



Design-in of the M29W800D 8Mbit Flash Memory

CONTENTS

- Main Features of the M29W800D
- Migrating from the M29W800A to the M29W800D from STMicroelectronics
- Electronic Signature
- Programming and Erase Considerations for Third Party Programmers
- Conclusion

The M29W800D is an addition to the family of industry standard Flash Memories from STMicroelectronics, suited for use in most applications. The purpose of this document is facilitate a smooth transition when migrating from STMicroelectronics M29W800A to the M29W800D.

MAIN FEATURES OF THE M29W800D

The M29W800D is an upgrade of the STMicroelectronics M29W800A 8 Mbit Flash memory. It is part of a family of standard Flash memory devices that includes the following devices: 32 Mbit, 16 Mbit, 8 Mbit, 4 Mbit, 2 Mbit and 1 Mbit.

The M29W800D is available with access times of 70 ns (2.7 V to 3.6 V) and 90 ns (2.7 V to 3.6 V) in the -40°C to 85°C temperature range.

The "D" suffix in the M29W800D sales type indicates that this device is manufactured on a 0.18 μm process.

The block organization consists of fifteen 64 KByte, one 32 KByte, two 8 KByte and one 16 KByte blocks available in top boot (M29W800DT) and bottom boot (M29W800DB) configurations.

An additional feature of the M29W800D is the CFI (Common Flash Interface), which was not available on the M29W800A. The CFI data of the M29W800D also includes 64 bits of unique security data, written into each device. This security data can be read through the CFI command, to give individual identity to each device independently of what is normally written in the main memory area.

The M29W800D has an unlock bypass programming feature that was not available on the M29W800A. The unlock bypass programming feature can be used to speed up programming, mainly on third party programmers, by reducing the number of instruction cycles required for programming.

The most popular package, in the terms of design-ins of the M29Wxxx family, is the TSOP48. The M29W800D continues to support the same packages as the M29W800A: namely, the TSOP48, TFBGA48 (6x9mm) and SO44.

MIGRATING FROM THE M29W800A TO THE M29W800D FROM STMICROELECTRONICS

Migrating from the 0.35 μm M29W800A to the 0.18 μm M29W800D is straightforward. However, certain differences are clarified in this section.

What are the differences to be aware of? The upper byte of the device electronic signature has been changed from 00h to 22h. The lower byte remains unchanged (Table 1). If the same software is to be used, regardless of which device is being used, the upper byte of the electronic signature needs to be ignored.

Table 1. Electronic Signature

	M29W800A	M29W800D
Bottom Device Code	005Bh	225Bh
Top Device Code	00D7h	22D7h

What about third party programmers? Third party programmers can use the upper byte of the electronic signature to distinguish between the M29W800D and M29W800A. If the M29W800D is detected then the faster unlock bypass programming routine can be implemented.

How about the differences in access times? The M29W800D is manufactured using a 0.18 μm technology, and is available with access times of 70 ns and 90 ns. The slower access times of the M29W800A have not been carried over into the M29W800D data sheet.

Are there any other differences? The Ready/Busy Output ($\overline{\text{RB}}$) has the same functionality with respect to program and erase operations. In the M29W800D the Reset/Block Temporary Unprotect ($\overline{\text{RP}}$) signal does not affect the Ready/Busy Output ($\overline{\text{RB}}$) if it was already High (it will remain High if Reset/Block Temporary Unprotect ($\overline{\text{RP}}$) goes Low). In the M29W800A the Ready/Busy Output ($\overline{\text{RB}}$) will remain Low as long as Reset/Block Temporary Unprotect ($\overline{\text{RP}}$) is Low.

In the M29W800D, once the Auto Select command is issued, the memory remains in Auto Select mode until a Read/Reset command (F0h) is issued. In the M29W800A, once the Auto Select command is issued, the memory remains in Auto Select mode until another command is issued.

PROGRAMMING AND ERASE CONSIDERATIONS FOR THIRD PARTY PROGRAMMERS

As with all the other members of the STMicroelectronics Flash memory family, when a program or erase command is issued, the memory invokes a complex set of internal algorithms that ensure the correct programming and erasing of the memory cells, with sufficient margin for them to be read reliably under all conditions.

Third party programmers should set the voltage supply to 3.3 V (typical) for read, program and erase operations. It is not recommended to set the supply voltages to values other than the typical ones when using gang programmers, or third party programmers with universal sockets designed to handle many different devices.

Since the M29W800D can be distinguished from the M29W800A by the upper byte of the device signature, as shown in Table 1, it is possible to make use of the faster cycles, and the unlock-bypass command of the M29W800D, to reduce time and the total number instruction cycles needed.

CONCLUSION

The M29W800D is an addition to the family of industry standard Flash memories from STMicroelectronics. It is manufactured on a 0.18 μm process to ensure a competitive cost versus its fast access times. The M29W800D replaces the previous generation 0.35 μm M29W800A.

For current information on ST Flash Memory products, please consult our pages on the world wide web:
www.st.com/flash

If you have any questions or suggestions concerning the matters raised in this document, please send them to the following electronic mail addresses:

ask.memory@st.com (for general enquiries)

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