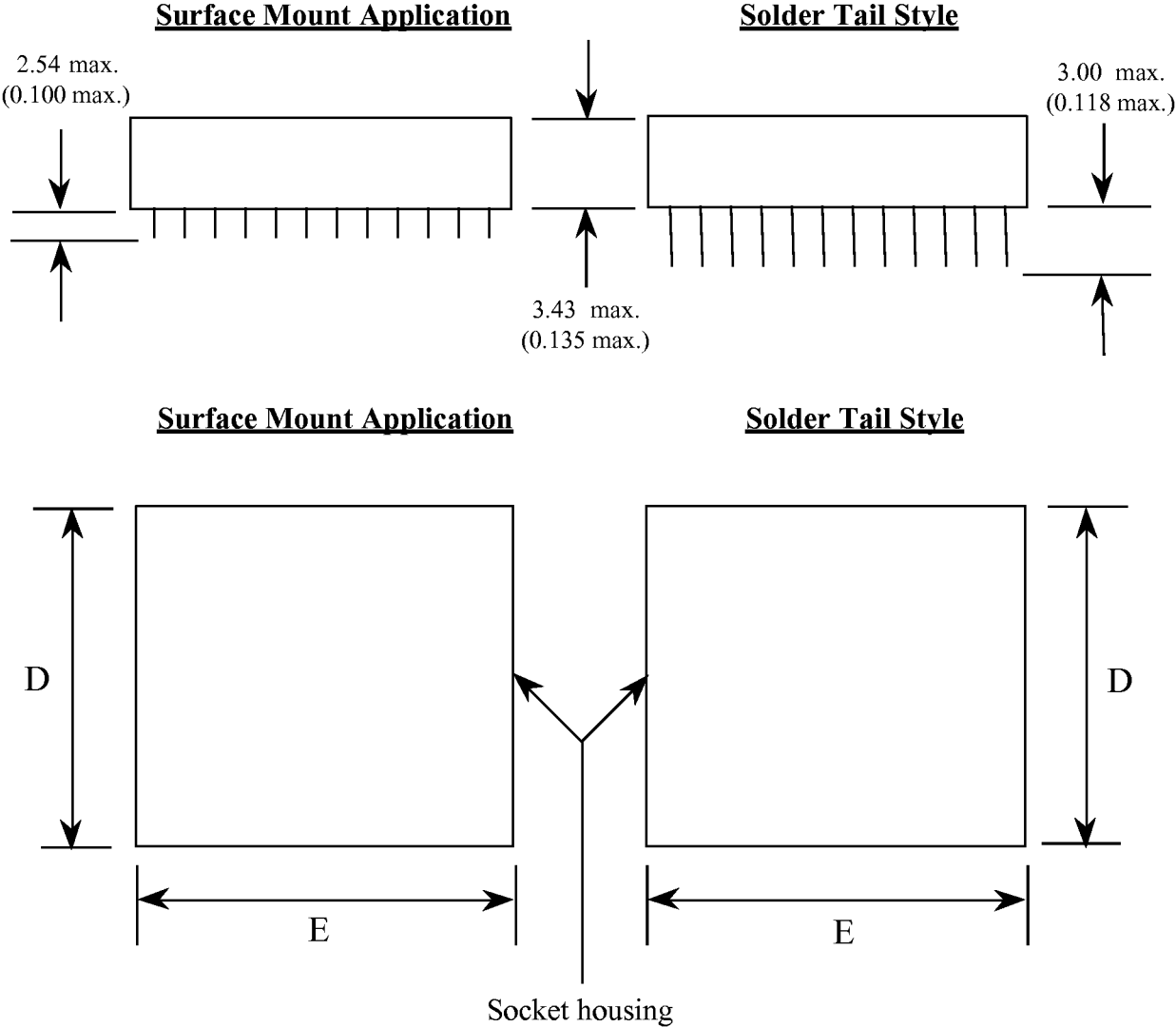
Mating devices shall be in accordance with JEDEC specifications. Said devices shall be internally wired in order to perform the appropriate electrical measurements such as low-level circuit resistance (LLCR).

5 Atmospheric conditions for testing

The interconnect system shall be tested at the atmospheric conditions as specified in table 5, general controlled.

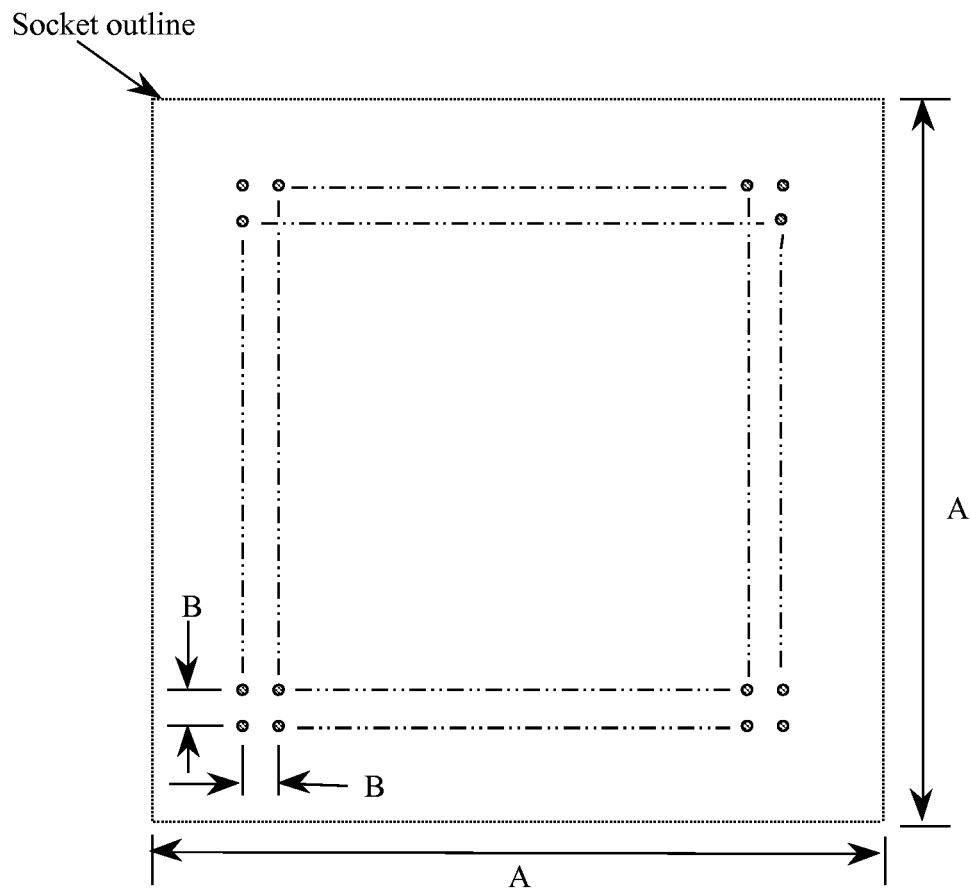
Table 5 Atmospheric conditions for testing

Atmospheric conditions	Temperature	Air pressure	Relative humidity
General controlled	15 °C to 35 °C (59 °F to 95 °F)	87 kPa to 107 kPa (650 mmHg to 800 mmHg)	80% or less



Socket housing	D (minimum)	E (minimum)
16 x 16	30.40 (1.197)	30.40 (1.197)
25 x 25	40.64 (1.600)	40.64 (1.600)
33 x 33	50.80 (2.000)	50.80 (2.000)

Figure 1 Housing dimensions



A	B
30.40	See table 4 for spacing
40.64	See table 4 for spacing
50.80	See table 4 for spacing

Notes (Surface mount application):

- a) SMT pad size : 0.86 mm +/- 0.05 mm diameter
(0.034 in +/- 0.002 in diameter)
- b) SMT pad plating : Tin-Lead

Notes (Plated through hole application):

- a) Finished PTH size : 0.86 mm +/- 0.05 mm diameter
(0.034 in +/- 0.002 in diameter)
- b) PTH plating : Tin-Lead

Figure 2 - Recommended board pattern

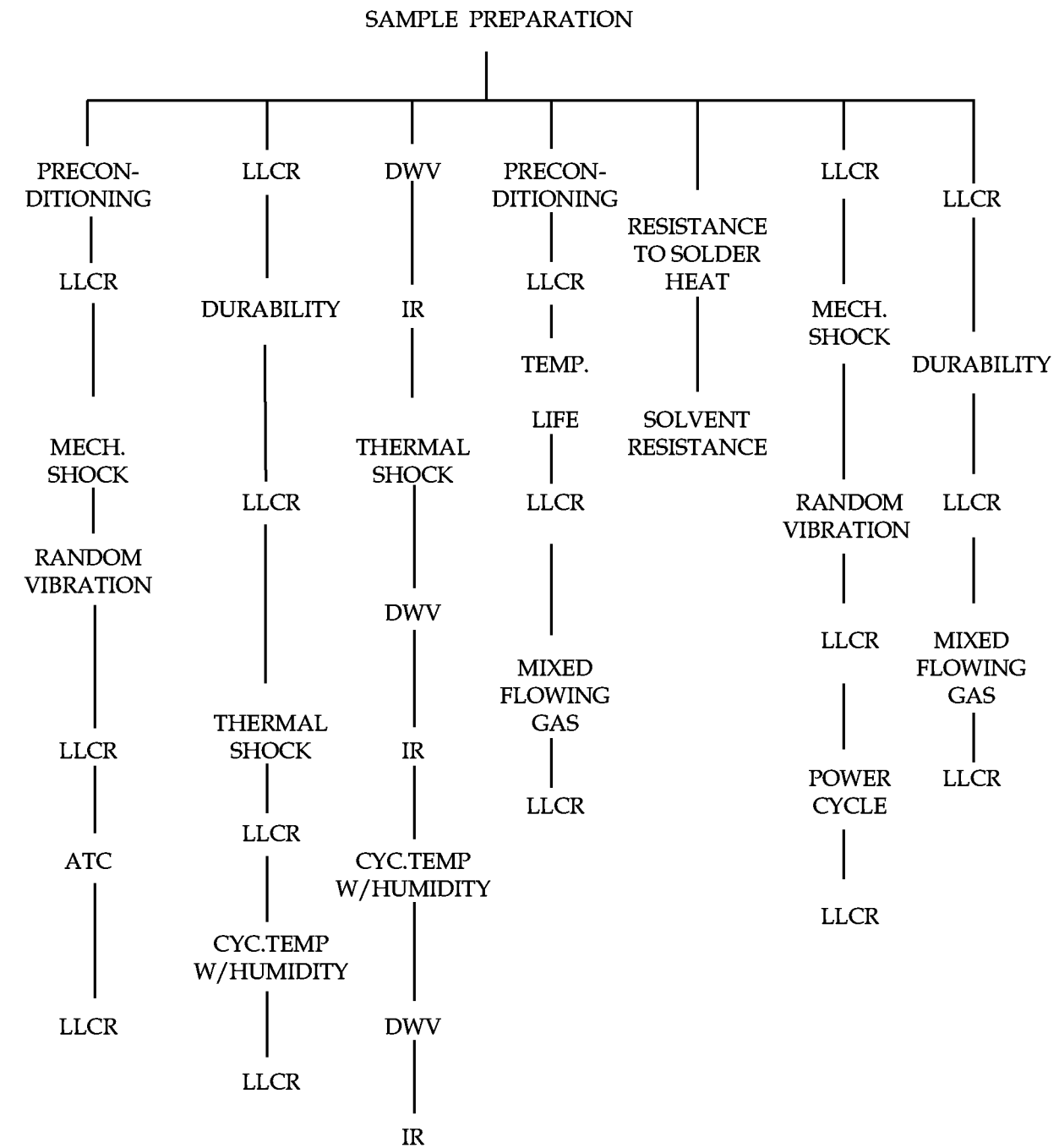


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6 **Test sequence**

This test sequence shows all tests and the order in which they shall be carried out as well as the requirements to be met. The baseline test sequence (figure 3) illustrates the order of tests by group. In the following test sequence tables, where an EIA test is specified without a letter suffix, the latest approved version of that test shall be used.



LLCR : Low level circuit resistance
 ATC : Accelerated thermal cycling
 DWV : Dielectric withstanding voltage
 IR : Insulation resistance

Figure 3 - Baseline test sequence



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