

BGA Reballing From SemiPack Services Inc.

A ball grid array (BGA) is a type of circuit board array characterized by its regular grid of soldered metal balls, which are used to establish multiple connections with printed circuit boards (PCBs) in electronic equipment. They are highly durable and long-lasting when compared to other board designs, making them ideal for use in high-performance and industrial equipment in everything from aerospace and avionics systems to military equipment and commercial manufacturing.

With the Restriction of Hazardous Substances (RoHS) implementation in July of 2006, the electronics industry rapidly converted most electronic components and assembly processes from tin-lead to lead-free. Due to reliability concerns, the use of lead-free BGAs is restricted for most Class 3 high reliability and avionics programs and prohibited on most space programs. Furthermore, lead-free BGAs are not compatible with tin-lead soldering processes, and soldering tin-lead BGAs with tin-lead solder may result in very unreliable solder joint interconnects. To mitigate the reliable risks associated with lead-free and mixed tin-lead/lead free assembly, it is necessary to replace the lead-free solder spheres on BGAs with tin-lead.



BGA Reballing Process

BGA reballing services require uniquely designed machinery and a high degree of skill and expertise to ensure quality connections and reliability. SemiPack's BGA reballing process is engineered to produce quality results with the utmost speed and efficiency.

How Does Our Reballing Process Work?

Step 1 BGA Reballing Sphere Removal

The first step in our reballing process is the removal of the existing solder spheres. Using our Robotic Technology, we remove the solder spheres from BGAs before replacing them with new solder spheres of the desired alloy.



Step 2 BGA Reballing Sphere Attachment & Alignment

Using custom-designed, laser-cut stencils, we ensure that the reattached spheres are perfectly aligned in accordance with customer specifications, including placement position and sphere diameter.



Step 3 BGA Rework & Reflow Services

After the new spheres are attached, we use convection reflow to solder the new spheres to the component PCB. Convection reflow is completed in an oven with highly calibrated thermal gradients to ensure reliable solder connections without causing thermal damage to the BGA package.



Step 4 BGA Inspection & Testing

One of the most critical aspects of BGA reballing services is quality assurance inspections and testing. At SemiPack Services, we provide a wide range of inspection and testing services throughout the BGA reballing process, including visual and optical inspection, X-ray fluorescence (XRF), co-planarity, FOD, and solderability.

SemiPack Provides Quality BGA Component Reballing

At SemiPack, we are committed to providing only the highest quality BGA reballing services in the industry. We are ITAR compliant and ISO 9001:2015 certified, which allows us to provide services to our customers in aerospace, defense, and a wide range of other specialty industries. We are committed to using only the latest technology for the most efficient and cost-effective services that meet even the most stringent industry standards. Our compliance operations also include:

Quality System Certification AS9100 Rev D

Comprehensive Process Documentation with Full Traceability

Full ESD Environment

As an industry leader in BGA modifications and conversions, SemiPack Services is capable of handling both high and low volume BGA reballing processes with quick turnarounds. We pride ourselves on our problem-solving skills and enjoy the challenge of finding the perfect BGA solution for even the most complex applications and newest technologies.

BGA Reballing Services

SemiPack's cutting-edge BGA reballing machines are capable of quickly restoring BGA components to their original specifications. As a recognized global provider of BGA services, SemiPack is dedicated to providing a full complement of quality BGA reballing services for our customers in every industry.

SemiPack's Reballing Services

Our BGA reballing services include:

Commercial Semiconductor Terminations with Tin-Lead (Sn-Pb)

SnPb Conversions for RoHS-Compliant Manufacturers

Low Non-Recurring Engineering (NRE) Charges

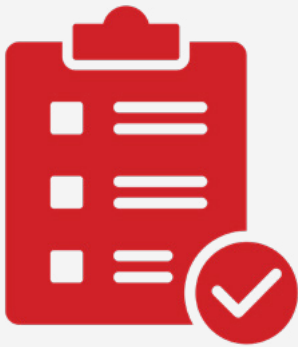


Reball of BGAs with High Melting Point (HMP) Spheres

BGA Restoration

RoHS to SnPb Conversions

First Time Ball Attachment of LGA/QFN/LCC Packages



BGA Restoration Services Based On IEC TS 62647-4 Compliance

Not only do we offer quality BGA reballing services, but we are also pleased to offer a host of IEC TS 62647-4 compliant BGA restoration services through our staff of experienced engineers and operators. With SemiPack, you receive reliable and consistent components that meet even the most stringent industry standards. Our extensive range of certifications allows us to provide exceptional BGA services for our customers in any industry.

SemiPack's BGA Reballing Advantage

For more than a decade, SemiPack Services has made continuous improvements in mechanical and process engineering for our BGA modification operations. Using the latest robotic automation and solder sphere placement technology, we specialize in reballing BGA packages as small as 3mm² to over 50mm² with ball pitch ranging from 0.30mm to 1.50mm and solder spheres sizes ranging from 0.20mm to 0.75mm.

BGA Modification & System Qualifications

Fully certified in accordance with ISO 9001, AS9100 Rev D, and ITAR standards, SemiPack is pleased to offer the highest degree of quality for critical military, aerospace, commercial, and automotive applications. Our internal standards are consistent with IEC TS 62647-4, Process Management for Avionics & Defense Systems that contain Lead-Free Solder. With the highest level of technology and strict adherence to industry standards, SemiPack is capable of producing superior quality products with the utmost precision and speed.

Pre- And Post-BGA Reballing Qualification Tests

At SemiPack Services, we ensure superior quality products through rigorous testing conducted throughout the reballing process.

Pre-Process & Process Qualification Tests

Visual Inspections

XRF Test

Post-Process Qualification Tests

Visual Inspection

XRF Test

Solderability Test

Solaris BGA Metrology System, including 3D optical inspection measurement, sphere diameter and placement, and co-planarity

Additional Testing, including Ball-Shear CSAM, and DPA



Standards We Comply To:

IEC TS 62647-4 – Process management for avionics – Aerospace and defense electronic systems containing lead-free solder – Part 4: Ball grid array (BGA) re-balling.

J-STD Compliance & MIL-STD Compliance From SemiPack

SemiPack maintains a comprehensive selection of industry certifications and registrations to ensure compliance with rigorous industry standards, including J-STD for soldering materials and processes as well as MIL-STD for military standards and operations in extreme conditions.

J-STD Specifications

J-STD 006

Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solders for electronic soldering applications.

J-STD 033

Joint IPC/JEDEC standard for handling, packing, shipping, and use of moisture and reflow-sensitive surface-mount devices.

J-STD-004

Requirements for the classification and testing of rosin, resin, organic, and inorganic fluxes for high-quality interconnections.

J-STD-020

A joint standard for moisture sensitivity classification developed by the IPC/JEDEC.

MIL-STD Specifications

MIL-STD 883

Establishes uniform methods, controls, and procedures for testing microelectronic devices suitable for use within military and aerospace electronic systems.

MIL-STD 750

Establishes uniform methods for testing semiconductor devices.

MIL-STD 202

Establishes uniform methods for testing electronic and electrical component parts.

Choose SemiPack Services For Superior BGA Reballing Services

For more than 15 years, SemiPack Services has been a leading global provider of superior quality reballing services for our customers in critical industries, from aerospace and automotive to defense and medical. We pride ourselves on using the latest BGA modification technology to ensure exceptional accuracy with a quick turnaround. To learn more about our BGA reballing and restoration services, [contact us](#) today or [request a quote](#).