SafeSense by ST
Premium image sensors
for in-cabin monitoring

In-cabin monitoring to improve road safety

In recent years, the rise in accidents due to driver drowsiness and distraction has become a major concern. These issues significantly contribute to road incidents, prompting regulatory bodies and governments worldwide to seek effective safety solutions.

30%
Disctraction is responsible for between 10% and 30% of all road deaths*

GSR2 REQUIREMENTS

Recognized for their critical role in preventing accidents and improving road safety, driver monitoring systems (DMS) and occupancy monitoring systems (OMS) are increasingly mandated in new vehicles.
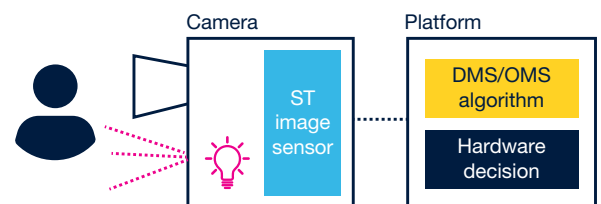
Since July 2022, the General Safety Regulation 2 (GSR2) has required these advanced safety features to specifically address accidents caused by driver drowsiness and distractions.

What is DMS

A Driver Monitoring System (DMS) is an advanced safety technology designed to analyze the driver's behavior. It detects signs of drowsiness, distraction, and other potentially dangerous behaviors to prevent accidents and ensure safer driving.

How does it work

DMS cameras use infrared (IR) image sensors to monitor the driver under all conditions, day or night. When critical situations like drowsiness or sleep are detected, the system can take immediate action, such as alerting the driver or even safely parking the vehicle.

Extending car safety with OMS

Beyond DMS, the Occupancy Monitoring System (OMS) extends safety capabilities to other passengers in the car. OMS ensures seatbelts are fastened, prevents children from being left behind, and even supports secured video conferencing.

SafeSense by ST
Safety is our DNA

INTRODUCING SAFESENSE BY ST

Introducing the SafeSense by ST portfolio, a cutting-edge collection of smart and highly reliable CMOS image sensors specifically engineered for automotive safety applications. These sensors are distinguished by their advanced maturity level and adherence to the most stringent industry regulations, ensuring unparalleled reliability and performance.

SafeSense by ST empowers Tier 1 and OEM engineers to develop high-performance, secure solutions with complete peace of mind. By meeting the highest industry standards, SafeSense by ST delivers superior quality sensors that are perfectly suited for critical applications such as Driver Monitoring Systems (DMS) and Occupancy Monitoring Systems (OMS).

With SafeSense by ST, you can expect exceptional image clarity, robust functionality, and the assurance of safety and compliance, paving the way for the next generation of automotive innovations.

PIONEERING AUTOMOTIVE IMAGING EXCELLENCE

SafeSense by ST products are developed with the most rigorous requirements in mind, ensuring they meet and exceed expectations for DMS and OMS applications. By collaborating with market leaders, SafeSense by ST incorporates cutting-edge innovations into its designs, as Back Side Illumination (BSI) process or ST's Smart Upscale technology for achieving 5-megapixel NIR images.

COMPREHENSIVE SUPPLY CHAIN CONTROL

ST maintains full control over its supply chain through ST's independent European foundries, mastering every aspect of production. This ensures unparalleled reliability and world-class quality, setting the benchmark in automotive imaging solutions.

MATURE SOLUTIONS TRUSTED BY INDUTRY LEADERS

SafeSense by ST has earned its reputation by working closely with industry leaders to develop products that address real-world challenges. This collaboration ensures that SafeSense image sensors are not only compliant with current standards but also prepared for future advancements in automotive safety technology.

SAFESENSE BY ST KEY PILLARS

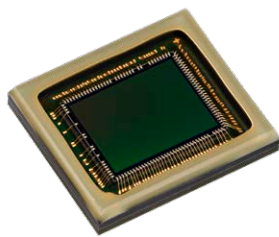| Strong maturity	Safety applications	Secured supply chain	World class quality
ST automotive image sensors for in-cabin monitoring are in mass production since 2022.	Our products comply with the most stringent regulations for DMS and OMS (GSR2:2019/2144)	With our own European fabs, we have full control of the manufacturing chain from design to supply.	World-class automotive quality with the highest standards and norms in our factories.

SafeSense by ST portfolio

A COMPLETE OFFER FOR IN-CABIN MONITORING

SafeSense by ST offers a comprehensive range of premium in-cabin image sensors. Our portfolio includes 1.5MP sensors tailored for DMS up to wide 5.1MP sensors designed for OMS, ensuring top-tier performance across all applications.

KEY FEATURES AND BENEFITS

- 3D stacked BSI (back side illumination) sensors with high Quantum Efficiency (QE)
- AEC-Q100 grade 2 with operating junction temperature from -40 to 125 °C
- ISO 26262 for ASIL B system integration
- Up to 60 fps in full resolution for all sensors
- Fast mode plus I^{2}C control interface & MIPI CSI-2 output format

Product portfolio

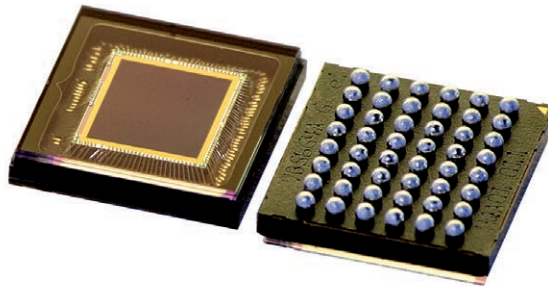| Product code	Resolution	Chroma	Shutter	Pixel size (µm)	Package	Cybersecurity
VB56G4A	1.5 Mp	NIR	Global	2.61	OBGA	No
VB56G6A	1.5 Mp	NIR	Global	2.61	OBGA	Yes
VB1740	2.7 Mp	RBG-NIR	Global & rolling	2.25	OBGA	Yes
VB1940	5.1 Mp	RBG-NIR	Global & rolling	2.25	OBGA	Yes
VD1940	5.1 Mp	RBG-NIR	Global & rolling	2.25	Bare die	Yes

Seamless interoperability

INTEROPERABILITY

Our image sensors are designed for seamless interoperability with a wide range of ecosystem partners. Whether it's algorithm developers, ISPs, SoCs, CMIs, or serializers, our market-proven sensors ensure compatibility and optimal performance, empowering you to build comprehensive solutions with confidence.

OPTICALLY-ENABLED BALL GRID ARRAY (OBGA)

Optically-enabled ball grid arrays (OBGAs) is a compact design for turnkey integration in cameras.

GETTING STARTED

We make it easy for our customers to get started with our advanced sensors. To facilitate a fast and seamless development process, we provide a comprehensive evaluation kit that includes all necessary hardware and software components.

In addition, our image sensors are readily available for ordering, with complete evaluation kits to help you get started.

For more information and local support, please contact your nearest ST sales office.

At STMicroelectronics we create technology that starts with You

For more information on ST products and solutions, visit www.st.com