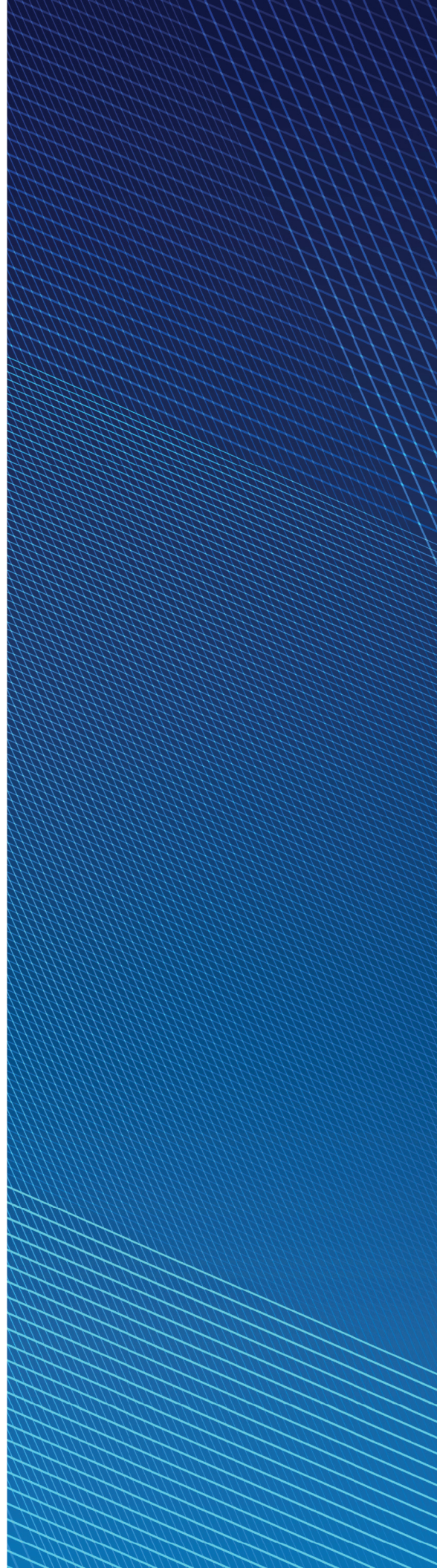


# ODYSSEY SEMICONDUCTOR RECEIVES THE 2023 NEW PRODUCT INNOVATION AWARD

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*Identified as best in class in the North American  
electric vehicle power solutions industry*



## Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Odyssey Semiconductor excels in many of the criteria in the electric vehicle power solutions space.

AWARD CRITERIA	
<i>New Product Attributes</i>	<i>Customer Impact</i>
Match to Needs	Price/Performance Value
Reliability	Customer Purchase Experience
Quality	Customer Ownership Experience
Positioning	Customer Service Experience
Design	Brand Equity

### Setting New Standards

With the increasing demand for electric vehicles (EVs), the worldwide power semiconductor industry will continue its vigorous expansion. Government laws and subsidies, the dedication of original equipment manufacturers to net zero emissions, and sustainability goals all contribute to accelerating EV penetration in the vehicle industry. According to Frost & Sullivan, the global rise in EV adoption will benefit the power

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*- John Sisemore,  
Best Practices Research Analyst*

semiconductor industry. When compared to the value of a car powered by traditional internal combustion engines, the semiconductor content of an EV is two to three times higher. Roughly 75% of this additional semiconductor content in EVs comes from power semiconductors. Chargers, converters, motors, battery management systems, communications, drives, and other comfort and safety features in vehicles all make use of power semiconductors. Incorporating these semiconductors allows for smaller vehicle designs, lighter vehicle weights, and lower power requirements, all leading to higher-performing EVs that can go farther.

### ***Positioned for Growth***

Due to several causes, for example, the pandemic and the whipsaw effect on the supply chain it caused, there is a profusion of lower-tech semiconductor chips, but a shortage of the high-end, high-capacity, high-voltage power chips needed in the automobile industry. In 2021, total worldwide sales of EVs, which includes battery-powered EVs and plug-in hybrid EVs, reached 5.8 million units, up 79% over the previous year.<sup>1</sup> Frost & Sullivan estimates the EV market will continue double-digit growth until the decade's end. High-voltage, high-performance power semiconductors will continue to be vital for EVs and are a growing part of the semiconductor segment during the forecast period. Odyssey Semiconductor is developing proprietary gallium-nitride (GaN) semiconductors and uniquely leverages its expertise with an intellectual product portfolio to protect it. The company has emerged from the process and materials development phase to reach its fabrication of product samples objective in Q4 2022. It is well-positioned to capitalize on new growth opportunities and continues to close new commitments for product samples as customers grasp the capabilities of Odyssey Semiconductor 's power devices.

### ***A Leading Position***

Founded in 2019 and headquartered in Ithaca, New York, Odyssey Semiconductor is a manufacturer of high-voltage power switching components and systems based on its proprietary GaN processing technology. The company, founded by Dr. Rick Brown and Dr. James R. Shealy, believes it possesses a unique breakthrough technology that will allow GaN to supersede silicon carbide (SiC) as the preferred high-voltage power-switching conductor material. GaN power switching devices are utilized in higher demand areas like EVs, industrial motor control, and energy grids thanks to Odyssey Semiconductor's innovative GaN processing technology, which enables the realization of vertical current conduction GaN devices with application voltages from 1,000 volts (V) to over 10,000 V.

### ***Purposeful Innovation***

Odyssey Semiconductor's corporate culture revolves around using purpose to drive innovation. Electrification and sustainability, two high-growth megatrends, present a market potential that silicon (Si) and SiC cannot satisfy. The company's product roadmap, i.e., planning, development, and implementation strategies, incorporates customer feedback, ensuring its offerings align with customers' dynamic needs. In the first quarter of 2023, Odyssey Semiconductor will begin shipping vertical conduction GaN to customers under early access agreements. It will use their feedback to refine products further for high-volume, scalable commercial sales. Initially the company concentrated on three customers, but in Q1 2023 it began accommodating sample requests of new customers. Odyssey Semiconductor's high-voltage vertical GaN power devices take the EV power solutions market one step further than any competing solution.

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<sup>1</sup> Ibid.



## Positioned for Growth

Due to material features that allow for substantially lower wafer area devices with equal breakdown voltage, on-resistance, and current handling capabilities, GaN-based power switching transistors outperform their Si and SiC counterparts. The smaller product die size helps in two ways: 1) the devices

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are less expensive to build because they use wafers more efficiently, and 2) the devices have ten times less capacitance, which dramatically boosts the switching speed of converter circuits that use these parts. Odyssey Semiconductor's proprietary vertical-conduction power-switching transistors are built on high-quality bulk GaN wafers. These substrates enable the formation of low defect-density device layers required for transistors with ratings greater than 1,000 V.

Odyssey Semiconductor's new and purpose-built vertical GaN power devices, which meet a 1,200 V rating, set the company apart from competitors, with superior design, reliability, and quality as its central pillars. Odyssey Semiconductor provides a ten times reduction in die size thanks to the industry's most robust vertical GaN intellectual property portfolio, superior to SiC in virtually every metric, including performance and price.

The market for high-voltage power semiconductors with the ability to power EVs is sizable, expanding, and highly fragmented, providing a significant opportunity for new competitors. Odyssey Semiconductor possesses a competitive advantage in this space through its 10,000 square foot center in Ithaca, NY, where the company vertically integrates semiconductor design, fabrication, testing, and packaging. The company has transitioned from creating processes and materials to testing and fabrication of samples and began product evaluation with customers in Q1 2023.

## Conclusion

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To create a new solution, a company needs to understand the market's needs and deliver a solid solution designed and embedded with high-quality and reliable performance. Frost & Sullivan finds that Odyssey Semiconductor embodies this concept. Electrification in the mobility space is proliferating, and the need for better, more cost-efficient vehicles is critical for moving electric vehicles into the larger traveling mainstream. The proprietary gallium nitride vertical power solution fashioned by Odyssey Semiconductor will move the needle on electric vehicles. Furthermore, Odyssey Semiconductor is working with customers meticulously to ensure that its offerings address the wants and needs of users.

With its strong overall performance, Odyssey Semiconductor earns Frost & Sullivan's 2023 North American New Product Innovation Award in the electric vehicle power solutions industry.

## What You Need to Know about the New Product Innovation Recognition

Frost & Sullivan's New Product Innovation Award recognizes the company that offers a new product or solution that uniquely addresses key customer challenges.

### Best Practices Award Analysis

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *New Product Attributes*

**Match to Needs:** Customer needs directly influence and inspire product design and positioning

**Reliability:** Product consistently meets or exceeds customer performance expectations

**Quality:** Product offers best-in-class quality with a full complement of features and functionality

**Positioning:** Product serves a unique, unmet need that competitors cannot easily replicate

**Design:** Product features an innovative design that enhances both visual appeal and ease of use

#### *Customer Impact*

**Price/Performance Value:** Products or services provide the best value for the price compared to similar market offerings

**Customer Purchase Experience:** Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

**Customer Ownership Experience:** Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

**Customer Service Experience:** Customer service is accessible, fast, stress-free, and high quality

**Brand Equity:** Customers perceive the brand positively and exhibit high brand loyalty

## About Frost & Sullivan

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## The Growth Pipeline Engine™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

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### Key Impacts:

- **Growth Pipeline:** Continuous Flow of Growth Opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



## The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

### Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

