



21152AB and S21152BB Differences

Application Note

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1.0 Introduction

This document describes the differences between the 21152AB and the S21152BB. The 21152AB PCI-to-PCI Bridge integrated circuit was a legacy custom design produced in Digital Equipment Corporation.5 micron CMOS technology. The S21152BB replaces the 21152AB. The S21152BB integrated circuit is an ASIC design using an Intel® 0.35 micron CMOS process and its associated cell library.

The S21152BB represents a complete re-layout of the original product. The pin out, however, is backwards-compatible with the 21152AB.

2.0 Stepping Differences

Table 1 summarizes circuit design changes between the 21152AB and the S21152BB

Table 1. Circuit Design Changes from 21152AB to S21152BB Migration

Item	21152AB	S21152BB	Comment
Vendor ID	1011 hex	8086 hex	Change Vendor ID from Digital to Intel.
Device ID	0024 hex	B152 hex	Change to Intel format.
Revision ID	05 hex	00 hex	Reset Revision ID to 0 due to the Device ID change.
Logo	Digital	Intel	Incorporate into the physical layout of this design.
Power Sequencing		Add a 50 to 100 ohm poly resistor in series with an internal bias scheme.	The 3- or 5-volt supplies can be powered up in any sequence.
Errata Fix ^a	Reserved Field 100b	Reserved Field 000b	Power management fix. The reserved bit in the Power Management Capabilities Register had the incorrect value.

a. See 21152 PCI-to-PCI Bridge Specification Update, March, 2000

3.0 Additional Differences

- Package —Intel’s standard 160-Metric Quad Flat Pack package is introduced for the S21152BB. The 21152AB remains in the previous 160-mQFP. The dimensional differences are listed in Table 2.

Table 2. 160 Metric Quad Mechanical Drawing Specifications, Package Type Lead Count

Dimensions (mm)	21152AB	S21152BB
Lead Form	1.6 BSC	1.3
Stand Off	0.33	0.33
Package Body Size	28x28 BSC	28x28
Lead Pitch	0.65 BSC	0.65 BSC

Table 2. 160 Metric Quad Mechanical Drawing Specifications, Package Type Lead Count

Dimensions (mm)	21152AB	S21152BB
Lead Width	0.30	0.32
Overall Height	3.70	3.70
Package Body Thickness	3.20	3.29
Foot Length	0.88	0.65
Foot Print X	31.20	30.60
Foot Print Y	31.20	30.60
Lead Frame	Etched CuC7025	Etched CuC7025

- The package marking has changed. The product number changed from 21152AB to S21152BB. The pin 1 designator appears in the lower left for the S21152BB. The pin 1 designator for the 21152AB placed the pin 1 designator in the upper left.
- The S21152BB design is pin-to-pin compatible with the 21152AB design. System validation testing by customers is recommended because of the process technology change described in the Introduction of this document.
- The S21152BB has new ESD circuits. The qualification requirement for FLQ is 2000V minimum for HBM and 1000V minimum robustness for CDM. The S21152BB meets the FLQ requirements with margin.

Note: For more information about these requirements, see the *Intel® S21152BB PCI-to-PCI Bridge Customer Full Qualification Report, 01/27/00, Rev 0.1*.

- The requirement for power sequencing has been removed from the S21152BB. The 3.3- or 5-volt supplies can be powered up in any sequence.
- The S21152BB meets the worst-case timing numbers for the 21152AB with greater margin.