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VESA Display Stream Compression IP Cores for Automotive Displays

Certified ISO 26262 ASIL-B Ready

Design Challenges for Automotive Displays

Whether it be for safety, entertainment, or simply convenience, video plays a key role in creating an optimal in-car user experience. Cars now contain multiple video sources for Advanced Driver Assistance Systems (ADAS), infotainment, head-up displays (HUDs), and driver navigation systems.

As the number of video sources in cars grows, so too does the challenge of processing and transporting video content around the vehicle. Automobile manufacturers face increased bandwidth requirements, cabling costs, and electromagnetic interference (EMI) when developing systems containing multiple, often ultra high-resolution, video streams.

VESA Display Stream Compression (DSC)

VESA DSC was developed by the Video Electronics Standards Association (VESA) as an industry-wide compression standard to support the development of higher resolution displays on existing video transport interfaces.

BENEFITS

- ✓ **Visually lossless picture quality for graphics, text, and videos**
- ✓ **Increased bandwidth capacity up to 3X**
- ✓ **Transport agnostic**
- ✓ **Ultra-low latency performance**
- ✓ **Scalable display resolution, frame rate, and color depth**
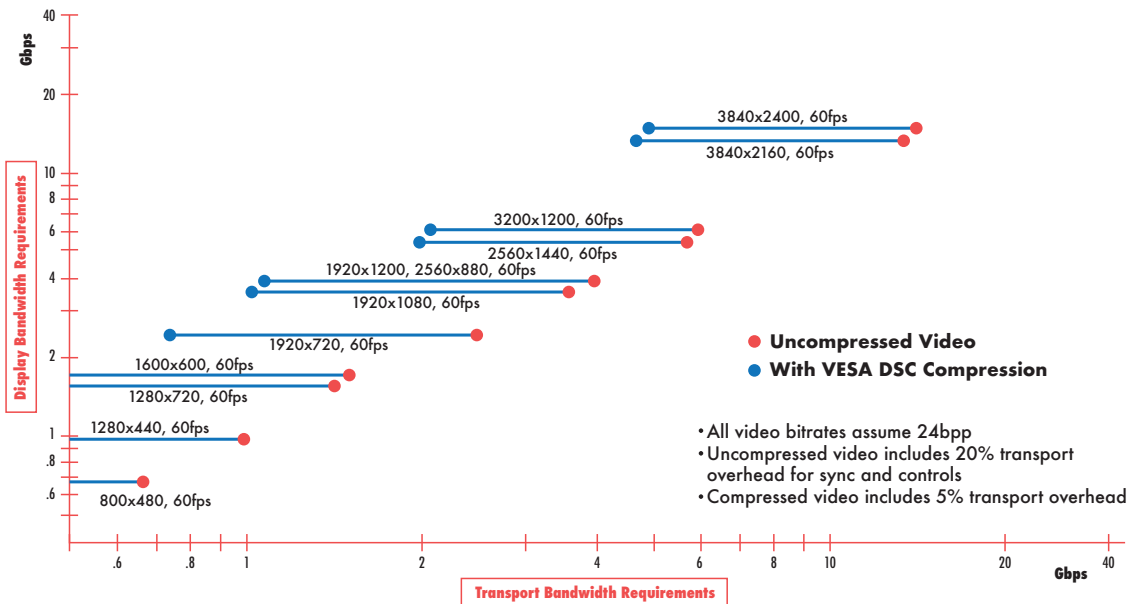- ✓ **Reduced power consumption, system costs, and EMI**

VESA DSC & Automotive Displays

With DSC compression, the data transport capacity is increased by up to 3X, enabling automobile manufacturers to use the existing physical interfaces and infrastructure in a car with an increased number of displays at higher resolutions.

By freeing up data bandwidth through compression, DSC enables more parallel video sources to be transported simultaneously over the same cabling, reducing the need for extra cabling and the potential cost and weight associated with this.
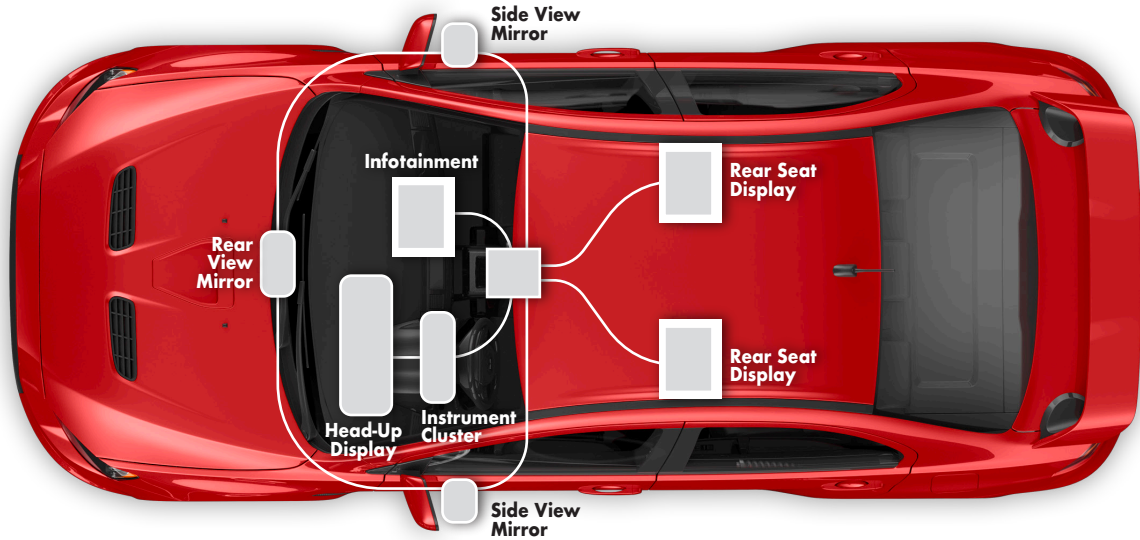
As display trends continue to evolve, using DSC compression offers designers a scalable solution to meet the demands of current and future automotive display systems.

- Uncompressed Video
- With VESA DSC Compression

- All video bitrates assume 24bpp
- Uncompressed video includes 20% transport overhead for sync and controls
- Compressed video includes 5% transport overhead

VESA DSC Encoder & Decoder IP Cores By Hardent
Features

Certified ISO 26262 ASIL-B Ready	Fully VESA DSC-compatible	Configurable maximum display resolution - up to 8K @ 120Hz with HDR	RGB and YCbCr 4:4:4, 4:2:2, & 4:2:0 native coding	8, 10, 12, 14, & 16 bits per video component

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