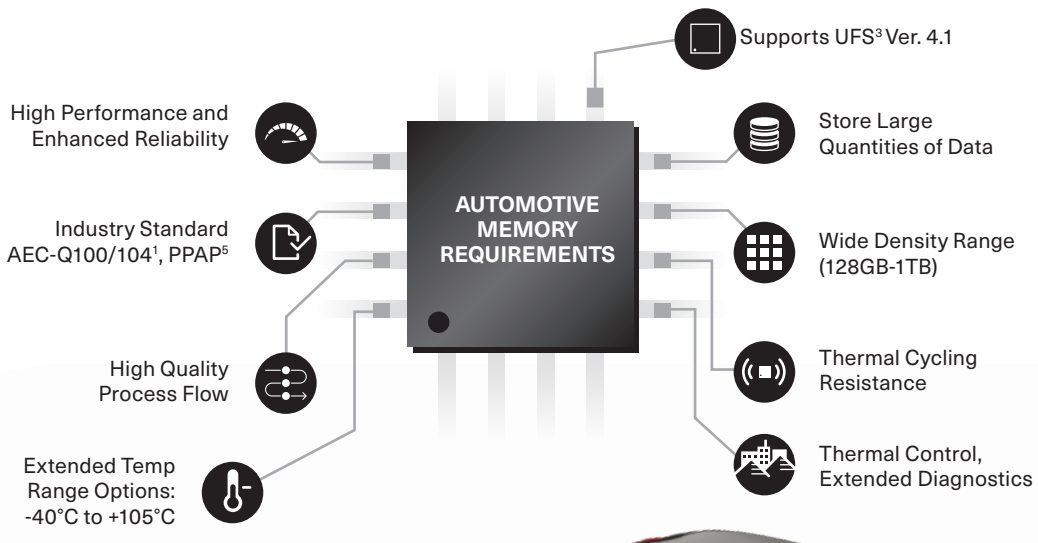
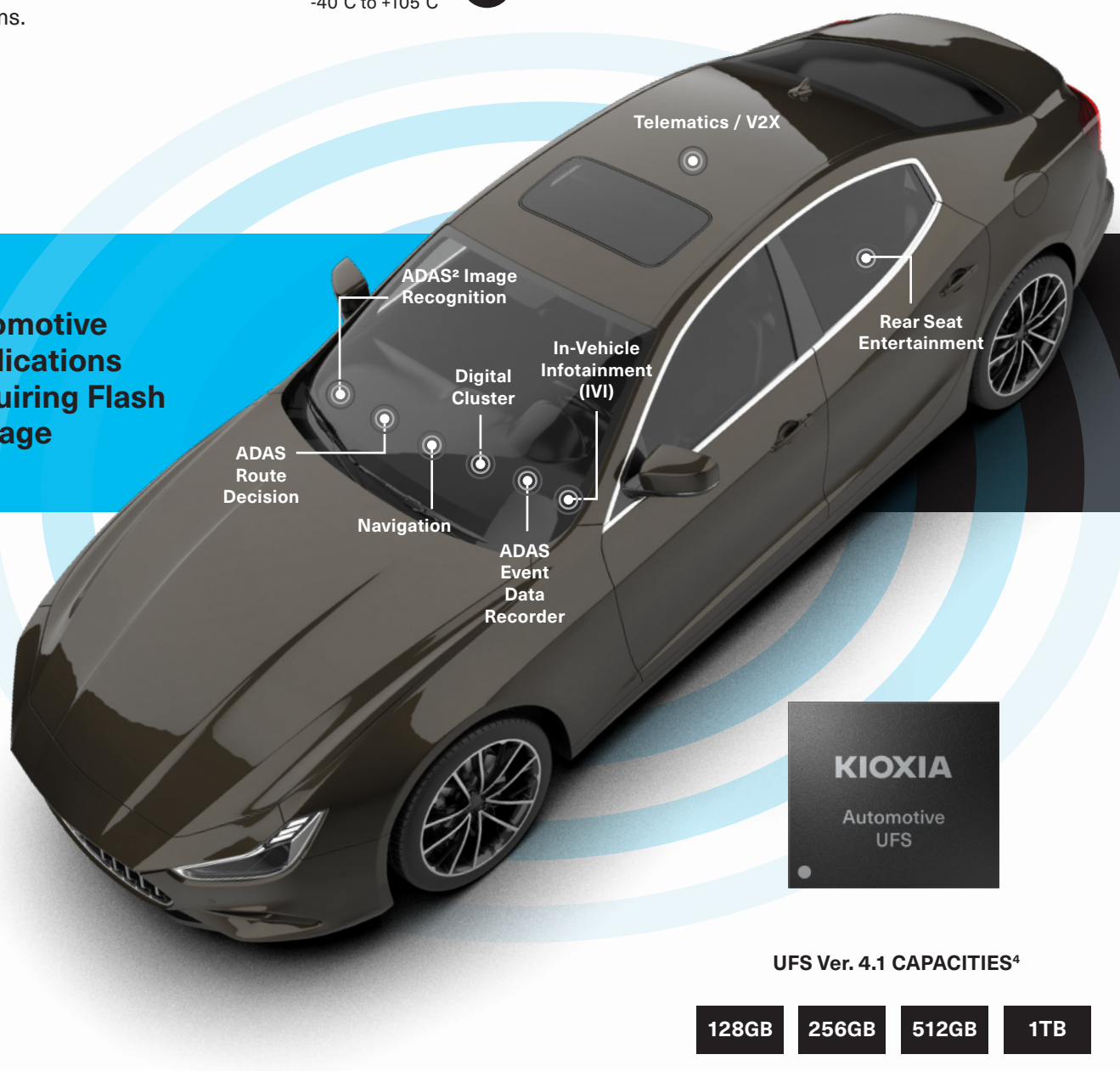
Accelerating Automotive Performance with UFS Ver. 4.1

Anytime, anywhere connectivity has extended to the vehicle. Advanced driver assist features and infotainment systems enhance the experience but place a greater demand for in-vehicle memory solutions.

Accelerated processing power and increased data storage capacity are the keys to enabling the next generation of automotive systems.



Automotive Applications Requiring Flash Storage



UFS Ver. 4.1 CAPACITIES[4]

128GB | 256GB | 512GB | 1TB

KIOXIA UFS for Automotive

The first to introduce UFS technology[6], KIOXIA continues its leadership position with UFS Ver. 4.1 for Automotive applications. UFS Ver. 4.1 devices integrate the company's BiCS FLASH™ generation 8 3D flash memory with CBA architecture and a controller in a JEDEC-standard package. UFS Ver. 4.1 incorporates MIPI® M-PHY® 5.0 and UniPro® 2.0 and supports theoretical interfaces speeds of up to 23.2 gigabits per second (Gbps) per lane or 46.4 Gbps per storage device. UFS Ver. 4.1 is backward compatible with UFS Ver. 3.1 and 4.0.

Why UFS Ver. 4.1?

- High performance
- Fast boot times
- Better power efficiency
- Supports full duplexing
- High density offerings
- Industry Standard Support
- Thermal control, extended diagnostic functions

UFS Ver. 4.1 KEY DIFFERENTIATORS

- 2x faster interface speed compared to the older UFS Ver. 3.1
- Up to 210% Random Read and 370% Write Performance Improvement*
- Up to 210% Seq Read and 250% Write Performance Improvement*
- Power efficiency improvement
- High speed link up support for faster boot times
- Write booster buffer resizing and Pinned Partial Flush Mode for performance flexibility
- Enhanced Diagnostic Capabilities including vendor-specific device health descriptor

Interface Speed[7]

UFS Ver. 4.1

supports **4.64GB/s**

KIOXIA delivers flash-based products for next-generation storage applications. Having invented NAND flash over 35 years ago, KIOXIA is now one of the world's largest flash memory suppliers – and continues to move the technology forward.

[1] Electrical component qualification requirements defined by the AEC (Automotive Electronics Council).
[2] Advanced Driving Assistant System.
[3] Universal Flash Storage (UFS) is a product category for a class of embedded memory products built to the JEDEC UFS standard specification. Due to its serial interface, UFS supports full duplexing, which enables both concurrent reading and writing between the host processor and UFS device.
[4] Product density is identified based on the density of memory chip(s) within the Product, not the amount of memory capacity available for data storage by the end user. Consumer-usable capacity will be less due to overhead data areas, formatting, bad blocks, and other constraints, and may also vary based on the host device and application. For details, please refer to applicable product specifications. The definition of 1Gb = 2^{30} bits = 1,073,741,824 bits. The definition of 1GB = 2^{30} bytes = 1,073,741,824 bytes.
[5] PPAP - Production Part Approval Process
[6] KIOXIA Corporation's first sample shipment, as of February 8, 2013.
[7] Read and write speeds are the best values obtained in a specific test environment at KIOXIA Corporation and KIOXIA Corporation warrant neither read nor write speeds in individual devices. Read and write speed may vary depending on a device used and file size read or written.
*Compared to KIOXIA Automotive UFS Ver. 3.1, 512GB device.
MIPI Alliance Specification for M-PHY.
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The product image shown is a representation of the design model and not an accurate product depiction.
All comparisons are to previous generation devices.

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