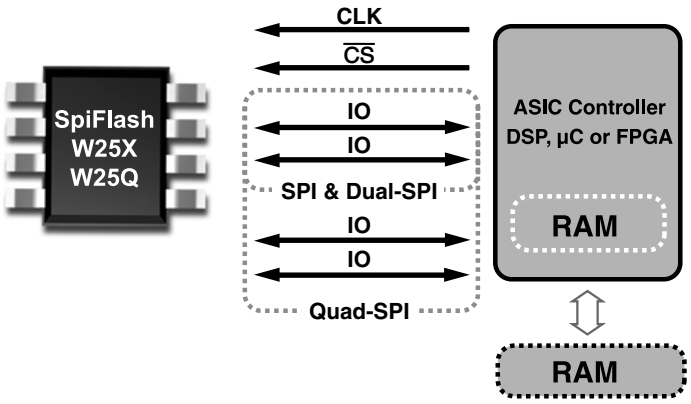
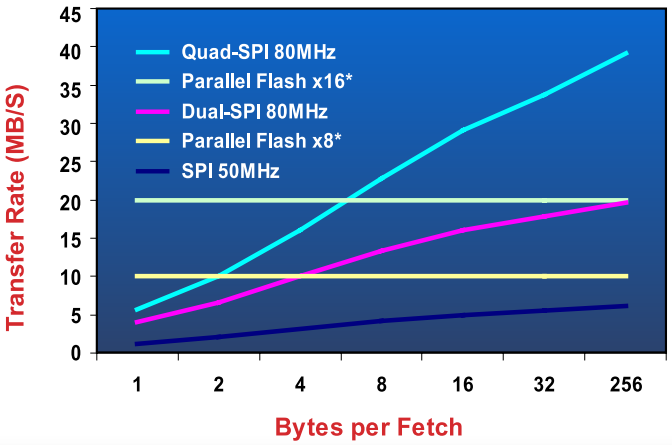
SpiFlash® Memories with SPI, Dual-SPI and Quad-SPI

Winbond's W25X and new 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 75MHz and supports "Dual-Output SPI", effectively doubling the clock rate to 150MHz. The new W25Q family maintains compatibility with the W25X while adding Dual-I/O and Quad-I/O SPI for even higher performance. Clock rates up to 80MHz achieve an equivalent 320MHz (40M-Byte/S transfer rate) when using Quad-SPI. This is more than six 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.



Random Access Performance



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

W25X SpiFlash Family

- 1M to 64M-bit, superset compatible with 25P
- Serial Peripheral Interface (SPI) and Dual Output SPI
- Uniform 4KB & 64KB erase
- Space saving packages (SOIC, WSON, DIP, KGD)

W25Q SpiFlash Family

- 1M to 128M-bit, superset compatible with 25X
- Dual I/O and Quad I/O SPI
- Uniform 4KB, 32KB & 64KB erase
- Erase Suspend/Resume
- Quad Page Program
- Lock-down, OTP and ID# security

Highest Performance

- 80MHz Clock, 320MHz Quad-SPI (40MB/S)
- >6X speed of most Serial Flash
- Fast-boot or execute code (XIP) from SPI

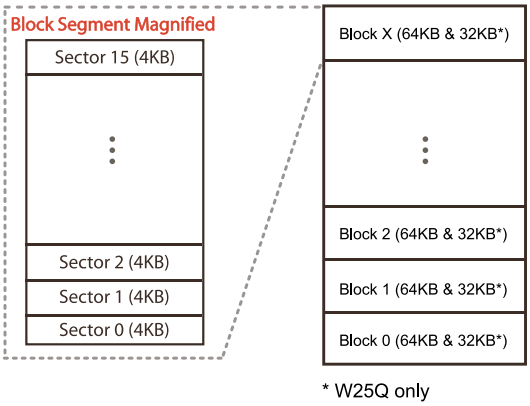
Wide Range of Applications

DVD Drives, Players & Recorders, WLAN, DSL/Cable Modems, Printers, Hard Drives, Set Top Box, GPS, LCD-TV, Phones, MP3, Meters, DSP, FPGAs and more

winbond

spiflash®
Serial Flash Memories

Uniform Sector and Block Erase



* W25Q only

The W25X and W25Q families feature uniform 4K, 32K* and 64K byte erase through the entire array allowing for efficient memory usage. Security Features include: top and bottom protection, lock-down*, one-time-program* (OTP) and 64 bit unique ID number*. (*W25Q Only)

Housed in space saving SOIC packaging, SpiFlash memories offer a pin, space and cost efficient alternative to ordinary Parallel Flash memories. SpiFlash memories are ideal for a wide range of applications including: DVD drives, players and recorders, wireless LANs, DSL and cable modems, PC's, printers, hard drives, set top boxes, GPS, DSPs, FPGAs and more.

Winbond W25X and W25Q SpiFlash Memory Selection Guide [6]

Density	Winbond Part # [1]	SPI	Dual SPI [2]	Quad SPI	Clock MHz	Erase Size Bytes	Voltage [3]	Package [4]	Temp °C	Availability [5]
1M-bit	W25X10VSNIG / W25X10AVSNIG	✓	✓		75	4K, 64K	3V	SO8 150mil	-40 to +85	Now / Q4-07
	W25X10ALSNIG	✓	✓		40	4K, 64K	2.5V	SO8 150mil	-40 to +85	Q4-07
2M-bit	W25X20VSNIG / W25X20AVSNIG	✓	✓		75	4K, 64K	3V	SO8 150mil	-40 to +85	Now / Q4-07
	W25X20ALSNIG	✓	✓		40	4K, 64K	2.5V	SO8 150mil	-40 to +85	Q4-07
4M-bit	W25X40VSNIG / W25X40AVSNIG	✓	✓		75	4K, 64K	3V	SO8 150mil	-40 to +85	Now / Q1-08
	W25X40VSSIG / W25X40AVSSIG	✓	✓		75	4K, 64K	3V	SO8 208mil	-40 to +85	Now / Q1-08
	W25X40LSNEG / W25X40ALSNIG	✓	✓		40	4K, 64K	2.5V	SO8 150mil	0 to +85 -40 to +85	Now / Q1-08
8M-bit	W25X80VSSIG / W25X80AVSSIG	✓	✓		75	4K, 64K	3V	SO8 208mil	-40 to +85	Now / Q4-07
	W25Q80VSSIG	✓	✓	✓	80	4K, 32K, 64K	3V	SO8 208mil	-40 to +85	Q2-08
16M-bit	W25X16VSSIG / W25X16AVSSIG	✓	✓		75	4K, 64K	3V	SO8 208mil	-40 to +85	Now / Q4-07
	W25X16VSFIG / W25X16AVSFIG	✓	✓		75	4K, 64K	3V	SO16 300mil	-40 to +85	Now / Q4-07
	W25Q16VSSIG	✓	✓	✓	80	4K, 32K, 64K	3V	SO8 208mil	-40 to +85	Now
32M-bit	W25X32VSSIG	✓	✓		75	4K, 64K	3V	SO8 208mil	-40 to +85	Now
	W25X32VSFIG	✓	✓		75	4K, 64K	3V	SO16 300mil	-40 to +85	Now
	W25Q32VSSIG	✓	✓	✓	80	4K, 32K, 64K	3V	SO8 208mil	-40 to +85	Q1-08
64M-bit	W25X64VSFIG	✓	✓		75	4K, 64K	3V	SO16 300mil	-40 to +85	Now
	W25Q64VSSIG	✓	✓	✓	80	4K, 32K, 64K	3V	SO8 208mil	-40 to +85	Q2-08
	W25Q64VSFIG	✓	✓	✓	80	4K, 32K, 64K	3V	SO16 300mil	-40 to +85	Q2-08
128M-bit	W25Q128VSFIG	✓	✓	✓	80	4K, 32K, 64K	3V	SO16 300mil	-40 to +85	Q4-08

1. "A" typically indicates new technology revision. **2.** 25X supports Dual Output not Dual I/O. **3.** 25XxxV = 2.7V to 3.6V, 25XxxL = 2.3V to 3.3V.
4. "Green" and/or RoHS compliant packaging. WSON, DIP and KGD also available. **5.** Sample availability **6.** Subject to change without notice.

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