



# Numonyx™ StrataFlash® Memory J3A to J3C Migration Guide

Application Note - 792

---

*September 2009*

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH NUMONYX™ PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN NUMONYX'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, NUMONYX ASSUMES NO LIABILITY WHATSOEVER, AND NUMONYX DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF NUMONYX PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. Numonyx products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications.

Numonyx may make changes to specifications and product descriptions at any time, without notice.

Numonyx, B.V. may have patents or pending patent applications, trademarks, copyrights, or other intellectual property rights that relate to the presented subject matter. The furnishing of documents and other materials and information does not provide any license, express or implied, by estoppel or otherwise, to any such patents, trademarks, copyrights, or other intellectual property rights.

Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Numonyx reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them.

Contact your local Numonyx sales office or your distributor to obtain the latest specifications and before placing your product order.

Copies of documents which have an order number and are referenced in this document, or other Numonyx literature may be obtained by visiting Numonyx's website at <http://www.numonyx.com>.

Numonyx StrataFlash is a trademark or registered trademark of Numonyx or its subsidiaries in the United States and other countries.

\*Other names and brands may be claimed as the property of others.

Copyright © 2009, Numonyx, B.V., All Rights Reserved.

## Contents

---

1.0	Introduction .....	5
2.0	Migration from the J3A to the J3C.....	5
3.0	Input Signal Transitions—Reducing Undershoots and Overshoots.....	6
A	Additional Information .....	7

## Revision History

---

Date	Revision	Description
December 2003	01	Initial release
September 2009	02	Applied Numonyx branding.

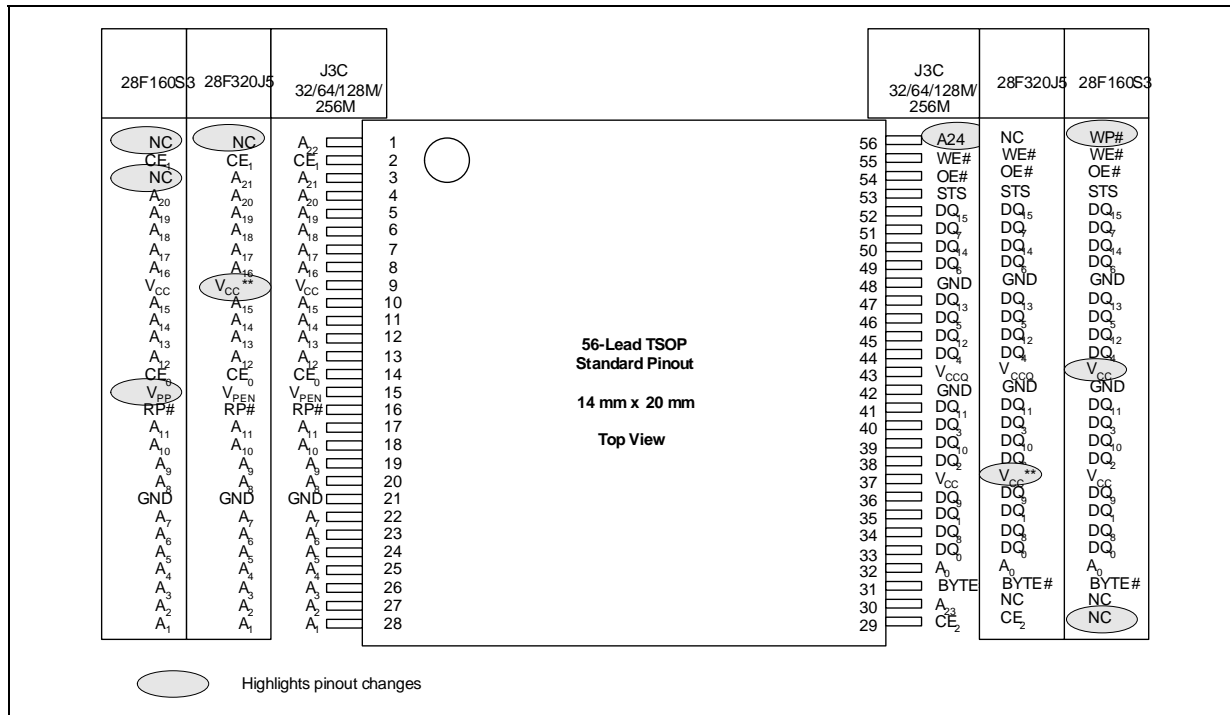
## 1.0 Introduction

The purpose of this document is to provide a seamless migration path from the Numonyx StrataFlash® memory (J3A) device to the Numonyx™ StrataFlash® memory (J3C) device.

## 2.0 Migration from the J3A to the J3C

The J3C is designed to be a drop-in compatible replacement for the J3A on a smaller 0.18µm lithography when the device is used within datasheet specifications. There are no differences in the command set sequences between the J3A and the J3C, and the pinouts are consistent between the two lithographies. It should also be mentioned that the 256-Mbit density offering is only available on the J3C. The pinout for the 256-Mbit J3C is as follows:

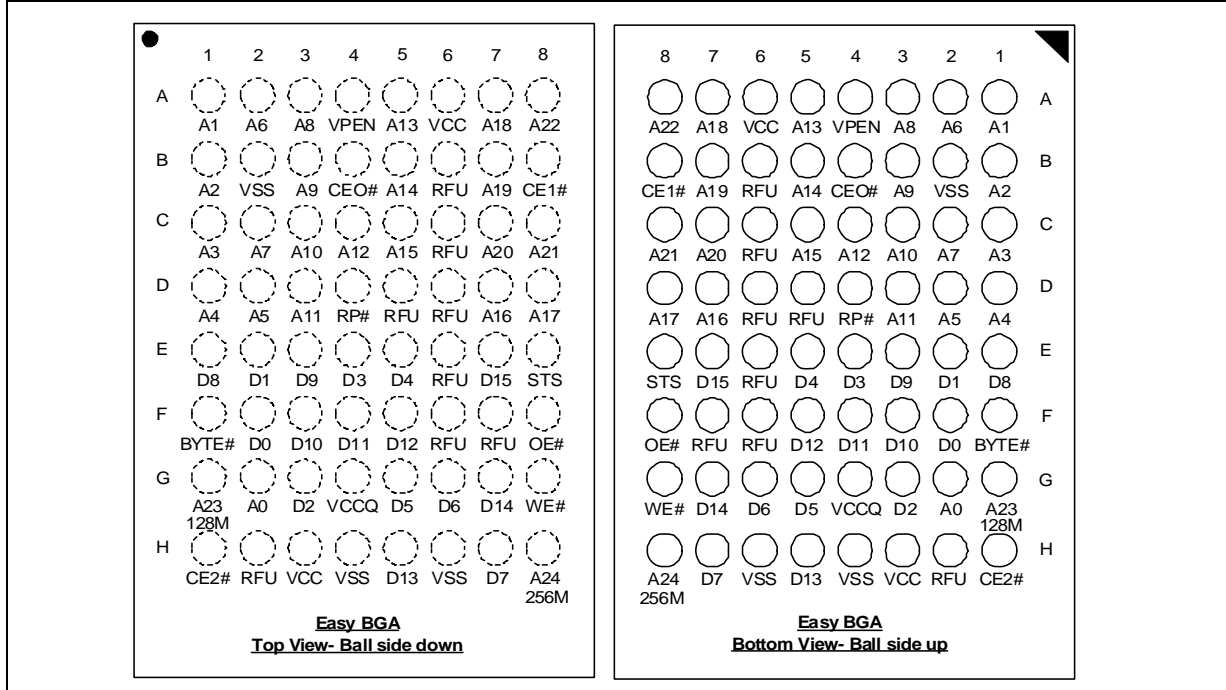
**Figure 1: Numonyx™ StrataFlash® Memory (J3C), 56-Lead TSOP (32/64/128/256 Mbit)**



**Notes:**

1. A22 exists on 64-, 128- and 256-Mbit densities. On 32-Mbit densities this signal is a no-connect (NC).
2. A23 exists on 128-Mbit densities. On 32- and 64-Mbit densities this signal is a no-connect (NC).
3. A24 exists on 256-Mbit densities. On 32-, 64- and 128-Mbit densities this signal is a no-connect (NC).
4. V<sub>CC</sub> = 5 V ± 10% for the 28F640J5/28F320J5.

**Figure 2: Numonyx™ StrataFlash® Memory (J3C) Easy BGA Ballout (32/64/128/256 Mbit)**



**Notes:**

1. Address A22 is only valid on 64-Mbit densities and above, otherwise, it is a no connect (NC).
2. Address A23 is only valid on 128-Mbit densities and above, otherwise, it is a no connect (NC).
3. Address A24 is only valid on 256-Mbit densities and above, otherwise, it is a no connect (NC).

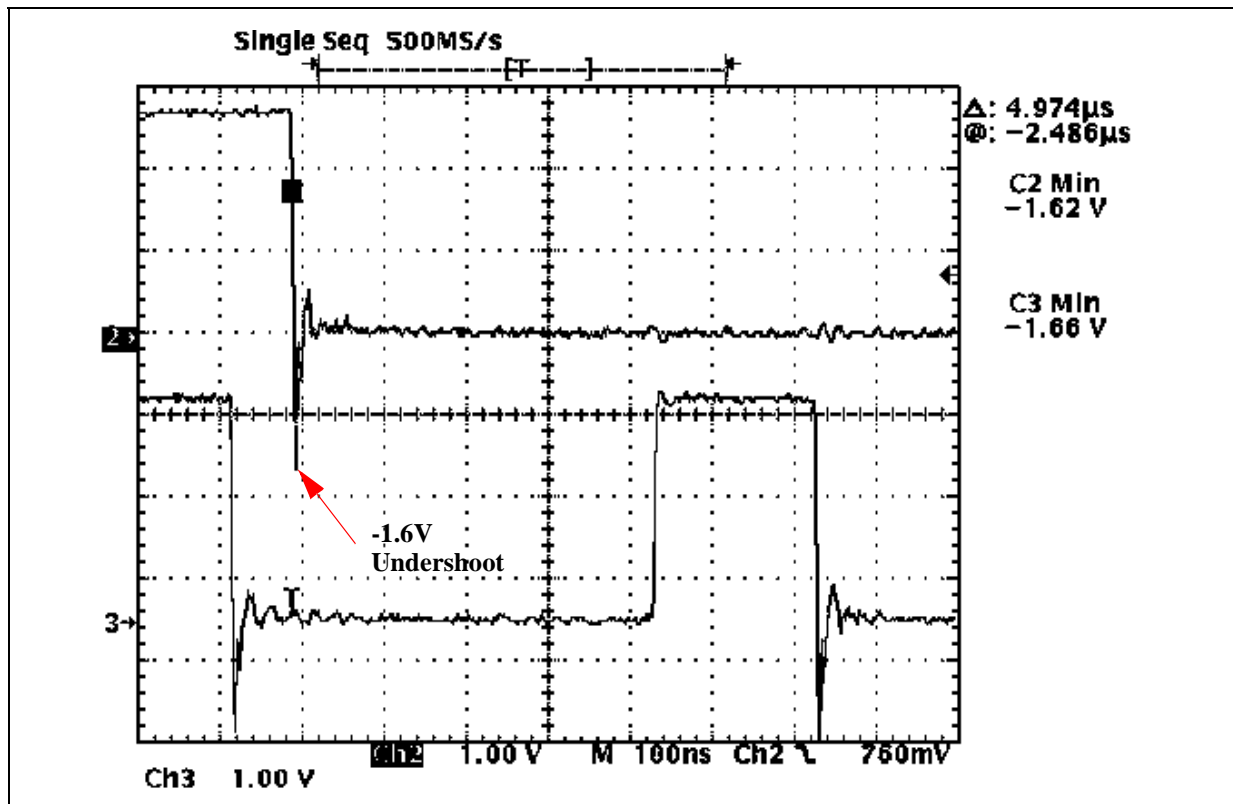
### 3.0 Input Signal Transitions—Reducing Undershoots and Overshoots

It should be noted that this is a sensitivity that only applies to customers whose systems exceed the minimum and maximum  $V_{IL}$  and  $V_{IH}$  datasheet specification, while the device is under bias.

In migrating from the J3A to the J3C, some customers may experience system hangs during code fetches, or incorrect data being read from the array of the flash. A system hang condition may be followed by a system reset if a watchdog timer is used to monitor the processor for such a condition.

The memory bus should be observed with a high-speed analog oscilloscope when the flash chip enable (CE#) is high, and when it is low, to determine the source of the worse-case undershoots and its magnitude/duration. Please note that standby is an operational mode of the device and should be treated with the same datasheet specifications as when the device is enabled (CE# = 1). An example of a non-ideal, unspecified input signal is given in Figure 3. The user should take note of the fact that the provided undershoot example is at an approximate level of -1.6V, which is almost three times the normally specified  $V_{IL}$  voltage of -0.5V.

Figure 3: Example of Unspecified Input voltage signal



To alleviate this problem, if it exists in the customer's system, eliminate the cause of the undershoot/overshoot in the end-product board design (e.g.: impedance mismatches, trace inductance/capacitance, loading, termination, etc.), and ensure  $V_{IL}$  (min) is not exceeded.

Other suggestions to revise current circuit board designs include:

- Add small filter capacitors (i.e.: 10 - 20pF) to the affected signal lines.
- Add small series resistors (i.e.: 47 Ohm) close to the signal driver to current-limit signal transitions.
- Decrease the drive strength or slew rate of the source device that is generating the excessive undershoot/overshoot.

A potential software revision can be used to alleviate this problem:

- Perform a read from the flash, but ignore the data. Re-read from the flash ensuring CE# is toggled, or ensure the new address is outside of the previous page address space. This will ensure another array access is performed, not a page-buffer access.

## Appendix A Additional Information

For the most current information about this or other Numonyx products, see your Numonyx sales representative or visit the Numonyx web site at <http://www.Numonyx.com>.