MX25L25635E

256Mb Serial Flash
Application in System Reset

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1. Introduction

MX25L25635E provides 24-bit and 32-bit address modes by command definition. Once the device enters 32-bit address mode by B7 command, command E9 or power-off cycle is required to exit the 32-bit address mode. After the flash switches to 32-bit address mode and the system executes a warm boot (power is not off during the system reset), the flash memory will remain in 32-bit address mode and will not be able to boot by 24-bit addressing.

This application note is designed specifically for those systems which can only be booted by 24-bit addressing but needs to switch to 32-bit addressing to access the higher address memory areas after boot up. By the solutions provided in this document, the Flash device can return to 24-bit addressing mode and boot properly.

Notice:
The systems not using the 32-bit addressing mode are excluded from this document.

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2. Two Address Modes: 24-bit Address Mode and 32-bit Adress Mode

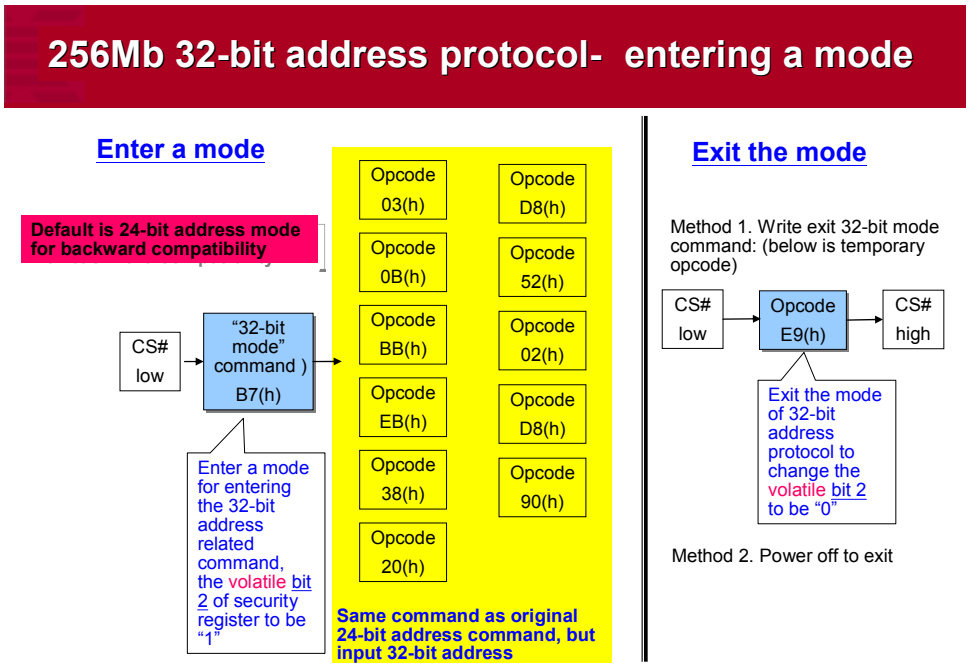
MX25L25635E provides 24-bit address mode as default, which allows the system to read data from the entire flash memory with the current traditional 24-bit address protocol until CS# becomes inactive (is brought to a high level).

However, if the system requires data from the flash using a starting address higher than 128Mb, it must enter 32-bit address mode by writing the **B7** command. Once it is in 32-bit address mode, it can perform all the standard operations and commands used in the 24-bit address mode. The only difference is that the address length must be increased to 32-bits.

To exit the 32-bit address mode, command **E9** or power-off is required.

Please refer to ***Figure 1*** for the process.

Figure 1. **32-bit Address Protocol**



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3. Hardware and Software Solutions to Reset

3-1. Hardware Solution

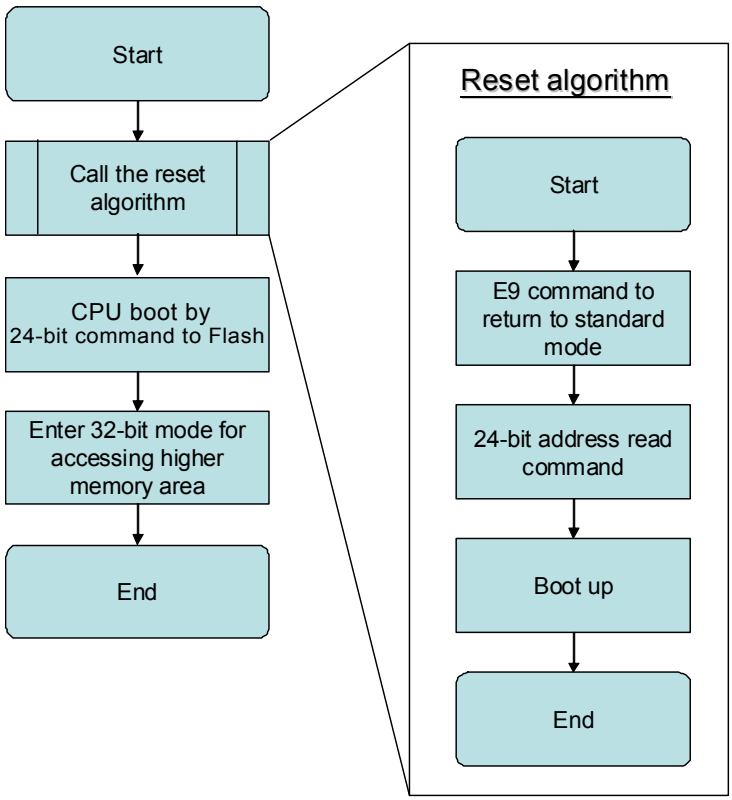
MX25L25635E provides a hardware RESET# pin to reset the device. Driving the RESET# pin low for a period of tRLRH or longer will reset the device and return it to 24-bit address mode.

It is highly recommended to use this hardware method to reset the device.

3-2. Software Solution

If user chooses software method to return the flash device to 24-bit address mode, it is **imperative** to use the **E9** command code as the initial command in any system reset algorithm. Once the system hardware is reset, it will call the reset algorithm and automatically issue command E9 to the flash memory. This ensures that the flash memory will always remain in 24-bit addressing mode during the remainder of the boot process. (*See **Figure 2**.*)

Figure 2. **The work flow of system boot-up and reset**



4. Conclusion

As a leading serial flash memory provider, Macronix announced that the world's first 256Mb serial flash to meet the application trend of increasing system code size caused by adding new features.

However, since the 256Mb serial flash cannot be fully utilized only in the previous 24-bit address protocol, some programming efforts are required to enable the system to adjust and select the proper addressing modes.

Considering the system reset requirement, it is highly recommended that the system designers implement the solutions above to handle warm boot situations when the controller is utilizing the 256Mb serial flash in 32-bit addressing mode.

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