Replacing MRAM with Cypress nvSRAM

AN6068

Associated Project: No
Associated Application Notes: None

Abstract

This application note discusses the key pin out differences between a MRAM and nvSRAM device. These differences should be taken into account while designing a PCB which plans to use either a MRAM or the high performance nvSRAM products on the same socket without making any PCB layout changes.

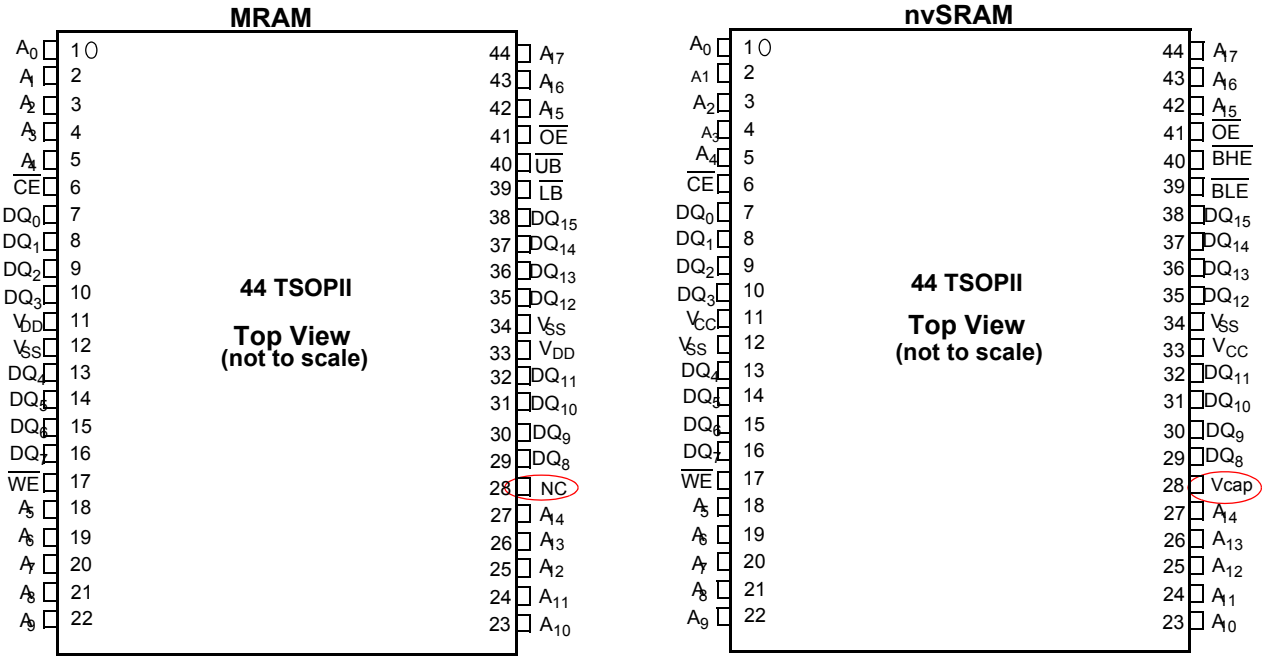
Introduction

Cypress offers a family of high-speed, high-performance non-volatile Static Random Access Memory (nvSRAM). The nvSRAM technology combines the performance characteristics of a high-speed SRAM with that of a nonvolatile cell. The other similar nonvolatile solution is the Magnetoresistive RAM (MRAM) in which magnetic polarization is used to store information permanently. This application note discusses about the ease of use of nvSRAMs in applcations. An example has been presented to show how a 4 Mbit MRAM can be easily replaced by 4 Mbit Cypress nvSRAM by making provision to accomodate a capacitor for the V_{CAP} pin of the nvSRAM.

The pinout for 4 Mbit nvSRAM and MRAM in 44 TSOP-II package is shown in Figure 1.

As can be seen from the Figure 1, the nvSRAM pinout is similar to that of the MRAM except for pin 28 which is a NC (No Connect) pin in MRAM, whereas it is a V_{CAP} pin in the nvSRAM. By providing a capacitor mount option for the V_{CAP} pin on the board, a MRAM can be easily replaced by the nvSRAM without any modification to the board.

Figure 1. Pin Layout for MRAM and nvSRAM[1, 2]



Notes

1. For MRAM all the pin assignments remain same as nvSRAM except for pin 28 which is left as no connect.
2. For nvSRAM all the pin assignments are same as MRAM except for the pin 28 where capacitor know as Vcap is connected to initiate Autostore™.

Conclusion

Customers using a MRAM can easily migrate to the Cypress nvSRAM by having a provision for the capacitor on V_{CAP} being mounted on the board. The capacitor should be mounted when the nvSRAM is used else left unconnected for the MRAM with rest of the pin assignments being same for both the MRAM and the nvSRAM.

Document History

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Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	1200303	ZSK	06/29/2007	Obtain spec# for note to be added to spec system. This note had no technical updates. Kindly replace existing .pdf file on cypress.com
*A	3125574	ZSK	01/02/2011	Updated Introduction. Updated in new template.

In March of 2007, Cypress recataloged all of its Application Notes using a new documentation number and revision code. This new documentation number and revision code (001-xxxxx, beginning with rev. **), located in the footer of the document, will be used in all subsequent revisions

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