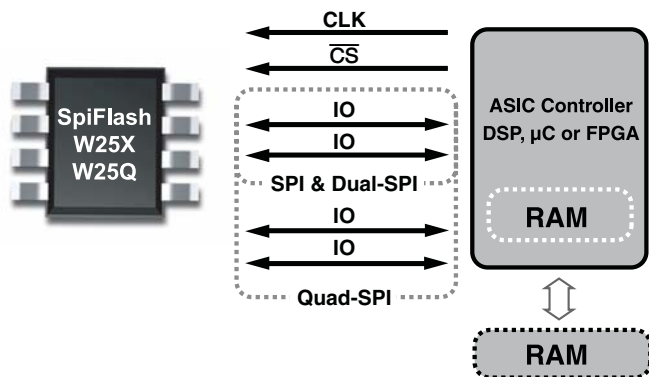




SpiFlash® Memories with SPI, Dual-SPI and Quad-SPI

Winbond's W25X and W25Q SpiFlash® Multi-I/O Memories feature the popular Serial Peripheral Interface (SPI), densities from 1M to 128M-bit, small erasable sectors and the industry's highest performance. The W25X family supports "Dual SPI" effectively doubling standard SPI clock rates. The W25Q family is a "superset" of the 25X family with Dual-I/O and Quad-I/O SPI for even higher performance. Clock rates up to 104MHz achieve an equivalent of 416MHz (50M-Byte/S transfer rate) when using Quad-SPI. This is more than eight times the performance of ordinary Serial Flash (50MHz) and even surpasses asynchronous Parallel Flash memories while using fewer pins and less space. Faster transfer rates mean controllers can execute code (XIP) directly from the SPI interface or further improve boot time when shadowing code to RAM.



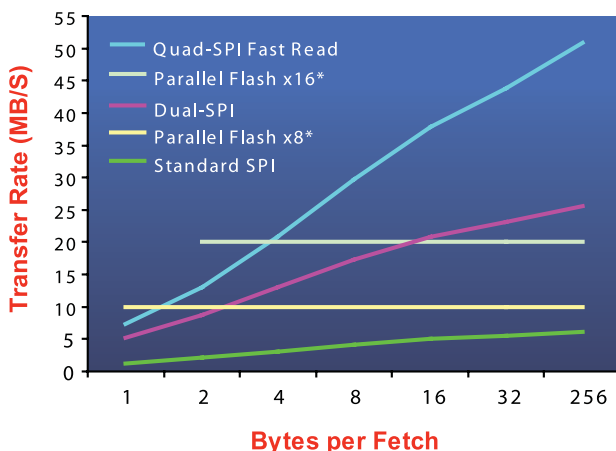
W25X SpiFlash Family

- 1M to 4M-bit (25Q recommended for higher densities)
- Serial Peripheral Interface (SPI), Dual Output SPI
- Uniform 4KB, 32KB & 64KB erase
- Space saving packages (SOIC, WSON, DIP, KGD)

W25Q SpiFlash Family

- 4M to 128M-bit, superset compatible with 25X
- SPI, Dual SPI and Quad SPI
- Uniform 4KB, 32KB & 64KB erase
- Erase and Program* Suspend/Resume
- Quad Page Program
- Security: Lock-down, ID#, OTP Registers*
- Compatible read-only SpiROM™ Device

Random Access Performance



* Asynchronous Parallel Flash with 70nS access, 100nS cycle time

Highest Performance

- 104MHz Clock, 416MHz Quad-SPI (50MB/S)
- >8X speed of most Serial Flash
- Fast-boot or execute code (XIP) from SPI

Wide Range of Applications

PCs, DVD, BluRay, WLAN, DSL, Cable, Printers, Hard Drives, Set Top Box, LCD-TV, Mobile Phones, Bluetooth, GPS, MP3, Meters, DSP, FPGAs and more

* Special feature on most 25Q "B-Series"



Winbond SpiFlash Memory Selection Guide ^{6,7}

Density	Winbond Part # ¹	SPI	Dual SPI ^{2,8}	Quad SPI	Clock MHz	Erase Size Bytes	Voltage ³	Package ⁴	Availability ⁵
1M-bit	W25X10AVxxIG	•	•		100	4K, 64K	3V	xx=(SN,ZP)	Use 25X10B
	W25X10BLxxIG	•	•		50	4K, 32K, 64K	2.5V	xx=(SN,ZP)	Now
	W25X10BVxxIG	•	•		104	4K, 32K, 64K	3V	xx=(SN,ZP)	Now
2M-bit	W25X20AVxxIG	•	•		100	4K, 64K	3V	xx=(SN,ZP)	Use 25X20B
	W25X20BLxxIG	•	•		50	4K, 32K, 64K	2.5V	xx=(SN,ZP)	Now
	W25X20BVxxIG	•	•		104	4K, 32K, 64K	3V	xx=(SN,ZP)	Now
4M-bit	W25X40AVxxIG	•	•		100	4K, 64K	3V	xx=(SN,SS,ZP,DA)	Use 25X40B
	W25X40BLxxIG	•	•		50	4K, 32K, 64K	2.5V	xx=(SN,SS,ZP,DA)	Now
	W25X40BVxxIG	•	•		104	4K, 32K, 64K	3V	xx=(SN,SS,ZP,DA)	Now
	W25Q40BVxxIG	•	•	•	104	4K, 32K, 64K	3V	xx=(SN,SS,ZP,DA)	Q1-2010
	W25Q40BWxxIG	•	•	•	80	4K, 32K, 64K	1.8V	xx=(SN,ZP)	Q2-2010
8M-bit	W25X80AVxxIG	•	•		100	4K, 64K	3V	xx=(SN ⁹ ,SS,ZP,DA)	Use 25Q80B
	W25Q80BLxxIG	•	•		50	4K, 32K, 64K	2.5V	xx=(SN ⁹ ,SS,ZP,DA)	Now
	W25Q80BVxxIG	•	•	•	80/104	4K, 32K, 64K	3V	xx=(SN ⁹ ,SS,ZP,DA)	Now
	W25Q80BWxxIG	•	•	•	80	4K, 32K, 64K	1.8V	xx=(SN ⁹ ,SS,ZP)	Q3-2010
16M-bit	W25X16AVxxIG	•	•		75/100	4K, 64K	3V	xx=(SN ⁹ ,SS,SF,ZP,DA)	Use 25Q16B
	W25Q16BLxxIG	•	•	•	50	4K, 32K, 64K	2.5V	xx=(SN ⁹ ,SS,SF,ZP,DA)	Contact Winbond
	W25Q16BVxxIG	•	•	•	80/104	4K, 32K, 64K	3V	xx=(SN ⁹ ,SS,SF ⁹ ,ZP,DA ⁹)	Now
	W25Q16CVxxIG	•	•	•	80/104	4K, 32K, 64K	3V	xx=(SN ⁹ ,SS,SF ⁹ ,ZP,DA ⁹)	Q2-2010
	W25Q16BWxxIG	•	•	•	80	4K, 32K, 64K	1.8V	xx=(SN ⁹ ,SS,SF ⁹ ,ZP,DA ⁹)	Q3-2010
32M-bit	W25X32VxxIG	•	•		75	4K, 64K	3V	xx=(SS,SF,ZE)	Use 25Q32B
	W25Q32BVxxIG	•	•	•	80/104	4K, 32K, 64K	3V	xx=(SS,SF,ZP,ZE ⁹ ,DA)	Now
	W25Q32BWxxIG	•	•	•	80	4K, 32K, 64K	1.8V	xx=(SN ⁹ ,SS,SF,ZP,ZE ⁹)	Q2-2010
64M-bit	W25X64VxxIG	•	•		75	4K, 64K	3V	xx=(SF,ZE)	Use 25Q64B
	W25Q64BVxxIG	•	•	•	80	4K, 32K, 64K	3V	xx=(SS,SF,ZE,DA)	Now
	W25Q64CVxxIG	•	•	•	80	4K, 32K, 64K	3V	xx=(SS,SF,ZE,DA)	Q1-2010
	W25Q64DWxxIG	•	•	•	80	4K, 32K, 64K	1.8V	xx=(SF,ZE)	Q3-2010
128M-bit	W25Q128BVxxIG	•	•	•	70/80/104	4K, 32K, 64K	3V	x=(F,E)	Now

1. 25Q B-series is recommended for all new 8M-128Mb designs. 25X B-series is available if needed, Contact Winbond for more information. 2. 25X series supports Dual Output only. 3. 25XxxV = 2.7V to 3.6V, 25XxxL = 2.3V to 3.6V, 25QxxBW = 1.65V to 1.95V. 4. "Green" and/or RoHS compliant packaging. KGD Wafer also available. SN=SO8 150mil, SS=SO8 208mil, SF or F=SO16 300mil, ZP=WSON8 6x5mm, ZE or E=WSON8 8x6mm, DA=PDIP8 300mil. 5. Sample availability. 6. See data sheet for additional technical information. Some special features, such as OTP Write Protection, are special order. 7. Subject to change without notice. 8. X-series B-version operates in Dual I/O SPI. 9. Special Order



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