

# Contactless multi-gigabit camera with rotation using 60 GHz RF Link

**Contactless connectivity using 60 GHz**



**Replace sliprings, connectors & cables**



**Transfer up to 6 Gbps**



**ST60 RF transceivers**





# 60 GHz contactless connectivity

## Contactless connectivity using 60 GHz RF links

Unlicensed band with worldwide availability

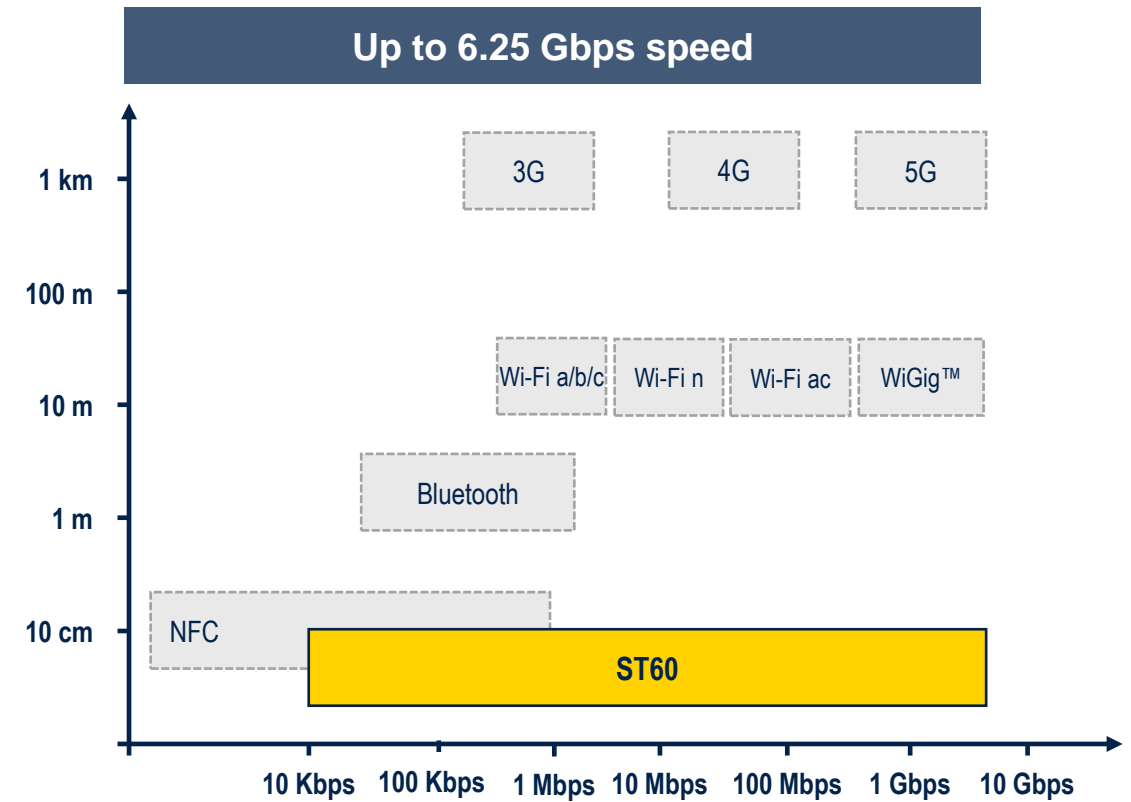
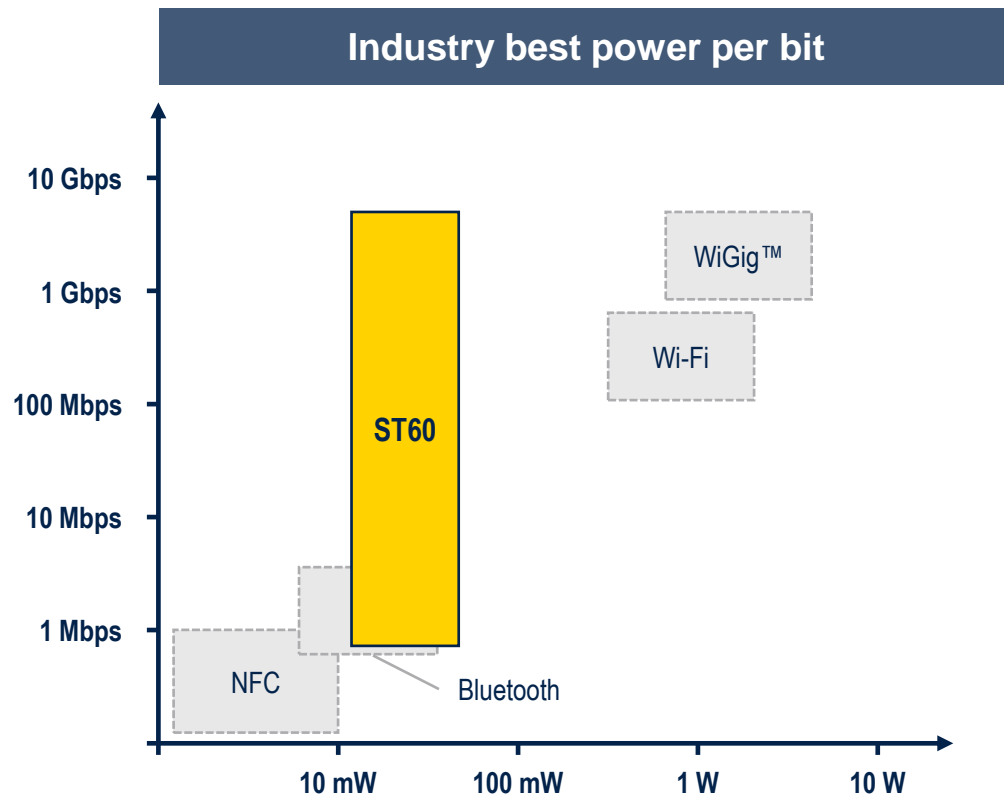
High bandwidth

Propagates through materials



# Why ST60 @ 60 GHz?

## High speed performance at very low power







# A new solution for contactless connectivity

High-speed, short range, point to point 60 GHz RF link

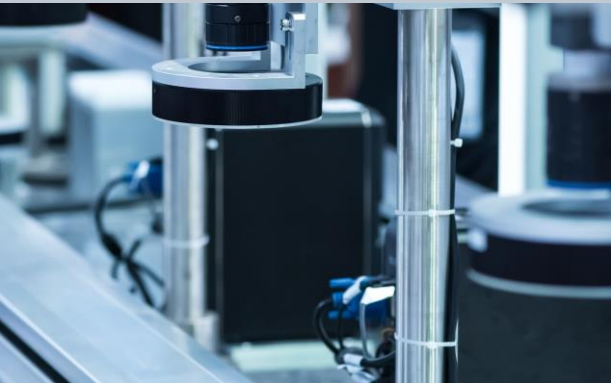
A photograph of an industrial engine assembly line. Several silver-colored engine blocks are mounted on a conveyor system, moving through a factory setting with various mechanical components and wiring visible.

Replace expensive sliprings with gigabit RF lanes

Robust & reliable connector-free solutions

Solve product design challenges





Factory automation



Industrial safety



Sliprings  
Lidar / radar



Robotics / Smart factory

**High and low data rate – Gigabit Ethernet, video, camera, firmware loading, docking – Safe & reliable rotation**



Personal electronics  
(docking, FW transfer)



Accessories & modular  
devices



Rotational high resolution  
Cameras



Video walls





# Contactless rotation with high data rates

**Transfer high quality video data through rotational joint using RF lane**



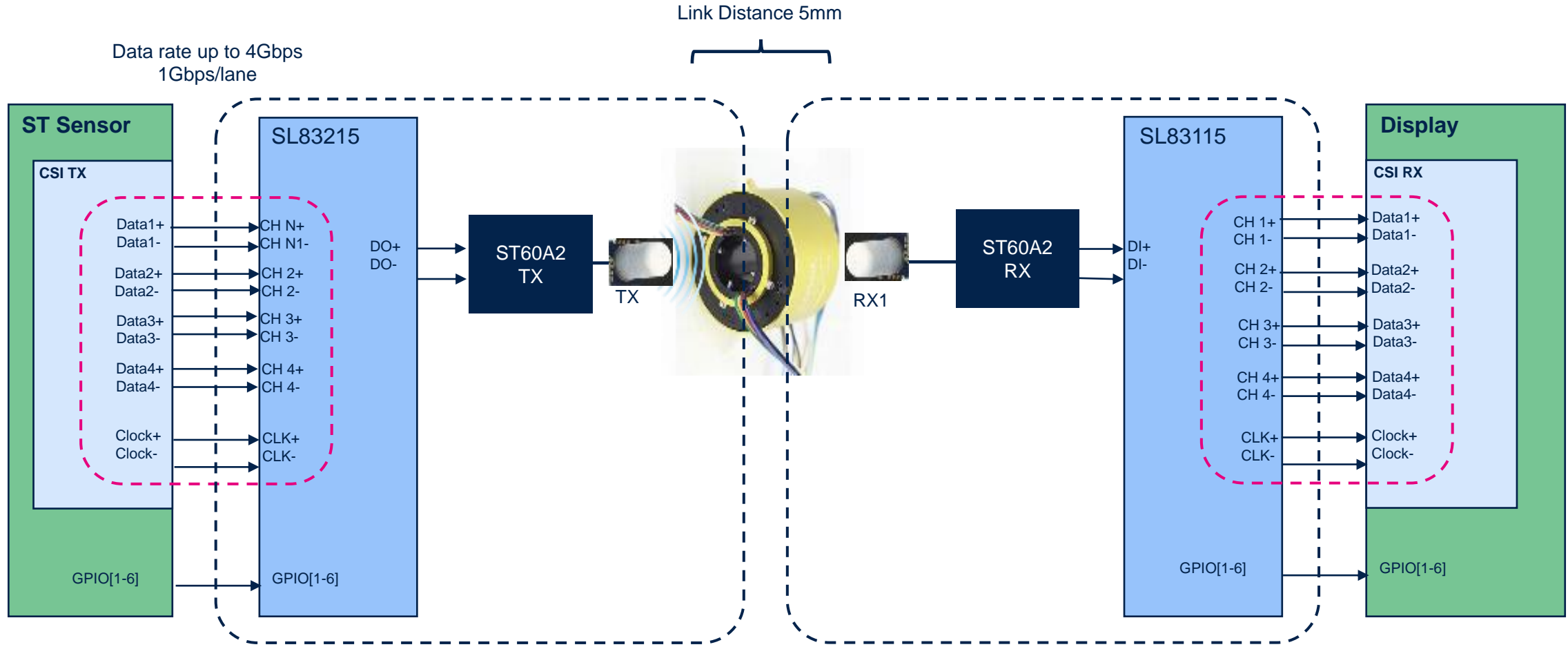
Achieve high data rates up to 6 Gbps

Compact solution with miniature antennas

Develop contactless rotational connections



# Demo block diagram





# ST60 – RF transceivers

## ST60 – Innovative 60 GHz transceiver family



Fully Integrated 60 GHz RF transceivers

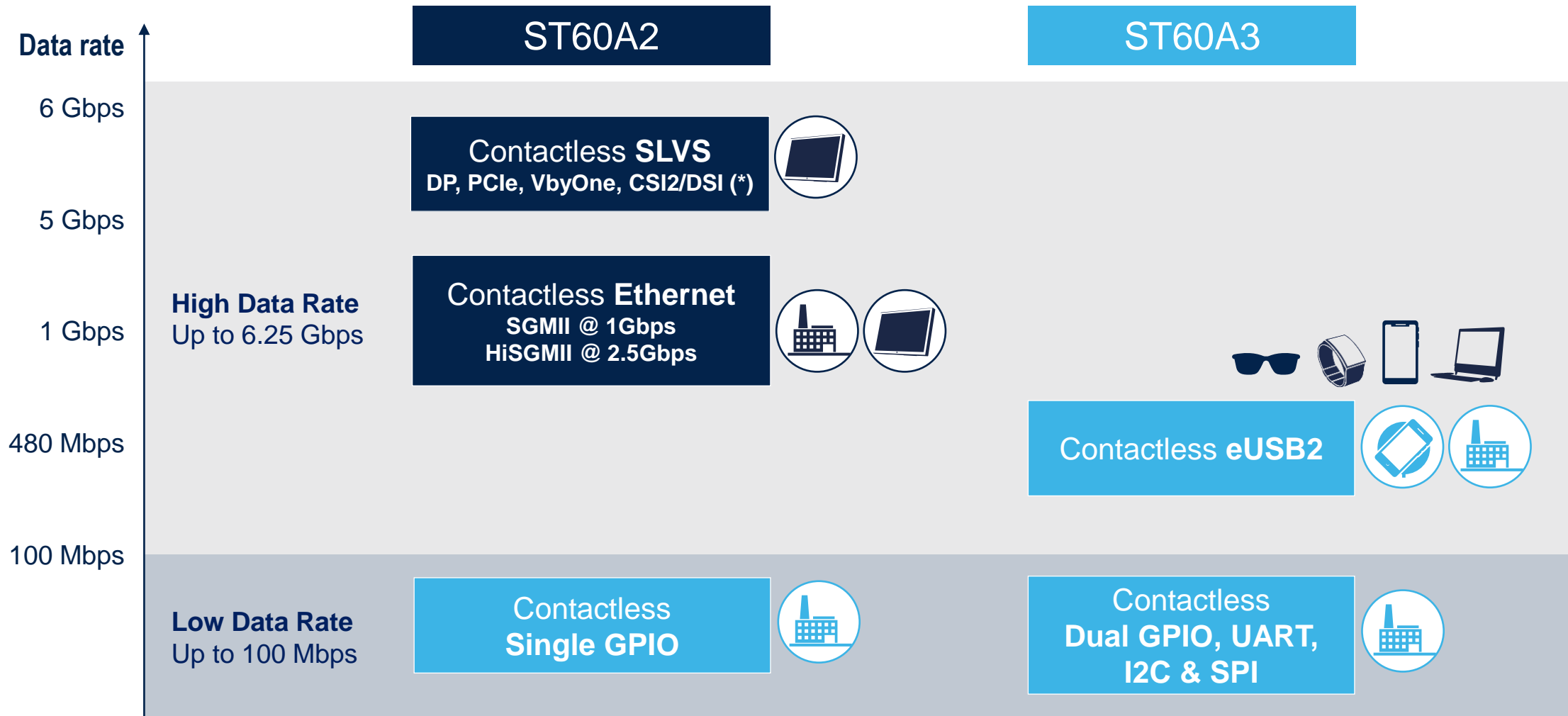
Small form factor

Very low power consumption





# ST60 portfolio



(\*) leveraging companion chips / serializer



# ST60A2 overview

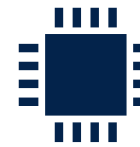
Compact solution integrating full 60 GHz RF transceiver



Point to point  
Short range  
Half duplex



Up to 6.25 Gbps



Small footprint



Ultralow power



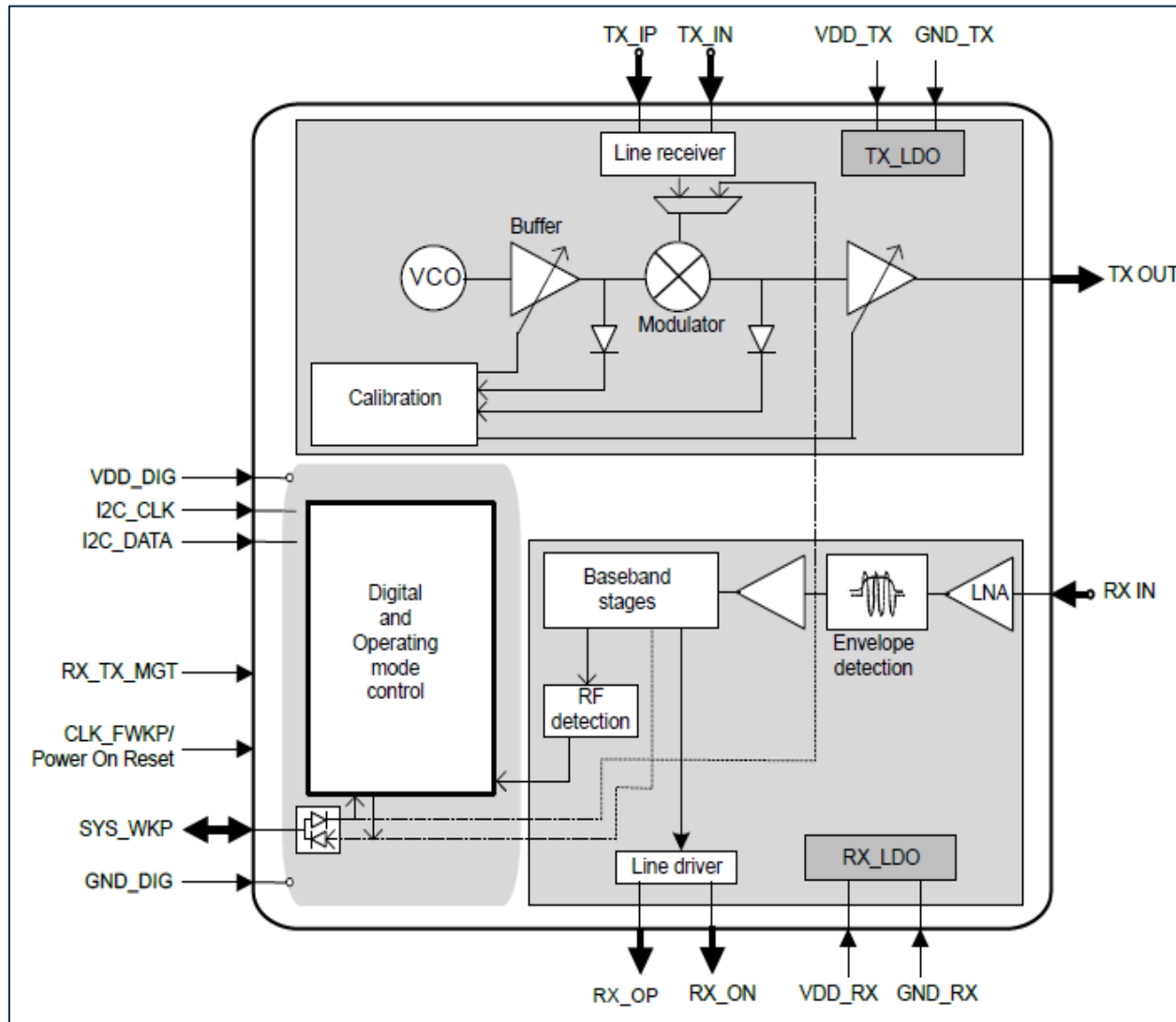
-40°C to 105°C







# ST60A2 – Block diagram

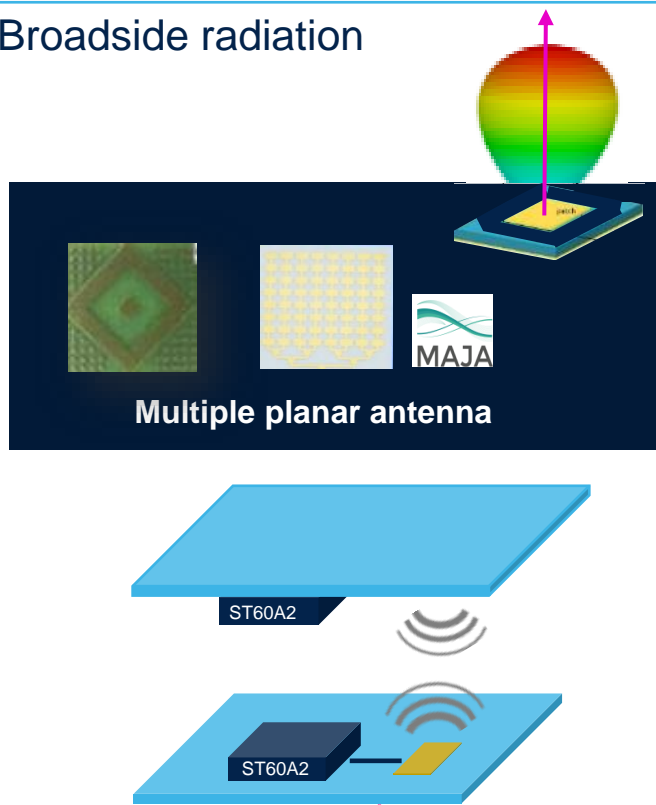




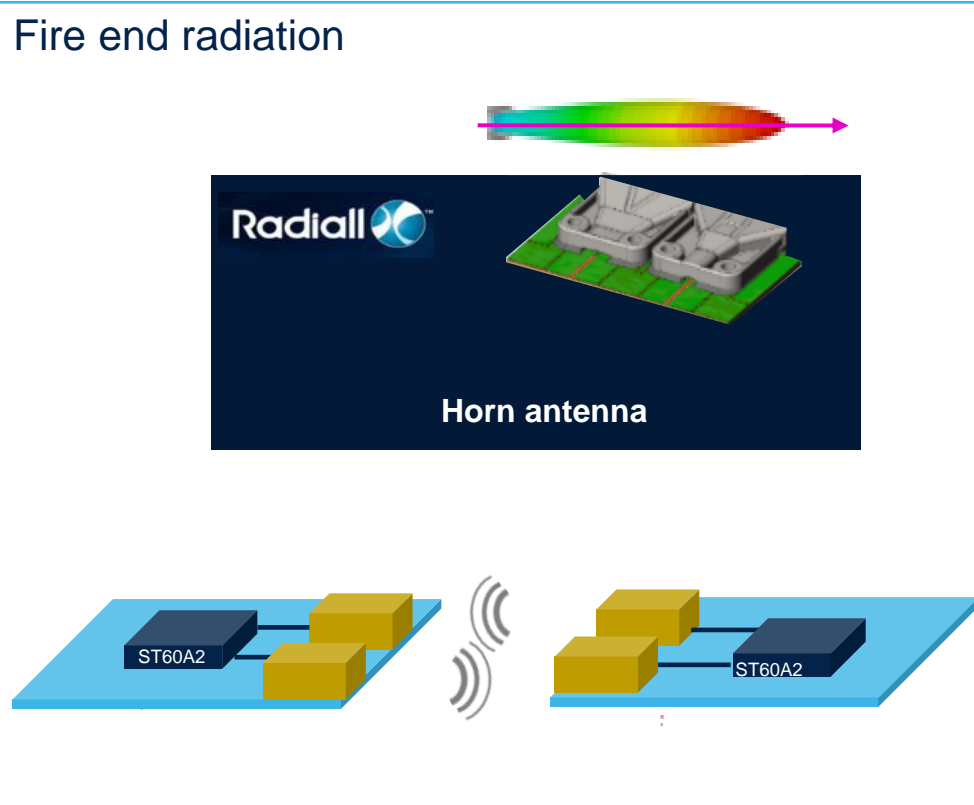
# ST60 antenna technologies

Horizontal, vertical and rotating links, an expanding eco-system of antenna offers

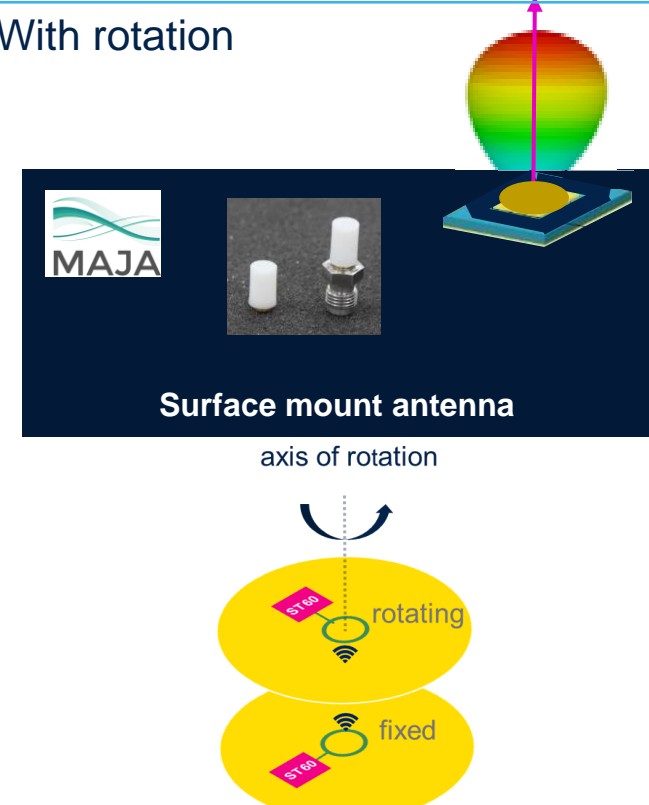
Broadside radiation



Fire end radiation



With rotation







# ST60A3HX overview

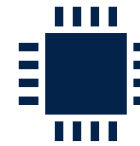
60 GHz V-Band transceiver for contactless connectivity  
up to 480 Mbps



**Point to Point**  
**Short range**  
**Self discovery**



Up to 480 Mbps (eUSB2)



Small footprint with integrated  
or external antenna options



Ultralow power



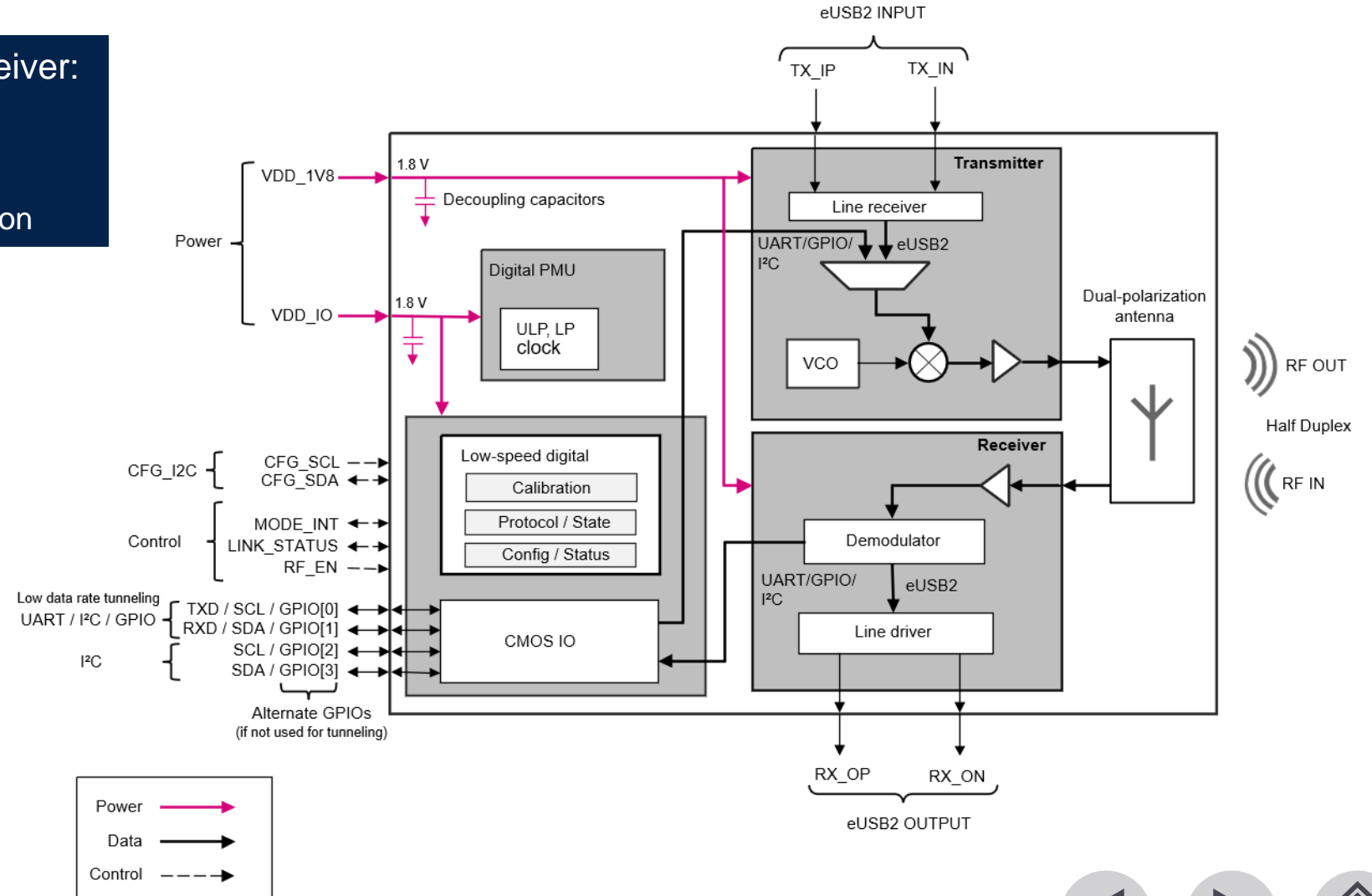
-20°C to 85°C



# ST60A3H1 – Block diagram

Fully integrated 60 GHz V-Band transceiver:

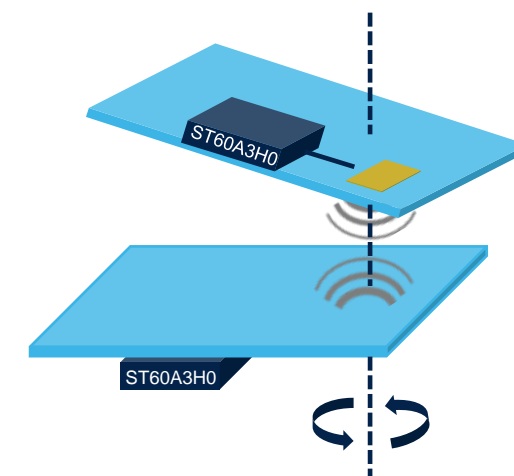
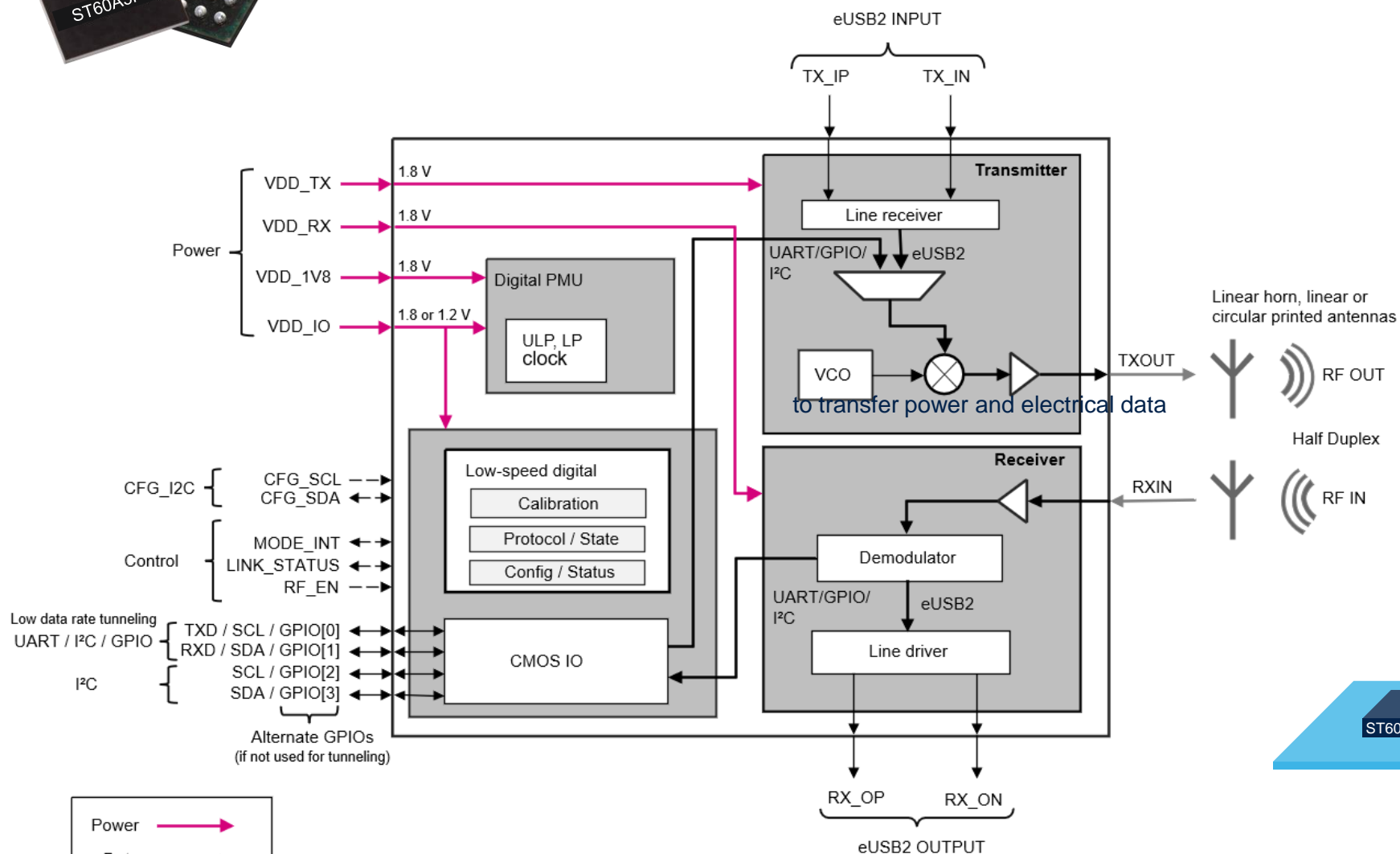
- Transmit & receive paths
- Digital control
- Power management
- Integrated antenna with broadside radiation



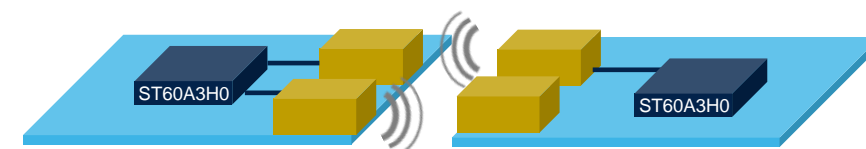




# ST60A3H0 – Block diagram



The setup can support rotation if one of the antennas is with circular polarization. An ST60A3H0 can also be paired with an ST60A3H1





# VD66GY overview

## Compact & high-sensitivity 1.5 MP global shutter image sensor



### Image sensor

**Resolution:** 1.53 MP

**Aspect ratio:** 1124 x 1364 (5:6)

**Chroma:** RGB

**Pixel type:** 2.61  $\mu\text{m}$  GS BSI

**Optical format:** 1/4" (4.61 mm)

**Interface:** MIPI CSI-2

**Dimensions:** 3.65 x 4.34 x 0.15 mm

### Typical use cases



Barcode reading & OCR



Identification & Tracking



Compliance check



3D Stereo & SLAM

### Applications



Smart appliances



Home robots & service robots



AR/VR & Smart glasses



Logistics & Retail



Quality inspection



AGVs & Industrial robots



Drones & UAVs



Security & biometrics



Gaming

### Unique performance of ST proprietary pixel

- High sensitivity, MTF and angular response thanks to BSI
- Excellent PLS across all visible spectrum

### A tiny die to fit into the smallest spaces

- Ultra-compact with optical center centered in die
- Small optical format to match with cost-effective lenses

### With a complete toolbox of embedded features

- Stunning images with Auto-Exposure & various corrections
- On-chip motion analysis with Optical Flow feature

### Seamless integration into your system

- Low power ideal for battery-powered devices
- Clever die design enabling small & simple PCB design

### Direct connection to embedded platforms

- MIPI CSI-2 on 1 or 2 lanes to match entry-level SoC/SoM
- Start with our turnkey sensor boards, modules & drivers

