LCA2
LeddarEngine™

SoC and Software for the Auto and Mobility LiDAR Platform
LCA2 LeddarEngine™

The powerful Engine at the Core of our Auto and Mobility LiDAR Platform

At the core of our LiDAR platform, the LeddarEngine sets a new standard for integrated and customizable solid-state LiDAR solutions that are optimized for high-volume production.

LeddarEngine™ enables Tier-1 suppliers and system integrators to design their own differentiated LiDAR solution by providing the technology, tools and resources they need to meet the specific requirements of various advanced driver-assistance systems (ADAS) and autonomous driving applications (AD).

Versatile

Comprised of the LeddarCore® LCA2 system-on-chip (SoC) and LeddarSP™ signal processing, the LCA2 LeddarEngine supports multiple LiDAR architectures and technologies, including solid-state flash and hybrid-flash.

Scalable

The LiDAR development platform enables our customers to design a variety of solid-state LiDARs (SSL) that are optimized for specific active safety and ADAS/AD applications. Leveraging affordable, readily available technologies, the platform shortens development cycles and accelerates the path to high-volume manufacturing to meet expected mass-market demand ramp-up.

Patented, Automotive-Grade Technology

The LCA2 LeddarEngine integrates LeddarTech’s® proprietary signal acquisition and processing algorithms. The powerful software, which has been perfected by over a decade of dedicated R&D and multiple commercial deployments in the most demanding environments, enhances LiDAR’s detection range and accuracy, for optimized performance-to-cost ratios. Developed to meet the automotive industry’s stringent requirements, the LeddarEngine allows Tier-1 suppliers to design and mass-produce automotive-grade SSLs that meet functional safety requirements (ISO-26262 ASIL-B) and high reliability (AEC-Q100).
Key Features

**LeddarCore® LCA2 SoC**
- Support for multiple LiDAR architectures, including 3D Flash and Hybrid Flash
- Signal acquisition and pre-processing: more than 1 billion samples per second
- Parallel acquisition mode: Multi-SoC combined and synched to increase acquisition channels and field of view
- Functional safety design (ISO-26262 ASIL-B)
- Automotive grade (AEC-Q100)
- Small form factor package

**LeddarSP™ Signal Processing Library**
- Includes LeddarTech's® advanced signal processing technology
- Functional safety design (ISO-26262 ASIL-B)
- Compatible with multiple microcontroller platforms

Full data sheet available upon request
Powered by Leddar® Technology

Covered by more than 70 patents (granted or pending), Leddar is LeddarTech’s® proprietary technology that generates a higher range-to-power ratio which enables lower detection thresholds for significantly increased range and sensitivity over other solid-state LiDAR methods.

Key Differentiators

• Leddar samples the received echo for the complete detection range of the sensor, rather than working directly on the analog signal.
• Through patented methods, Leddar iteratively expands the sampling rate and resolution of the sampled signal.
• Using sophisticated software algorithms, Leddar analyzes the resulting discrete-time signal and recovers the distance for every object.

Leddar Benefits

Higher sensitivity and range, for unmatched performance
Leddar’s cleaner, digitalized signal enables detection of weaker signals for significantly increased range using existing standard technology/components.

Less signal degradation, providing high robustness in inclement weather and changing light conditions
Multi-pulse measurement method statistically increases quality of measurements and full waveform processing ensures high adaptability of sensors in all conditions.

No interference from sensors’ overlapping fields of view or from other light sources
Multi-pulse measurement method combined with low duty cycle and spectrum spreading minimizes mutual sensor interference. Additional intelligent interference rejection enabled by full waveform processing.

Enabling enhanced object detection, classification and tracking
Detection segments provide complete sensing of the environment and better long-range object detection, classification and tracking and with less data compared to point-based methods.

Affordable solid-state LiDAR suited to large-scale deployment
Leveraging affordable components and designed with no moving parts, Leddar-based sensors are designed for large-scale automotive grade production and deployment.
**Auto and Mobility LiDAR Platform**

The most scalable, versatile solid-state LiDAR platform to enable ADAS and AD applications

The auto and mobility LiDAR platform provides Tier-1 suppliers and selected Tier-2s the key components and tools to develop and produce differentiated SSL solutions tailored to the specific ADAS, AD and mobility application requirements of OEMs.

**Customers developing with the LeddarEngine™ have access to:**

- A comprehensive set of development tools that include LiDAR architecture
- Design files and documentation
- LiDAR evaluation kits to benchmark the technology against application requirements and to begin development and integration
- Technical Support: throughout the entire development process, customers have access to engineering and training services, ongoing support, and a comprehensive team of Leddar® Ecosystem partners, who serve as integral elements of the platform offering.

*LeddarTech® also offers off-the-shelf modules for specific mobility projects such as R&D, proof-of-concept, field validation, and for platform seeding.*

<table>
<thead>
<tr>
<th></th>
<th>LeddarEngine</th>
<th>Development Tools</th>
<th>Support and Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LeddarCore® SoC</td>
<td>• Architecture, Design Files &amp; Documentation</td>
<td>• LiDAR Development Services</td>
</tr>
<tr>
<td></td>
<td>LeddarSP™ Signal Processing Software</td>
<td>• LiDAR Development Tools</td>
<td>• ADAS/AD Development Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Evaluation Kits and Off-the-shelf Modules</td>
<td>• Training Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Perception Software Kit</td>
<td></td>
</tr>
</tbody>
</table>

upplier network of key components, software tools and complementary products qualified by LeddarTech® for the Auto and Mobility LiDAR Platform

- Scalable
  - Single architecture enables solutions across the ADAS/AD performance range from L2 to L5
  - Ability to meet high-volume production requirements
  - Ecosystem partnerships enable rapid deployment and ramp-up of core technologies

- Versatile
  - Directly compatible with a wide variety of LiDAR architectures and technologies
  - Allows Tier1s and OEMs to meet various use cases with single platform
  - Architecture and software compatibility enables central architecture or local processing

- Automotive-Grade
  - SoC architecture and software library designed to meet ISO20262 functional safety standard
  - Ecosystem partners developing core components to meet automotive-grade requirements
  - Roadmap supports multiple generations of automotive integration meeting AEC-Q100

- Optimal Cost / Performance
  - Disruptive business model allows to select building blocks and components according to market needs
  - Platform developed to enable highest performance leveraging lower cost, standard components
  - Modular approach allows volume aggregation from multiple end-customers to reduce production costs
About LeddarTech®

LeddarTech is the industry leader behind the most versatile, scalable auto and mobility LiDAR platform based on the unique LeddarEngine. The company is responsible for several innovations in cutting-edge mobility remote-sensing applications, its patented technologies enhancing ADAS/AD capabilities for automobiles, trucks, buses, delivery vehicles, robotaxis and shuttles.

The Leddar® Ecosystem is comprised of a select group of world-class suppliers that support customers development with the LeddarEngine™ by providing components, such as emitters, receivers, micromirrors, microprocessors and software-development tools. These suppliers are prequalified for integration with LeddarCore® SoCs to ensure maximum design agility and reduced technical risks. The ecosystem provides customers with a faster, safer path to high-volume commercial deployments.