

Reliable Flash Solutions for Automotive Systems

AEC-Q100 Qualified NOR & NAND Solutions for ADAS, Cluster and Domain Controllers

As a leading provider of Flash memory solutions, Winbond provides AEC-Q100 qualified memories tailored to automotive applications, including Advanced Driver Assist Systems (ADAS), Driver Monitoring Systems (DMS), infotainment, and integrated smart cockpit systems. With its own ISO 16949 certified fab, Winbond is committed to delivering automotive-grade memory solutions that meet stringent quality and reliability requirements. This commitment is particularly crucial for the automotive industry where product innovation and longevity support are paramount for ensuring reliable performance over extended periods. Winbond offers outstanding Flash memories specifically designed for the automotive industry.

NOR Flash memories feature multi-I/O and the standard Serial Peripheral Interface (SPI) capabilities. Ranging from 2Mb to 2Gb, these memories enable fast transfer rates at a frequency up to 133MHz. They enable controllers to execute code directly from the SPI interface or speed up boot times by shadowing code to RAM. Octal NOR Flash utilizes the JEDEC xSPI interface to achieve a continuous read throughput of 400MB/s and delivers up to 25% lower current, empowering automotive designers to meet the increasing performance and safety requirements.

NAND Flash memories are available in sizes ranging from 512Mb to 8Gb and can operate at ambient temperatures of up to 115°C. The ONFI NAND families are fully industry standard and can be directly used as a drop-in replacement of existing flash. QSPI NAND Flash achieves a data throughput rate of up to 80MB/s, while Octal NAND Flash offers a maximum continuous Read throughput of 240MB/s and can perform 100,000 Program/Erase cycles. These NOR and NAND Flash solutions support a wide range of automotive applications, from instrument clusters and infotainment systems to smart front camera, ADAS and domain controller platforms.

	Automotive Grade 2	Automotive Grade 1
Temperature Range	-40°C~105°C	-40°C~125°C
Part # Example	W25H12RVSSAQ/M	W25H12RVSSAQ/M
AEC-Q100 Compliant	Yes	Yes
Change Control (PPAP)	Available	Available

NOR Flash

W25Q QSPI NOR

- 3V / 1.8V Operating Voltage
- 2Mb - 256Mb with 104MHz Clock
- Uniform 4KB, 32KB & 64KB erase
- Automotive Grade 1 and 2 qualified

W35T Octal NOR with JEDEC xSPI Interface

- 1.8V Operating Voltage
- 64Mb - 2Gb with 200MHz Clock
- STR and DTR output support
- Continuous read throughput: up to 400MB/s
- CRC-in-Transit
- CRC-in-Rest
- Built-in ECC
- ASIL-B and ASIL-D compliant products available

W25H Built-in ECC QSPI NOR

- 3V / 1.8V Operating Voltage
- 32Mb - 2Gb with 133MHz Clock
- STR and DTR output support
- Data Throughput up to 66MB/s
- Hardware Reset Support
- ASIL-B compliant
- Automotive Grade 1 and 2 qualified

Winbond Automotive NOR Flash Memory Selection Guide^{1,2,3}

Density	Winbond Part #	QSPI NOR	Octal NOR	Voltage	105°C	115°C ⁸	125°C
2Gb	W25H02RV	•		3V	•		•
	W25H02JV	•		3V	•		•
	W25H02NW	•		1.8V	•		•
	W35T02NW		•	1.8V	•		•
1Gb	W25H01RV	•		3V	•		•
	W25H01JV	•		3V	•		•
	W25H01NW	•		1.8V	•		•
	W35T01NW		•	1.8V	•		•
512Mb	W25H51RV	•		3V	•		•
	W25H51JV	•		3V	•		•
	W25H512NW	•		1.8V	•		•
	W35T51NW		•	1.8V	•		•
256Mb	W25H25RV	•		3V	•		•
	W25Q256JV	•		3V	•		•
	W25Q256JW	•		1.8V ⁴	•		•
	W35T25NW		•	1.8V	•		•
128Mb	W25H12RV	•		3V	•		•
	W25Q128JV	•		3V	•		•
	W25Q128JW	•		1.8V ⁴	•		•
	W35T12NW		•	1.8V	•		•
64Mb	W25H64RV	•		3V	•		•
	W25Q64JV	•		3V	•		•
	W25Q64JW	•		1.8V ⁴	•		•
	W35T64NW		•	1.8V	•		•
32Mb	W25Q32RV	•		3V	•		•
	W25H33RV	•		3V	•		•
	W25Q32JV	•		3V	•		•
	W25Q32JW	•		1.8V ⁵	•		•
16Mb	W25Q16RV	•		3V	•		•
	W25Q16JV	•		3V	•		•
	W25Q16JW	•		1.8V	•		•
8Mb	W25Q80RV	•		3V	•		•
	W25Q81DV	•		3V	•		•
	W25Q81EW	•		1.8V ⁴	•		•
4Mb	W25Q40RV	•		3V	•		•
	W25X/Q40CV	•		3V	•		•
	W25Q41EW	•		1.8V ⁴	•		•
2Mb	W25Q20RV	•		3V	•		•
	W25X20CV	•		3V	•		•
	W25Q21EW	•		1.8V ⁴	•		•

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. 1.8V=1.65-1.95V. 5. 1.8V=1.7-1.95V. 6. "•" means qualified and available. 7. CP/F tested by -40°C and 115°C, reliability report refers to AG2 grade (-40°C to 105°C).

NAND Flash

W29N ONFI NAND

- 3V / 1.8V Operating Voltage
- 1Gb - 8Gb
- Industry Standard Compatible Products and Packages

W35N Octal NAND

- 1.8V Operating Voltage
- 1Gb, 2Gb, 4Gb with SDR 166MHz & DDR 120MHz Clock
- SPI, OSPI, ODDR
- Data Throughput SDR 166MB/s, DDR 240MB/s
- Built-in ECC
- Continuous Read
- Block management by Look-Up Table

W25N QSPI NAND

- 3V / 1.8V Operating Voltage
- 512Mb - 2Gb with 104MHz to 166MHz Clock
- SPI, Dual SPI, Quad SPI
- STR and DTR Output Support
- Data Throughput Up to 83MB/s
- Hardware Reset Support (TFBGA24)
- Mainstream Packages
- Built-in ECC
- Continuous Read and Sequential Read

Winbond Automotive NAND Flash Memory Selection Guide^{1,2,3}

Density	Winbond Part #	QSPI NAND	Octal NAND	ONFI NAND	Voltage	105°C	115°C ⁸	125°C
8Gb	W29N08LZ			•	1.8V ⁵	•	•	
	W29N08GV			•	3V	•	•	
4Gb	W29N04LZ			•	1.8V ⁵	•	•	
	W25N04LW	•			1.8V ⁵	•		•
	W29N04GV			•	3V	•	•	
	W35N04JW		•		1.8V ⁵	•	•	
2Gb	W25N02JW	•			1.8V ⁵	•	•	
	W35N02JW		•		1.8V ⁵	•	•	
1Gb	W25N01JW	•			1.8V ⁵	•	•	
	W25N01GV	•			3V	•	•	
	W35N01JW		•		1.8V	•	•	
512Mb	W25N512GV	•			3V	•	•	

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