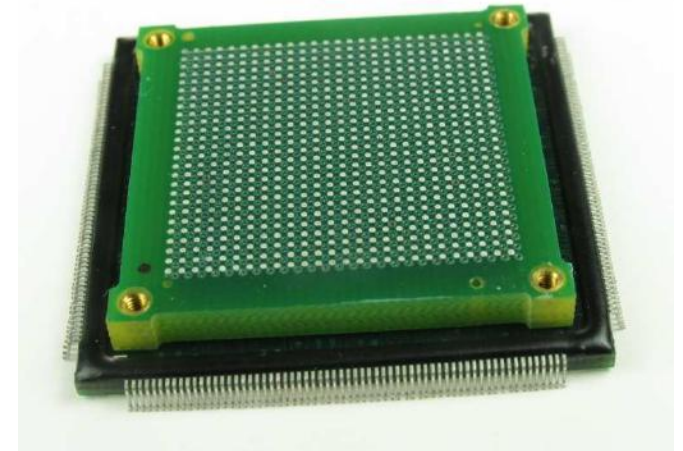




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## **Package Converters**

**High Performance  
IC Sockets  
And Adaptors**

# Corporate Overview

- SMT Interconnection Specialists
- Over 20 years of Industry Experience
- Over 6,000 Products Offered
- Mechanical and Electrical Engineers
- Quick Design Capability
- Quick Turn Production



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# IC Package Conversion

- Broad Product Range
- All Major Package Types Available
- Hundreds Standard Items Offered
- Many Custom Designs Delivered
- Start a new Custom Every Day - Average

# Package Converter Examples



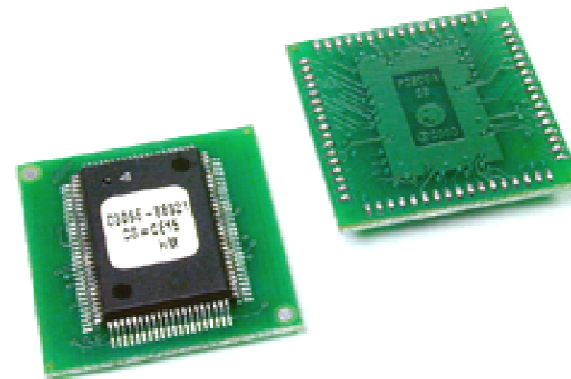
**SOIC - DIP**



**BGA - BGA**



**BGA - PLCC**



**QFP - PLCC**

# IC Package Converters

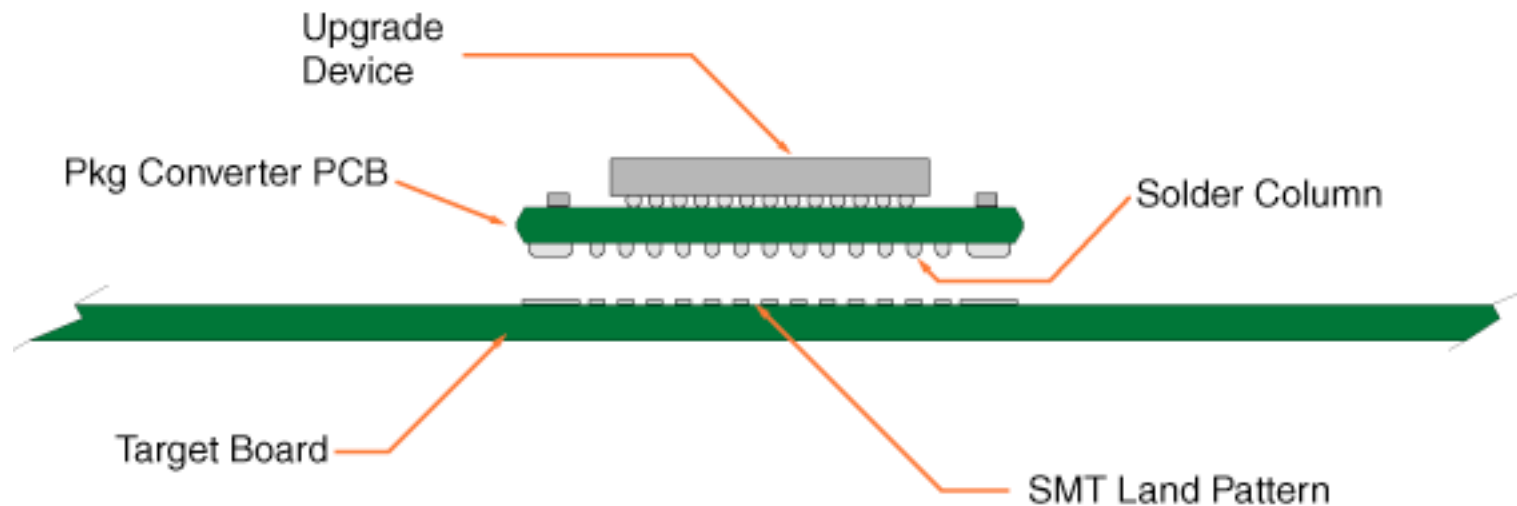
- **Low Profile**
  - Less than 2.0 mm total added height
- **Low Impact Footprint**
  - Less than 0.7 mm per side
- **IC's including Voltage Regulation Available**
  - On-board regulators and capacitors
  - Multi-chip and Multi-layer

# Shaped Solder Column Technology

- Matches Target Land Pattern
- Allows Simple Flux & Reflow Attach
- Cost Effective
  - In Moderate to High Volume
- Proven Reliability and Performance
- Used in MIL Applications
- Tough, Durable



## Package Converter with Shaped Solder Column - SSC



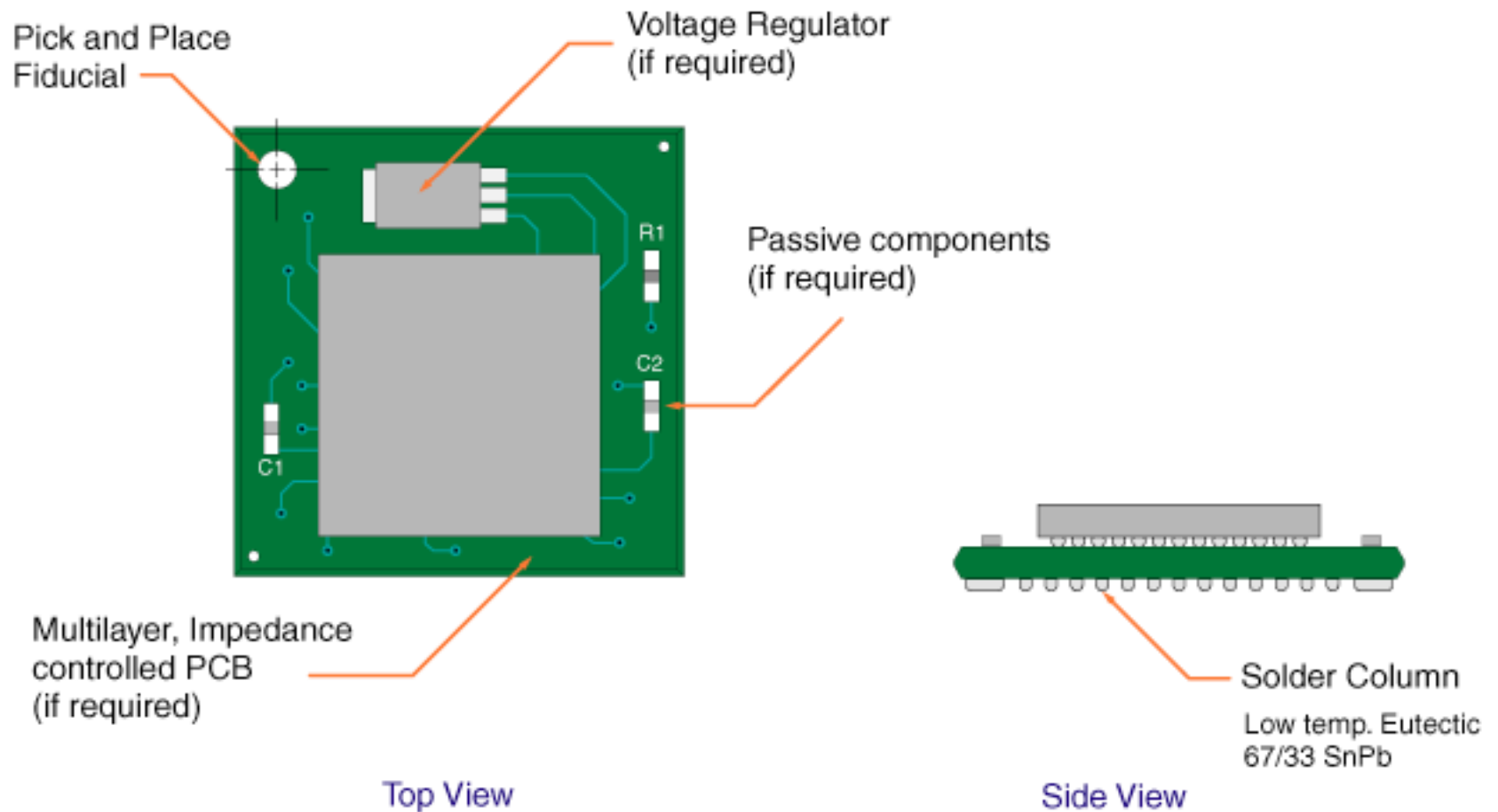
Side View

Combines space efficiency with high speed.

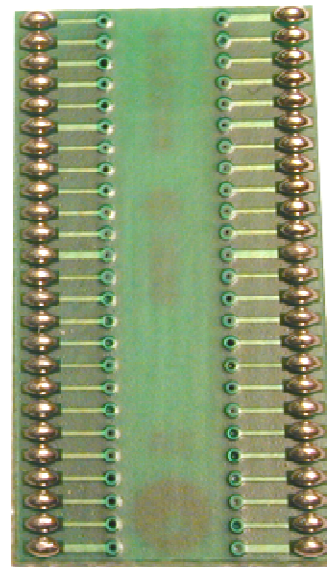
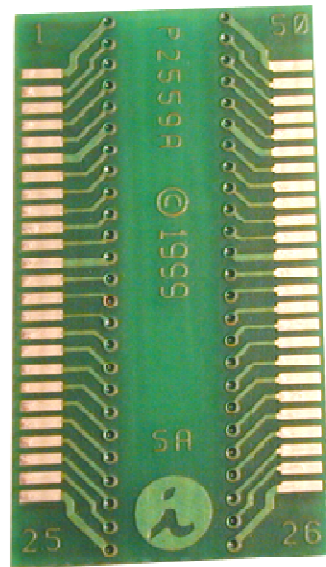
# Package Converter – Leaded Parts

- Types of Leaded Parts
  - PGA – Connect with SMT or Soldered Blind Pin
  - DIP – Connect with SMT or Soldered Blind
  - QFP – Connect with Gullwing Leadframe or Shaped Solder Column
  - PLCC – Connect with Leadframe or Shaped Solder Column

## Package Converter Design Possibilities



# SOIC to SOIC

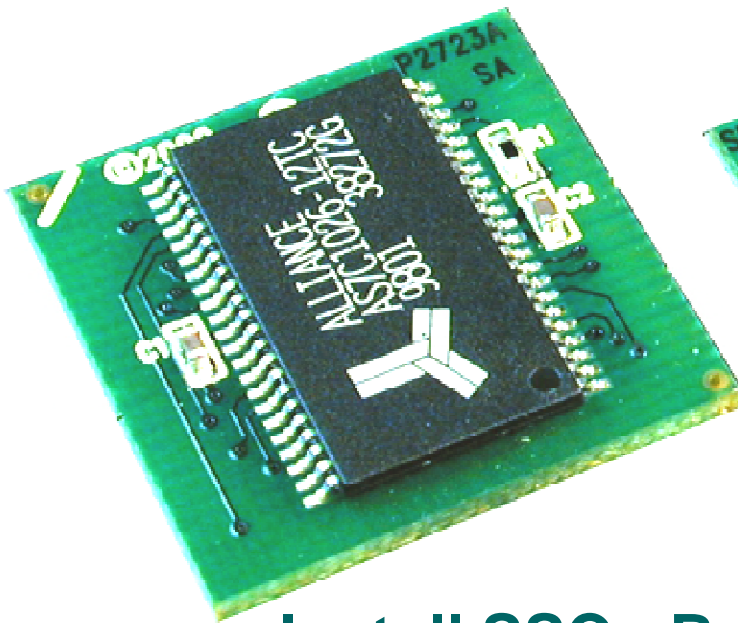


SSC

**SMT Leads on Top**

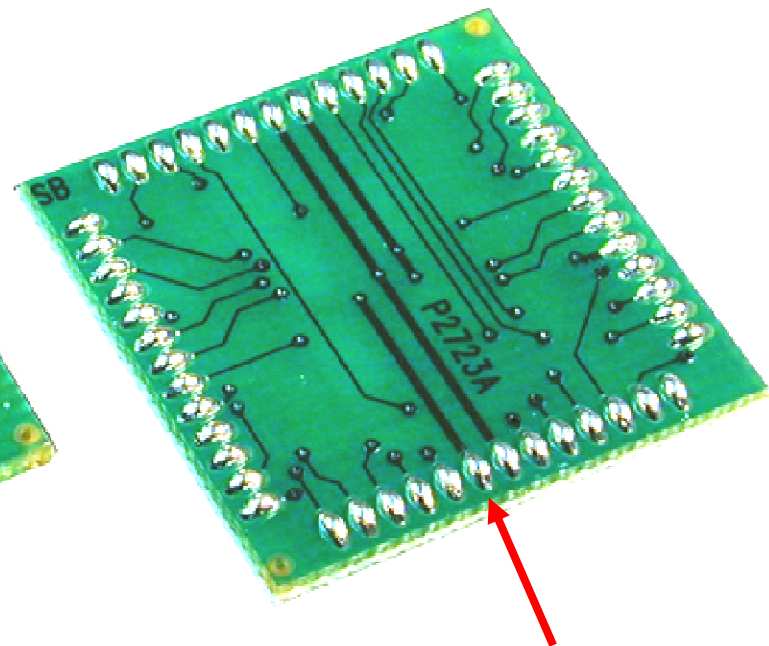
**SSC on Bottom**

# SOIC to PLCC



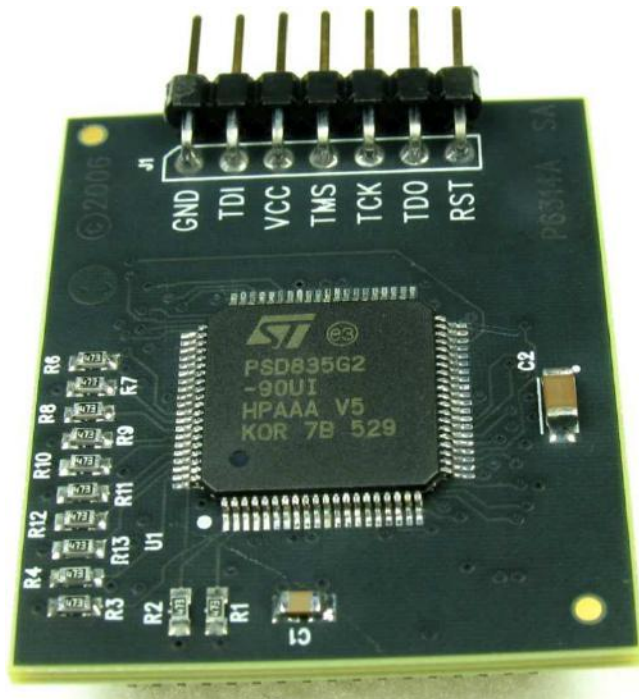
**Install SSC - Bottom**

**Install IC, Discretes - Top**



Solder Columns

# QFP to PLCC

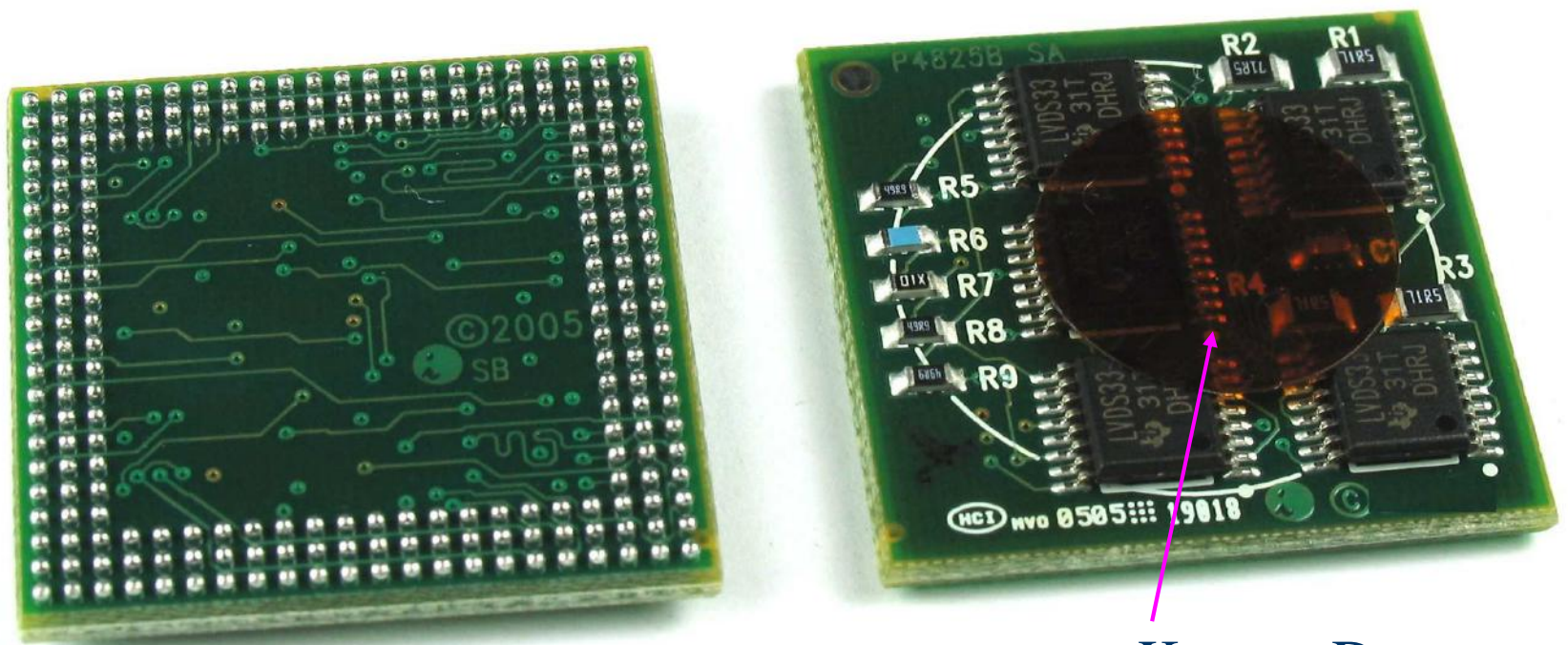


**QFP, Discretes,  
Connector**



Socketed PLCC

# Multichip to BGA

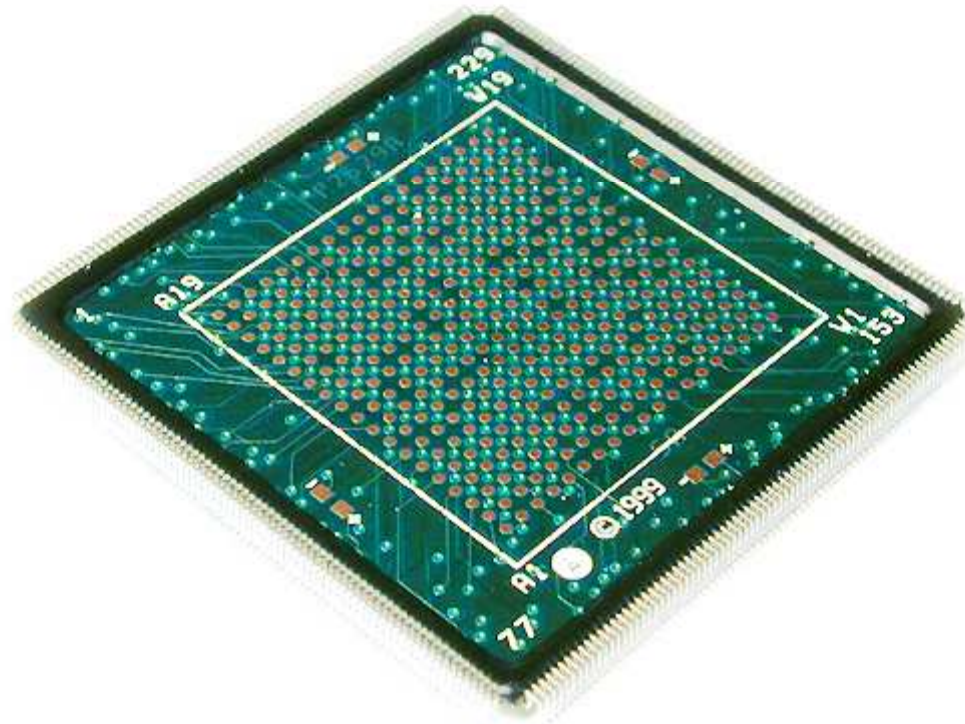


**Install ICs on Top**

**Install Solder Balls on Bottom**

**Kapton Dot  
For SMT  
Placement**

# BGA to QFP



**Converts BGA to QFP Gullwing**

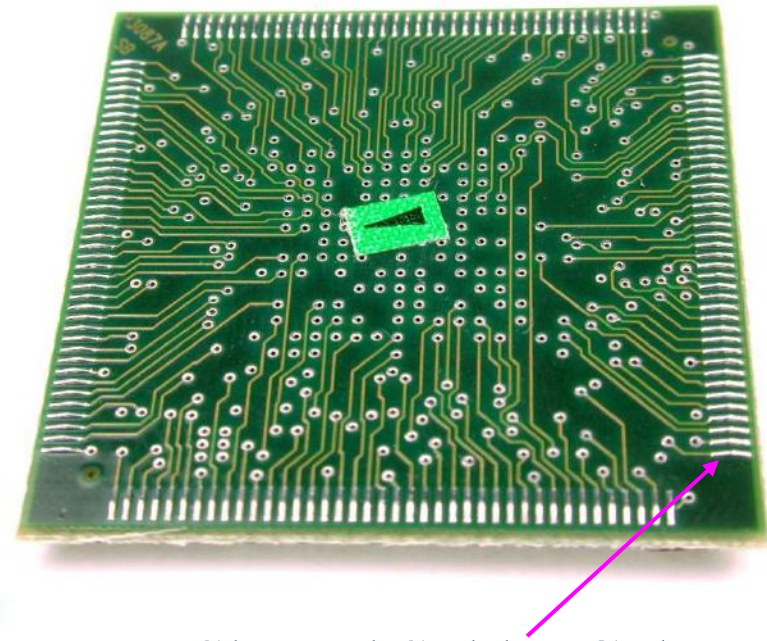


# BGA to QFP



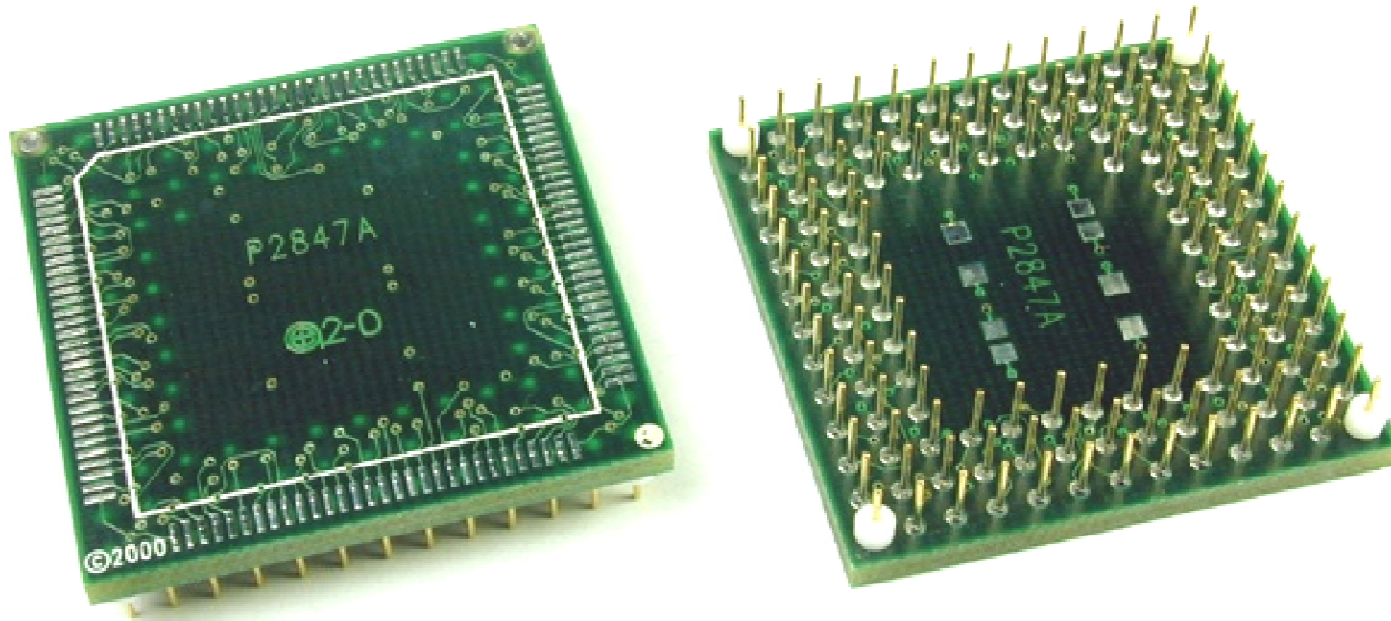
**BGA to QFP – SSC**

**BGA With multi Component**



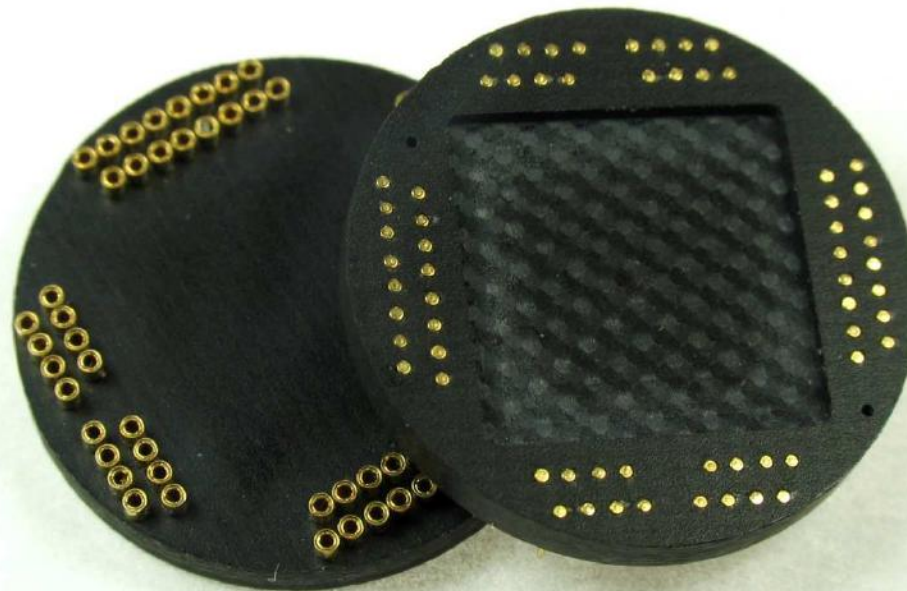
**Shaped Solder Column**

# QFP to PGA

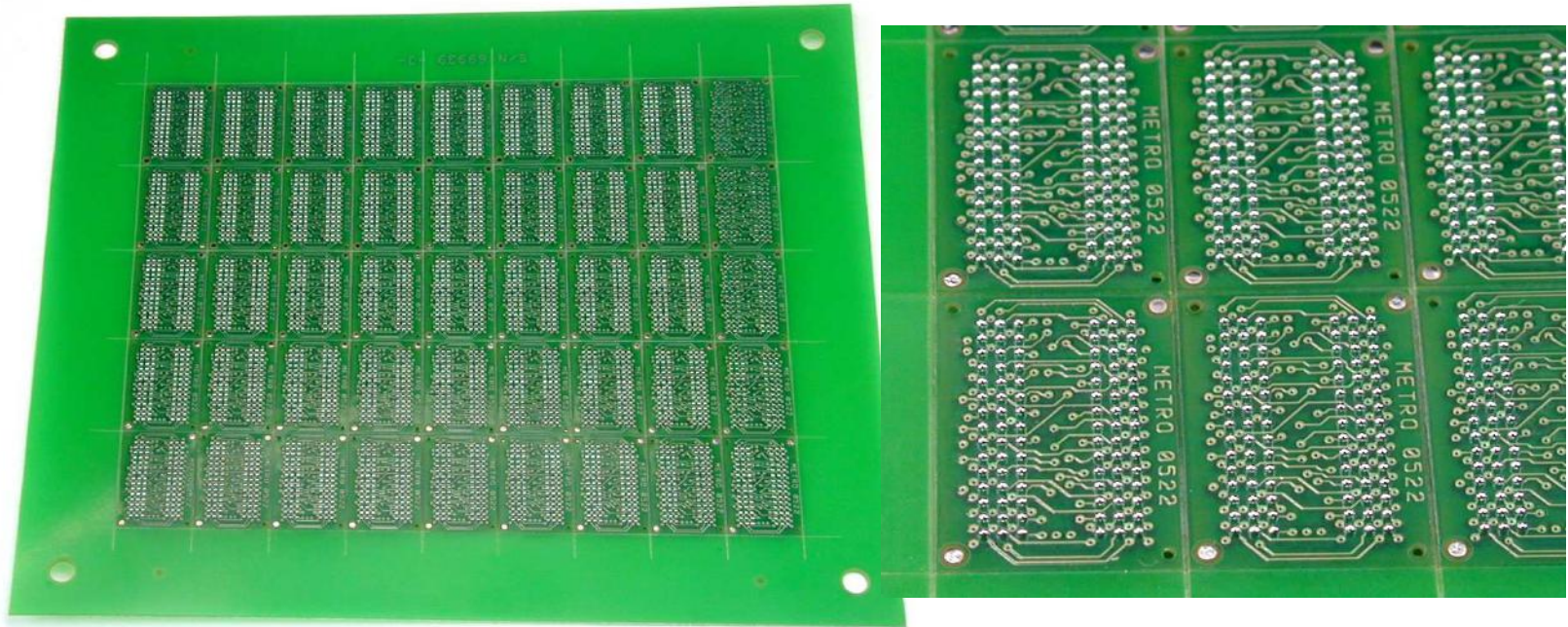


**QFP SMT on top to  
Solderable PGA**

# Package Converter with Machining



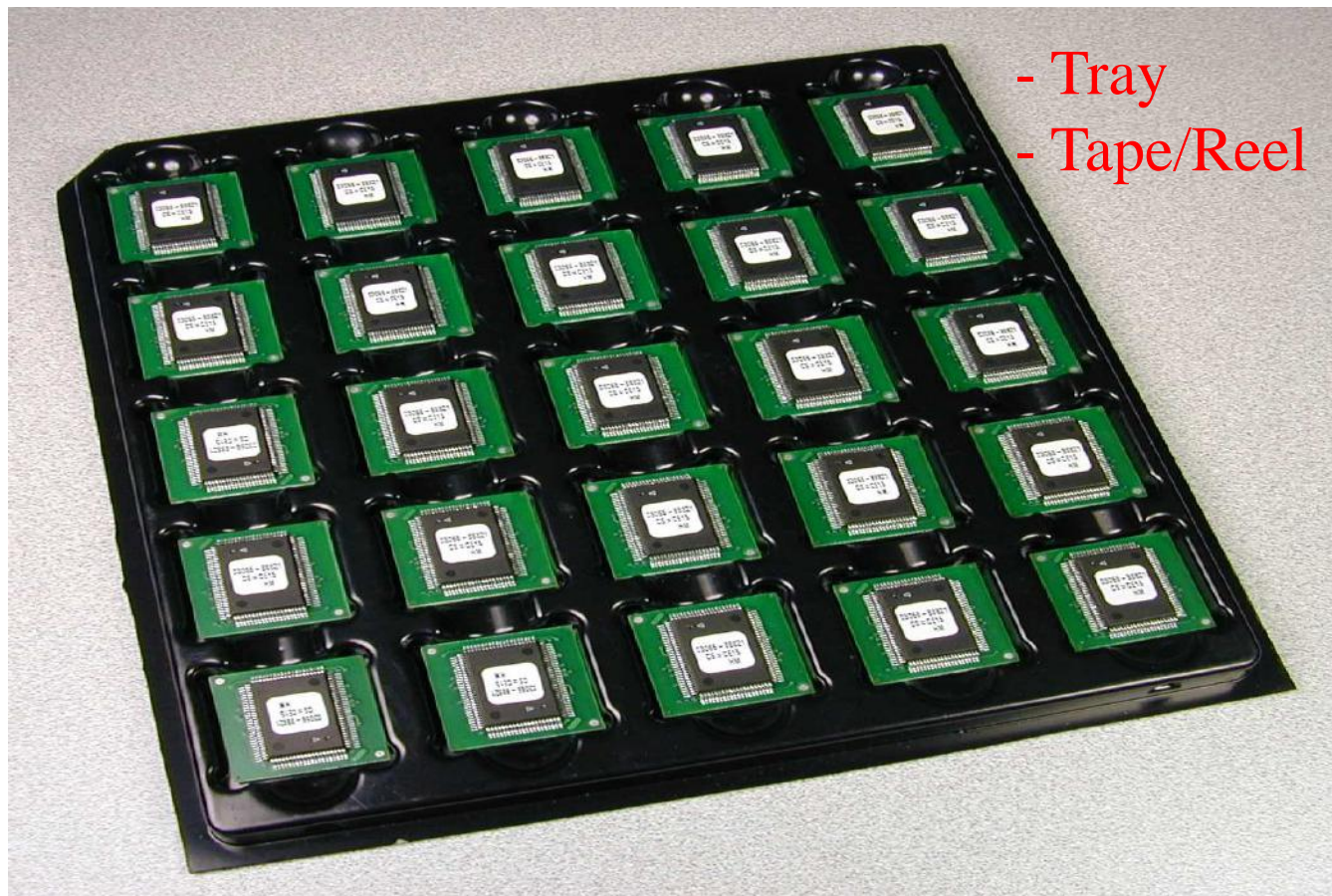
# Panelized Adapters – BGA to BGA With Solder Ball



TOP

Bottom

# Packaging For Further Assembly



# Design Process

- Obtain General Requirements
- Inputs Form is Completed
- Drawings Developed Collaboratively
- Customer Approves Drawings and Design
- First Article – Customer Approves
- Volume Production

# Why Ironwood for Package Converters

- Highly Skilled Engineering for SMT Interfacing
- Advanced Electronic Assembly
- Machining Capability for Fixturing
- Experienced in Volume and Prototype Applications
- Military and Aerospace