

Prepared for



SCANTINEL[®]
P H O T O N I C S

Scan | Detect | Navigate

Daive Canavesi
Strategy and Business Development
Munich, Germany, 29.04.2022

Photonic Integrated FMCW LiDAR Paves the Way for Autonomous Mobility

LASER
World of
PHOTONICS



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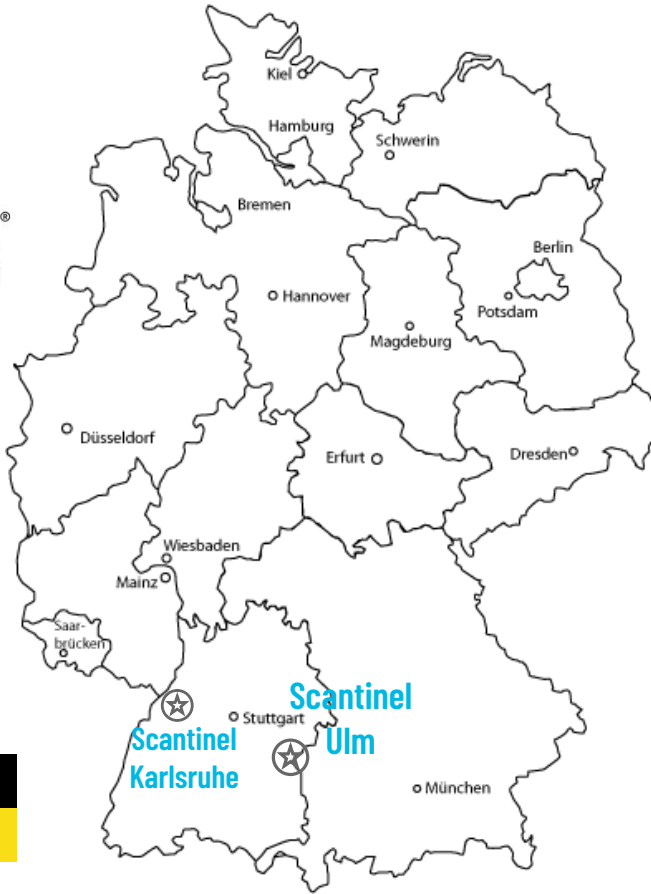
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Overview of Scantinel



SCANTINEL
PHOTONICS



Our mission is to create optimum value for our customers and partners by providing outstanding LiDAR solutions

- Spin-off start-up from ZEISS
- Located in Germany with offices in Ulm and Karlsruhe
- Solid-state FMCW LiDAR for mobility and industrial applications enabling detection range >300m
- International team of 34 experts from >10 different countries (80%+ engineers, 40%+ PhDs)



Scantinel
is backed by*:



SCANIA

* Scantinel is backed by ZEISS Ventures and Scania Growth Capital



Our FMCW LiDAR Optoelectronics Core Module (OCM™) addresses multiple attractive segments

Market Segment

Automotive (ADAS/AD)



Passenger



Commercial

Mobility Service



Robo-Taxi



Logistics



Delivery

Industrial



Rail



Mining



Robot/Automation



Harbor



Smart City

Use Cases

- Level 3 ADAS
- Level 4/5 Autonomous Driving

- Mobility-as-a-Service (MaaS) such as Robo-Taxi and Robo-Bus
- Autonomous highway and urban logistics
- Autonomous last-mile delivery

- Industrial use cases including rail, mining, robot/automation, harbor, smart city, etc.



Key benefits of Scantinel FMCW LiDAR for autonomous mobility

Key Benefits of Scantinel FMCW

Long range

Detect objects at >300m with high accuracy

Fine resolution

Detect object height at distance like road debris

Direct velocity and reflectivity in every pixel

Improve object detection and tracking

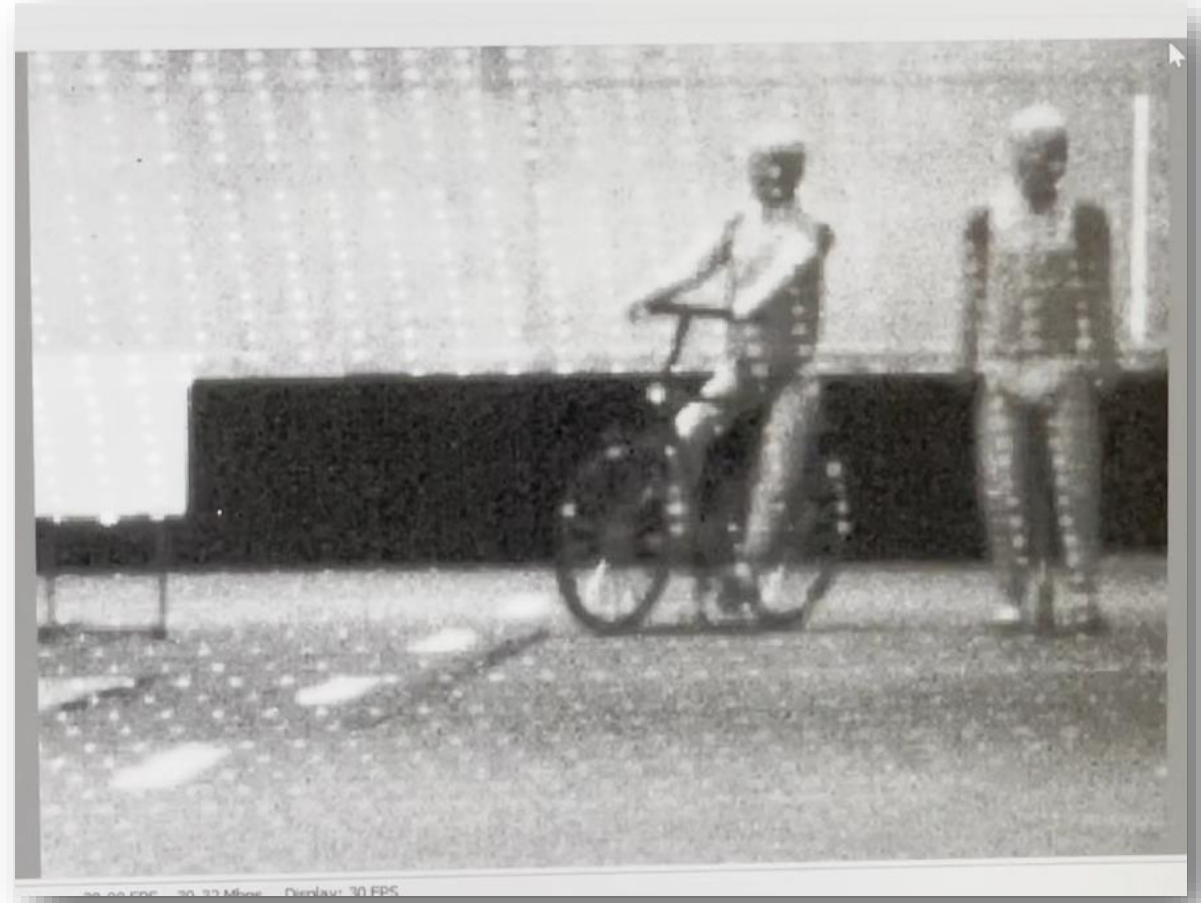
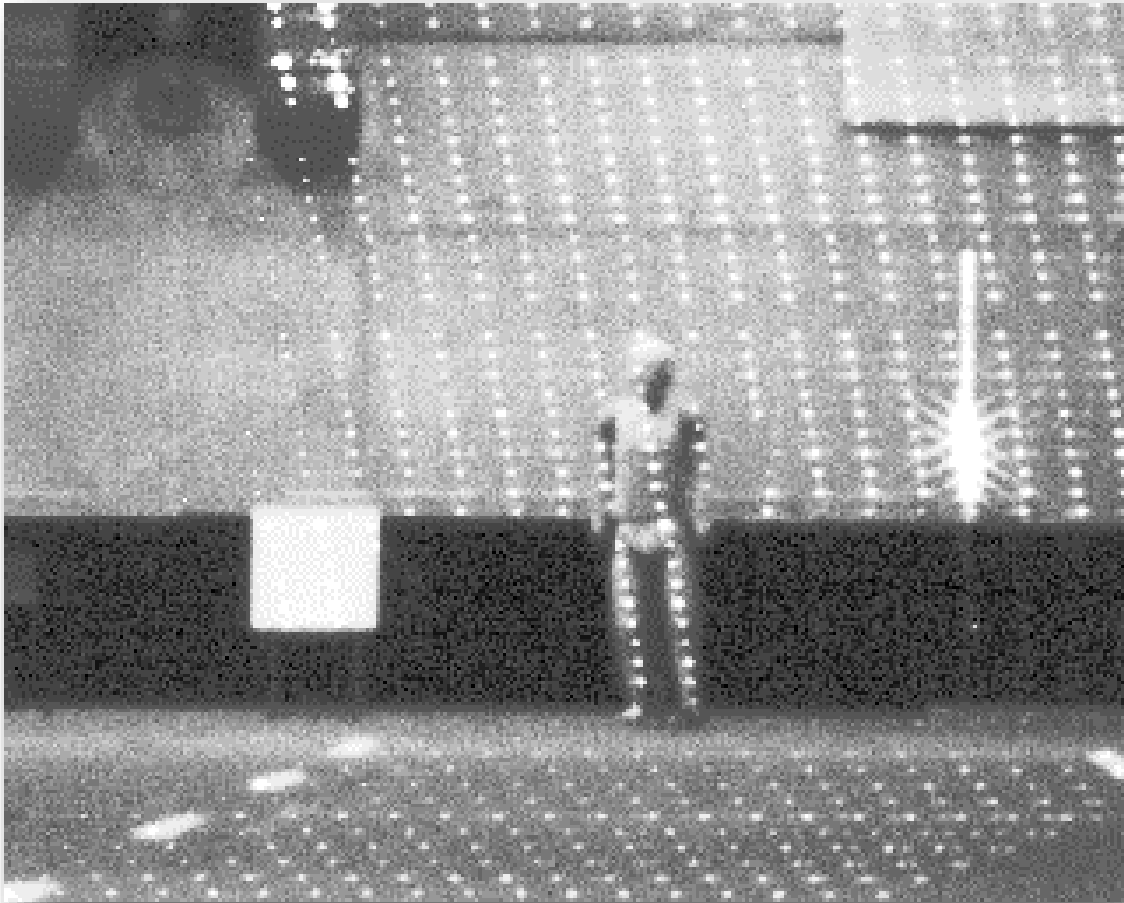
Immunity to interference

Retroreflectors blooming, sunglare and interference with other systems



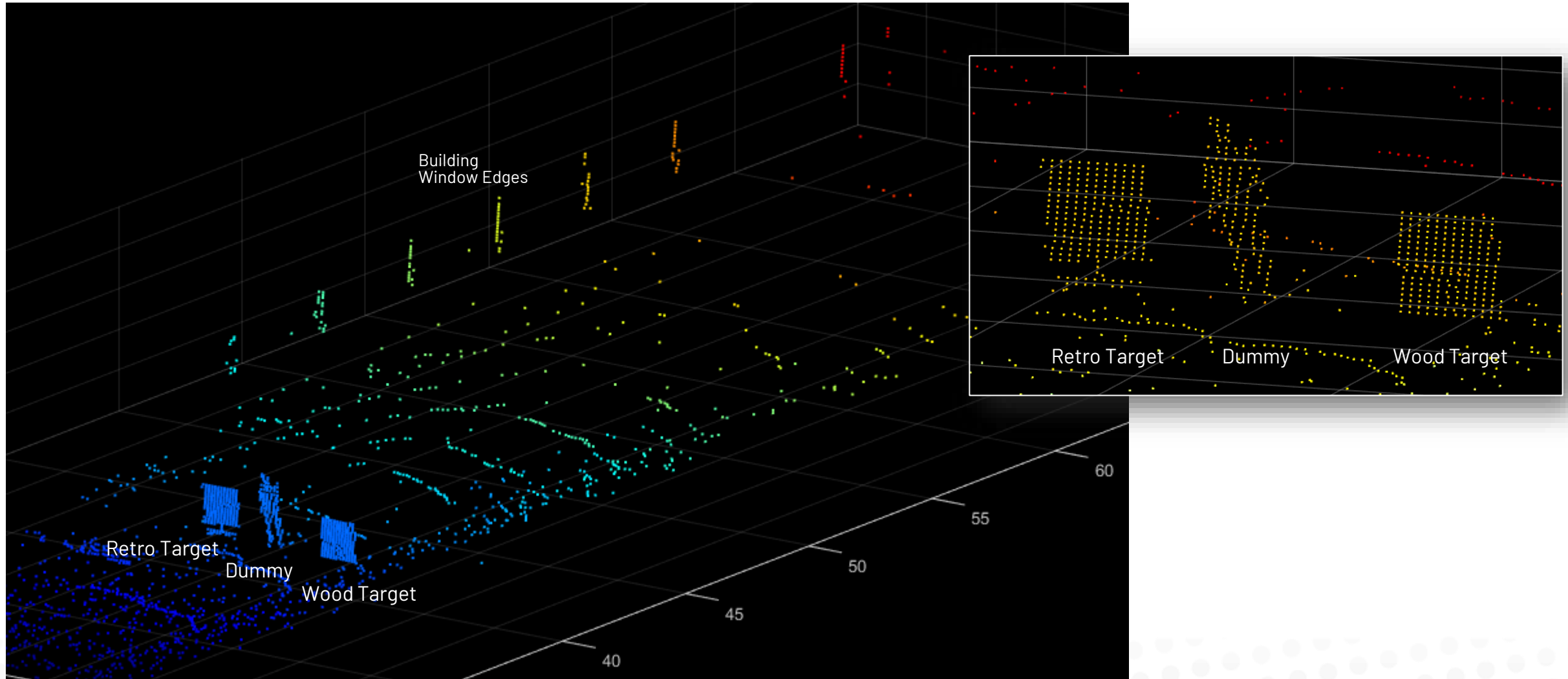


Current PoC-Sample has demonstrated PIC-based solid-state scanning over 100m distance



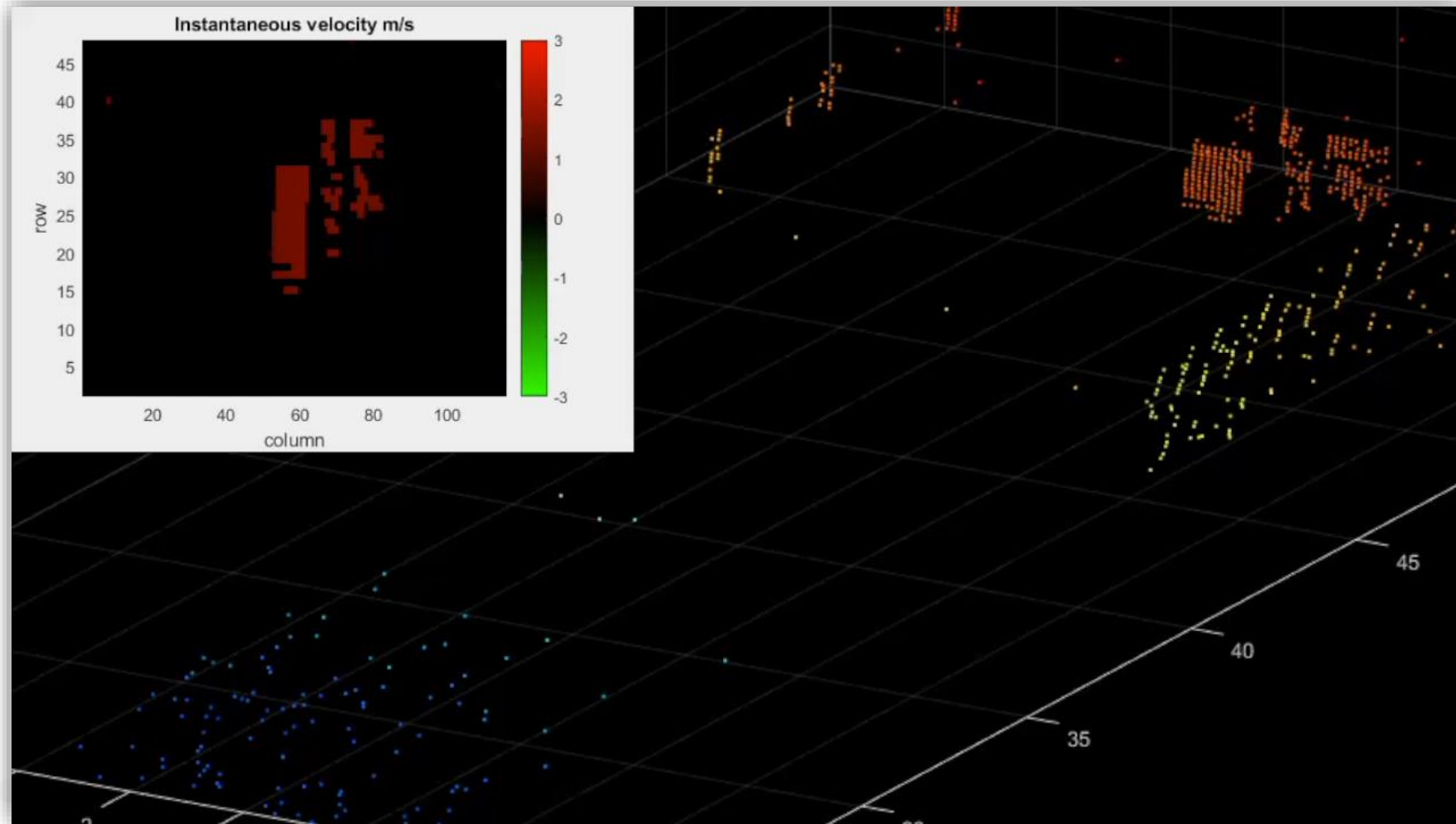


Outdoor measurement of different targets over 100m



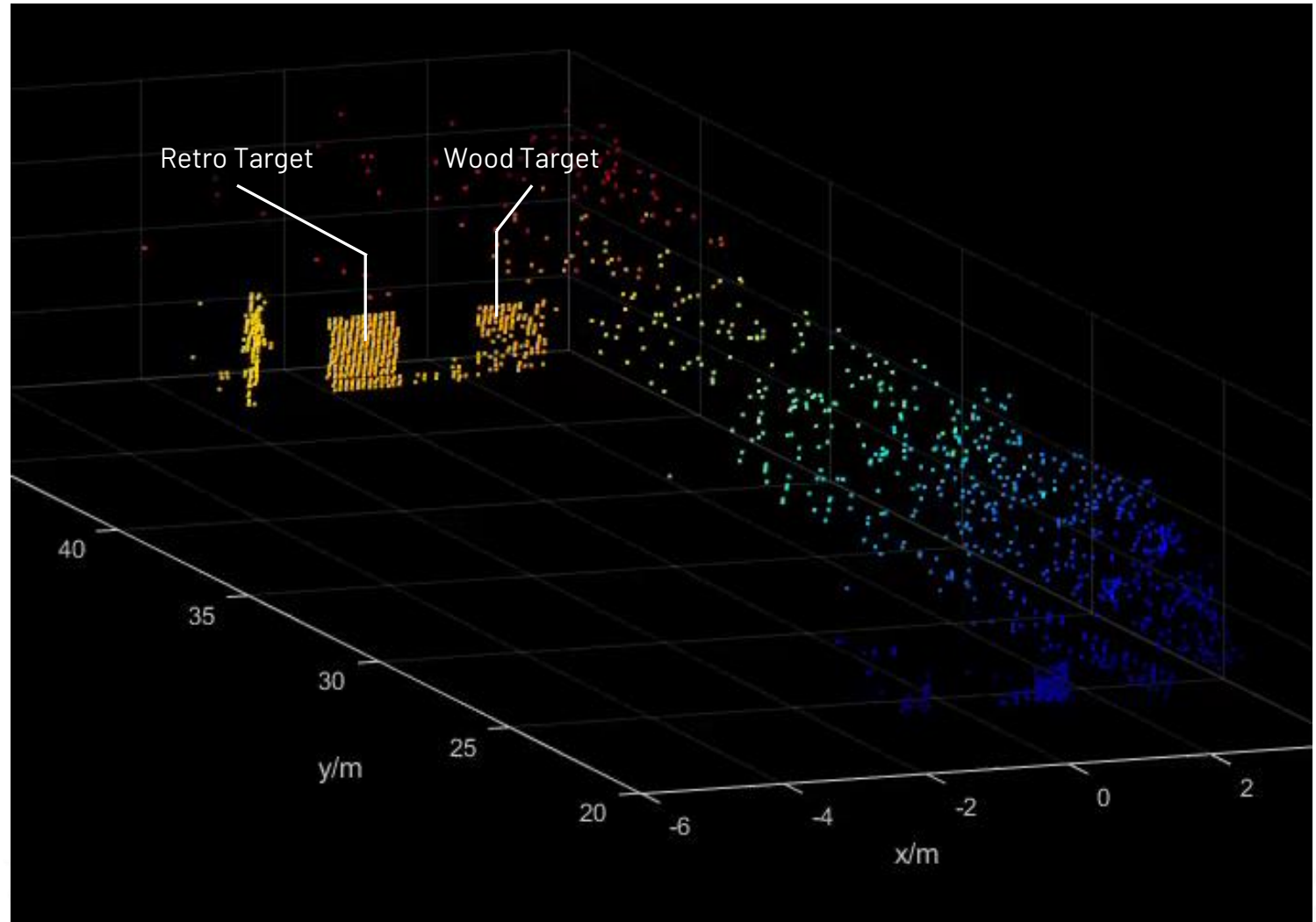
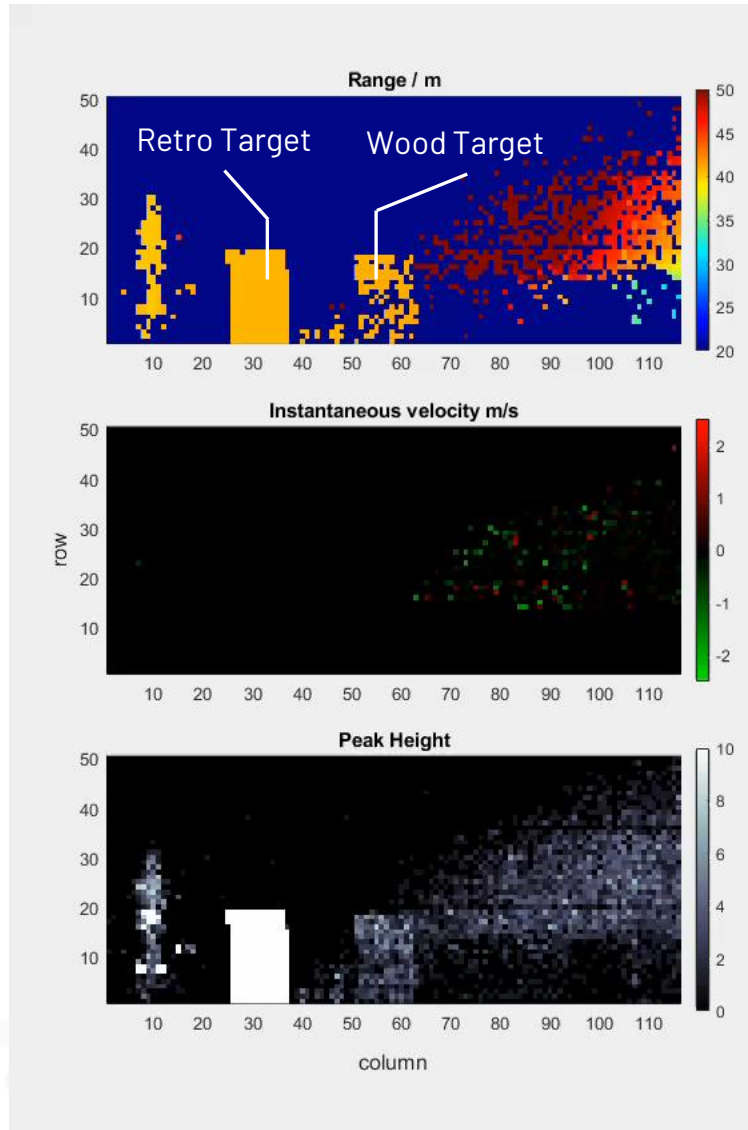


Instantaneous velocity brings highly valuable information to the perception layer



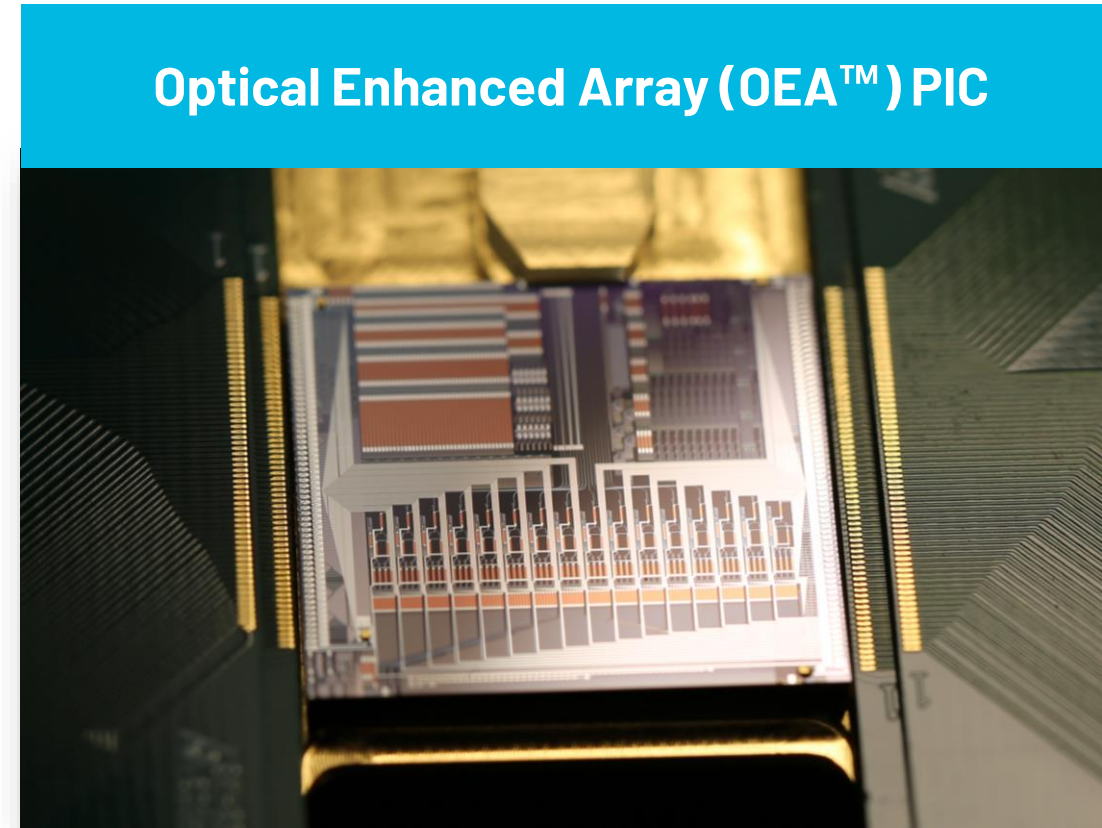
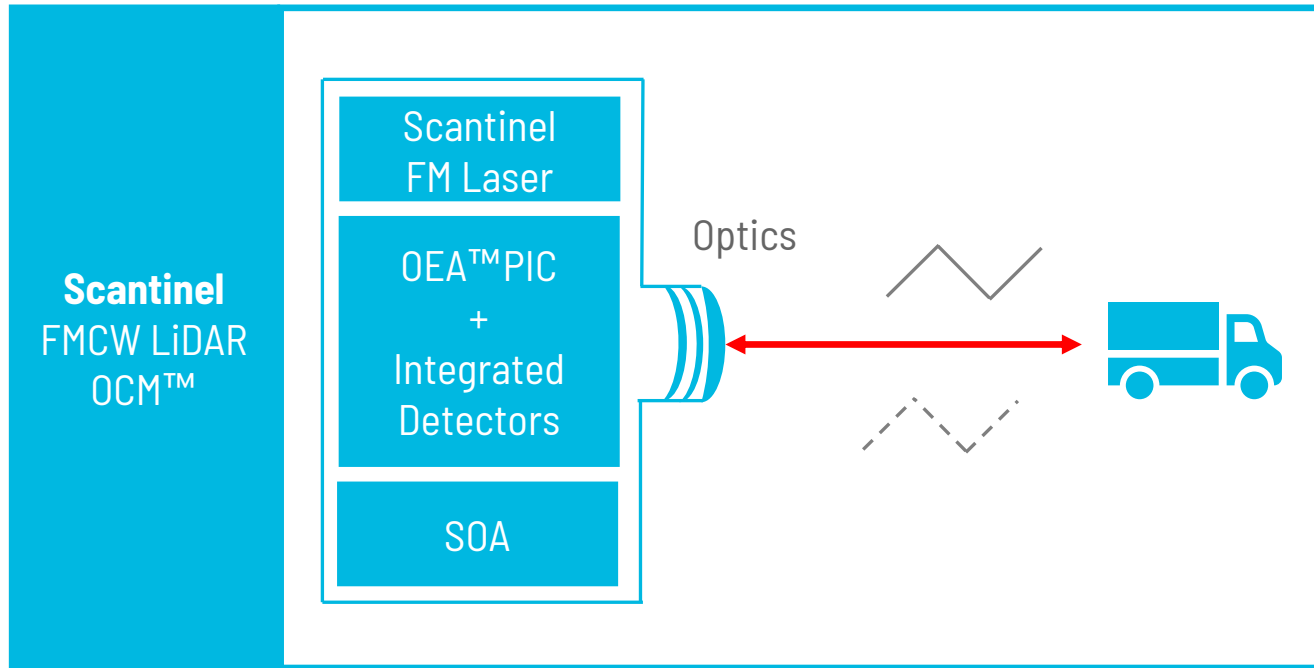


Immunity to retroreflectors





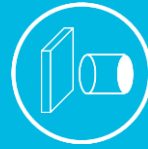
Silicon Photonics enables maximum integration of FMCW LiDAR





Scantinel's approach is a 1550nm solid-state FMCW LiDAR leveraging maximum integration on Silicon Photonics

Enablement of
**Silicon
Photonics**



Solid-state scanning

PIC-based scanner (Optical Enhanced Array - OEA™)
Long range (> 300m) with high angular resolution

Integration of Laser, Isolator and Detectors
Silicon Optical Amplifier (SOA)

Maximum Integration

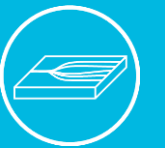


Multi-channel parallelization

5D Point clouds (xyz, direct velocity, reflectivity)
High information density at 2MP/s

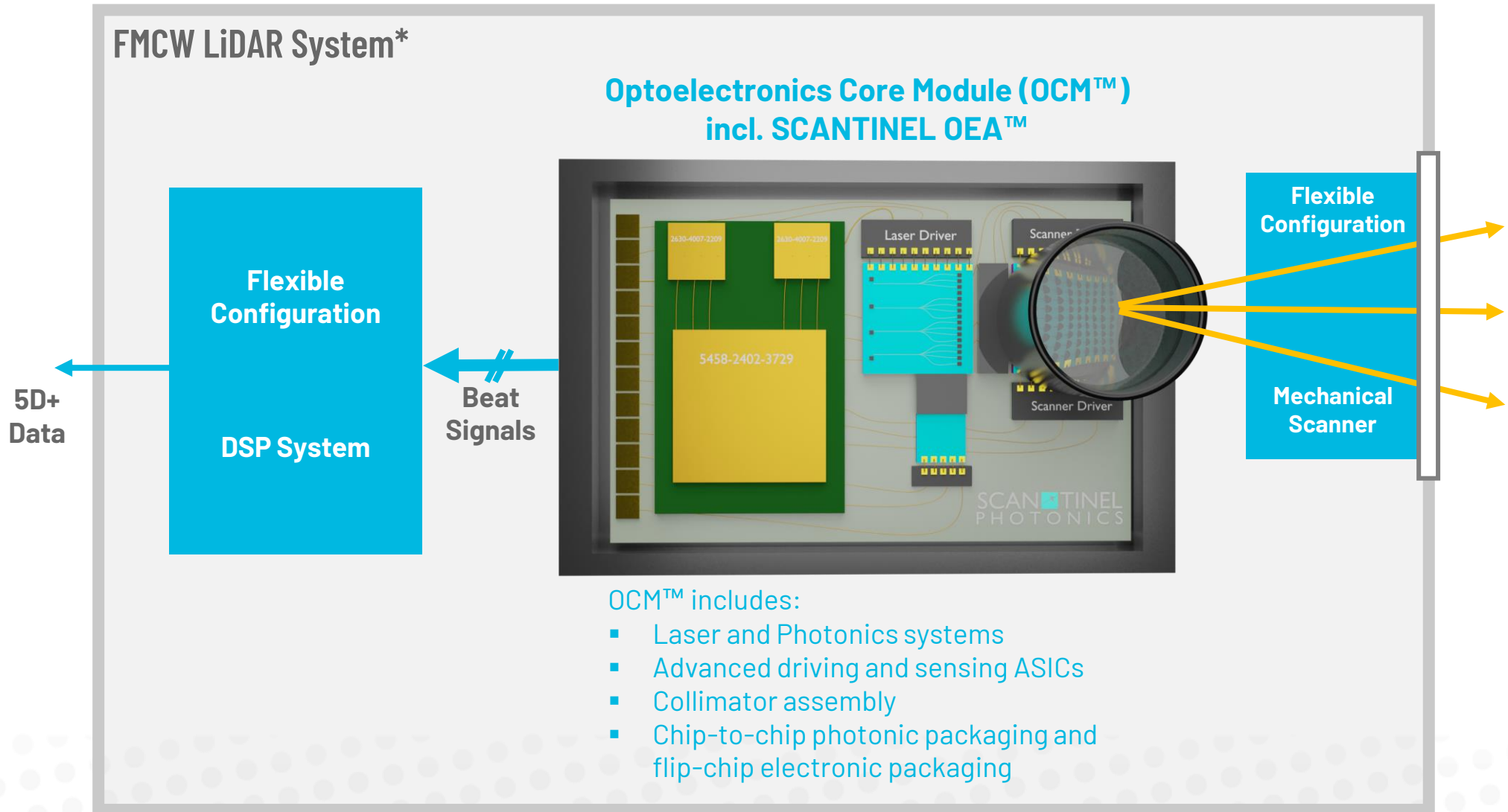
CMOS compatible for high volume manufacturing
Flexible to fit different use cases

Scalability



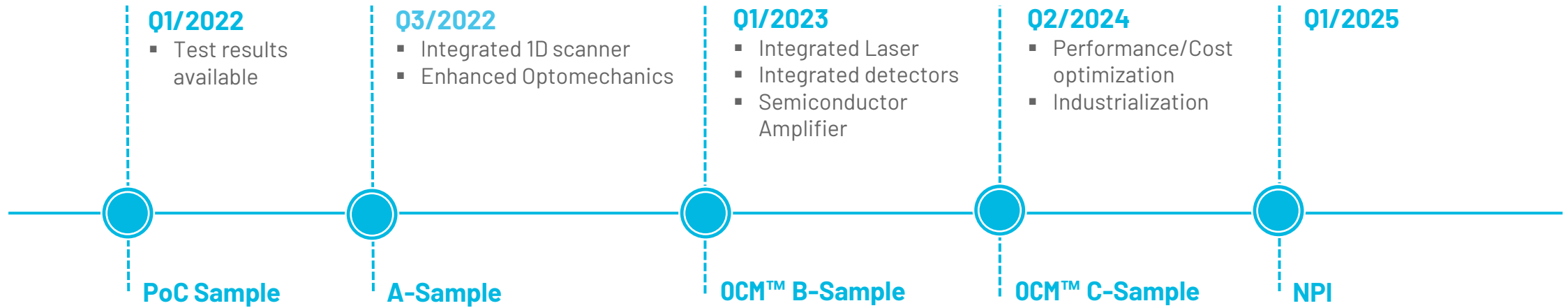


Scantinel Optoelectronics Core Module (OCM™) represents the next level of highly scalable modularity





Fast-track to product ramp-up targets NPI in 2025





We strongly believe in technical cooperation

Areas of Cooperation

Fiber-Array to PIC coupling

32-64 fibers

RL > 60dB, IL < 1dB

Robust and flexible mechanical interface

Si/Organic/glass interposer for PIC flip-chip

Fanning out electrical connections of >400 pads

Input bonds: 50um diameter, 100um pitch (center to center)

Output bonds: 127um diameter, 200um pitch (center to center)

Flip-chip bonding of interposer on Ceramic substrate

Multilayer Ceramic AIN

Input bonds: 127um diameter, 200um pitch (center to center)

Output bonds: TBD

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Let's stay in touch!

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