



# Migration from SST28xF040 to SST28VF040A

Application Note  
April 2000

## INTRODUCTION

In this application note, we describe how an SST28xF040A can be used in place of an SST28xF040 with no hardware or software changes.

SST28xF040 is a 4M Small-Sector Flash memory product. These products are available in three voltage ranges—SST28SF040 (5V), SST28LF040 (3.0-3.6V) and SST28VF040 (2.7-3.6V).

SST is now introducing a new version of these products called the SST28xF040A, which will replace the above products. These products are available in two voltage ranges – SST28SF040A (5V) and SST28VF040A (2.7-3.6V). The SST28SF040A replaces the SST28SF040, while the SST28VF040A replaces the SST28LF040 and the SST28VF040.

### Software comparison between SST28SF040 and SST28SF040A

The SST28SF040 and the SST28SF040A have the same software command set, as well as the same Manufacturer ID (0xBF) and Device ID (0x04). As a result, any firmware written for the SST28SF040 can be used with the SST28SF040A.

### Hardware comparison between SST28SF040 and SST28SF040A

The SST28SF040 and the SST28SF040A have the same packages and pinouts, and so no board layout change is needed in designing the SST28SF040A in place of the SST28SF040.

The SST28SF040 is offered in speeds of 120ns and 150ns, while the SST28SF040A is offered in speeds of 90ns and 120ns. As a result, the SST28SF040A can be used to substitute the SST28xF040.

All Erase and Program timing parameters for both these products are the same. One of the parameters – Address protect setup time ( $T_{PAS}$ ) looks different because it is referenced differently. In the SST28SF040,  $T_{PAS}$  is defined as the time constraint between the address being valid and the *falling* edge of CE#, and is specified as 0ns. In the SST28SF040A,  $T_{PAS}$  is defined as the time constraint between the address being valid and the *rising* edge of CE#, instead, and is specified at 40ns. This difference in referencing  $T_{PAS}$  doesn't impact the compatibility of the SST28SF040A with the SST28SF040.

Another parameter – Address protect hold time ( $T_{PAH}$ ) is 50ns in the SST28SF040 and 0ns in the SST28SF040A. Since the SST28SF040A has a shorter  $T_{PAH}$ , it can be used to substitute the SST28SF040.

In addition to the above, all of the SST28SF040A product from the previous mask-set required pull-up resistors on CE# and WE#. The newer SST28SF040A, which starts sampling now (in late April, 2000), does not require pull-up resistors on CE# and WE#. However, if a system has been designed with the earlier SST28SF040A using the pull-up resistors, the newer SST28SF040A can be used in that system without any modifications.

### Software comparison between SST28LF/VF040 and SST28VF040A

The SST28LF040 and the SST28VF040 have the same software commands set as the SST28VF040A. They also share the same Manufacturer ID (0xBF) and Device ID (0x04). As a result, any firmware written for the SST28LF/VF040 can be used with the SST28VF040A.

### Hardware comparisons between SST28LF/VF040 and SST28VF040A

The SST28LF040 is offered in speeds of 200ns and 250ns, and the SST28VF040 is offered in speeds of 250ns and 300ns. The SST28VF040A is offered in speeds of 200ns and 250ns. Since the SST28VF040A offers the same speeds as the SST28LF040 and a wider voltage range, it can be used to substitute the SST28LF040. Also, since the SST28VF040A offers higher speeds than the SST28VF040, in the same voltage range, it can also be used to substitute the SST28VF040.

All Erase and Program timing parameters for all these products are the same. One of the parameters – Address protect setup time ( $T_{PAS}$ ) looks different because it is referenced differently. In the SST28LF/VF040,  $T_{PAS}$  is defined as the time constraint between the address being valid and the *falling* edge of CE#, and is specified as 0ns. In the SST28VF040A,  $T_{PAS}$  is defined as the time constraint between the address being valid and the *rising* edge of CE#, instead, and is specified as 40ns. This difference in referencing  $T_{PAS}$  doesn't impact the compatibility of the SST28SF040A with the SST28SF040.

Another parameter – Address protect hold time ( $T_{PAH}$ ) is 100ns in the SST28LF/VF040 and 0ns in the SST28VF040A. Since the SST28VF040A has a shorter  $T_{PAH}$ , it can be used to substitute the SST28LF/VF040.

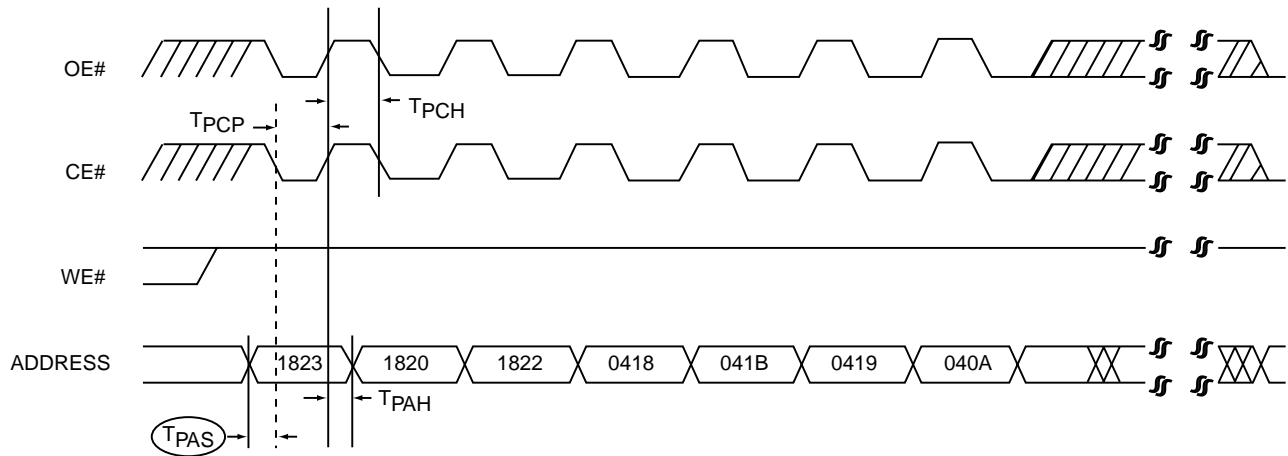
### Conclusion

The SST28xF040A can be used to replace the SST28xF040, with no changes in board layout or software.



# Migration from SST28xF040 to SST28xF040A

Application Note



NOTE: A. ADDRESSES ARE LATCHED INTERNALLY ON THE RISING EDGE OF:

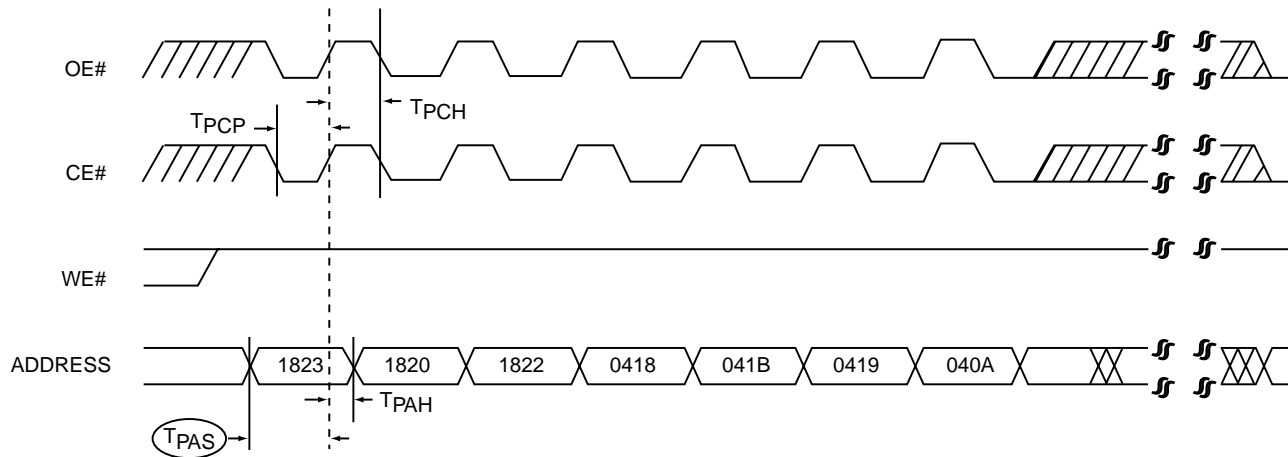
1. OE# IF CE# IS KEPT AT LOW ALL TIME.
2. CE# IF OE# IS KEPT AT LOW ALL TIME.
3. THE FIRST PIN TO GO HIGH IF BOTH ARE TOGGLED.

B. ABOVE ADDRESS VALUES ARE IN HEX.

C. ADDRESSES > A12 ARE "DON'T CARE"

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FIGURE 1: SOFTWARE DATA PROTECT TIMING DIAGRAM FOR SST28SF040/SST28LF040/SST28VF040



NOTE: A. ADDRESSES ARE LATCHED INTERNALLY ON THE RISING EDGE OF:

1. OE# IF CE# IS KEPT AT LOW ALL TIME.
2. CE# IF OE# IS KEPT AT LOW ALL TIME.
3. THE FIRST PIN TO GO HIGH IF BOTH ARE TOGGLED.

B. ABOVE ADDRESS VALUES ARE IN HEX.

C. ADDRESSES > A12 ARE "DON'T CARE"

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FIGURE 2: SOFTWARE DATA PROTECT TIMING DIAGRAM FOR SST28SF040A/SST28VF040A