



# BGA Breakouts and Routing

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## Effective Design Methods for Very Large BGAs

Second Edition  
Version 5.0

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Very large BGAs, over 1500 pins, present a unique challenge for routing on a printed circuit board. Often just routing out of the BGA is the primary contributor to the number of layers required for routing. This book presents a number of studies and solutions for addressing these challenges.

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## **Preface – Second Edition**

This new edition includes updates throughout the book with greater details, new methods, and clearer figures. It also has an additional chapter called “Software for Generating BGA Fanouts”. This chapter describes how to use new software in Mentor Graphics Expedition PCB and BoardStationXE to automatically generate efficient fanouts patterns for large dense BGAs.



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