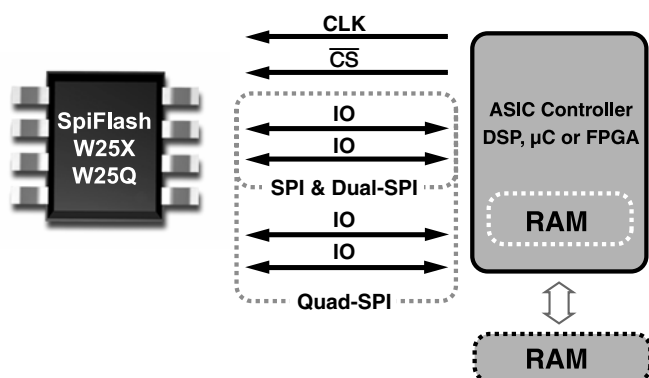




SpiFlash[®]
Serial Flash Memories

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

Winbond's W25X and W25Q SpiFlash[®] 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 operates up to 104MHz and supports "Dual-Output SPI", effectively doubling the clock rate to 208MHz. The W25Q family is "super-set" compatible with W25X devices while adding 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 64M-bit, superset compatible with 25P
- Serial Peripheral Interface (SPI), Dual Output SPI
- Uniform 4KB & 64KB erase
- Space saving packages (SOIC, WSON, DIP, KGD)

W25Q SpiFlash Family

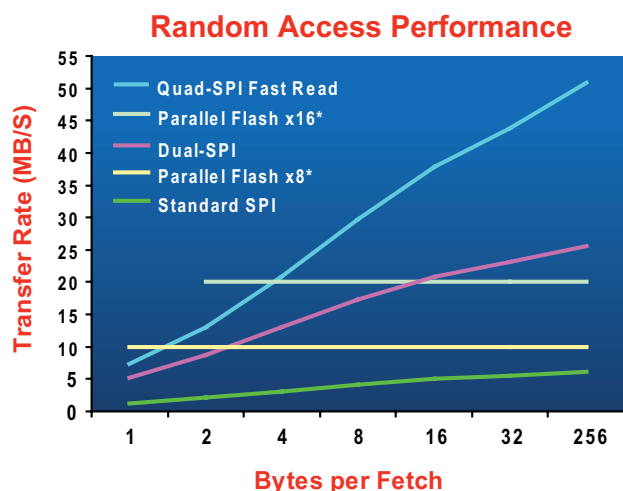
- 4M to 128M-bit, superset compatible with 25X
- SPI, Dual SPI and Quad SPI
- Uniform 4KB, 32KB & 64KB erase
- Erase and Program* Suspend/Resume
- Quad Page Program
- Security: Lock-down, ID#, OTP Registers*
- Compatible read-only SpiROM[™] Device

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



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

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

winbond



Winbond SpiFlash Memory Selection Guide ^{7, 8}

Density	Winbond Part # ¹	SPI	Dual SPI ²	Quad SPI	Clock MHz	Erase Size Bytes	Voltage ³	Package ⁴	Availability ⁵
1M-bit	W25X10AVxxIG	•	•		100	4K, 64K	3V	xx=(SN, ZP, DA)	Now
	W25X10ALxxIG	•	•		50	4K, 64K	2.5V	xx=(SN, ZP, DA)	Now
2M-bit	W25X20AVxxIG	•	•		100	4K, 64K	3V	xx=(SN, ZP, DA)	Now
	W25X20ALxxIG	•	•		50	4K, 64K	2.5V	xx=(SN, ZP, DA)	Now
4M-bit	W25X40AVxxIG	•	•		100	4K, 64K	3V	xx=(SN,SS,ZP,DA)	Now
	W25X40ALxxIG	•	•		50	4K, 64K	2.5V	xx=(SN,SS,ZP,DA)	Now
	W25X40BVxxIG ⁶	•	•		104	4K, 32K, 64K	3V	xx=(SN,SS,ZP,DA)	Q3-09
	W25X40BLxxIG ⁶	•	•		50	4K, 32K, 64K	2.5V	xx=(SN,SS,ZP,DA)	Q3-09
	W25Q40BVxxIG	•	•	•	104	4K, 32K, 64K	3V	xx=(SN,SS,ZP)	Q3-09
	W25Q40BWxxIG	•	•	•	80	4K, 32K, 64K	1.8V	xx=(SN,ZP)	Q3-09
8M-bit	W25X80AVxxIG	•	•		100	4K, 64K	3V	xx=(SN,SS,ZP,DA)	Now
	W25X80ALxxIG	•	•		50	4K, 64K	2.5V	xx=(SN,SS,ZP,DA)	Now
	W25X80BVxxIG ⁶	•	•		80/104	4K, 32K, 64K	3V	xx=(SN,SS,ZP,DA)	Q3-09
	W25Q80BVxxIG	•	•	•	80/104	4K, 32K, 64K	3V	xx=(SN,SS,ZP)	Q3-09
	W25Q80BWxxIG	•	•	•	80	4K, 32K, 64K	1.8V	xx=(SN,SS,ZP)	Q4-09
16M-bit	W25X16AVxxIG	•	•		75/100	4K, 64K	3V	xx=(SN,SS,SF,ZP,DA)	Now
	W25X16ALxxIG	•	•		50	4K, 64K	2.5V	xx=(SN,SS,SF,ZP,DA)	Now
	W25X16BVxxIG ⁶	•	•		80/104	4K, 32K, 64K	3V	xx=(SN,SS,SF,ZP,DA)	Now
	W25Q16VxxIG	•	•	•	80	4K, 32K, 64K	3V	xx=(SS,SF,ZP)	Now
	W25Q16BVxxIG	•	•	•	80/104	4K, 32K, 64K	3V	xx=(SN,SS,SF,ZP)	Now
	W25Q16BWxxIG	•	•	•	80	4K, 32K, 64K	1.8V	xx=(SN,SS,SF,ZP)	Q4-09
	W25X32VxxIG	•	•		75/100	4K, 64K	3V	xx=(SS,SF,ZE,DA)	Now
32M-bit	W25X32AVxxIG	•	•		75	4K, 64K	3V	xx=(SS,SF,ZP,DA)	Now
	W25X32BVxxIG ⁶	•	•		104	4K, 32K, 64K	3V	xx=(SS,SF,ZP,DA)	Q2-09
	W25Q32VxxIG	•	•	•	80	4K, 32K, 64K	3V	xx=(SS,SF,ZP)	Now
	W25Q32BVxxIG	•	•	•	104	4K, 32K, 64K	3V	xx=(SS,SF,ZP)	Q2-09
	W25Q32BWxxIG	•	•	•	80	4K, 32K, 64K	1.8V	xx=(SN,SS,SF,ZP)	Q2-09
	W25X64VxxIG	•	•		75	4K, 64K	3V	xx=(SF,ZE,DA)	Now
64M-bit	W25X64BVxxIG ⁶	•	•		80	4K, 32K, 64K	3V	xx=(SS,SF,ZE,DA)	Q1-09
	W25Q64BVxxIG	•	•	•	80	4K, 32K, 64K	3V	xx=(SS,SF,ZE)	Q1-09
128M-bit	W25Q128BVxxIG	•	•	•	104	4K, 32K, 64K	3V	x=(F,E)	Q2-09

1. "A" or "B" typically indicates new technology revision. 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=WSO8 6x5mm, ZE or E=WSO8 8x6mm, DA=PDIP8 300mil. 5. Sample availability. 6. W25QxxB series is recommended for all new designs. W25XxxB series is available for existing designs that require X-series ID for firmware compatibility. 7. See data sheet for additional technical information. Some special features, such as OTP Write Protection, are special order. 8. Subject to change without notice.



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