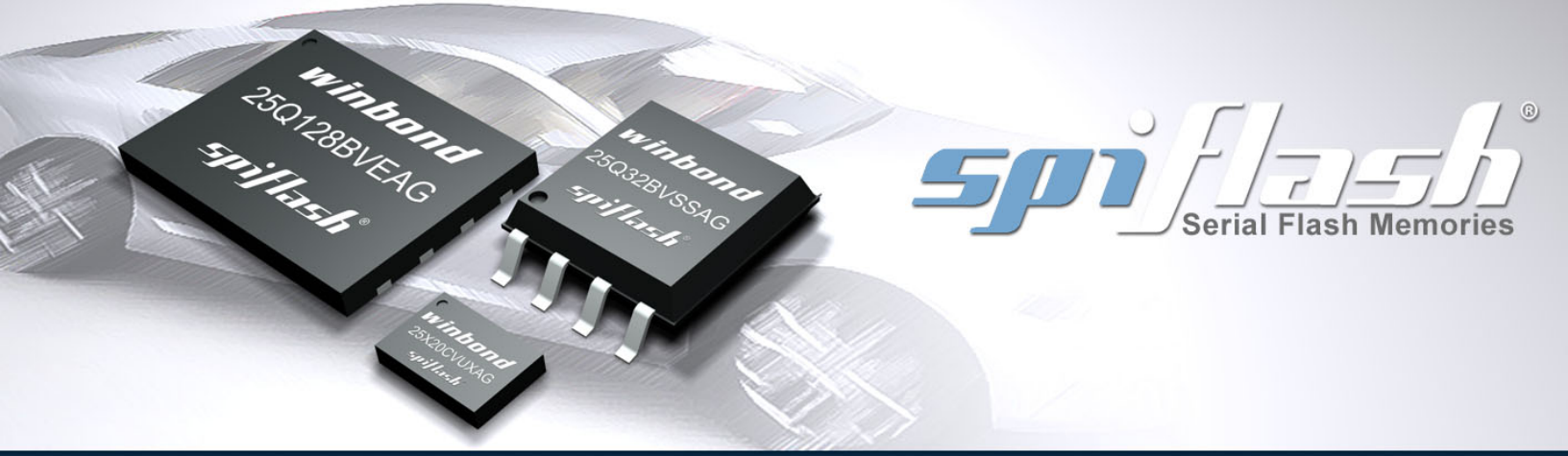

Automotive Certified SpiFlash Memories

Winbond's Industrial and Automotive W25X and W25Q SpiFlash® Multi-I/O Memories feature the popular Serial Peripheral Interface (SPI), densities from 2M to 512M-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.

Leading the Serial Flash Market in unit sales and revenue, Winbond TS16949 certified AEC-Q100 qualified memories now support automotive applications. The automobile has transformed into the most sophisticated electronic device in the market. Digital displays in automotive dashboards provide more information about the car, and improve safety. Instant-on and real time 2D/3D image rendering is achieved with fast processors and SpiFlash memories. ADAS (Advanced Driver Assist Systems), comfort, entertainment, and navigation are now available in the center console and this is addressed with SpiFlash memories using small packages for space constrained systems and high density for advanced applications.

	Industrial	Industrial Plus	Automotive Grade 3	Automotive Grade 2
Temperature Range	-40°C~85°C	-40°C~105°C	-40°C~85°C	-40°C~105°C
Part # Example	W25Q80DVSSIG	W25Q80DVSSJG	W25Q80DVSSBG	W25Q80DVSSAG
AEC-Q100 Compliant	No	No	Yes	Yes
Change Control (PPAP)	No	No	Optional	Optional

W25X SpiFlash Family

- 1M to 4M-bit (25Q recommended for higher densities)
- Serial Peripheral Interface (SPI), Dual Output SPI
- Uniform 4KB, 32KB & 64KB erase

W25Q SpiFlash Family

- 2M to 512M-bit, superset compatible with 25X
- SPI, Dual-SPI, Quad-SPI
- Uniform 4KB, 32KB & 64KB erase
- Erase and Program Suspend/Resume
- Quad Page Program
- Security: Lock-down, ID#, OTP Registers

High Performance

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

Voltage & Package Options

- 3V, 2.5V & 1.8V operation
- Space saving packages:
  8-pin & 16-pin SOIC, USON, and WSON
- Known Good Die (KGD) Wafers

Wide Range of Applications

- Digital Cluster, Rear/Front Camera, ADAS ECU, Radio / Infotainment, Navigation, Bluetooth, GPS, Telematic / Gateway, Data Recorder, DSP, FPGAs and more

Winbond also offers the W29GL family of Parallel Flash products from 32Mb through 256Mb densities compatible to industry standard x29GL products.

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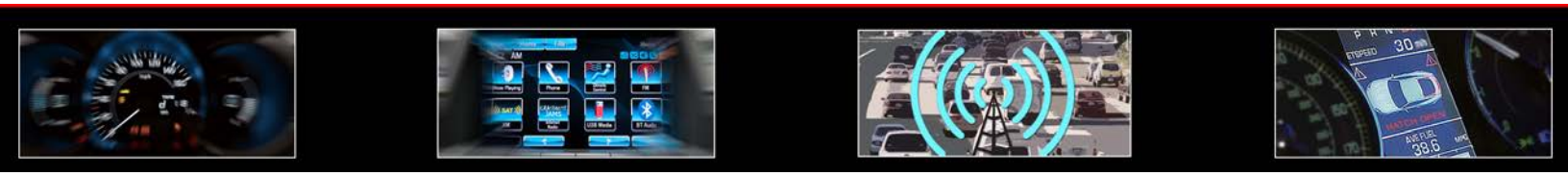
Winbond Industrial and Automotive SpiFlash Memory Selection Guide [1,2,3]

Density	Winbond Part # [7]	SPI/ Dual	Quad SPI	DTR	Voltage[4]	Package[5]	Temp (Deg C)	AEC-Q100	Sample Availability
2M-bit	W25X20CVxxJG	•			3V	xx=(SS, SN,ZP[6],UX[6])	-40 to 105	Yes	Now
	W25X20CVxxBG	•			3V	xx=(SS, SN,ZP[6],UX[6])	-40 to 85	Yes	Now
	W25X20CVxxAG	•			3V	xx=(SS, SN,ZP[6],UX[6])	-40 to 105	Yes	Now
4M-bit	W25X40CVxxJG	•			3V	xx=(SS, SN,ZP[6],UX[6])	-40 to 105	Yes	Now
	W25X40CVxxBG	•			3V	xx=(SS, SN,ZP[6],UX[6])	-40 to 85	Yes	Now
	W25X40CVxxAG	•			3V	xx=(SS, SN,ZP[6],UX[6])	-40 to 105	Yes	Now
	W25Q40CVxxJG	•	•		3V	xx=(SS, SN,ZP[6],UX[6])	-40 to 105	Yes	Now
	W25Q40CVxxBG	•	•		3V	xx=(SS, SN,ZP[6],UX[6])	-40 to 85	Yes	Now
	W25Q40CVxxBG	•	•		3V	xx=(SS, SN,ZP[6],UX[6])	-40 to 105	Yes	Now
8M-bit	W25Q80DVxxJG	•	•		3V	xx=(SS, SN,ZP[6],UX[6],TC[6],TB[6])	-40 to 105	Yes	Now
	W25Q80DVxxBG	•	•		3V	xx=(SS, SN,ZP[6],UX[6],TC[6],TB[6])	-40 to 85	Yes	Now
	W25Q80DVxxAG	•	•		3V	xx=(SS, SN,ZP[6],UX[6],TC[6],TB[6])	-40 to 105	Yes	Now
16M-bit	W25Q16DVxxJG	•	•		3V	xx=(SS, SN,ZP[6],TC[6],TB[6])	-40 to 105	Yes	Now
	W25Q16DVxxBG	•	•		3V	xx=(SS, SN,ZP[6],TC[6],TB[6])	-40 to 85	Yes	Now
	W25Q16DVxxAG	•	•		3V	xx=(SS, SN,ZP[6],TC[6],TB[6])	-40 to 105	Yes	Now
	W25Q16DWxxJG	•	•		1.8V	xx=(SS, SN,ZP[6],TC[6],TB[6])	-40 to 85	Yes	Now
	W25Q16DWxxBG	•	•		1.8V	xx=(SS, SN,ZP[6],TC[6],TB[6])	-40 to 85	Yes	Now
	W25Q16DWxxAG	•	•		1.8V	xx=(SS, SN,ZP[6],TC[6],TB[6])	-40 to 105	Yes	Now
32M-bit	W25Q32BVxxJG	•	•		3V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 105	Yes	Now
	W25Q32BVxxBG	•	•		3V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 85	Yes	Now
	W25Q32BVxxAG	•	•		3V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 105	Yes	Now
	W25Q32FWxxJG	•	•		1.8V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 105	4Q-2015	4Q-2015
	W25Q32FWxxBG	•	•		1.8V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 85	4Q-2015	4Q-2015
	W25Q32FWxxAG	•	•		1.8V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 105	4Q-2015	4Q-2015
64M-bit	W25Q64CVxxJG	•	•		3V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 105	Yes	Now
	W25Q64CVxxBG	•	•		3V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 85	Yes	Now
	W25Q64CVxxAG	•	•		3V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 105	Yes	Now
	W25Q64FWxxJG	•	•		1.8V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 105	2Q-2016	2Q-2016
	W25Q64FWxxBG	•	•		1.8V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 85	2Q-2016	2Q-2016
	W25Q64FWxxAG	•	•		1.8V	xx=(SS,SF,ZP,ZE[6],TC[6],TB[6])	-40 to 105	2Q-2016	2Q-2016
128M-bit	W25Q128BVxJG	•	•		3V	x=(S[7],F,E,C[6],B[6])	-40 to 105	Yes	Now
	W25Q128BVxBG	•	•		3V	x=(S[7],F,E,C[6],B[6])	-40 to 85	Yes	Now
	W25Q128BVxAG	•	•		3V	x=(S[7],F,E,C[6],B[6])	-40 to 105	Yes	Now
	W25Q128FWxJG	•	•		1.8V	x=(S[7],F,E,C[6],B[6])	-40 to 105	2Q-2016	2Q-2016
	W25Q128FWxBG	•	•		1.8V	x=(S[7],F,E,C[6],B[6])	-40 to 85	2Q-2016	2Q-2016
	W25Q128FWxAG	•	•		1.8V	x=(S[7],F,E,C[6],B[6])	-40 to 105	2Q-2016	2Q-2016
256M-bit	W25Q256FVxJG	•	•		3V	x=(F,E,C[6],B[6])	-40 to 105	2Q-2016	2Q-2016
	W25Q256FVxBG	•	•		3V	x=(F,E,C[6],B[6])	-40 to 85	2Q-2016	2Q-2016
	W25Q256FVxAG	•	•		3V	x=(F,E,C[6],B[6])	-40 to 105	2Q-2016	2Q-2016
	W25Q256JVxJG	•	•	•	3V	x=(F,E,C[6],B[6])	-40 to 105	4Q-2016	4Q-2016
	W25Q256JVxBG	•	•	•	3V	x=(F,E,C[6],B[6])	-40 to 85	4Q-2016	4Q-2016
	W25Q256JVxAG	•	•	•	3V	x=(F,E,C[6],B[6])	-40 to 105	4Q-2016	4Q-2016
512M-bit	W25M512JVxJG[8]	•	•	•	3V	x=(F,E)	-40 to 105	4Q-2016	4Q-2016
	W25M512JVxBG[8]	•	•	•	3V	x=(F,E)	-40 to 85	4Q-2016	4Q-2016
	W25M512JVxAG[8]	•	•	•	3V	x=(F,E)	-40 to 105	4Q-2016	4Q-2016

1. See data sheet for further technical information. Some special features, such as OTP Write Protection, are special order. 2. Subject to change without notice. 3. See data sheet for details on Automotive product specifications. 4. Voltage 3V=2.7-3.6V, 1.8V=1.65-1.95V. 5. "Green" and RoHS compliant packaging. KGD Wafer also available. SN=SO8 150mil, SS or S=SO8 208mil, SF or F=SO16 300mil, ZP or P=WSON8 6x5mm, ZE or E=WSON8 8x6mm, UX=USON8 2x3mm, TC or C=TFBGA24 8X6mm (4X6 matrix), TB or B=TFBGA24 8X6mm (5X5 matrix). 6. Special Order. Contact Winbond for availability of products under development, special order and Automotive products. 7. Contact Winbond marketing for availability of AG1 (-40 to 125 Deg C). 8. 512Mb is a dual-die package device.



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