Introduction
IEC/TS 62647-4
Re-balling Standard

Agenda

- History
  - GEIA/IEC/SAE
  - IEC versus SAE the broken connection
  - The (SAE IEC) Re-balling agreement
- The standard
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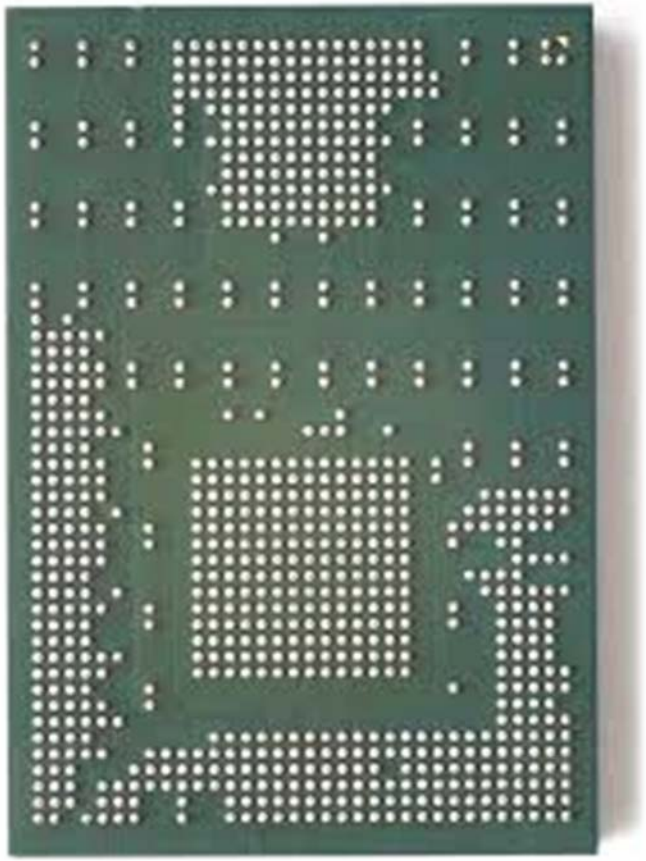
IEC/TS 62647-4 BGA Re-balling Top Level Table of Contents



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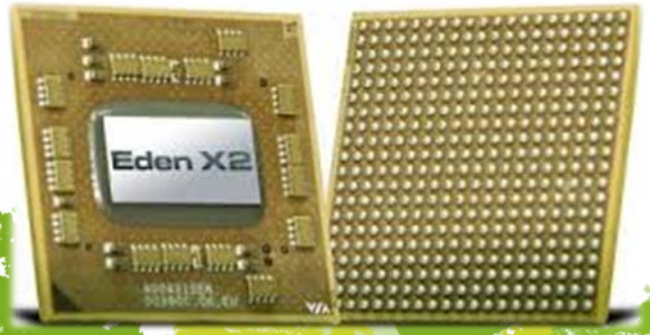
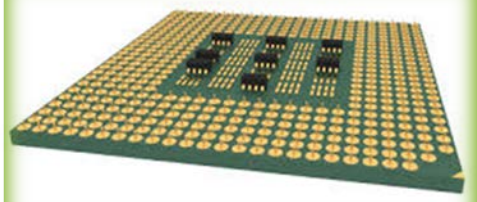
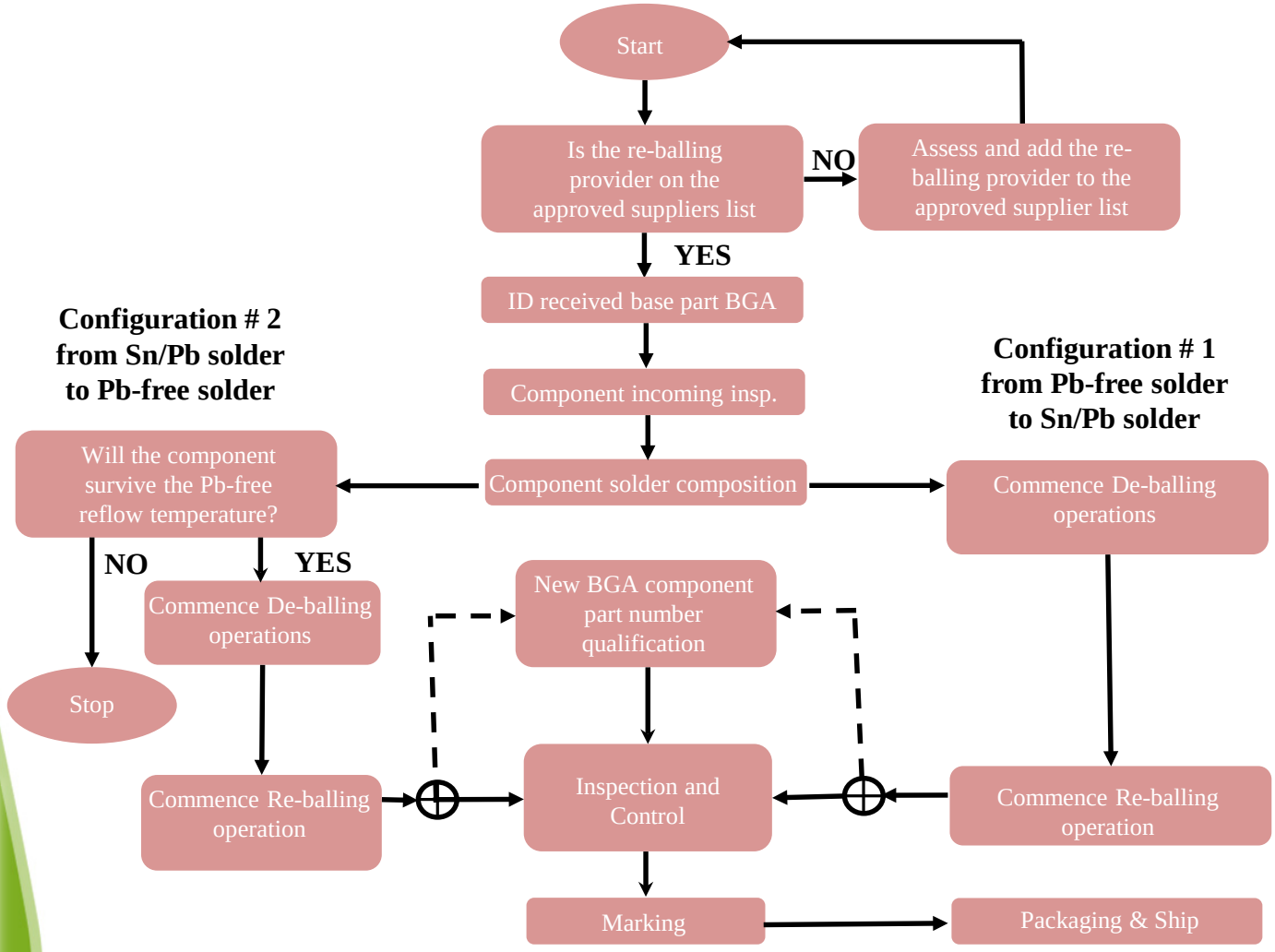


Re-balling Process Approach





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5.2.4 Quality standards

The re-balling provider ***shall*** have a documented quality system registered to an internationally recognized quality management system. In addition the de-balling and re-balling process shall satisfy the applicable requirements of IPC J-STD-001.

NOTE An internationally recognized quality management system can be the relevant parts of EN/AS/JISQ 9100 or equivalent.

5.2.5 Records

Quality records, technical records (e.g. component qualification test results, control results, process monitoring), lot travelers, change notices and all other documentations generated during the de-balling / re-balling process shall be retained and made available to the customer upon request.

5.2.6 Facility requirements

In addition to having the tools and equipment necessary for de-balling and re-balling the re-balling provider's facility cleanliness, lighting, temperature, humidity and environmental control shall be in accordance with IPC J-STD-001 or IPC J-STD-001FS for the class defined by the customer (see 5.2.2 and Table 1).

5.2.7 Electrostatic discharge (ESD)

BGA components are electrostatic discharge (ESD) sensitive and ESD discharge can result in functional damages. Their handling, storage, transportation, shall satisfy the requirements of at least one of the following standards:
IEC TR 61340-5-1 and IEC TR 61340-5-2, or JEDEC JESD 625, ANSI/ESD S20.20 or equivalent.

5.2.8 Physical handling of BGA components

The re-balling Provider shall be responsible for the development and implementation of requirements and procedures necessary to prevent physical damage to BGA components while at the re-balling provider's facility.

5.2.9 Moisture / Reflow sensitivity

Since the re-balling process subjects the BGA component to reflow temperatures the moisture sensitivity level (MSL) shall be identified and maintained in accordance with IPC/JEDEC J-STD-033 or equivalent

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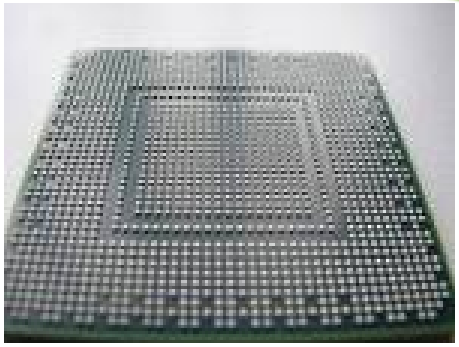
Some Content



6.3 BGA component de-balling

6.3.1 General

The sub-clauses 6.3.2 to 6.3.8 consider the steps for the de-balling operation.

NOTE 6.3 addresses the process steps 9 and 11 identified in Figure 1.

6.3.2 Temperature excursions

Regardless of the method being used the re-balling provider shall have a temperature profile (see 6.2) for the specific BGA package and ensure control of temperature excursions and durations according to IPC J-STD-001.

NOTE: Minimizing time at peak temperature contributes to reduce thermal stress at package level.

The temperature excursion shall be unique to prevent additional stresses, otherwise the re-balling provider shall request customer's approval.

6.3.3 Flux

Unless specified by the customer on its design, or assembly drawings, or specification, or purchase order, the flux shall be selected in accordance with IPC/JEDEC J-STD-004 and IPC J-STD-001 or equivalent.

Flux shall conform to flux activity level L0 of flux materials rosin (RO), resin (RE) or organic (OR). When other activity levels or flux materials are used, data demonstrating compatibility shall be available for customer's review and approval.

If low solid flux is used, flux specific gravity or titration shall be monitored and controlled and monitored a minimum of once per shift. Controls shall include flux replacement schedule.

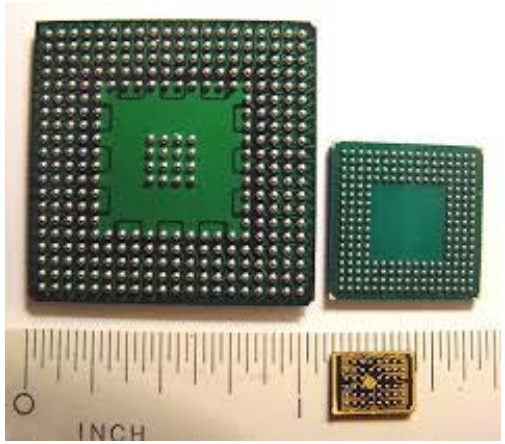
Flux shall be applied to the BGA components before preheat, in a consistent and repeatable manner. The flux apparatus shall be compatible with the flux used.

6.3.4 Preheat

BGA components shall be preheated prior to ball removal. The preheat ramp-up rates and the highest temperature shall not exceed the original component manufacturer's specification. If the original component manufacturer's specification is not available then use IPC/JEDEC J-STD 020.

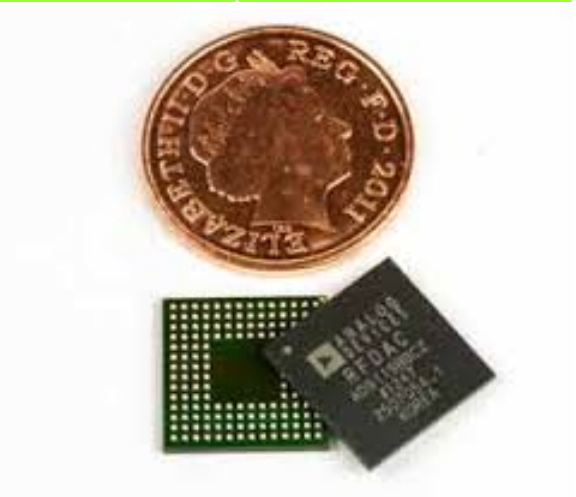
IEC/TS 62647-4 BGA Re-balling Tailoring Template

Requirement Number	Clause or Sub-clause	Requirement Description	Tailored Requirement	Re-balling Provider's Signature	Customer's Signature



IEC/TS 62647-4 BGA Re-balling Compliance Verification Matrix

Item #	Clause in IEC TS 62647-4	Requirement as Specified in this Standard	Location of Compliance in Re-balling Providers Plan/Process	Compliance to Plan Verified and Approved
1	4.0	If tailoring is performed, the re-balling provider *shall* obtain documented customer's concurrence		
2	5.1	The re-balling provider *shall* be on the approved suppliers list with an approved de-balling / re-balling process.		
3	5.2.2	Prior to processing the re-balling provider *shall* obtain the component class from the customer. Descriptions are provided in Table 1.		
4	5.2.3.1	If the re-balling provider is engaged in the procurement of BGA components, the re-balling provider *shall* have a counterfeit electronic component management plan/process which satisfies the requirements of the IEC TS 62668 series and/or SAE AS5553 or equivalent.		



Re-balling Process Key Points

1. This standard provides requirements for going from Pb-free solder to Sn/Pb solder.

2. It discourages the use of the braided wick solder removal process.

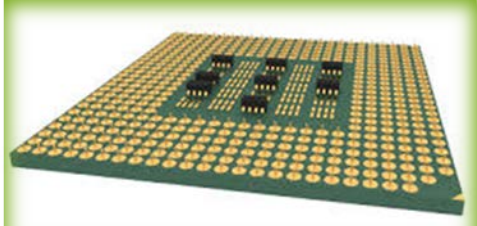
3. It does not restrict the laser de-balling/re-balling process as long as the process can meet the requirements called out in the standard.

4. Deviations from the standard can be made via the tailoring matrix with customer approval.

5. The standard includes a compliance verification matrix.

6. A final draft will be reviewed at the SAE G-24 Committee meeting at Harris Corporation in Melbourne, Fl. On 4 November.

7. The final draft will be reviewed by IEC TC-107 Working group WG-1 in November and will go into ballot through IEC shortly thereafter.



Questions?