Card Engine Insertion and Extraction Procedure
White Paper 318

Logic Product Development
Published: March 2006
Last Revised: December 2006

Abstract

This White Paper provides instructions for inserting and extracting a Card Engine into and from its baseboard to minimize any flexing of the Card Engine's Printed Circuit Board.

REVISION HISTORY

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	Jed Anderson	Initial Release	JCA	3/16/06
B	Jed Anderson	Updated for use of the Logic designed extraction tool; General grammatical and formatting changes	JCA	12/20/06

1   Introduction

This White Paper will discuss the hazards of flexing or stressing the Card Engine Printed Circuit Board (PCB). In order to limit the amount of stress placed on the Card Engine PCB, this document will explain proper procedures for inserting and extracting a Card Engine into and from its baseboard using the Logic designed extractor tool.

2   Overview

When inserting or extracting a Card Engine into or from its baseboard, care must be taken not to flex the Card Engine PCB. In order to accomplish this, Logic recommends applying even pressure directly above the expansion connectors when inserting the Card Engine, and using a specially designed tool that engages the entire length of the Card Engine's back edge when extracting the card. The even distribution of force along the entire length of the board edge will help to ensure that the board does not flex during insertion or removal.

Be aware that the Card Engine's expansion connectors have a lifespan of 50 insertion/extraction cycles. Exceeding 50 cycles may result in damage to the expansion connectors and cause the Card Engine to malfunction.

It is important to follow these procedures in order to prevent damage to the Card Engine.

3   Hazards of Flexing or Stressing PCB

The Card Engine PCB is made of a flexible material that allows varying degrees of bowing when force is applied to the board. Problems arise because rigid components placed on the PCB, such as the processor, will not bend to the same degree. When the board flexes, pieces of the circuit board can break off, or connections between the PCB pad and the ball grid array (BGA) can separate (see Figure 1).
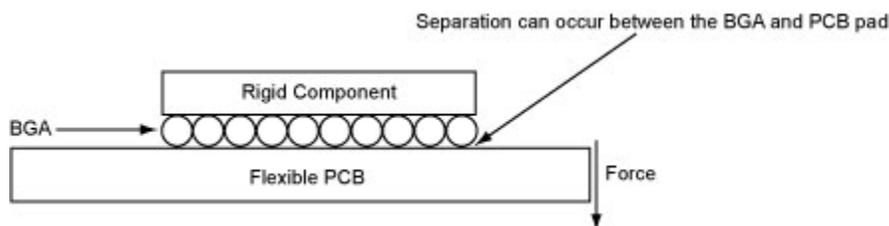

Figure 1 – Side-view of Component Placement on PCB

This separation can break traces that will result, at best, in unreliability and, at worst, in failure of the Card Engine. In order to reduce the possibility of incurring such damage to the Card Engine, use the following procedures when inserting and extracting the card.

4   Inserting the Card Engine into Baseboard

1.   Firmly press the Card Engine into the SODIMM connector until it is fully seated (see Figure 2).
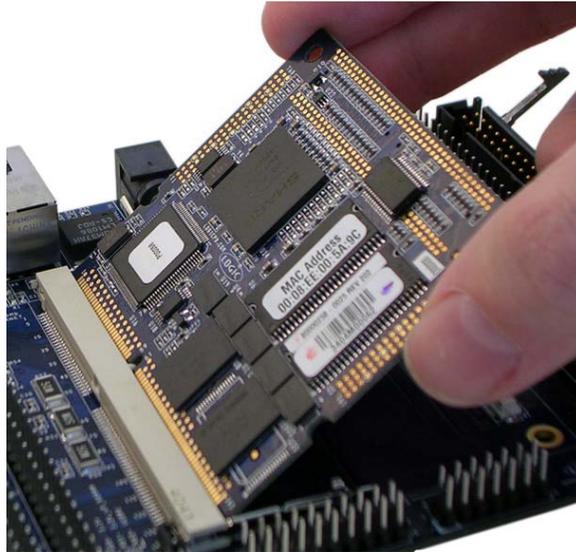

Figure 2 – Insert Card Engine into SODIMM Connector

2.   Using equal, downward pressure directly over the expansion connectors, press down so the expansion connectors mate correctly with the baseboard (see Figure 3). Do not apply pressure to the corners of the board, or press on one side first and then the other.
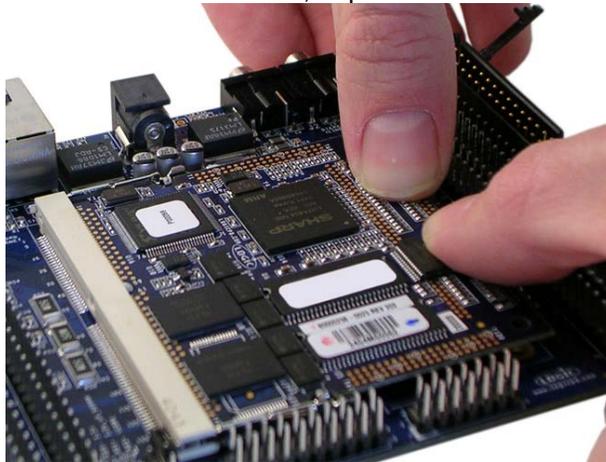

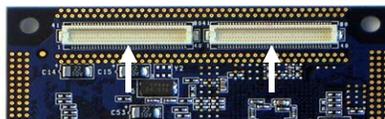*Figure 3 – Apply Equal Pressure Directly above Expansion Connectors*

Figure 4 – Underside-view of Card Engine Showing Location of Expansion Connectors

3.   Verify that the expansion connectors have mated correctly with the baseboard and the SODIMM connector locks have locked with the Card Engine in its down position.

5   Extracting Card Engine from Baseboard

1.   Place the Logic extractor tool behind the Card Engine with the prongs of the tool inserted under the back edge of the Card Engine (see Figure 5).

Figure 5 – Use Tool to Extract Card Engine

2.   Gently pull back on the tool (away from the Card Engine) to disconnect the Card Engine from the expansion connectors.

3.   Release the SODIMM connector locks (see Figure 6) and lift up on the back edge of the Card Engine until it is at the same angle as during insertion.
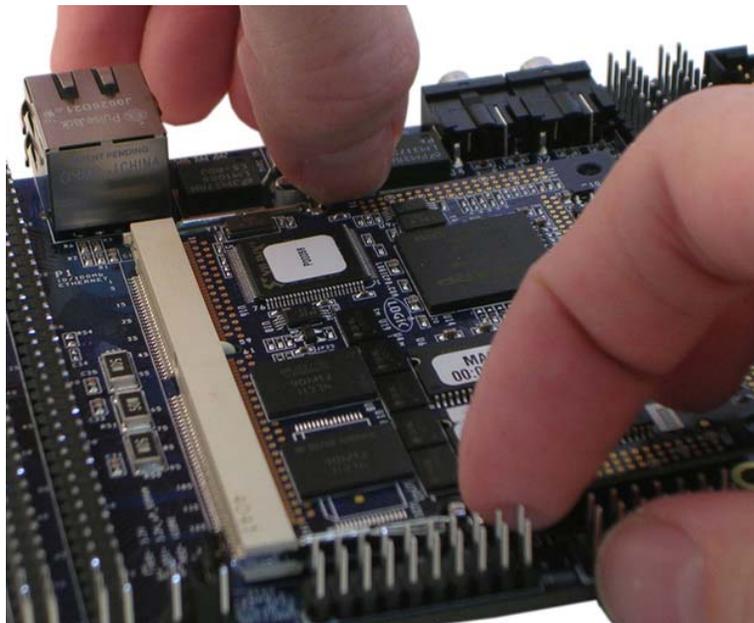

Figure 6 – Release SODIMM Connector Locks

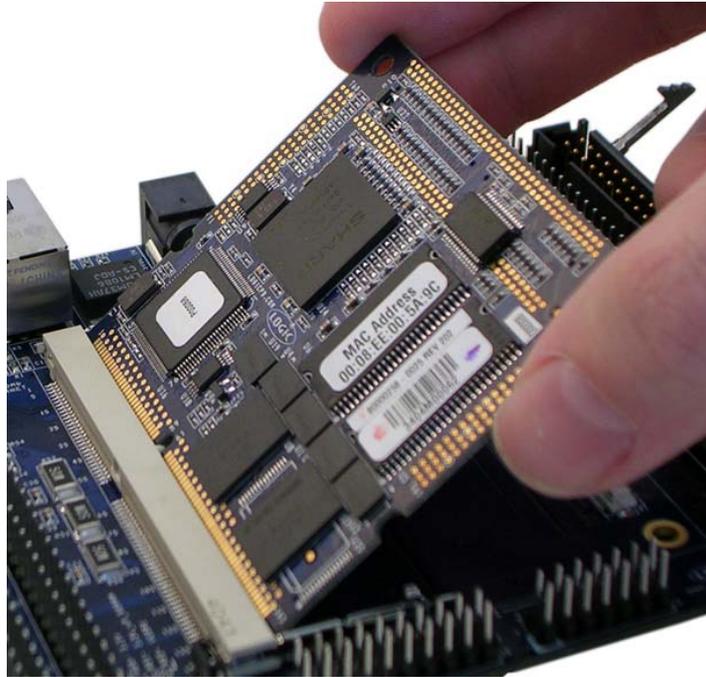4.   Remove the Card Engine from the SODIMM connector (see Figure 7).

Figure 7 – Remove Card Engine from SODIMM Connector

6   Logic Extractor Tool

Using the Logic extractor tool will help prevent stressing the PCB and possibly damaging the Card Engine. If you would like to receive a Logic extractor tool to use with your Card Engine, please contact Logic Sales at product.sales@logicpd.com.