DataFlash® and Serial Flash BGA Package

Introduction

Adesto Technologies, DataFlash (AT45DB) and Serial Flash Devices (AT25DF) have been offered for sale in different Ball Grid Array (BGA) package options. This design note is issued as a supplement to the existing device Datasheets and Product Change Notices (PCN) available for download at www.adestotech.com.

Electrical and Operational Specifications

The standard Device Datasheets and operating specifications can be found at www.adestotech.com The respective datasheets will provide architecture details and electrical specifications for the devices listed in this design note.

Ball Grid Array (BGA) Package Options

Adesto Technologies Dataflash and Serial Flash products have been available in two compatible BGA package options:

- 9 Ball BGA with a 3 x 3 ball matrix and
- 24Ball BGA with a 5 x 5 ball matrix
  (with one corner ball missing).

Recent PCNs issued have indicated the End of Life of the 24Ball BGA package option. Table 1 below. lists the package options by density for both the DataFlash and Serial Flash Families. drivers. This feature is useful where system designers need to provide a different opcode to multiple memory devices on the board.

DataFlash and Serial Flash BGA Package

Design Note

Package Options

Table 1. BGA package options by density and device family

Density	Serial Flash P/N	24Ball BGA	9Ball BGA	Device Status
32Mbit	AT25DF321A		✓	Active
64Mbit	AT25DF641A		✓	Active
	DataFlash P/N	**24Ball BGA**	**9Ball BGA**	**Device Status**
32Mbit	AT45DB321D	✓	✓	EOL
64Mbit	AT45DB642D	✓		EOL
	DataFlash P/N	**24Ball BGA**	**9Ball BGA**	**Device Status**
16Mbit	AT45DB161E		✓	Active
32Mbit	AT45DB321E		✓	Active
64Mbit	AT45DB641E		✓	Active

Selecting a Replacement BGA Package

As devices have been brought to End of Life status, demand for the 24Ball BGA has declined and Adesto will only support the 9Ball BGA for the new replacement products. The 9Ball BGA (Package Code 'CCU'), has been designed to be a direct replacement for the Obsolete 24Ball BGA (Package Code 'CU') in all respects. The CCU package matches the ball out of the CCU package exactly and is totally interchangeable for a Dataflash or Serial Flash device.

Figure 1. DataFlash BGA Package Signal Assignments (Top View)

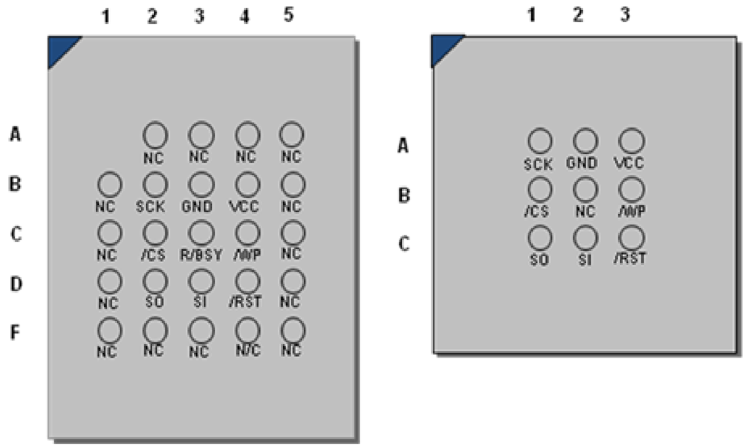


Figure 2. Serial Flash BGA Package Signal Assignment (Top View)

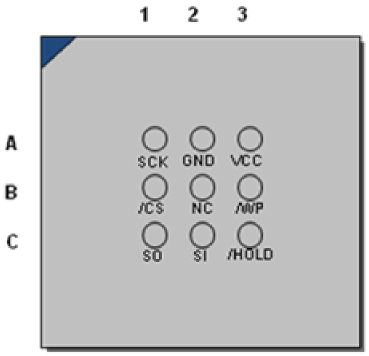


Figure 3. 24C1 Package Drawing Information

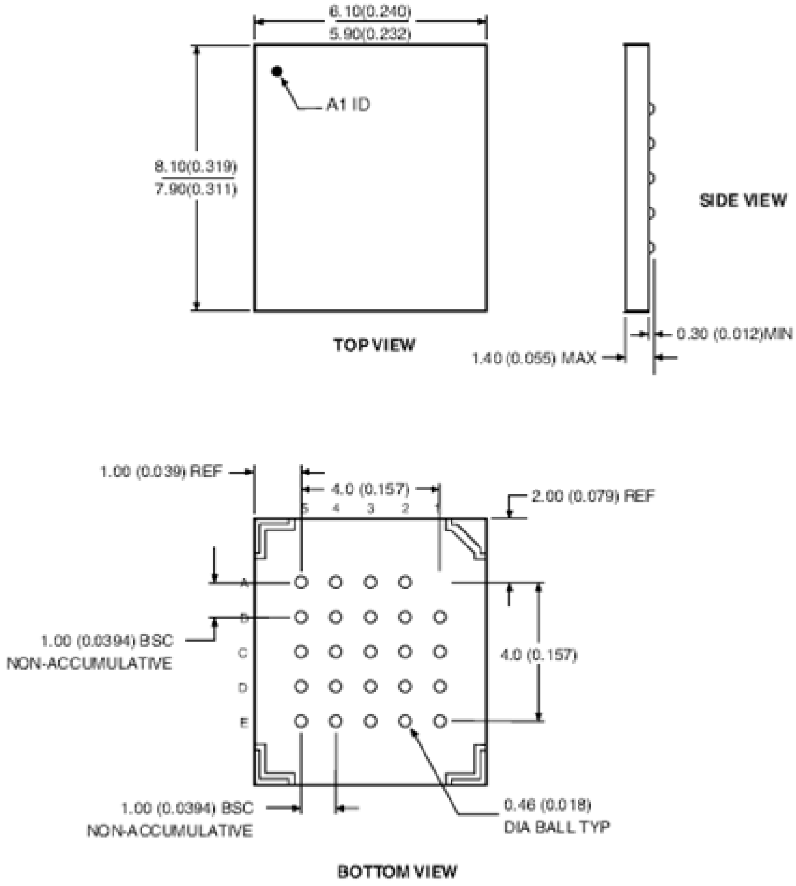

Dimensions in Millimeters and (Inches).
Controlling dimension: Millimeters.

Figure 4. 9C1 Package Drawing Information

Dimensions in Millimetres
Controlling Dimensions in Millimetres

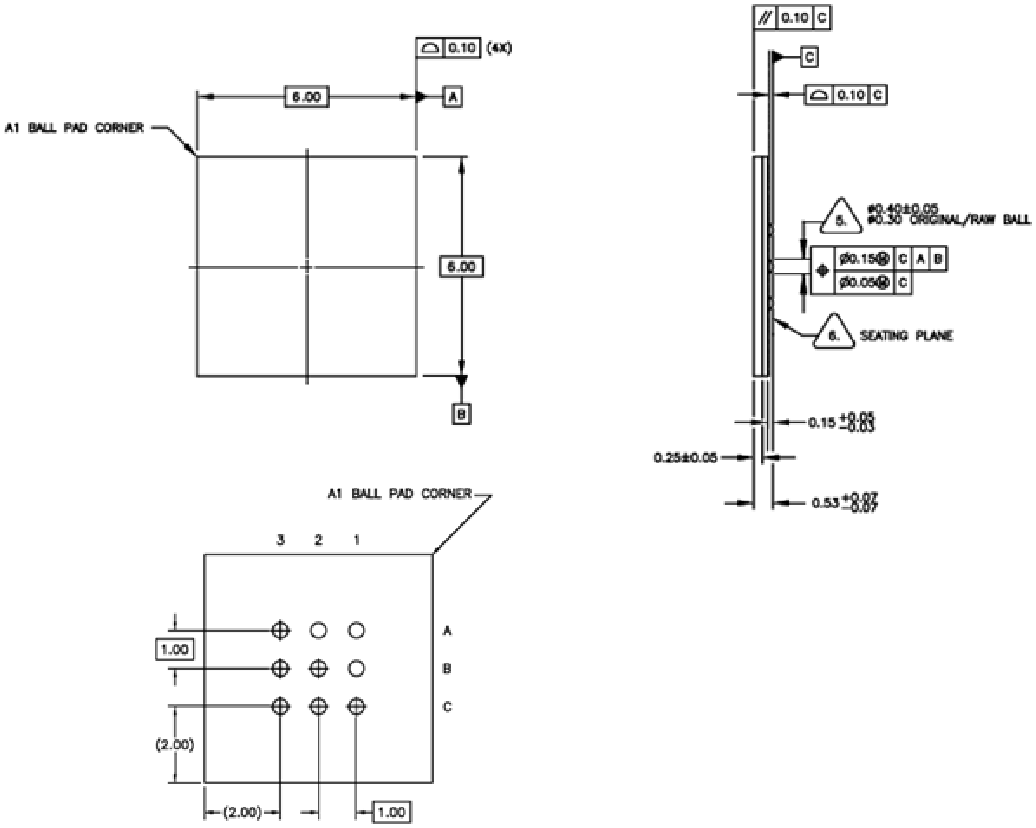
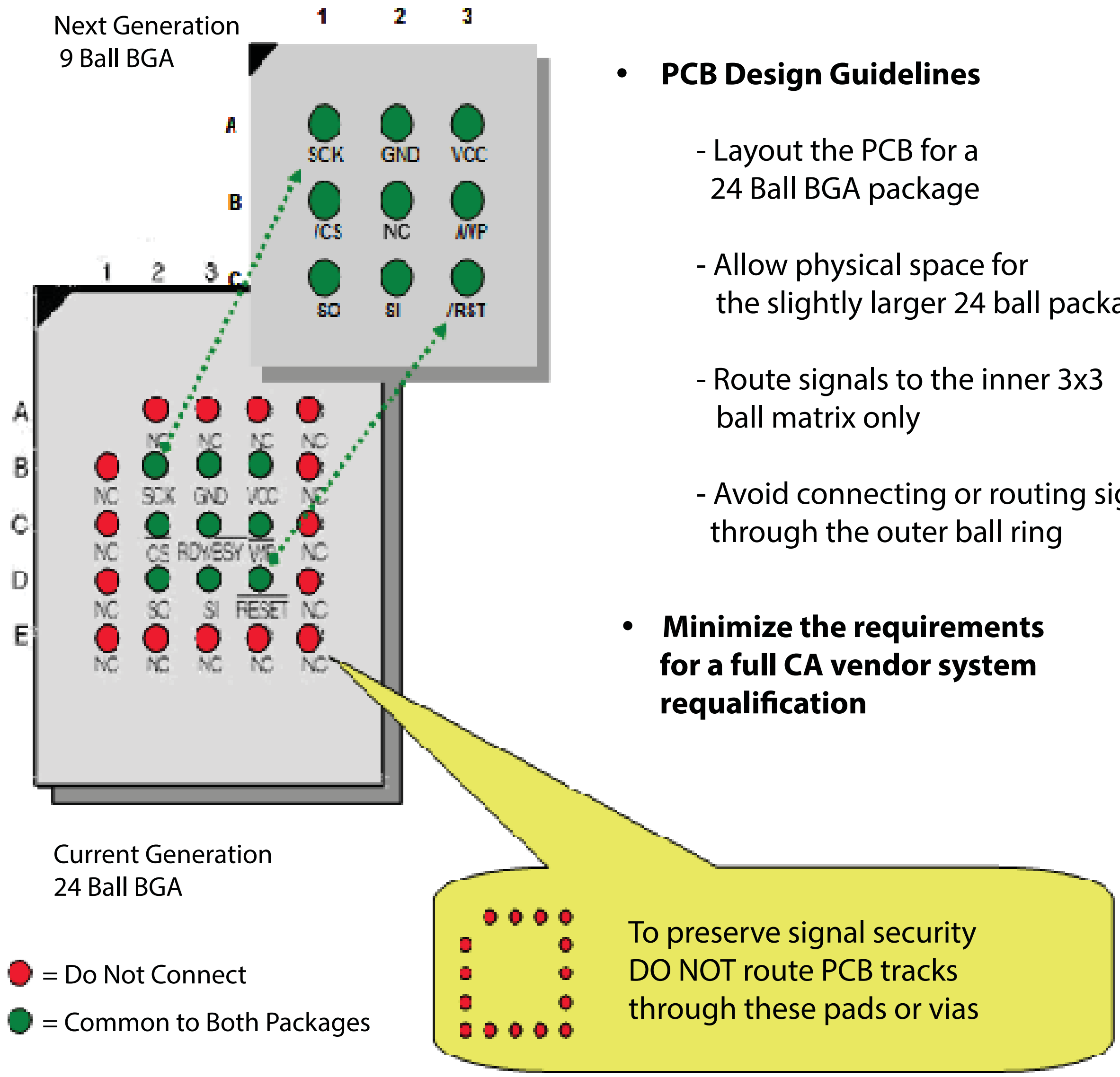


Figure 5. 24Ball to 9Ball Design Migration Notes



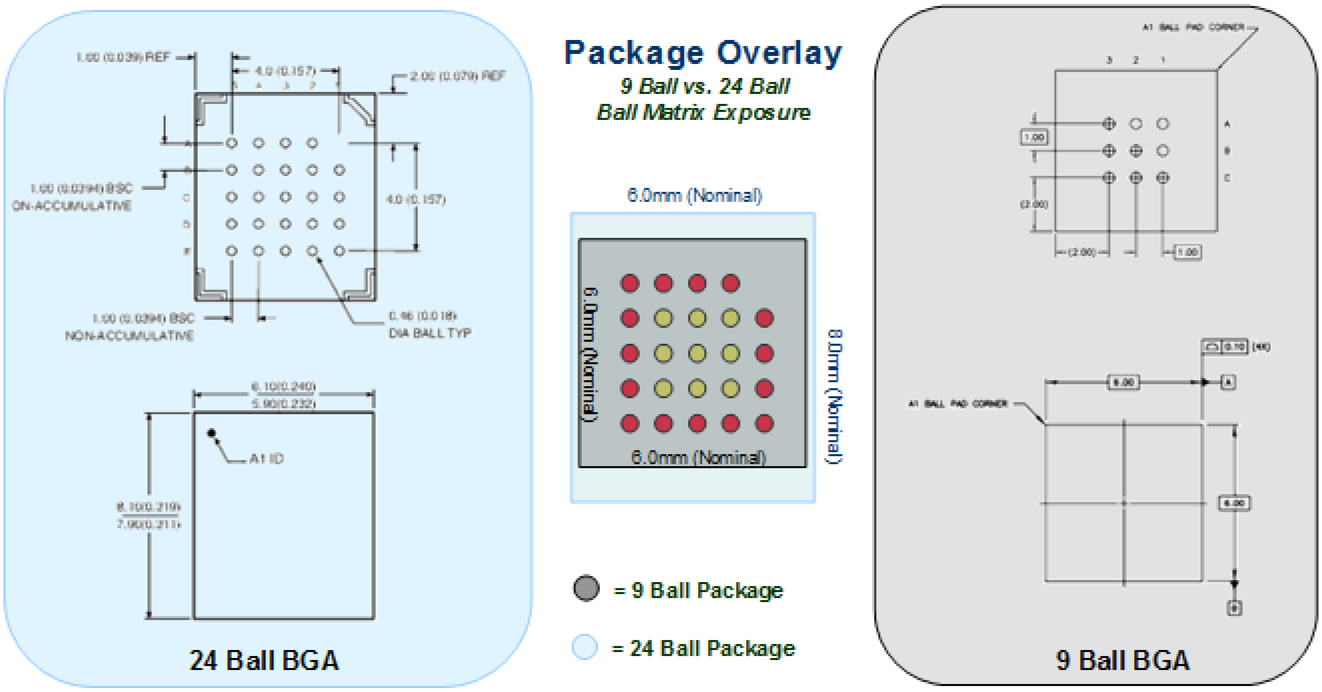
🔴 = Do Not Connect

🟢 = Common to Both Packages

To preserve signal security DO NOT route PCB tracks through these pads or vias

- **PCB Design Guidelines**
  - Layout the PCB for a 24 Ball BGA package
  - Allow physical space for the slightly larger 24 ball package
  - Route signals to the inner 3x3 ball matrix only
  - Avoid connecting or routing signals through the outer ball ring
- **Minimize the requirements for a full CA vendor system requalification**

Figure 6. 24Ball to 9Ball Design Migration Notes (continued)



- Unused solder pads on the 24 Ball BGA Package PCB footprint will remain masked by the body of the 9 Ball BGA Package.

- The 9 Ball BGA Package body will prevent external probing of unused pads or exposed signals on the 24 Ball PCB ball matrix pads.

Further Information and contacts

For further information please email: info@adestotech.com or techsupport@adestotech.com.

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